FINAL | Prepared for

New York City Department of Environmental Protection

BODR Validation Services, Design Services and Design Services During Construction for the

Construction of CSO Abatement Facility at Gowanus Canal OH-007

Sustainable Material Content Plan, CP3 - 100% Design

Contract: CSO-GC-SFS DES OH | PIN: 82620WP01534

September 2026

Hazen

Brown AND Caldwell



Photo Credit: Audrey Gray

Technical Memorandum

Hazen and Sawyer
498 Seventh Ave, 11th Floor
New York, NY 10018
212-539-7000

Brown and Caldwell Associates
1350 Broadway, Suite 2000
New York, NY 10018
646-367-0631

Prepared for: New York City Department of Environmental Protection

Project Title: Construction of CSO Abatement Facility at Gowanus Canal Outfall OH-007

DEP Contract: CSO-GC-SFS DES OH

Technical Memorandum

Subject: Sustainable Material Content Plan, CP3 100% Design

Date: September 2026

To: Jesse Goldin, P.E., DEP Accountable Manager

From: Eliora Camilleri, P.E., Hazen and Sawyer, Project Manager
Gui DeReamer, P.E., Brown and Caldwell, Design Manager

Prepared by: _____
Sarah Teevan, E.I.T., Hazen and Sawyer

Reviewed by: _____
Nicolette Leung, P.E., ENV SP, Hazen and Sawyer

Reviewed by: _____
Marcella Capuco, E.I.T., ENV SP, Brown and Caldwell

Limitations:

This is a draft and is not intended to be a final representation of the work done or recommendations made by Hazen and Sawyer/Brown and Caldwell Joint Venture. It should not be relied upon; consult the final report.

This document was prepared solely for New York City Department of Environmental Protection (DEP) in accordance with professional standards at the time the services were performed and in accordance with the contract between DEP and Hazen and Sawyer/Brown and Caldwell Joint Venture dated April 29, 2021. This document is governed by the specific scope of work authorized by DEP; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by DEP and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

Table of Contents

List of Figures ii
List of Tables ii
List of Abbreviations iii
Section 1: Executive Summary 1
Section 2: Introduction 2
2.1 Overview 2
2.2 Project Objectives 3
2.3 Assumptions 2
2.4 Calculations Inputs 6
2.5 Calculation Outputs 6
2.5.1 Recycled Material Content 6
2.5.2 Regional Material Content 6
2.5.3 Sustainably Procured Material Content 7
2.6 Contractor Requirements 7
Section 3: Recycled Material Content 7
Section 4: Regional Material Content 8
Section 5: Sustainably Sourced Material Content 8
Section 6: Vendors 9
Section 7: Net Embodied Carbon 17
Section 8: Conclusion 17
Attachment A: Preliminary Vendor Research ..... A
Attachment B: New Material Quantities ..... B
Attachment C: Vendor Sustainability Information C

List of Figures

Figure 1. OH-007 CSO storage facility design 3

List of Tables

Table 1. Material Content Summary 1
Table 2. Material Assumptions 2
Table 3. Concrete Recycled Content Assumptions 8

Table 4. Envision Regional Construction Materials[1] 8
Table 5. Preliminary Vendor Research 10
Table 6. Total Weight of New Materials[1] 17

List of Abbreviations

BODR	Basis of Design Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIP	cast-in-place
City	City of New York
CP	Construction Package
CSO	combined sewer overflow
cf	cubic feet
CR	Climate Resilience
DDSW	Deep Dive Sustainability Workshop
DEP	New York City Department of Environmental Protection
DSNY	New York City Department of Sanitation
EPA	Environmental Protection Agency
EPD	Environmental Product Declaration
FRP	fiber-reinforced plastic
FSC	Forest Stewardship Council
ISO	International Organization for Standardization
KPI	Key Performance Indicator
lb	pound
LCA	Life Cycle Assessment
LEED	Leadership in Energy and Environmental Design
MG	million gallon(s)
mg/kg	milligrams per kilogram
NPCA	National Precast Concrete Association
NRMCA	National Ready Mix Concrete Association
NYCRR	New York Code Rules and Regulations
OH	Owls Head
PEFC	Programme for the Endorsement of Forest Certification
RA	Resource Allocation
RD	Remedial Design
RH-3	Red Hook 3
ROD	Record of Decision
SFI	Sustainable Forestry Initiative
SMCP	Sustainable Material Content Plan
SOP	Standard Operating Procedure
SOW	Statement of Work
sf	square feet
UAO	Unilateral Administrative Order
USGBC	United States Green Building Council

DRAFT for review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Section 1: Executive Summary

This Sustainable Material Content Plan (SMCP) approximates the quantity of recycled, regional, and sustainably sourced content of new materials being procured for the Gowanus Combined Sewer Overflow (CSO) Storage Facilities, Contract CSO-GC-SFS-DES-OH-007 Construction Package (CP) 3 (the Project). This SMCP was completed in accordance with the corresponding New York City Department of Environmental Protection (DEP) Standard Operating Procedure (SOP) 056 (Revision 8, 6/15/2022). Recycled, regional, and sustainably sourced content targets have been incorporated into the contract specifications, specifically Section 01 35 63 – Sustainability Certification Project Requirements. Opportunities for recycled content are largely derived from asphalt, concrete, and steel. Concrete and steel provide large opportunities for sustainably sourced content. The Key Performance Indicator (KPI) matrix goals were developed during the Preliminary Sustainability Workshop for the RH-3, RH-4, and OH-007 contracts on November 15, 2016. The KPI goals were further reviewed and updated for OH-007 at the Sustainability Review Meeting on October 20, 2021. KPI goals were then finalized for recycled, regional, and sustainably sourced content at the Deep Dive Sustainability Workshop (DDSW) held on June 6, 2022, based on the results of the CP3 SMCP submitted on April 25, 2022.

Table 1 shows the summary of recycled, regional, and sustainably sourced content of Project materials.

Table 1. Material Content Summary

Metric	Weight (tons)	Content (%)
Recycled Content KPI Goal	-	15%
Regional Content KPI Goal	-	95%
Sustainably Sourced Content KPI Goal	-	50%
Total Weight of All Project Materials (tons)[2] *Used in sustainably sourced content calculation*	74,582	-
Total Weight of All Project Materials *Excluding Plants, Soils, and Stones (tons)[1,3] *Used in recycled content calculation*	25,927	-
Total Weight of All Project Materials *Excluding Equipment (tons)[1] *Used in regional content calculation*	74,582	-
Total Weight of Recycled Content (tons)	4,050	-
Percentage of Recycled Content by weight (%)	-	16%
Total Weight of Regional Content (tons)	74,378	-
Percentage of Regional Content by weight (%)	-	99.9%
Total Weight of Sustainably Sourced Content (tons)	62,792	-
Percentage of Sustainably Sourced Content by weight (%)	-	84%

1. *Per SOP 056, process mechanical equipment, electrical equipment, and water equipment, (collectively referred to as equipment herein) are exempt from the new material content recycled and regional KPI goals. Hazen and Brown and Caldwell have interpreted this exemption covers packaged equipment only (ex: pumps, sprinkler systems, electric heating units, and circuit breakers), but not linear materials such as piping, which have been included in this analysis.*
2. *Per SOP 056, sustainably sourced material calculations only consider newly procured materials.*
3. *Per SOP 056, recycled material calculations do not include soils or plants. Per Envision v3, Natural materials such as soil and rock when used as backfill do not count toward credit Resource Allocation (RA) 1.2 – Use Recycled Materials but are addressed in RA 1.5 - Balance Earthwork on Site.*

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Section 2: Introduction

The following sections provide the Project background and an overview of this report.

2.1 Overview

In September 2013, the United States Environmental Protection Agency (EPA), acting under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund), issued its Record of Decision (ROD) describing the selected remedy for the Gowanus Canal Superfund site located in Brooklyn, New York. In May 2014, the EPA issued an Administrative Order for Remedial Design (Index No. CERCLA-02-2014-2019) (RD UAO) that contained a Statement of Work (SOW) specifying the tasks to design the components of the remedy selected in the ROD. As part of the selected remedy, the City of New York (NYC) was directed to institute CSO controls consisting of the design for construction of retention tanks to intercept discharges from outfalls RH-034 and OH-007. The ROD preliminarily estimates that an 8-million-gallon (MG) tank at RH-034 and a 4-MG tank at OH-007 will provide a 58-to-74-percent reduction of CSO solids discharged to the canal. The ROD estimates this volume of CSO solids reduction will prevent recontamination by CSOs of the post-remedy clean surface. The ROD established a preliminary remediation goal of 20 mg/kg for polyaromatic hydrocarbons in post-remedy clean canal surface sediments.

This design contract covers a period of 10 years and supports approximately $600 million of construction. DEP has determined that there will be four design/construction work packages at each site:

- Construction package 1 is a site preparation contract. This contract demolishes existing structures on site, disconnects and/or relocates any in service utilities, and provides a secure site perimeter for work that will follow. It includes the relocation of the existing New York City Department of Sanitation (DSNY) operated winter weather operations (salt shed, plow storage, etc.) to an alternate location, likely South of 5th Street.
- Construction package 2 includes the majority of subsurface work. It includes construction of the support of excavation; the excavation, stabilization and disposal of soils; and construction of the foundation for the facility.
- Construction package 3 includes superstructure construction on the facility itself as well as the conveyance necessary to integrate the facility with DEP's infrastructure. This includes the integration of the replacement for the current Second Avenue pump station into the finished OH-007 facility.
- Construction package 4 includes relocating the compost and Gowanus Canal Conservancy area, as well as general site improvements and the public realm.

The Basis of Design Report (BODR) dated November 2021 outlines the basis of design for the 4 MG OH-007 CSO storage facility, which is required to comply with the regulations identified in the EPA's ROD and DEP's design preferences for a CSO facility. As shown in Figure 1, the OH-007 CSO facility is proposed to be located within the OH-4 site, a peninsula composed of a cluster of five properties along 5th Street between 2nd Avenue

and the southern side of the Gowanus Canal as it bends toward the west near the 4th Street turning basin. The OH-007 CSO storage facility is proposed to be situated on the property north of 5th Street.



Figure 1. OH-007 CSO storage facility design

2.2 Project Objectives

The purpose of this SMCP is to detail the anticipated amounts of recycled, regional, and sustainably sourced content in new materials to be procured by the Project, as per SOP 056 (Revision 8, 6/15/2022). Per SOP 056, recycled content is in accordance with industry standards, and regional content is in accordance with the NYC market at the time of report completion. This report also reviews opportunities to incorporate sustainably sourced material.

The KPI matrix goals were developed during the Preliminary Sustainability Workshop for the RH-3, RH-4, and OH-007 contracts on November 15, 2016. The KPI goals were further reviewed and updated for OH-007 at the Sustainability Review Meeting on October 20, 2021. KPI goals were then finalized for recycled, regional, and sustainably sourced content at the DDSW held on June 6, 2022, based on the results of the CP3 SMCP submitted on April 25, 2022.

This report is provided for reference only and is not a contractually binding document. The Contractor will demonstrate good faith efforts to meet the contractual targets stipulated in Section 01 41 11 – Envision Requirements. The compliance strategy provided in this report is only an example, and the Engineer does not attest to the accuracy or feasibility of the numbers provided. It is the responsibility of the Contractor to prepare their own compliance plan according to the requirements of Section 01 41 11 – Envision Requirements and meet the target within their means and methods.

The new materials on this project include:

- Aluminum (Floor Hatches)
- Asphalt
- Brick
- Bronze (Valves)
- Cast Iron (Bike Rack)
- Cast Iron (Piping/Fittings)
- Cast Iron (Manholes)
- Cast Iron (Stair Nosings)
- Concrete (Structural/Non-Structural)
- Concrete (Precast)
- Copper (Piping/Fittings)
- Copper (Wire)
- Ductile Iron (Piping/Fittings)
- Ductile Iron (Grates/Frames)
- Epoxy
- Fiberboard (Duct Insulation)
- Fiberglass (Copper Piping Insulation)
- Fiber-reinforced plastic (FRP)
- Geotextile
- Glass

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

- Grout
- HDPE (Piping/Fittings)
- Paint
- Plywood (Concrete Forms)
- Porcelain (Tile)
- Polished Brass (Roof Manifold/Flashing)
- PVC (Piping)
- PVC Coated Rigid Steel Conduit
- Reclaimed Timber
- Rigid Galvanized Steel
- Roofing Membrane
- Stainless Steel (Overhead Coiling Doors)
- Stainless Steel (Doors/Frames/Hardware)
- Stainless Steel (Ductwork)
- Stainless Steel (Gates)
- Stainless Steel (Piping)
- Stainless Steel/Steel (Non-Structural)
- Steel (Piping)
- Steel (Reinforcing)
- Steel (Deck Units)
- Steel (Sheet Piling)
- Steel (Structural)
- Urethane (Anti-Graffiti Coating)
- Plants and Grasses
- Stone
- Soil

2.3 Assumptions

Materials anticipated to be procured for the Project, the densities, recycled, regional, and sustainably sourced content values assumed for this analysis, are provided in Table 2. The following assumptions were made for this submission:

- As soil is required to be procured under New York Code Rules and Regulations (NYCRR) Part 360, it is assumed that soils are 100 percent sustainably sourced.
- Per Standard Operating Procedure (SOP) 056, process mechanical equipment, electrical equipment, and water equipment, (collectively referred to as equipment herein) are exempt from the new material content recycled and regional KPI goals. Hazen and Brown and Caldwell have interpreted this exemption to cover packaged equipment only (ex: pumps, sprinkler systems, electric heating units, and/or circuit breakers), but not linear materials such as piping, which have been included in this analysis.
- Per SOP 056, recycled material calculations do not include soils or plants. Per Envision v3, Natural materials such as soil and rock when used as backfill do not count toward credit Resource Allocation (RA) 1.2 – Use Recycled Materials but are addressed in RA 1.5 - Balance Earthwork on Site.
- Per SOP 056, sustainably sourced material calculations only consider newly procured materials.
- Temporary works such as turbidity curtains, wells for dewatering, and/or fencing are assumed to be completely recovered and reused by the contractor and are not included in this analysis.
- Soil and stone are assumed to be readily available materials. Therefore, these materials are assumed to be 100 percent regionally sourced. No vendors are included as per SOP 056 guidance.

The 90% cost estimate takeoffs were used as the basis for calculations presented in this report.

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Table 2. Material Assumptions

Item Description	Total Weight (tons)	Density (lb/ft³)	Recyclable Content %	Regional Content %	Sustainably Sourced Content %	Source
Aluminum (Floor Hatches)	0.06	168	0%[1]	100%[2]	100%[3]	1. N/S 2. Acudor 3. Bilco
Asphalt	3,122	145	30%[1]	100%[2]	0%[3]	1. LL 71 of 2011 2. RCA Asphalt, Tilcon, Willets Point Asphalt Corp. 3. N/S
Brick	35.89	181	0%[1]	100%[2]	100%[3]	1. N/S 2. Consolidated Brick Company 3. Belden Brick Company
Bronze (Valves)	0.29	545	0%[1]	100%[2]	100%[3]	1. N/S 2. Watts 3. Milwaukee Valve, Watts
Cast Iron (Bike Rack)	0.02	446	0%[1]	100%[2]	0%[3]	1. N/S 2. Preliminary Vendor Research 3. N/S
Cast Iron (Piping/Fittings)	9.60	446	96%[1]	100%[2]	100%[3]	1. Charlotte Pipe and Foundry 2. Tyler Pipe 3. Charlotte Pipe and Foundry, Tyler Pipe
Cast Iron (Manholes)	908.50	446	0%[1]	100%[2]	100%[3]	1. N/S 2. Precast Concrete, Long Island Precast 3. Monarch, Precast Concrete, Long Island Precast
Cast Iron (Stair Nosings)	28.58	446	0%[1]	100%[2]	0%[3]	1. N/S 2. Wooster Products, Safe-T-Metal Co. 3. N/S
Concrete (Structural/ Non-Structural)	13,899	116	Structural: Average of 7.6% Non-Structural: Average of 27.6%	100%[2]	100%[3]	1. RH-3 CP2 composition. Refer to Table 4 for initial assumptions. 2. DKN Ready Mix, Empire Transit, Gotham Ready Mix 3. DKN Ready Mix, Empire Transit, Gotham Ready Mix

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Table 2. Material Assumptions

Item Description	Total Weight (tons)	Density (lb/ft³)	Recyclable Content %	Regional Content %	Sustainably Sourced Content %	Source
Concrete (Precast)	216	116	0%[1]	100%[2]	100%[3]	1. N/S 2. Monarch, Precast Concrete, Long Island Precast 3. Monarch, Precast Concrete, Long Island Precast
Copper (Piping/Fittings)	0.63	560	8%[1]	100%[2]	100%[3]	1. Mueller 2. Mueller 3. Mueller
Copper (Wire)	0.06	560	0%[1]	100%[2]	100%[3]	1. N/S 2. Okonite 3.Okonite, Southwire
Ductile Iron (Piping/Fittings)	192.69	449	0%[1]	100%[2]	100%[3]	1. N/S 2. Precast Concrete, Long Island Precast 3. Monarch, Precast Concrete, Long Island Precast
Ductile Iron (Grates/Frames)	51.85	449	98%[1]	0%[2]	100%[3]	1. McWane 2. N/S 3. McWane
Epoxy	89.82	78	0%[1]	100%[2]	100%[3]	1. N/S 2. Sika, Euclid Chemical 3. Sika, Euclid Chemical, Master Builders
Fiberboard (Duct Insulation)	11.85	40.5	63%[1]	100%[2]	100%[3]	1. Owens 2. Owens 3. Owens
Fiberglass (Copper Piping Insulation)	1.05	0.60	0%[1]	100%[2]	100%[3]	1. N/S 2. Schuller International 3. Certain Teed, Schuller International
FRP	0.22	125	0%[1]	0%[2]	0%[3]	1. N/S 2. N/S 3. N/S
Geotextile	0.14	92	0%[1]	0%[2]	100%[3]	1. N/S 2. N/S 3. Propex, Tencate
Glass	12.53	156	0%[1]	100%[2]	0%[3]	1. N/S 2. W&W 3. N/S
Grout	4,971	140	0%[1]	100%[2]	100%[3]	1. N/S 2. Sika, Euclid 3. Sika, Euclid, Master Builders

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Table 2. Material Assumptions

Item Description	Total Weight (tons)	Density (lb/ft³)	Recyclable Content %	Regional Content %	Sustainably Sourced Content %	Source
HDPE (Piping/Fittings)	3.35	60	0%[1]	100%[2]	100%[3]	1. N/S 2. Tricon, Vari-Tech, Allied Tube and Conduit 3. Allied Tube and Conduit
Paint	25.19	125	0%[1]	100%[2]	100%[3]	1. N/S 2. PPG Amercoat 3. Tnemec, Sherwin Williams, Carboline, PPG Amercoat
Plywood (Concrete Forms)	100.75	37.5	0%[1]	100%[2]	100%[3]	1. N/S 2. Feldman, Lenoble, Kamco 3. Feldman, Lenoble, Kamco
Porcelain (Tile)	4.25	147	0%[1]	100%[2]	100%[3]	1. N/S 2. DAL-Tile 3. DAL-Tile
Polished Brass (Roof Manifold/ Flashing)	0.06	520	0%[1]	0%[2]	0%[3]	1. N/S 2. N/S 3. N/S
PVC (Piping)	6.61	85	28%[1]	100%[2]	100%[3]	1. Atkore 2. Atkore 3. Atkore
PVC Coated Rigid Steel Conduit	30.65	490	0%[1]	100%[2]	100%[3]	1. N/S 2. Robroy 3. OCAL
Reclaimed Timber	2.58	37.5	0%[1]	0%[2]	0%[3]	1. N/S 2. N/S 3. N/S
Rigid Galvanized Steel	13.35	490	66%[1]	100%[2]	100%[3]	1. N/S 2. Allied Tube, Wheatland 3. Allied Tube, Wheatland, Republic Conduit
Roofing Membrane	2.37	400	0%[1]	100%[2]	100%[3]	1. N/S 2. Henry, Cetco 3. American Hydrotech, Henry, Cetco
SS (Overhead Coiling Doors)	219	480	0%[1]	100%[2]	100%[3]	1. N/S 2. Cornell Iron Works, Overhead Door 3. Cornell Iron Works, Overhead Door, The Cookson Company

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Table 2. Material Assumptions

Item Description	Total Weight (tons)	Density (lb/ft³)		Recyclable Content %	Regional Content %	Sustainably Sourced Content %	Source
SS (Doors/Frames /Hardware)	180	480		0%[1]	100%[2]	100%[3]	1. N/S 2. Pioneer Industries 3. Pioneer Industries
SS (Floor Grating)	1.06	480		18%[1]	100%[2]	100%[3]	1. McNichols 2. McNichols 3. McNichols
SS (Ductwork)	7.45	480	0%[1]	100%[2]	100%[3]		1. N/S 2. Ductmate, Duro Dyne 3. Ductmate
SS (Gates)	139	480	0%[1]	100%[2]	100%[3]		1. N/S 2. Whipps, Hydrogate, Atlantic Fluid Technologies, Gabriel Novac 3. Hydrogate
SS (Piping)	8.17	480	0%[1]	100%[2]	0%[3]		1. N/S 2. Dexter Sales Inc. 3. N/S
SS/Steel (Non-Structural)	14.62	490	77%[1]	100%[2]	100%[3]		1. Nucor, Ceco Building Systems, Iron World Manufacturing 2. Ceco Building Systems, Iron World Manufacturing, Tymetal 3. Nucor, Ceco Building Systems, Ameristar
Steel (Piping)	21.93	490	77%[1]	100%[2]	100%[3]		1. Nucor 2. Mueller 3. Wheatland, Mueller, Nucor
Steel (Reinforcing)	552	490	97%[1]	100%[2]	100%[3]		1. Nucor 2. Gerdau 3. Nucor, ArcelorMittal, Gerdau
Steel (Deck Units)	67.23	490	98%[1]	100%[2]	100%[3]		1. United Steel Deck, Nucor 2. United Steel Deck 3. United Steel Deck, Nucor
Steel (Sheet Piling)	621	490	77%[1]	100%[2]	100%[3]		1. Nucor 2. Hammer & Steel, JD Fields 3. Nucor
Steel (Structural)	347	490	77%[1]	100%[2]	100%[3]		1. Nucor, Marino Ware 2. Marino Ware 3. Nucor, Marino Ware

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Table 2. Material Assumptions							
Item Description	Total Weight (tons)	Density (lb/ft³)		Recyclable Content %	Regional Content %	Sustainably Sourced Content %	Source
Urethane (Anti-Graffiti Coating)	8.76	2.0	0%[1]	0%[2]	0%[3]		1. N/S 2. N/S 3. N/S
Plants and Grasses	1,208	100		N/A	100%[2]	100%[3]	1. N/S 2. Pinelands, One Nature 3. Pinelands, One Nature
Stone	8,601	100		N/A	100%[2]	0%[3]	1. N/S 2. Assumed readily available material 3. N/S
Soil	38,846	100		N/A	100%[2]	100%[3]	1. N/S 2. Assumed readily available material 3. NYCRR Part 360
Total (tons)	74,582						

1. *Refer to Source column*
2. *Refer to Source column*
3. *Refer to Source column*
4. *Assumed without weight of water. See Section 3.3.1 – Recycled Material Content*
5. *Totals rounded to nearest significant digit. Given weights are approximate and should be considered reflective of the estimated order of magnitude of materials to be used for planning and guidance only. Hazen and Brown and Caldwell make no claim regarding the accuracy and/or precision of the values provided. These values shall not be used as the basis for cost estimating by others. Bidders are responsible for generating their own estimates for the purposes of bidding and contracting.*

2.4 Calculations Inputs

Material quantities are based on the draft 90% Cost Estimate. Calculations are provided in Attachment A.

2.5 Calculation Outputs

This section includes equations used to calculate percent recycled material content, percent regional material content, and percent sustainably sourced material content.

2.5.1 Recycled Material Content

New construction tonnage was calculated for each material identified in the cost estimate. Based on these quantities, the percent recycled content for each material (Equation 1) and the overall percent recycled content (Equation 2) were calculated.

$$Percent\ Recycled\ Content = \frac{Estimated\ Material\ from\ Recycled\ Source}{Estimated\ Total\ Material\ Produced} \times 100 \qquad \textbf{Equation 1}$$

$$Overall\ Percent\ Recycled\ Content = \frac{Estimated\ \ Total\ Material\ from\ Recycled\ Sources}{Estimated\ Total\ Material\ Produced} \times 100 \qquad \textbf{Equation 2}$$

2.5.2 Regional Material Content

New construction tonnage was calculated for each material identified in the cost estimate. Based on these quantities, the percent regional content for each material (Equation 3) and the overall percent regional content (Equation 4) were calculated.

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

$$Percent\ Regional\ Content = \frac{Estimated\ Material\ Sourced\ Regionally}{Estimated\ Total\ Material\ Produced} \times 100$$ **Equation 3**

$$Overall\ Percent\ Regional\ Content = \frac{Estimated\ Total\ Material\ Sourced\ Regionally}{Estimated\ Total\ Material\ Produced} \times 100$$ **Equation 4**

2.5.3 Sustainably Procured Material Content

New construction tonnage was calculated for each material identified in the cost estimate. Based on these quantities, the percent sustainably sourced content for each material (Equation 5) and the overall percent sustainably sourced content (Equation 6) were calculated.

$$Percent\ Sustainably\ Sourced\ Content = \frac{Estimated\ Material\ Sustainably\ Sourced}{Estimated\ Total\ Material\ Produced} \times 100$$ **Equation 5**

$$Overall\ Percent\ Sustainably\ Sourced = \frac{Estimated\ Total\ Material\ Sustainably\ Sourced}{Estimated\ Total\ Material\ Produced} \times 100$$ **Equation 6**

2.6 Contractor Requirements

Recycled, regional, and sustainably sourced content targets for new materials will be accomplished by including Contractor targets and requirements to plan, track, and report during construction per Section 01 35 63 – Sustainability Certification Project Requirements. Opportunities and limitations on incorporating recycled content are stipulated in each individual section, as required for material performance. The Contractor may reference this SMCP for development of the Contractor's required New Material Implementation Plan, which will detail how the Contractor aims to meet with a Good Faith Effort the minimum required levels identified in Section 01 35 63 – Sustainability Certification Project Requirements. The New Material Implementation Plan will be submitted to the engineer for approval prior to substantial commencement.

Section 3: Recycled Material Content

Concrete, cast iron, ductile iron, and steel present the largest opportunities to include recycled content into the project materials, as shown in Table 3. Allowable recycled content has been coordinated with the disciplines in consideration of material performance requirements and incorporated accordingly into the design specifications.

Recycled content of concrete was assumed to be dependent on its use: structural, non-structural, or precast. At this time, the recyclable content of precast concrete was conservatively estimated at 0 percent. The recycled content of structural vs non-structural concrete varies because non-structural concrete could be composed of 50 percent recycled aggregate, whereas structural concrete requires a lower percentage (0 percent – 30 percent range) to achieve required structural performance. A concrete mix example from RH-3, was used to estimate total percent recycled content of concrete. The percent by weight of each concrete component and its corresponding recycled content is summarized in Table 3.

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Table 3. Concrete Recycled Content Assumptions			
Material	Percent by Weight of Concrete Mix[1]	Recyclable Percent of Material	Recyclable Percent of Total Concrete Mix
Cement	11%	0%	0%
Fly ash	7%	20%	1.4%
Crush stone	52%	Structural: 0% - 30%	Structural: 0 – 15.7%
		Non-structural: 50%	Non-structural: 26.2%
Sand	30%	0%	0%
Total	100%	-	Structural: 0% - 17.2%
			Non-structural: 27.6%

1. *Weight of water not included.*

It was assumed that the weight of water was approximately 20 percent of the density for cast-in-place (CIP) concrete products (non-structural, structural). Therefore, the typical density of concrete 145 lbs/CF was reduced by 20 percent, and 116 lbs/CF was used for CIP concrete products. It is assumed that precast concrete is to be brought onsite and its density includes the weight of water.

Section 4: Regional Material Content

Most of the materials listed in Table 3 present opportunities to include regional content into the Project. Envision Version 3 does not include regional content criteria, therefore the criteria used in this SMCP is defined by Envision Version 2, as shown in Table 4.

Table 4. Envision Regional Construction Materials[1]	
Material	Distance Requirement
Soils and mulches	50 mi
Aggregates, sands	50 mi
Concrete	100 mi
Plants	250 mi
Other materials (excluding equipment)	500 mi
Mechanical, electrical, plumbing	N/A

1. *Per Envision Version 2, Credit RA 1.4 (Institute for Sustainable Infrastructure, 2015).*

Section 5: Sustainably Sourced Material Content

Sustainably sourced content is defined as material from a supplier/manufacturer that is demonstrably protective of human health and the environment. The supplier/manufacturer's commitment to sustainability may be evidenced by organizational certifications, product declarations/certifications, or sustainability policies such as International Standards Organization (ISO) 14001, ISO 14025, ISO 14044, etc., and third-party verified sustainability programs like Forest Stewardship Council, Green Seal, and EcoLogo, for example. More information about Envision requirements and sustainably sourced definitions/examples can be found in the

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Envision Version 3 Manual (Institute for Sustainable Infrastructure, April 2018), Section 01 35 63– Sustainability Certification Project Requirements and NYC Local Laws 118-121 of 2005.

Per SOP 056, the DEP Sustainable Sources Database was used, along with additional research, as the basis of estimation for the sustainably sourced content of products procured during the work. Names of vendors, their contact information, and websites are provided as Attachment A, which is a modification of the database. Sustainability commitments for the different vendors are provided in Attachment C.

Below is a description of the different organizational certifications, product declarations, or sustainability policies that the vendors may be involved in:

- USGBC: The US Green Building Council (USGBC) is an organization that is committed to transforming how buildings are designed, constructed, and operated through sustainable practices. Companies that are members and/or associated with USGBC have made a commitment to an origination that leads the industry in Leadership in Energy and Environmental Design (LEED) and LEED Zero certified buildings (usgbc.org).
- NRMCA: The National Ready Mix Concrete Association's (NRMCA) mission is to assist concrete producers in product disclosure inquiries, specifically environmental product declaration. Manufacturers that are members of NRMCA are completely transparent about the environmental impact the product has on the environment (nrmca.org).
- NPCA: The National Precast Concrete Association's (NPCA) goals are to ensure the products their members use is manufactured in the most responsible manner. Manufacturers that are members of NPCA are committed to staying up to date on the latest sustainable methods of producing precast concrete (precast.org).
- ISO 14001: The ISO 14001 specifies the requirements for an environmental management system that an organization can use to enhance its environmental performance. Organizations that abide by these standards seek to manage its environmental responsibilities in a systematic manner that contributes to the environmental pillar of sustainability (iso.org).
- EPDs: Environmental Product Declarations (EPDs) are a comprehensive disclosure of a product's environmental impacts based on a Life Cycle Assessment (LCA). Manufacturers who chose to provide EPDs increase the transparency regarding the environmental impacts of their products using established international standards.
- SFI: Sustainable Forestry Initiative (SFI) certification certifies that sustainability of company's forest management practices to the SFI standard (sfmi.org).
- FSC: Forest Stewardship Council (FSC) certification ensures that products come from responsibly managed forests that provide environmental, social, and economic benefits (fsc.org).
- PEFC: Programme for the Endorsement of Forest Certification (PEFC) endorses national forest certification systems that have been developed through multi-stakeholder processes and tailored to local priorities and conditions (pefc.org).
- B Corp Certified: "B Corp Certification is a designation that a business is meeting high standards of verified performance, accountability, and transparency on factors from employee benefits and charitable giving to supply chain practices and input materials." (https://www.bcorporation.net/en-us/certification/).

Section 6: Vendors

Attachment A lists vendors used as basis of estimation for recycled, regionally, and sustainably sourced content. This attachment is a modification of the DEP Sustainable sources database and contains vendors

that are relevant to this project. Therefore, Attachment A includes vendors from outside research and design specifications.

Attachment A does not claim to be exhaustive and including specific vendors does not constitute an endorsement by Hazen/Brown and Caldwell. Additionally, Hazen/Brown and Caldwell do not guarantee the availability of listed vendors at the time of construction.

Table 5 below provides a summary of the vendors noted in Attachment A. Support documentation for vendor's sustainably sourced certifications and recycled content information is provided in Attachment C.

Table 5. Preliminary Vendor Research

Material	Material Use	Vendor	Distance (mi) from Site	Section Vendors Are Listed In	Sustainably Sourced Certification	Recycled Content
Aluminum	Aluminum Floor Hatches	Bilco	500	05 59 16	Corporate Sustainability Policies	N/S
		Acudor Products	25	05 59 16	N/S	N/S
Asphalt	Asphalt	RCA Asphalt	25	Outside research	N/S	N/S
		Tilcon	2	Outside research	N/S	N/S
		Willets Point Asphalt Corp.	16	Outside research	N/S	N/S
Brick	Brick	Consolidated Brick Company	7	Outside Research	N/A	N/S
		Belden Brick Company	450	Outside Research	Corporate Sustainability Policy	N/S
Bronze	Valves	NIBCO	700	22 05 23	N/S	N/S
		Milwaukee Valve	890	22 05 23	Environmental Policy Statement	N/S
		Watts	235	22 05 23	Annual Sustainability Report	N/S
Cast Iron	Bike Rack	DOT Standards	N/S	N/S	N/S	N/S
Cast Iron	Piping/Fittings	Charlotte Pipe and Foundry Company	185	22 13 00	Corporate sustainability policies	96%
		Tyler Pipe	35	22 13 00	Environmental commitments	N/S
		US Pipe	1,000	22 13 00	N/S	N/S
Cast Iron	Manhole covers	Monarch Precast Corp	100	33 39 10	NPCA Member	N/S
		Precast Concrete Sales	45	33 39 10	NPCA Member	N/S
		Long Island Precast	60	33 39 10	NPCA Member	N/S
Cast Iron	Stair Nosings	Wooster Products	475	05 50 00	N/S	N/S
		Safe-T-Metal Co	255	05 50 00	N/S	N/S
Concrete	Structural, Non-structural	DKN Ready Mix	8	Outside Research	NRMCA Member	N/S
		Empire Transit Mix	8	Outside Research	NRMCA Member	N/S

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Table 5. Preliminary Vendor Research						
Material	Material Use	Vendor	Distance (mi) from Site	Section Vendors Are Listed In	Sustainably Sourced Certification	Recycled Content
		Gotham Ready Mix, LLC	6	Outside Research	NRMCA Member	Average of 30%-40% cement replacment using slag with some mixes reaching 50%-75%
Concrete	Precast	Monarch Precast Corp	100	33 39 10	NPCA Member	N/S
		Precast Concrete Sales	45	33 39 10	NPCA Member	N/S
		Long Island Precast	60	33 39 10	NPCA Member	N/S
Copper	Piping/Fittings	Mueller Industries	80	23 23 10	Corporate Sustainability Policy	Tube: 10% Post-Consumer Fittings: 5% Post-Consumer
		NIBCO	700	23 23 10	N/S	N/S
Copper	Wire	Okonite Company	30	26 05 20	Corporate Sustainability Policy	N/S
		Southwire	900	26 05 20	Corporate Sustainability Policy	N/S
		General Cable	1,000	26 05 20	N/S	N/S
Ductile Iron	Piping/Fittings	McWane, Inc.	975	40 05 19	Corporate Sustainability Policy, ISO 14001 Certified	98%
		American Cast Iron	1,000	40 05 19	N/S	N/S
		US Pipe and Foundry	1,000	40 05 19	N/S	N/S
Ductile Iron	Grates/Frames	Monarch Precast Corp	100	33 39 10	NPCA Member	N/S
		Precast Concrete Sales	45	33 39 10	NPCA Member	N/S
		Long Island Precast	60	33 39 10	NPCA Member	N/S
Epoxy	Epoxy	Sika Corp.	20	03 30 00 (Assumed)	Corporate sustainability policies	N/S
		Master Builders	500	03 30 00 (Assumed)	Corporate sustainability policies	N/S
		Euclid Chemical	470	03 30 00 (Assumed)	Corporate sustainability policies	N/S
Fiberboard	Duct Insulation	Owens Corning	150	23 07 13	Corporate Sustainability policies and sustainability report	Contains anywhere from 53% to 73% recycled content (Assumed average of 63% for report)

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Table 5. Preliminary Vendor Research

Material	Material Use	Vendor	Distance (mi) from Site	Section Vendors Are Listed In	Sustainably Sourced Certification	Recycled Content
Fiberglass	Copper Piping Insulation	Certain Teed	N/S	23 07 13	Corporate sustainability policies, EPDs	N/S
		Schuller International (Johns Manville)	30	23 07 13	Corporate sustainability policies and sustainability report	N/S
FRP	Elevated grating path	Fiber grate Composite Structures	1,600	06 74 13 (assumed – spec is for FRP stair treads)	N/S	N/S
		Delta Composite Structures	1,660	06 74 13 (assumed – spec is for FRP stair treads)	N/S	N/S
Geotextile	Geotextile	Propex Fabrics	820	32 12 16	Environmental Commitments, ISO 14001 Certified	N/S
		Tencate Geosynthetics	800	32 12 16	Sustainability Commitments	N/S
Glass	Curtain Wall	Sentech Architectural Systems	1,800	08 44 26	N/S	N/S
		W&W Glass Systems	35	08 44 26	N/S	N/S
Grout	Grout	Sika Corp.	20	03 60 00	USGBC Member, Corporate sustainability policies	N/S
		Euclid Chemical	470	03 60 00	NRMCA, NPCA members	N/S
		Master Builders	500	03 60 00	Sustainable construction policies	N/S
HDPE	Piping/fittings	Tricon Piping Systems	275	Outside research	N/S	N/S
		Vari-Tech LLC	275	Outside research	N/S	N/S
		Allied Tube and Conduit Corporation	20	Outside research	(Part of Atkore) Corporate sustainability policies	N/S
Paint	Paint	Tnemec	1,200	09 91 00	Corporate Sustainability Policies	N/S
		Sherwin Williams	470	09 91 00	Corporate Sustainability Policies	N/S
		Carboline	990	09 91 00	Part of RBM International – Corporate sustainability policies	N/S
		PPG Amercoat	10	09 91 00	Corporate Sustainability Policies	N/S

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Table 5. Preliminary Vendor Research

Material	Material Use	Vendor	Distance (mi) from Site	Section Vendors Are Listed In	Sustainably Sourced Certification	Recycled Content
Plywood	Concrete Forms	Feldman Lumber	10	DEP Sustainable Sources Database	FSC, SFI, PEFC	N/S
		Lenoble Lumber	15	DEP Sustainable Sources Database	FSC, SFI	N/S
		Kamco Supply	5	DEP Sustainable Sources Database	FSC, SFI	N/S
Porcelain	Tile	DAL-Tile Corporation	10	09 31 13	Environmental commitments	N/S – Dependent on product
Polished Brass	Roof manifold, flashing, drain	Metalloy Industries	1,150	23 23 10	N/S	N/S
		NIBCO	700	23 23 10	N/S	N/S
PVC	Ball valve	Stockham Valves (Crane)	850	40 05 56	N/S	N/S
		CVC Valves	650	40 05 56	N/S	N/S
PVC	Conduit	Allied Tube and Conduit Corporation	20	26 05 43	(Part of Atkore) Corporate sustainability policies	15-40% average post-industrial
		Heritage Plastics		26 05 43	(Part of Atkore) Corporate sustainability policies	15-40% average post-industrial
PVC Coated Rigid Steel Conduit	Conduit	Robroy Industries	390	26 05 33	N/S	N/S
		OCAL (Now ABB)		26 05 33	Sustainability Report	N/S
Rigid Galvanized Steel Conduit	Conduit	Allied Tube and Conduit Corporation	20	26 05 33	(Part of Atkore) Corporate sustainability policies	N/S
		Wheatland Tube Company	385	26 05 33	Solar Energy Industries Association member	66%
		Republic Conduit	770	26 05 33	Sustainable policies and report, ISO 14001 Certified	20-45% Pre Consumer, 8-20% Post Consumer
Roofing Membrane	Roofing Membrane	American Hydrotech	800	07 55 56.13	Corporate Sustainability Policies	Recycled content for materials is available dependent on product
		Henry Company	120	07 55 56.13	Part of Carlisle Company which has corporate sustainability policies	Recycled content for materials is available dependent on product
		Cetco Building Materials (Minerals Technologies)	10	07 55 56.13	Corporate Sustainability Policies and report	N/S

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Table 5. Preliminary Vendor Research						
Material	Material Use	Vendor	Distance (mi) from Site	Section Vendors Are Listed In	Sustainably Sourced Certification	Recycled Content
Stainless Steel	Overhead Coiling Doors	Cornell Iron Works	130	08 33 23	Can provide LEED information for materials, no organization policies at this time	Recycled content for materials is available dependent on product
		Overhead Door Corporation	50	08 33 23	N/S	N/S
		The Cookson Company	2,450	08 33 23	Can provide LEED information for materials, no organization policies at this time	Recycled content for materials is available dependent on product
Stainless Steel	Doors, Frames, Hardware	Pioneer Industries	15	08 11 19	Part of Assa Abloy - Corporate Sustainability Policies and report	N/S
		Medallion Entry Systems	725	08 11 19	N/S	N/S
Stainless Steel	Floor Grating	McNichols Co	40	Outside research	Corporate Sustainability Policies	10%-25% post-consumer (Average of stainless steel products)
		McMaster-Carr	880	Outside research	N/S	N/S
		IKG	660	Outside research	N/S	N/S
Stainless Steel	Ductwork	Ductmate Industries	380	23 31 14 (Assumed from product name "Transverse Duct connections")	USGBC and Green Building Alliance or Industry Partners	N/S
		Duro Dyne Corporation	50	23 31 14 (Assumed from product name "Transverse Duct connections")	N/S	N/S
Stainless Steel	Gates	Whipps	190	40 05 59.05	N/S	N/S
		Hydrogate	15	40 05 59.05	Environmental commitment	N/S
		Atlantic Fluid Technologies (Grande Water Management Systems)	190	46 46 16	N/S	N/S
		Gabriel Novac and Associates	340	46 46 16	N/S	N/S
Stainless Steel	Piping	Metalman	850	Outside research	N/S	N/S
		Dexter Sales Inc	5	Outside research	N/S	N/S
		CADA Stainless & Alloys	770	Outside research	N/S	N/S

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Table 5. Preliminary Vendor Research						
Material	Material Use	Vendor	Distance (mi) from Site	Section Vendors Are Listed In	Sustainably Sourced Certification	Recycled Content
Stainless Steel / Steel	Non-Structural	Nucor (Vulcraft)	770	05 21 00	ISO 14001 Certified	77.3% (Average of Nucor Steel
		Ceco Building Systems	450	05 21 00	Products can contribute to LEED credits, no organizational policies at this time	Products contain between 30%-50%
		Iron World Manufacturing	210	32 31 19	N/S	Fence panels/posts consist of minimum 63% recycled steel content
		Ameristar Fence Products	1,360	32 31 19	Corporate sustainability policies	N/S
		Tymetal Corp	195	32 31 19	N/S	N/S
Steel	Piping	Wheatland Tube	385	Outside research	American Metal Initiative	66%
		Mueller Industries	80	Outside research	Corporate Sustainability policies	N/S
		Nucor	770	Outside research	Corporate sustainability policies	77.3% (Average of Nucor Steel products)
Steel	Reinforcing Steel	Nucor	770	03 21 00	Corporate sustainability policies	96.6% (Average off Bar mill group that produces rebar)
		ArcelorMittal	1,200	03 21 00	Corporate sustainability policies	N/S
		Gerdau	360	03 21 00	Corporate sustainability policies	N/S
Steel	Steel Deck Units	United Steel Deck (Looks to be acquired by Commercial Metals Company)	35	05 31 13	Commercial Metals Company – Corporate sustainability policies, EPDs	98% (Average of CMC steel products)
		Nucor (Vulcraft Corporation)	770	05 31 13	Owned by Nucor – Corporate sustainability policies	77.3% (Average of Nucor Steel products)
Steel	Sheet piling	Nucor (Skyline)	770	Outside research	Owned by Nucor – Corporate sustainability policies	77.3% (Average of Nucor Steel products)
		Hammer & Steel	60	Outside research	N/S	N/S
		JD Fields	100	Outside research	N/S	N/S

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Table 5. Preliminary Vendor Research						
Material	Material Use	Vendor	Distance (mi) from Site	Section Vendors Are Listed In	Sustainably Sourced Certification	Recycled Content
Steel	Structural steel (Framing, shoring system, angle, columns)	Nucor Building Systems	770	Outside research	Part of Nucor - Corporate sustainability policies	77.3% (Average of Nucor Steel products)
		Marino Ware	35	Outside research	EPDs, corporate sustainability policies	On average, 19.8% post-consumer, 14.4% pre-consumer
		CF-Steel	610	Outside research	N/S	N/S
Urethane	Anti-Graffiti Coating	Prosoco	1,250	09 91 00	N/S	N/S
Planting Materials	Plants, grasses, mulch	Hardscrabble Farm Nursery	655	32 90 00	N/S	N/S
		Pinelands Nursery	70	32 90 00	Corporate Sustainability Policies	N/S
		One Nature Nursery	80	32 90 00	B Corp Certified	N/S

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Section 7: Net Embodied Carbon

An embodied carbon analysis, as required by the latest revision of SOP 056 (Revision 8, 6/15/2022), has not been provided at this time as it is not included in Hazen and Brown and Caldwell's contractual scope, which was based on the SOP revision in place at the time of contract execution. Therefore, this project is currently not pursuing Envision credit Climate Resilience (CR) 1.1.

Section 8: Conclusion

Analysis results for potential minimum recycled, regional, and sustainably sourced content in new project materials, are summarized in Table 6. The total weight of new materials is approximately 74,582 tons.

Approximately 16 percent of new materials could feasibly be composed of recycled content. Based on preliminary manufacturer research, approximately 99.9 percent of new materials could feasibly be sourced regionally, and approximately 84 percent of new materials could feasibly be procured with sustainably sourced content. Data supporting Table 6 is provided in Attachment B. Material weights are rounded to the nearest significant digit.

Based on these preliminary results, it is anticipated that this project will achieve Conserving for RA 1.1 and Superior for RA 1.2 Envision Ratings. As noted in Section 7, this report does not include an embodied carbon analysis. Therefore, this project is currently not pursuing CR 1.1.

Table 2. Total Weight of New Materials[1]

Material	Total Weight of New Materials (tons)	Total Recycled Content (tons)	Total Regional Content (tons)	Sustainably Sourced Content (tons)
Aluminum (Floor Hatches)	0.06	0.00	0.06	0.06
Asphalt	3,122	0.00	3,122	0.00
Brick	35.89	937	35.89	35.89
Bronze (Valves)	0.29	0.00	0.29	0.29
Cast Iron (Bike Rack)	0.02	0.00	0.02	0.00
Cast Iron (Piping/Fittings)	9.60	9.22	9.60	9.60
Cast Iron (Manholes)	908.50	0.00	909	909
Cast Iron (Stair Nosings)	28.58	0.00	28.58	0.00
Concrete (Non-Structural)	2,329	643	2,329	2,329
Concrete (Structural)	11,570	879	879	879
Concrete (Precast)	216	0.00	216	216
Copper (Piping/Fittings)	0.63	0.05	0.63	0.63
Copper (Wire)	0.06	0.00	0.06	0.06
Ductile Iron (Piping/Fittings)	193	0.00	51.85	51.85
Ductile Iron (Grates/Frames)	51.85	50.81	0.00	51.85

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Table 2. Total Weight of New Materials[1]				
Material	Total Weight of New Materials (tons)	Total Recycled Content (tons)	Total Regional Content (tons)	Sustainably Sourced Content (tons)
Epoxy	89.82	0.00	89.82	89.82
Fiberboard (Duct Insulation)	11.85	7.47	11.85	11.85
Fiberglass (Copper Piping Insulation)	1.05	0.00	1.05	1.05
FRP	0.22	0.00	0.00	0.00
Geotextile	0.14	0.00	0.00	0.14
Glass	12.53	0.00	12.53	0.00
Grout	4,971	0.00	4,971	4,971
HDPE (Piping/Fittings)	3.35	0.00	3.35	3.35
Paint	25.19	0.00	25.19	25.19
Plywood (Concrete Forms)	101	0.00	101	101
Porcelain (Tile)	4.25	0.00	4.25	4.25
Polished Brass (Roof Manifold/ Flashing)	0.06	0.00	0.00	0.00
PVC (Piping)	6.61	1.82	6.61	6.61
PVC Coated Rigid Steel Conduit	30.65	0.00	30.65	30.65
Reclaimed Timber	2.58	0.00	0.00	0.00
Rigid Galvanized Steel	13.35	8.81	13.35	13.35
Roofing Membrane	2.37	0.00	2.37	2.37
SS (Overhead Coiling Doors)	219	0.00	219	219
SS (Doors/Frames /Hardware)	180	0.00	180	180
SS (Floor Grating)	1.06	0.19	1.06	1.06
SS (Ductwork)	7.45	0.00	7.45	7.45
SS (Gates)	139	0.00	139	139
SS (Piping)	8.17	0.00	8.17	0.00
SS/Steel (Non-Structural)	14.62	11.30	14.62	14.62
Steel (Piping)	21.93	16.96	21.93	21.93
Steel (Reinforcing)	552	533	552	552
Steel (Deck Units)	67.23	65.89	67.23	67.23
Steel (Sheet Piling)	621	480	621	621
Steel (Structural)	347	268	347	347
Urethane (Anti-Graffiti Coating)	8.76	0.00	0.00	0.00
Plants and Grasses	1,208	N/S	1,208	1,208
Stone	8,601	N/S	8,601	0.00

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Table 2. Total Weight of New Materials[1]				
Material	Total Weight of New Materials (tons)	Total Recycled Content (tons)	Total Regional Content (tons)	Sustainably Sourced Content (tons)
Soil	38,846	N/S	38,846	38,846
Total Weight of All Project Materials (tons) *Used in Sustainably Sourced Calculation*	74,582	4,050	74,582	62,792
Total Weight of All Project Materials, excluding plants, soil, and stones (tons) *Used in recycled content calculation*	25,927			
Total Weight of All Project Materials, excluding equipment (tons) *Used in regional content calculation*	74,582			
		16%	99.9%	84%
KPI Goal (%)		15%	95%	50%

1. *Totals rounded to nearest significant digit. Given weights are approximate and should be considered reflective of the estimated order of magnitude of materials to be used for planning and guidance only. Hazen and Brown and Caldwell make no claim regarding the accuracy and/or precision of the values provided. These values shall not be used as the basis for cost estimating by others. Bidders are responsible for generating their own estimates for the purposes of bidding and contracting.*

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Attachment A: Preliminary Vendor Research

Ror review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

Material	Nearest Dealer/Distributor	Address	City	State	Zip	Phone	Website	Approximate Miles from Site
Aluminum (Floor Hatches)	Bilco	3400 Jim Grainger Road	Zanesville	OH	43701	(740) 455-9020	https://www.bilco.com/	500
	Acudor Products	9 Woodland Rd. Unit A	Roseland	NJ	7068	(800) 722-0501	https://acudor.com/	25
Asphalt	RCA Asphalt	7 Edison Ave.	Mount Vernon	NJ	10550	(914) 669-3370	https://www.rcaasphalt.c	25
	Tilcon	Red Hook Terminal, 70 Hamilton Ave.	Brooklyn	NY	11231	(800) 789-7625	https://www.tilconny.com/	2
	Willets Point Asphalt Corp.	32-02 College Point Blvd.	Queens	NY	11354	(718) 358-2222	https://willetspointasphalt.	16
Brick	Consolidated Brick Company	127 W. 24th Street	New York	NY	10011	(212) 645-6700	https://consolidatedbrick.c	7
	Belden Brick Company	700 Tuscarawas Street W.	Canton	OH	44702	(330) 456-0031	https://www.beldenbrick.c	450
Bronze (Valves)	NIBCO	1516 Middlebury St	Elkhard	IN	46516	(574) 295-3000	https://www.nibco.com/	700
	Milwaukee Valve	16550 West Stratton Drive	New Berlin	WI	53151	(262) 432-2700	https://www.milwaukeev	890
	Watts	815 Chestnut Street	North Andover	MA	01845	(978) 688-1811	https://www.watts.com/	235
Cast Iron (Bike Rack)	DOT Standards							
Cast Iron (Pipings/Fittings)	Charlotte Pipe and Foundry Company		Muncy	PA	17756	(704) 328-6450	https://www.charlottepip	185
	Tyler Pipe	111 Somogyi Court	South Plainfield	NJ	07080	(973) 317-0005	https://www.tylerpipe.co	35
	US Pipe and Foundry	Two Chase Corporate Drive, Suite 200	Birmingham	AL	35244	(866) 347-7473	http://uspipe.com	1,000
Cast Iron (Manhole Covers)	Monarch Precast Corp.	425 N. Dauphin St.	Allentown	PA	18109	(610) 435-6746	https://monarchprecast.c	100
	Precast Concrete Sales	20 Stiriz Road	Brookhaven	NY	11719	(631) 286-0240	li-precast.com	60
	Long Island Precast	20 Stiriz Road	Brookhaven	NY	11719	(631) 286-0240	li-precast.com	60
Cast Iron (Stair Nosings)	Wooster Products	1000 Spruce Street PO Box 6005	Wooster	OH	44691	(800) 321-4936	https://www.woosterproc	475
	Safe-T-Metal Co.	1841 Lemoyne Avenue	Syracuse	NY	13208	(800) 886-7238	http://safetmetal.com/wp	255
Concrete (Structural/Non-Structural)	DKN Ready Mix	362 Maspeth Ave.	Brooklyn	NY	11211	(718) 218-6418	http://dknreadymix.com/	8
	Empire Transit Mix	430 Maspeth Ave.	Brooklyn	NY	11211	(718) 384-3000	N/A	8
	Gotham Ready Mix, LLC	200 Morgan Road	Brooklyn	NY	11237	(718) 246-4444	https://gothamreadymix.c	6
Concrete (Precast)	Monarch Precast Corp.	425 N. Dauphin St.	Allentown	PA	18109	(610) 435-6746	https://monarchprecast.c	100
	Penn-Cast Products, Inc.	123 Rt. # 303, P.O. Box 516	Valley Cottage	NY	10989	(845) 268-4949	http://precastconcretesal	45
	Long Island Precast	20 Stiriz Road	Brookhaven	NY	11719	(631) 286-0240	li-precast.com	60
Copper (Piping/Fittings)	Mueller Industries	10 Hershey Drive	Ansonia	PA	06401	(203) 734-6233	https://www.muellercom	80
	NIBCO	1516 Middlebury St	Elkhard	IN	46516	(574) 295-3000	https://www.nibco.com/	700
Copper (Wire)	Okonite Company	959 Market St.	Patterson	NJ	07513	(973) 345-5963	https://www.okonite.com	30
	Southwire	Three Southwire Drive	Carrollton	GA	30117	(770) 832-4352	https://www.southwire.c	900
	General Cable	1501 31st Avenue	North Birmingham	AL	35207	(205) 325-7701	http://www.american-usa.	1,000
Ductile Iron (Piping/Fittings)	McWane, Inc.	2900 Highway 280, Ste. 300	Birmingham	AL	35223	(205) 414-3100	https://www.mcwane.cor	975
	American Cast Iron	1501 31st Avenue	North Birmingham	AL	35207	(205) 325-7701	http://www.american-usa	1,000
	US Pipe and Foundry	Two Chase Corporate Drive, Suite 200	Birmingham	AL	35244	(866) 347-7473	http://uspipe.com	1,000
Epoxy	Sika Corp.	201 Polito Ave.	Lyndhurst	NJ	07071	(800) 933-7452	http://usa.sika.com/en/gr	20
	Euclid Chemical	19215 Redwood Road	Cleveland	OH	44110	(216) 531-9222	https://www.euclidchemi	470
	Master Builders	23700 Chagrin Blvd	Beechwood	OH	44122	(216) 839-7500	https://www.master-build	500
Fiberboard (Duct Inlsulation)	Owens Coming	1277 Feura Bush Rd	Feura Bush	NY	12067	(718) 784-4262	https://www.owenscornir	150
	Certain Teed (cannot find location)							
	Schuller International (Johns Manville)	1000 Liddle Avenue	Edison	NJ	08837	(732) 225-9190	https://www.owenscornir	30
Fiberglass (Copper Piping Insulation)	Armstrong World Industries	1507 River Road	Marietta	PA	17547	(717) 426-4171	https://www.armstrongce	180
	Rubatex Corp.	678 Belmont Ave. W#202	Kitchener	Ontario	N2M 1N6	(855) 347-0816	https://www.rubatexusa.c	820
FRP	Fibergrate Composite Structures	5151 Beltline Road, Suite 1212	Dallas	TX	75254	(800) 527-4043	https://fibergrate.com/?u	1,600
	Delta Composite Structures	1617 Peachleaf Street	Houston	TX	77039		https://www.floor-grating	1,660
Geotextile	Propex Fabrics	4019 Industry Dr	Chattanooga	TN	37416	(800) 621-1273	http://propexglobal.com/	820
	Tencate Geosynthetics	365 South Holland Drive	Pendergrass	GA	30567	(706) 693-2226	https://www.tencategeo.c	800
Glass (Curtain Wall)	Sentech Architectural Systems	4421 Supply Court	Austin	TX	78744	(512) 266-7045	https://www.sentechas.co	1,800
	W&W Glass Systems	302 Airport Executive Park	Nanuet	NY	10954	(845) 425-4000	https://www.wwglass.com	35
Grout	Sika Corp.	201 Polito Ave.	Lyndhurst	NJ	07071	(800) 933-7452	http://usa.sika.com/en/gr	20
	Euclid Chemical	19215 Redwood Road	Cleveland	OH	44110	(216) 531-9222	https://www.euclidchemi	470
	Master Builders	23700 Chagrin Blvd	Beechwood	OH	44122	(216) 839-7500	https://www.master-build	500
HDPE	Tricon Piping Systems	2 Technology Blvd.	Canastota	NY	13032	(315) 697-8787	https://triconpiping.com/	275
	Vari-Tech LLC	4545 Wetzel Road	Liverpool	NY	13090	(315) 622-1800	https://varitech.com/high	275
	Allied Tube and Conduit Corporation	380 Allwood Road	Clifton	NJ	07012	(973) 472-4720	https://www.alliedeg.us/	20
Paint	Tnemec	6800 Corporate Dr.	Kansas City	MO	64120	(816) 483-3400	https://www.tnemec.com	1,200
	Sherwin Williams	101 West Prospect Ave	Cleveland	OH	44115	(216) 566-2000	https://corporate.sherwin	470
	Carboline (RPM)	2150 Schuetz Road	St. Louis	MO	63146	(314) 644-1000	https://www.carboline.co	990

	PPG Amercoat	51-02 27th Street	Long Island City	NY	11101	(718) 361-2916	https://www.ppgpmc.com	10
Plywood (Concrete Forms)	Feldman Lumber	1281 Metropolitan Ave.	Brooklyn	NY	11232	(718) 786-7777	feldmanlumber.com	10
	Lenoble Lumber	38-20 Review Ave	Long Island City	NY	11101	(800) 453-6625	https://lenoblelumber.co	15
	Kamco Supply Corp.	80 21st Street	Brooklyn	NY	11232	(718) 768-1234	https://www.kamco.com/	5
Porcelain (Tile)	Dal-Tile Corporation	49 E. 21st Street	New York	NY	10010	(212) 471-0256	https://www.daltile.com/	10
Polished Brass (Roof Manifold/Flashing)	Metalloy Industries	13101 Rachel Blvd.	Alachua	FL	32615	(800) 874-6080	http://www.metalloy.com	1,150
	NIBCO	1516 Middlebury St	Elkhard	IN	46516	(574) 295-3000	https://www.nibco.com/	700
PVC (Ball Valve/Piping)	Stockham Valves (Crane)	2129 3rd Avenue SE	Cullman	AL	35055	(256) 775-3800	https://cranecpe.com/pro	950
	CVC Valves	1245 Hillsmith Drive	Cincinnati	OH	45215	(513) 471-8256	https://cvcvalves.com/	650
PVC Coated Rigid Steel Conduit	Robroy Industries	River Road	Verona	PA	15147	(412) 828-2100	https://robroy.com/	390
	OCAL (ABB) (cannot find location)							
Rigid Galvanized Steel Conduit	Allied Tube and Conduit Corporation	380 Allwood Road	Clifton	NJ	07012	(973) 472-4720	https://www.alliedeg.us/	20
	Wheatland Tube Company	1 Council Ave. P.O. Box 608	Wheatland	PA	16161	(800) 257-8182	https://www.wheatland.c	385
	Republic Conduit (Nucor)	7301 Logistics Dr.	Louisville	KY	40258	(502) 995-5900	https://www.nucortubula	770
Roofing Membrane	American Hydrotech	401 N. Michigan Ave. Suite 1550	Chicago	IL	60611	(800) 877-6125	https://www.hydrotechus	800
	Henry Company	336 Cold Stream Road	Kimberton	PA	19460	(800) 523-0268	https://henry.com/	120
	Cetco Building Materials (Minerals Technologies)	622 3rd Ave.	New York	NY	10017	(212) 878-1800	https://www.mineralstecl	10
Stainless Steel (Overhead Coiling Doors)	Cornell Iron Works	24 Elmwood Avenue	Mountain Top	PA	18707	(217) 860-6838	https://www.cornelliron.c	130
	Overhead Door Corporation		Happauge	NY	11788	(469) 549-7243	https://ohdcorporation.co	50
	The Cookson Company	1901 South Litchfield Road	Goodyear	AZ	85339	(800) 882-0254	https://www.cooksondoo	2,450
Stainless Steel (Doors/Frames/Hardware)	Pioneer Industries	111 Kero Road	Carlstadt	NJ	07072	(201) 933-1900	https://www.pioneerindu	15
	Medallion Entry Systems	2350 N Shadeland Avenue	Indianapolis	IN	46219	(317) 890-3550	http://www.medallionentry	725
Stainless Steel (Floor Grating)	McNichols Co.	2 Home News Row	New Brunswick	NJ	08901	(877) 898-9598	https://www.mcnichols.co	40
	McMaster-Carr	1901 Riverside Pkwy	Douglasville	GA	30135	(609) 689-3000	https://www.mcmaster.co	880
	IKG	1801 Forrest Park Drive	Garrett	IN	46738	(800) 324-8417	https://ikg.com/	660
Stainless Steel (Ductwork)	Ductmate Industries	1502 Industrial Drive	E. Monogahela	PA	15063	(800) 990-8459	https://ductmate.com/	380
	Duro Dyne Corporation	81 Spence Street	Bay Shore	NY	11706	(631) 249-9000	https://www.durodyne.co	50
Stainless Steel (Gates)	Whipps	370 South Athol Road	Athol	MA	01331	(978) 2449-7924	https://whipps.com/home	190
	Hydrogate	1515 Lexington Ave.	Manhattan	NY	10029	(212) 722-8079	https://www.aftinc.com/,	15
	Atlantic Fluid Technologies (Grande Water Management Systems)	52 SW Cutoff	Northborough	MA	01532	(508) 755-0440	https://www.aftinc.com/	190
	Gabriel Novac and Associates	107 Lawrence Paquette Drive	Champlain	NY	12919	(866) 746-2276	http://www.gnacso.com/	340
Stainless Steel (Piping)	Metalman	24418 West Old Monaville Rd.	Lake Villa	IL	60046	(847) 356-0566	https://www.mmcontrol.c	850
	Dexter Sales Inc.	271 Clinton Street	Brookl;yn	NY	11201	(718) 852-4014	https://www.dextersalesi	5
	CADA Stainless & Alloys	193 Black Meadow Road	Chester	NY	10918	(845) 469-3899	https://www.cadastainles	70
Stainless Steel / Steel (Non-Structural)	Iron World Manufacturing	9390 Davis Avenue	Laurel	MD	20723	(301) 776-7448	https://ironworldfencing.c	210
	Ameristar Fence Products	1555 N. Mingo Road	Tulsa	OK	74116	(888) 333-3422	https://www.ameristarpe	1,360
	Tymetal Corp.	678 Wilbur Avenue	Greenwich	NY	12834	(888) 978-4283	https://www.tymetal.com	195
	Nucor (Vulcraft)	7301 Logistics Dr.	Louisville	KY	40258	(502) 995-5900	https://www.nucortubula	770
	Ceco Building Systems	100 Red Iron Road	Rocky Mountain	NC	27804	(800) 474-2326	https://www.cecobuilding	450
Steel (Piping)	Wheatland Tube Company	1 Council Ave. P.O. Box 608	Wheatland	PA	16161	(800) 257-8182	https://www.wheatland.c	385
	Mueller Industries	10 Hershey Drive	Ansonia	PA	06401	(203) 734-6233	https://www.muellercom	80
	Nucor	7301 Logistics Dr.	Louisville	KY	40258	(502) 995-5900	https://www.nucortubula	770
Steel (Reinforcing)	Nucor	7301 Logistics Dr.	Louisville	KY	40258	(502) 995-5900	https://www.nucortubula	770
	ArcelorMittal		Calvert	AL	36513	(251) 289-3000	https://corporate.arcelorr	1,200
	Gerdau	25801 Hofheimer Way	Petersburg	VA	23803	(804) 520-0286	https://www2.gerdau.con	360
Steel (Deck Units)	United Steel Deck		South Plainfield	NJ	07080	(908) 561-3484	https://cscsteelusa.com/	35
	Nucor (Vulcraft)	7301 Logistics Dr.	Louisville	KY	40258	(502) 995-5900	https://www.nucortubula	770
Steel (Sheet Piling)	Nucor (Skyline)	7301 Logistics Dr.	Louisville	KY	40258	(502) 995-5900	https://www.nucortubula	770
	Hammer & Steel	482 Houses Corner Rd.	Sparta	NJ	07871	(800) 325-7453	https://www.hammerstee	60
	JD Fields	3045 Bath Pike	Nazareth	PA	18064	(281) 558-7199	https://www.jdfields.com	100
Steel (Structural)	Nucor	7301 Logistics Dr.	Louisville	KY	40258	(502) 995-5900	https://www.nucortubula	770
	Marino Ware	400 Metuchen Road	South Plainfield	NJ	07080	(800) 627-4661	https://www.marinoware	35
	CF-Steel	12322 Old Camden Road	Midland	NC	28107	(704) 485-2234	https://www.flattruss.con	610
Urethane (Anti-Graffiti Coating)	Prosoco	3741 Greenway Circle	Lawrence	KS	66046	(800) 255-4255	https://prosoco.com/	1,250
Planting Materials	Hardscrabble Farm Nursery	45 Hardscrabble Rd.	North Salem	NY	10560	(914) 669-5633	https://www.hardscrabble	655
	Pinelands Nursery	323 Island Rd.	Columbus	NJ	08022	(609) 291-9486	https://www.pinelandsnu	70
	One Nature Nursery	3 Old Glenham Road	Beacon	NY	12508	(845) 440-1677	https://www.onenaturen	80

Attachment B: New Material Quantities

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

SOP 056 - SUSTAINABLE MATERIAL CONTENT FOR NEW MATERIALS
TEMPLATE SPREADSHEET

Project ID: OH-007, CP-3
AM: Manuel Lago, P.E.
Milestone: 100%

Material	Quantity	Unit	Weight[1] (tons)	Recycled Material Content (%)	Recycled Material Content (tons)
Aluminum (Floor Hatches)	1	Tons	0.06	0.0%	0.00
Asphalt	1	Tons	3,121.94	30.0%	936.58
Brick	1	Tons	35.89	0.0%	0.00
Bronze (Valves)	1	Tons	0.29	0.0%	0.00
Cast Iron (Bike Rack)	1	Tons	0.02	0.0%	0.00
Cast Iron (Piping / Fittings)	1	Tons	9.60	96.0%	9.22
Cast Iron (Manholes)	1	Tons	908.50	0.0%	0.00
Cast Iron (Stair Nosings)	1	Tons	28.58	0.0%	0.00
Concrete (Non-Structural)	1	Tons	2,329.00	27.6%	642.80
Concrete (Structural)	1	Tons	11,570.08	7.6%	879.33
Concrete (Precast)	1	Tons	216.48	0.0%	0.00
Copper (Piping / Fittings)	1	Tons	0.63	7.5%	0.05
Copper (Wire)	1	Tons	0.06	0.0%	0.00
Ductile Iron (Piping / Fittings)	1	Tons	192.69	98.0%	188.83
Ductile Iron (Grates/Frames)	1	Tons	51.85	0.0%	0.00
Epoxy Use	1	Tons	89.82	0.0%	0.00
Fiberboard (Duct Insulation)	1	Tons	11.85	63.0%	7.47
Fiberglass (Copper Piping Insulation)	1	Tons	1.05	0.0%	0.00
FRP	1	Tons	0.22	0.0%	0.00
Geotextile (Including Jute Mesh, Nylon, Etc.)	1	Tons	0.14	0.0%	0.00
Glass	1	Tons	12.53	0.0%	0.00
Grout	1	Tons	4,970.65	0.0%	0.00
HDPE (Piping / Fittings)	1	Tons	3.35	0.0%	0.00
Paint	1	Tons	25.19	0.0%	0.00
Plywood (Concrete Forms)	1	Tons	100.75	0.0%	0.00
Porcelain (Tile)	1	Tons	4.25	0.0%	0.00
Polished Brass (Roof Manifold/Flashing)	1	Tons	0.06	0.0%	0.00
PVC (Piping)	1	Tons	6.61	28%	1.82
PVC Coated Rigid Steel Conduit	1	Tons	30.65	0.0%	0.00
Reclaimed Timber	1	Tons	2.58	0.0%	0.00
Rigid Galvanized Steel (Conduit/Bulkhead)	1	Tons	13.35	66.0%	8.81
Roofing Membrane	1	Tons	2.37	0.0%	0.00
Stainless Steel (Overhead Coiling Doors)	1	Tons	218.85	0.0%	0.00
Stainless Steel (Doors/Frames/Hardware)	1	Tons	179.76	0.0%	0.00
Stainless Steel (Floor Grating)	1	Tons	1.06	17.5%	0.19
Stainless Steel (Ductwork)	1	Tons	7.45	0.0%	0.00
Stainless Steel (Gates)	1	Tons	138.59	0.0%	0.00
Stainless Steel (Piping)	1	Tons	8.17	0.0%	0.00
Stainless Steel/Steel (Non-Structural)	1	Tons	14.62	77.3%	11.30
Steel (Piping)	1	Tons	21.93	77.3%	16.96
Steel (Reinforcing)	1	Tons	551.83	96.6%	533.07
Steel (Deck Units)	1	Tons	67.23	98.0%	65.89
Steel (Sheet Piling)	1	Tons	620.63	77.3%	479.75
Steel (Structural)	1	Tons	347.17	77.3%	268.36
Urethane (Anti-Graffiti Coating)	1	Tons	8.76	0.0%	0.00
	Total[2]		**25,927.11**		**4,050.42**

1 - Calculation by weight (ton) is preferred. Calculation by cost or volume may be acceptable with justification.
2 - Recycled Material Calculations do not include mechanical, electrical, or water equipment. Recycled Material Calculations also do not include soils or plants.

SOP 056 - SUSTAINABLE MATERIAL CONTENT FOR NEW MATERIALS
TEMPLATE SPREADSHEET

Project ID: OH-007, CP-3
AM: Manuel Lago, P.E.
Milestone: 100%

Material	Quantity	Unit	Weight[1] (tons)	Regional Material Content (%)	Regional Material Content (tons)
Aluminum (Floor Hatches)	1	Tons	0.06	100%	0.06
Asphalt	1	Tons	3,121.94	100%	3,121.94
Brick	1	Tons	35.89	100%	35.89
Bronze (Valves)	1	Tons	0.29	100%	0.29
Cast Iron (Bike Rack)	1	Tons	0.02	100%	0.02
Cast Iron (Piping / Fittings)	1	Tons	9.60	100%	9.60
Cast Iron (Manholes)	1	Tons	908.50	100%	908.50
Cast Iron (Stair Nosings)	1	Tons	28.58	100%	28.58
Concrete (Non-Structural)	1	Tons	2,329.00	100%	2,329.00
Concrete (Structural)	1	Tons	11,570.08	100%	11,570.08
Concrete (Precast)	1	Tons	216.48	100%	216.48
Copper (Piping / Fittings)	1	Tons	0.63	100%	0.63
Copper (Wire)	1	Tons	0.06	100%	0.06
Ductile Iron (Piping / Fittings)	1	Tons	192.69	0%	0.00
Ductile Iron (Grates/Frames)	1	Tons	51.85	100%	51.85
Epoxy Use	1	Tons	89.82	100%	89.82
Fiberboard (Duct Insulation)	1	Tons	11.85	100%	11.85
Fiberglass (Copper Piping Insulation)	1	Tons	1.05	100%	1.05
FRP	1	Tons	0.22	0%	0.00
Geotextile (Including Jute Mesh, Nylon, Etc.)	1	Tons	0.14	0%	0.00
Glass	1	Tons	12.53	100%	12.53
Grout	1	Tons	4,970.65	100%	4,970.65
HDPE (Piping / Fittings)	1	Tons	3.35	100%	3.35
Paint	1	Tons	25.19	100%	25.19
Plywood (Concrete Forms)	1	Tons	100.75	100%	100.75
Porcelain (Tile)	1	Tons	4.25	100%	4.25
Polished Brass (Roof Manifold/Flashing)	1	Tons	0.06	0%	0.00
PVC (Piping)	1	Tons	6.61	100%	6.61
PVC Coated Rigid Steel Conduit	1	Tons	30.65	100%	30.65
Reclaimed Timber	1	Tons	2.58	0%	0.00
Rigid Galvanized Steel (Conduit/Bulkhead)	1	Tons	13.35	100%	13.35
Roofing Membrane	1	Tons	2.37	100%	2.37
Stainless Steel (Overhead Coiling Doors)	1	Tons	218.85	100%	218.85
Stainless Steel (Doors/Frames/Hardware)	1	Tons	179.76	100%	179.76
Stainless Steel (Floor Grating)	1	Tons	1.06	100%	1.06
Stainless Steel (Ductwork)	1	Tons	7.45	100%	7.45
Stainless Steel (Gates)	1	Tons	138.59	100%	138.59
Stainless Steel (Piping)	1	Tons	8.17	100%	8.17
Stainless Steel/Steel (Non-Structural)	1	Tons	14.62	100%	14.62
Steel (Piping)	1	Tons	21.93	100%	21.93
Steel (Reinforcing)	1	Tons	551.83	100%	551.83
Steel (Deck Units)	1	Tons	67.23	100%	67.23
Steel (Sheet Piling)	1	Tons	620.63	100%	620.63
Steel (Structural)	1	Tons	347.17	100%	347.17
Urethane (Anti-Graffiti Coating)	1	Tons	8.76	0%	0.00
Plants and Grasses	1	Tons	1,207.58	100%	1,207.58
Stone	1	Tons	8,601	100%	8,601.21
Soil	1	Tons	38,846.39	100%	38,846.39
Total[2]			**74,582.28**		**74,377.85**

1 - Calculation by weight (ton) is preferred. Calculation by cost or volume may be acceptable with justification.
2 - Regional Material Calculations do not include mechanical, electrical, or water equipment. Regional Material Calculations may include newly purchased soils or plants, but does not include soil reused onsite.

SOP 056 - SUSTAINABLE MATERIAL CONTENT FOR NEW MATERIALS
TEMPLATE SPREADSHEET

Project ID: OH-007, CP-3
AM: Manuel Lago, P.E.
Milestone: 100%

Material	Quantity	Unit	Weight[1] (tons)	Sustainably Sourced Material Content[3] (%)	Sustainably Sourced Material Content[3] (tons)	Procurement methodology[4]
Aluminum (Floor Hatches)	1	Tons	0.06	100%	0.06	Corporate Sustainability Policies
Asphalt	1	Tons	3,121.94	0%	0.00	N/A
Brick	1	Tons	35.89	100%	35.89	Corporate Sustainability Policy
Bronze (Valves)	1	Tons	0.29	100%	0.29	Environmental Policy Statement, Annual Sustainability Report
Cast Iron (Bike Rack)	1	Tons	0.02	0%	0.00	N/A
Cast Iron (Piping / Fittings)	1	Tons	9.60	100%	9.60	Corporate Sustainability Policies, Environmental Commitments
Cast Iron (Manholes)	1	Tons	908.50	100%	908.50	NPCA Member
Cast Iron (Stair Nosings)	1	Tons	28.58	0%	0.00	N/A
Concrete (Non-Structural)	1	Tons	2,329.00	100%	2,329.00	NRCA Member
Concrete (Structural)	1	Tons	11,570.08	100%	11,570.08	NRCA Member
Concrete (Precast)	1	Tons	216.48	100%	216.48	NPCA Member
Copper (Piping / Fittings)	1	Tons	0.63	100%	0.63	Corporate Sustainability Policy
Copper (Wire)	1	Tons	0.06	100%	0.06	Corporate Sustainability Policy
Ductile Iron (Piping / Fittings)	1	Tons	192.69	100%	192.69	Corporate Sustainability Policy, ISO 14001 Certified
Ductile Iron (Grates/Frames)	1	Tons	51.85	100%	51.85	Corporate Sustainability Policy, ISO 14001 Certified
Epoxy Use	1	Tons	89.82	100%	89.82	Corporate Sustainability Policies
Fiberboard (Duct Insulation)	1	Tons	11.85	100%	11.85	Corporate Sustainability Policies, Sustainability Report
Fiberglass (Copper Piping Insulation)	1	Tons	1.05	100%	1.05	Corporate Sustainability Policies, Sustainability Report, EPDs
FRP	1	Tons	0.22	0%	0.00	N/A
Geotextile (Including Jute Mesh, Nylon, Etc.)	1	Tons	0.14	100%	0.14	Environmental Commitments, ISO 14001 Certified, Sustainability Commitments
Glass	1	Tons	12.53	0%	0.00	N/A
Grout	1	Tons	4,971	100%	4,970.65	USGBC Member, Corporate Sustainability Policies, MNRA Member, NPCA Member, Sustainable Construction Policy
HDPE (Piping / Fittings)	1	Tons	3.35	100%	3.35	Corporate Sustainability Policies
Paint	1	Tons	25.19	100%	25.19	Corporate Sustainability Policies
Plywood (Concrete Forms)	1	Tons	100.75	100%	100.75	FSC, SFI, PERC
Porcelain (Tile)	1	Tons	4.25	100%	4.25	Environmental Commitments
Polished Brass (Roof Manifold/Flashing)	1	Tons	0.06	0%	0.00	N/A
PVC (Piping)	1	Tons	6.61	0%	0.00	N/A
PVC Coated Rigid Steel Conduit	1	Tons	30.65	100%	30.65	Sustainability Report
Reclaimed Timber	1	Tons	2.58	0%	0.00	N/A
Rigid Galvanized Steel (Conduit/Bulkhead)	1	Tons	13.35	100%	13.35	Corporate Sustainability Policies and Report, Solar Energy Industries Association Member, ISO 14001 Certified
Roofing Membrane	1	Tons	2.37	100%	2.37	Corporate Sustainability Policies
Stainless Steel (Overhead Coiling Doors)	1	Tons	218.85	100%	218.85	LEED information available for materials
Stainless Steel (Doors/Frames/Hardware)	1	Tons	179.76	100%	179.76	Corporate Sustainability Policy and Report
Stainless Steel (Floor Grating)	1	Tons	1.06	100%	1.06	Corporate Sustainability Policy
Stainless Steel (Ductwork)	1	Tons	7.45	100%	7.45	USGBC and Green Building Alliance or Industry Partners

Stainless Steel (Gates)	1	Tons	138.59	100%	138.59	Environmental Commitment
Stainless Steel (Piping)	1	Tons	8.17	0%	0.00	N/A
Stainless Steel/Steel (Non-Structural)	1	Tons	14.62	100%	14.62	ISO 14001 Certified
Steel (Piping)	1	Tons	21.93	100%	21.93	American Metal Initiative, Corporate Sustainability Policies
Steel (Reinforcing)	1	Tons	551.83	100%	551.83	Corporate Sustainability Policies
Steel (Deck Units)	1	Tons	67.23	100%	67.23	Corporate Sustainability Policies, EPDs
Steel (Sheet Piling)	1	Tons	620.63	100%	620.63	Corporate Sustainability Policies
Steel (Structural)	1	Tons	347.17	100%	347.17	Corporate Sustainability Policies
Urethane (Anti-Graffiti Coating)	1	Tons	8.76	0%	0.00	N/A
Plants and Grasses	1	Tons	1,207.58	100%	1,207.58	Corporate Sustainability Policies, B Corp. Certified
Stone	1	Tons	8,601	0%	0.00	
Soil	1	Tons	38,846	100%	38,846.39	
Total[2]			**74,582.28**		**62,791.63**	

1 - Calculation by weight (ton) is preferred. Calculation by cost or volume may be acceptable with justification.

2 - Sustainably Sourced Material Calculations may include mechanical, electrical, or water equipment and newly purchased soils or plants, but does not include soil reused onsite.

3 - See Envision v3 RA1.1. Weight of materials where manufacturer is demonstrably protective of human health and the environment.

4 - See Envision v3 RA1.1. Demonstrably protective may include third party sustainability certification programs, environmental product declarations, or corporate sustainabilty policies.

Projects will abide by all sole sourcing restrictions.

SOP 056 - SUSTAINABLE MATERIAL CONTENT FOR NEW MATERIALS
TEMPLATE SPREADSHEET

Project ID: OH-007, CP-3
AM: Manuel Lago, P.E.
Milestone: 100%

	Weight[1] (tons)	Content (%)
Total New Material	74,582	N/A
Total excluding soils, plants, stones, and equipment	25,927	N/A
Recycled Material[2]	4,050	16%
Regional Material[3]	74,378	100%
Sustainably Sourced Material[4]	62,792	84%

1 - Calculation by weight (ton) is preferred. Calculation by cost or volume may be acceptable with justification.
2 - Recycled Material Calculations do not include mechanical, electrical, or water equipment. Recycled Material Calculations also do not include soils or plants.
3 - Regional Material Calculations do not include mechanical, electrical, or water equipment. Regional Material Calculations may include newly purchased soils or plants, but does not include soil reused onsite.
4 - Sustainably Sourced Material Calculations may include mechanical, electrical, or water equipment and newly purchased soils or plants, but does not include soil reused onsite.

Environmental Protection

SOP 056 - SUSTAINABLE MATERIAL CONTENT FOR NEW MATERIALS
TEMPLATE SPREADSHEET

Project ID: OH-007, CP-3
AM: Manuel Lago, P.E.
Milestone: 100%

	Baseline (MT CO2e)	Proposed (MT CO2e)	Reduction (%)
Total Net Embodied Carbon	N/A	N/A	N/A
Production	N/A	N/A	N/A
Transportation	N/A	N/A	N/A
Operation	N/A	N/A	N/A

Attachment C: Vendor Sustainability Information

For review purposes only. Use of contents on this sheet is subject to the limitations specified at the beginning of this document.
CSO-GC-SFS DES OH-TM-SMCP CP3 100per-202609

ABB

SUSTAINABILITY REPORT 2019

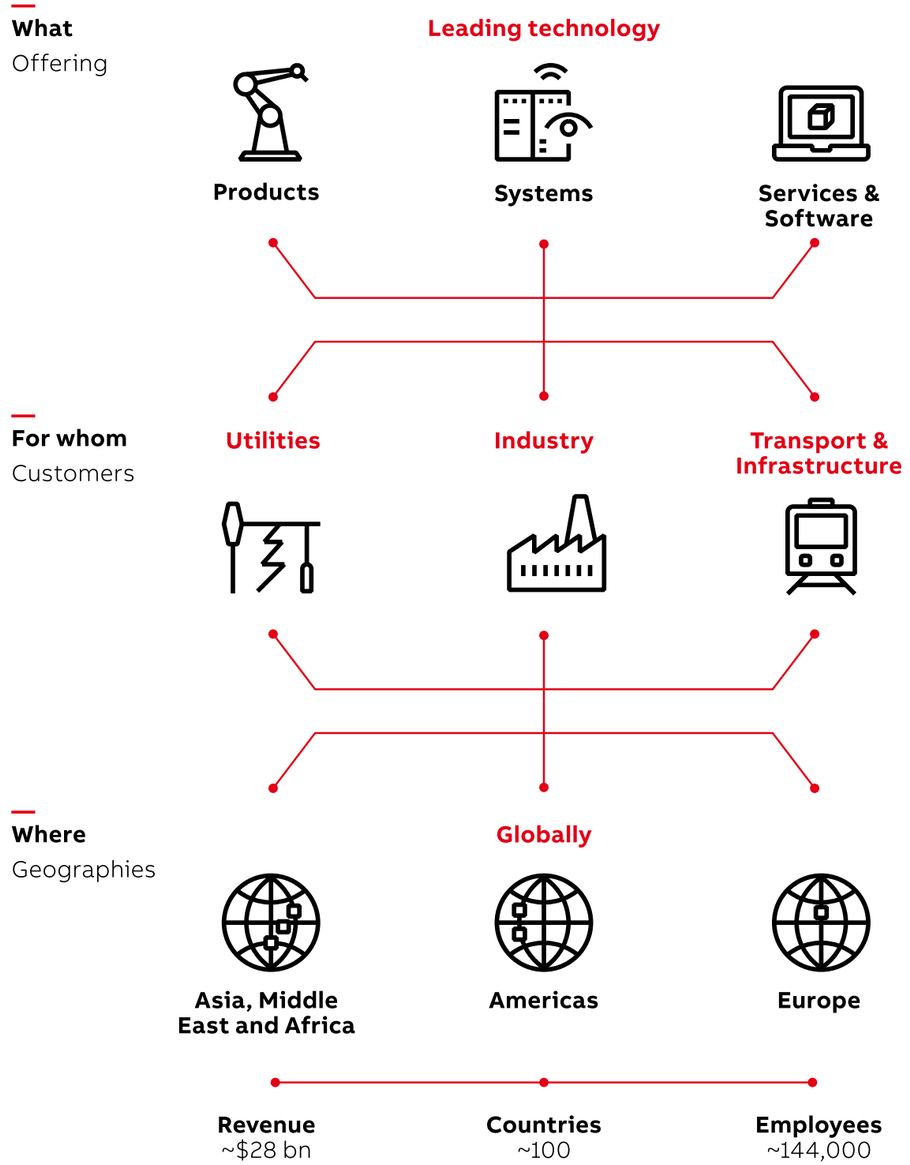
Leading solutions for a sustainable future



ABB at a glance

ABB is a technology leader that is driving the digital transformation of industries. With a history of innovation spanning more than 130 years, ABB has four customer-focused, globally leading businesses: Electrification, Industrial Automation, Motion, and Robotics & Discrete Automation, supported by the ABB Ability™ digital platform. ABB's Power Grids business will be divested to Hitachi in 2020. ABB operates in more than 100 countries with about 144,000 employees.

abb.com



Contents

01 Introduction

05 CEO message
07 Awards and achievements
08 Progress towards targets
09 Business model
10 Contribution to sustainable development

02 Governance

12 Sustainability governance
13 Stakeholder engagement
14 Material issues

03 Leading technology

17 Energizing SDGs 9 and 11
18 Smart buildings
19 Smart mobility
20 Sustainable infrastructure
21 Innovative industry

04 Responsible operations

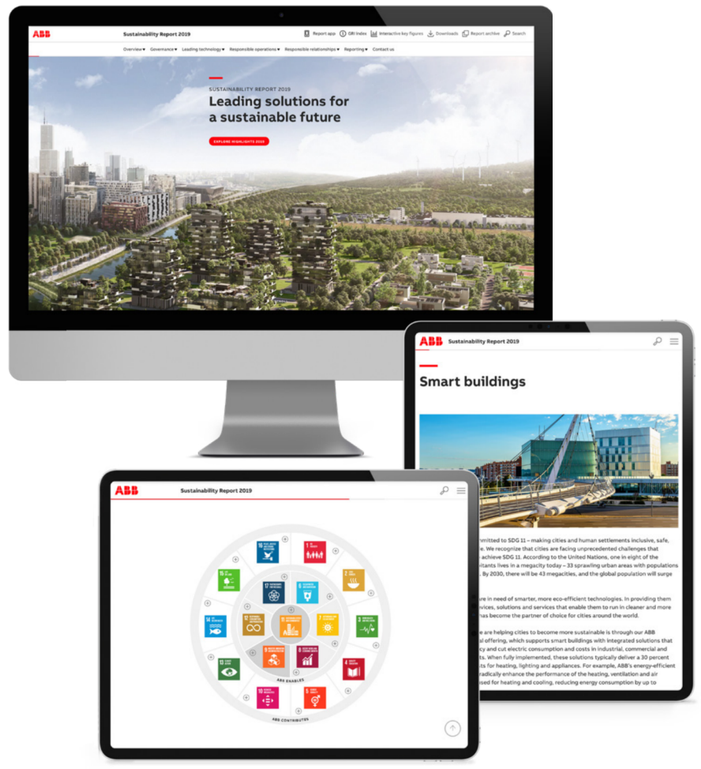
24 Safe operations
26 Climate action
28 Resource efficiency
30 Right materials
32 Responsible sourcing

05 Responsible relationships

35 Integrity
37 Human rights
39 Our people
41 Community engagement

06 Reporting indicators

43 Approach to sustainability reporting
44 Summary of GRI indicators
53 Appendix: Contribution to sustainable development



Experience our interactive microsite

01 Introduction

05 CEO message

07 Awards and achievements

08 Progress towards targets

09 Business model

10 Contribution to sustainable development

CEO MESSAGE

Sustainability driven by technology, cooperation and clear goals

ABB delivers solutions that enable the sustainable cities, industry and transport systems that the world needs to mitigate climate change and conserve non-renewable resources

Dear Stakeholders,

Two centuries ago, the First Industrial Revolution set the planet on a long-term path toward accelerated global warming. Now, the advanced technologies enabling the Fourth Industrial Revolution are our best hope of addressing the climate emergency.

Around the world, expanding cities are under growing pressure to reduce pollution and congestion, while providing clean energy and water, as well as the necessary jobs, goods and services for their inhabitants to have a good standard of living. The only way to achieve this is to build smarter cities, using advanced technologies and systems that enable urban areas to accommodate swelling populations without overwhelming infrastructure or services.

A similar challenge is confronting industry, which must reduce its environmental footprint while at the same time becoming more productive and providing affordable power, goods and services to a growing global population. Here, renewable energy and digitally enabled automation and robotics solutions hold the key to sustainable power, manufacturing and production.

As a company that helped to make possible the Second and Third Industrial Revolutions, ABB today is driving the development of smart cities and the digital transformation of industries, and it is transforming itself in the process. In 2019, we undertook a wide-ranging internal reorganization to bring our businesses closer to our customers and enable us to respond more quickly to their needs.

ABB today is driving the development of smart cities and the digital transformation of industries, and it is transforming itself in the process, bringing our businesses closer to our customers.

Peter Voser – Chairman and CEO

Today, our businesses are leaders in their respective markets, and they are designed to help our customers continuously improve productivity and efficiency while reducing waste and emissions and extending the lifecycles of their equipment. Our focus on driving productivity and sustainability means that our business supports, directly or indirectly, the achievement of all 17 of the United Nations' Sustainable Development Goals (SDGs), particularly SDG 11, making cities and human settlements inclusive, safe, resilient and sustainable, and SDG 9, building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation.

In the next stage of our transformation, we are further developing our company culture to create an environment where people have the confidence to take risks and aim at delivering results for sustainable high performance. As a first step in 2019, we encouraged open and inclusive dialogue across the company through CEO webcasts for employees, a new internal social networking channel and a global employee engagement survey, which was filled out by more than 95,000 colleagues.

The results showed high levels of engagement among employees – we received more than 40,000 comments on the topic of sustainability alone – but our people also delivered a clear message that they want to have a better understanding of where the company is heading. To answer this need, we have launched a project to identify the company purpose. As part of this project, we are asking multiple stakeholder groups how they perceive our company and what

they think ABB should aspire to in the future. We are open to any and all stakeholder suggestions about our company purpose with the only given being that it must drive sustainability – because this is part of our license to operate and a requirement for building a business over the long-term.

In tandem with this effort, we have been working on new diversity and inclusion targets for 2025. These targets are being developed in conjunction with a special report, commissioned from Catalyst, a global nonprofit that helps organizations accelerate progress for women at work.

We continue to demonstrate our commitment to sustainability in other ways. This autumn, we began our third season as title partner to the ABB FIA Formula E Championship racing series, the world's first fully electric international FIA motorsport series. Since ABB is a world leader in electric vehicle charging solutions, we view Formula E as the ideal event to demonstrate that e-mobility works. As such, it provides us with a unique opportunity to engage with customers around the world while building a sustainable future.

ABB is equally committed to the sustainability of its own operations. With the long-term ambition of making our company fully carbon-neutral, we inaugurated our first carbon-neutral factory in Lüdenscheid, Germany, as an example of what can be done to make industry truly sustainable. Equipped with a solar power station and other state-of-the-art technologies, the factory is on its way to becoming energy self-sufficient and demonstrating all the advantages of intelligent, digitally controlled industrial ecosystems.

Reaffirming that ABB is prepared to speak out on climate change and take action to help solve the technical challenges it presents, I joined with other global CEOs in December 2019 to sign a statement calling on the United States to remain within the Paris Agreement. I strongly believe that it is to the advantage of the United States and the world as a whole to meet the goals of the Paris Agreement. The benefits to be realized are economic, social, environmental and more. As a digital technology company at the forefront of industrial modernization, ABB is pleased to be at the center of the effort to safeguard our planet.

In March 2020, I am handing over the CEO role to my successor Björn Rosengren. Björn will continue to drive our transformation with the ultimate goal of making ABB the No. 1 choice for industrial customers seeking to drive the productivity and sustainability of their businesses.

Sincerely,

Peter Voser
Chairman and CEO

February 2020



AWARDS AND ACHIEVEMENTS

Recognized across the world for its accomplishments

ABB's offerings, operations and people continue to receive plaudits for their role in building a better world for future generations

Leading technology

ABB ranked No. 61 on Corporate Knights magazine's list of **World's 100 Most Sustainable Corporations**

ABB named **Global E-mobility Leader 2019** by the Polish Presidency of COP24 and the Polish Alternative Fuels Association

ABB honored with an **Electrical Review Excellence award for TXplore™**, its free-swimming ABB Ability™-enabled submersible transformer inspection robot

The National Association of Electrical Distributors presented ABB with the **Industry Award of Merit**

iF International Forum Design GmbH recognized ABB's innovative ABB-free@home® thermostat with a **Technology Design Award**

ABB i-bus® KNX sensor PEONIA® and ABB tacteo® KNX sensor received two prestigious **Red Dot Awards** for outstanding design

Nine of ABB's local companies placed on Electric Age's **China Top 100 Electric Companies** annual rankings

Responsible operations

ABB presented with the **Contribution to Skills and Training Award** at the Motor Control Industry Awards 2019

ABB recognized for the **fifth consecutive year for the responsible sourcing of minerals** by an independent benchmark study from the Responsible Sourcing Network

Security & Risk Magazine presented ABB with Honorable Mention for **Safe Organization of the Year** at the 2019 Finnish Security Awards

ABB recognized as a **top supplier and subcontractor** by Bechtel during its 2019 Supply Chain Awards

In Mexico, ABB's Nogales and Matamoros sites were awarded **Clean Industry certifications** by PROFEPA, Mexico's Federal Agency of Environmental Protection

ABB ranked No. 12 in the **Corporate Knights Clean200 list of the world's most significant publicly traded firms** according to the size of "clean revenue" from products and services that provide solutions for the planet

Responsible relationships

2019 **Ethisphere Compliance Leader** and **Anti-Bribery Management System Verification**

ABB awarded the **Excellent Organization in Building Happy Enterprise** 2019 award in China for its talent cultivation, corporate culture practices and CSR commitment

ABB was recognized in Colombia for its **Healthy Body Healthy Mind** program which includes several health initiatives, including the Global Health Challenge

Universum ranked ABB as the **most attractive employer among young professionals** in Italy

ABB India recognized as an exemplar of inclusion and **among the 100 best companies for women in India** by Working Mother magazine

ABB Canada Ranked No. 6 on Corporate Knights magazine's 2019 list of **Top Foreign Corporate Citizens** and as one of **Canada's Best Employers** by Forbes magazine

External accreditation

2019 FTSE4Good Index Series

2019 ISS ESG Prime Status

2020 EcoVadis Platinum

2019 Ethibel Sustainability Index Excellence Global

2019 Ethibel Sustainability Index Excellence Europe

2019 Corporate Knights Global 100 Index

PROGRESS TOWARDS TARGETS

Approaching the finish line

ABB on track to meet 2020 targets

We use 11 measures and targets to quantify ABB's progress toward nine sustainability objectives, which were established in 2014. We made progress on our measures in 2019 and remain on track to meet or exceed our targets in 2020.

The objectives cover three areas: leading technology, responsible operations and responsible relationships. Each area has a direct or indirect impact on ABB's business success. Our Executive Committee and external stakeholder panel reaffirmed that our measures and targets remain material to ABB's business.

In 2019, ABB underwent an extensive organizational transformation, initiating the carve-out of Power Grids and the simplification of our structure and business model. The ABB that will emerge will continue to not only be a technology leader, but also an exemplary corporate citizen contributing to a more sustainable world.

In 2019, we reviewed our 2013 baseline data to be able to track the environmental performance internally of each of our businesses individually, to reflect the changes at the company and maintain the consistency of the reported information. 2013 baselines in this report are unchanged.

As we prepare to close out our current measures and targets at the end of 2020, we have begun the work of developing new measures and targets for the years ahead. Our external stakeholder engagement process and the results of the 2019 Global Employee Engagement Survey will inform this process.

Leading technology

Objective	Measure	2020 Target	2013 Baseline	2019 Performance	Page
Products, solutions and services	Increase share of ABB eco-efficiency portfolio	**60%** of $ revenue	**53%**	**57%** →	16

Responsible operations

Objective	Measure	2020 Target	2013 Baseline	2019 Performance	Page
Safe operations	Reduction in employee injuries	**<0.7**	**1.09**	**0.47** √	24
Climate action	Reduce greenhouse gas (GHG) emissions	**by 40%**	**1,552 kt**	**41%** √	26
Resource efficiency	Reduce water consumption in water stressed areas	**by 25%**	**3,157 kt**	**18.5%** →	28
	Reduce share of waste sent for disposal	**by 20%**	**19.6%**	**13.5%** →	28
Right materials	Reduce emissions of VOCs	**by 25%**	**1,210 t**	**24%** →	30
Responsible sourcing	Closure of identified risks from supplier assessments	**>65%**	n/a	**78%** √	32

Responsible relationships

Objective	Measure	2020 Target	2013 Baseline	2019 Performance	Page
Integrity	Employees trained in integrity	**>96%**	n/a	**98%** √	35
Human rights	Training for specific job roles exposed to human rights risks	**2 campaigns** p.a.	n/a	**2** √	37
Our people	Increase in % of females in senior management[1]	**by 30%** (vs 2017)	10% (2017)	**11.7%** X	39
	Employees covered by the ABB well-being program	**>70%**	n/a	**77%** √	39

1 Hay grades 1-7

Definitions and methodology of targets

√ Achieved → On track: target likely to be achieved X Not on track: behind schedule to meet target

BUSINESS MODEL

Smart and sustainable growth

ABB creates value for stakeholders while fostering sustainability

We are committed to building long-term relationships with all ABB stakeholders. These include customers, shareholders, suppliers, partners, employees and communities.

Our business model is founded on three pillars:

- Leading technology that enables sustainability
- Responsible operations
- Responsible relationships

Our **leading technologies** are developed to enable sustainable growth for our customers. We strive for all of our technologies to have a positive impact. We seek not just to create value, but to enable sustainable growth. Each of ABB's businesses works to move society away from outmoded products and toward smart solutions that leverage the power of digitalization, incorporating sustainability as a central feature. The result will be smarter buildings, cities, industry and transport that help the world achieve a better future.

ABB's approach to **responsible operations** relies on frequent reassessments of our production processes and product designs. We give due consideration to governance, legal, environmental, and health and safety requirements. Our Group's tax position complies with applicable laws and follows international best-practice guidelines, including the OECD Guidelines for Multinational Enterprises. In Switzerland, ABB has elected to provide voluntary country-by-country reporting.

We place a high value on transparency. Details on our tax policy are available on our website.

We cultivate **responsible relationships** with our stakeholders. We seek out suppliers who respect international standards of quality, operational excellence, social and environmental responsibility and business ethics. To achieve this, we rely on ABB's Supplier Sustainability Development Program. We engage with our shareholders in ways that emphasize reputation, proper behaviors and good governance, with a priority on value creation and sustainable growth. We listen to our employees and work to strengthen our capacity to attract, develop and retain talent. In the broader community, we seek to engage with diverse segments of society. ABB endeavors to have a positive impact on the complete environment in which we operate.

ABB value chain

Suppliers and contractors

Materials and services

↓↑

Spend ~$13 billion

Governments

Services

↓↑

~27.3% effective tax rate[2]

Society

Need for reliable and efficient power supply, increased productivity and lower environmental impact

→

~100
Countries

$1.3 billion
R&D invested[1]

~144K
Employees

←

→

Customers

Revenues: 57% from energy efficiency, renewable energy

Products, solutions and services

→

Helping to write the future

Dividend payments and share repurchases ~$1.8 billion

↑↓

Capital

Investors

Community spending $12.1 million, 4,300 volunteer days

↑↓

Employees, partnerships

Communities

1 Non-order related R&D expenses plus digital investments including ABB Ability™.

2 Effective tax rate for continuing operations only, adjusted primarily for tax impacts from the planned sale of Power Grids and solar inverters business.

CONTRIBUTION TO SUSTAINABLE DEVELOPMENT

Geared to help solve humanity's most pressing challenges

ABB's smart technologies are helping to meet many of the underlying targets of the Sustainable Development Goals (SDGs)

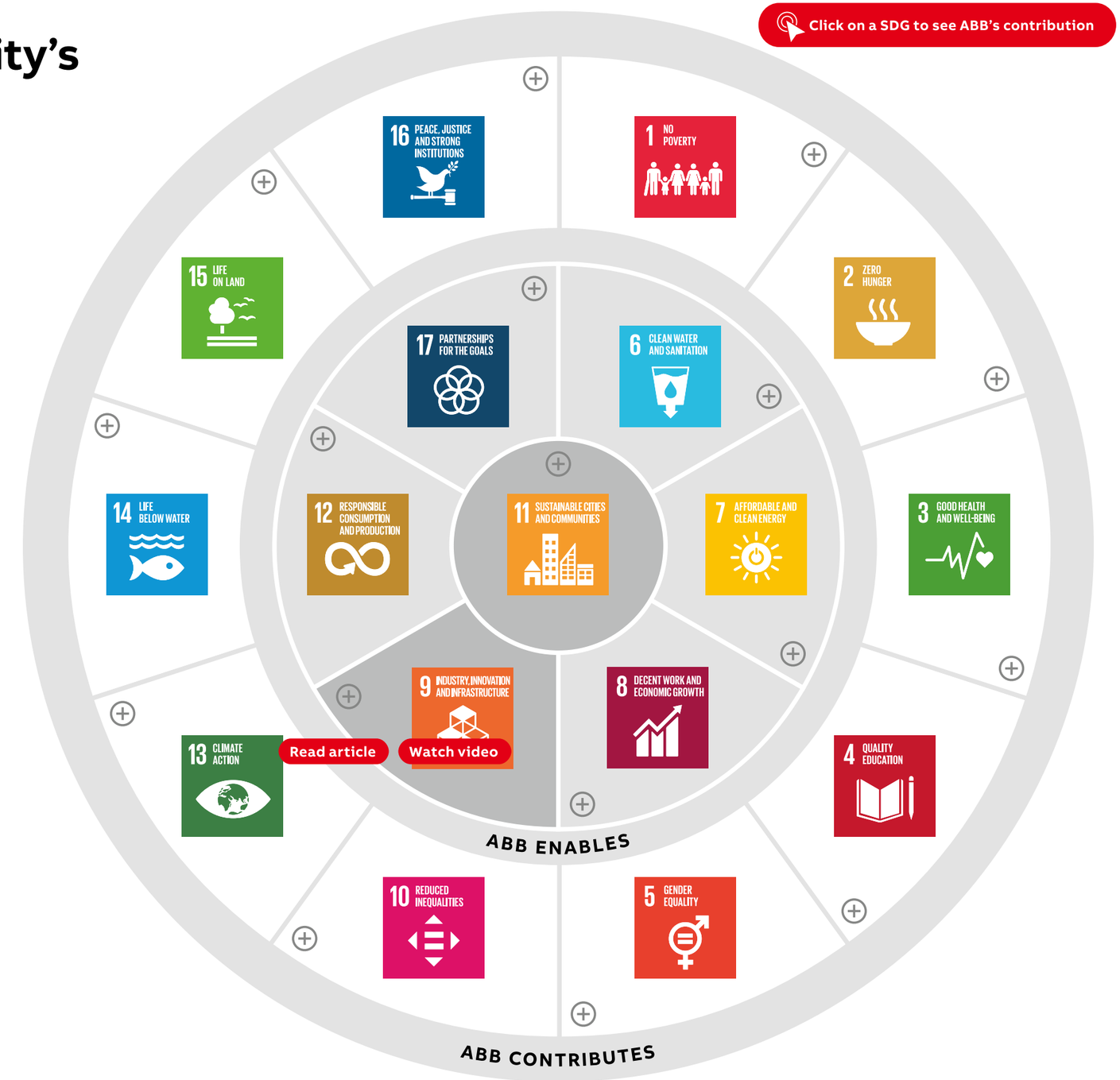
Adopted by the member states of the United Nations in 2016, the 17 SDGs are a blueprint for achieving peace and prosperity by 2030. ABB is cognizant these goals cannot be met without support from the global business community. Our approach to supporting the SDGs is to focus on the goals where we can have the most impact, while screening and implementing actions that contribute to the other goals as well.

While there is a moral imperative to support the SDGs, there are also material incentives. SDG-related opportunities involving building solutions, urban infrastructure, clean energy, energy efficiency and mobility are estimated to exceed $5 trillion.

To identify the SDGs where ABB can make the most difference, we used the GAPFRAME framework to identify five "grand challenges" (waste, equal opportunity, clean energy, innovation and carbon) in response to our materiality mix.

These challenges point to the seven SDGs where we can have the most impact: SDG 7 (energy), 11 (cities), 9 (industry and infrastructure), 6 (water), 8 (work) and 12 (production). And through our behavior and values, we contribute to SDG 17 (partnerships).

Click on the icons on this page for stories about how we contribute to the SDGs.



02 Governance

12 Sustainability governance

13 Stakeholder engagement

14 Material issues

SUSTAINABILITY GOVERNANCE

ABB's integrated governance enables it to meet expectations

Sustainability lies at the core of ABB's business strategy, informing what we manufacture, how we operate and the way we work with stakeholders

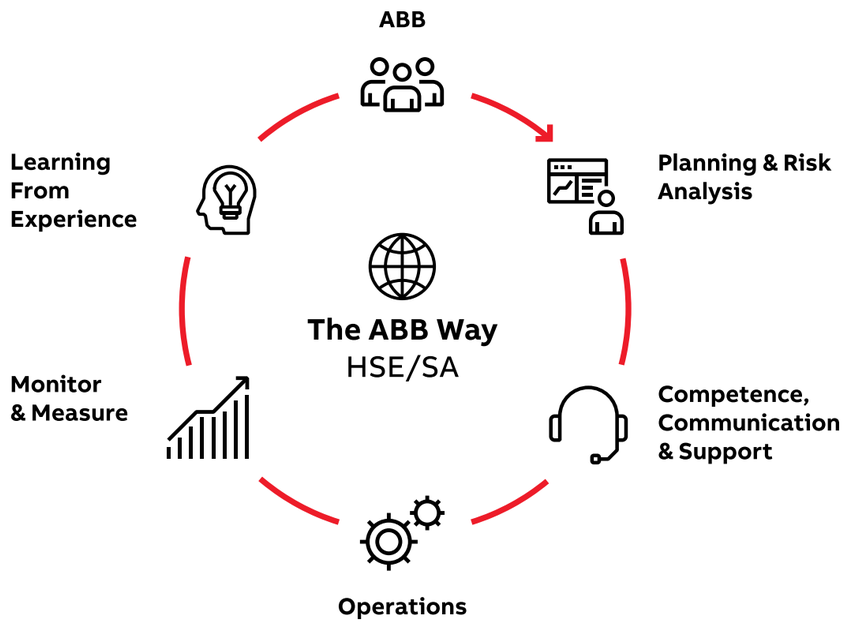
Structures and responsibilities
The Board of Directors is responsible for the stewardship of the ABB Group, and its duties include oversight of sustainability and corporate responsibility. The board is charged with ensuring that our products and people are safe, the environment is protected and human rights are respected. As such, it is ultimately accountable for bringing ABB's 2020 sustainability strategy to fruition.

The ABB Sustainability Board, which comprises the Executive Committee and is chaired by the CEO, is accountable for sustainability within ABB. Meeting semi-annually, this board ensures our sustainability policies and programs are aligned with our business goals and aspirations, monitoring progress against ABB's nine sustainability objectives. The Chief Human Resources Officer (CHRO) is a Member of the Group Executive Committee and is responsible for ABB's health, safety, environment, security and sustainability (HSE/SA) performance and the successful implementation of ABB's sustainability strategy. The Group General Counsel, also a Member of the Group Executive Committee, is responsible for ABB's integrity performance.

The Senior Vice President Global HSE and Sustainability Affairs (SVP HSE/SA) reports to the CHRO and is responsible for all sustainability deliverables. The HSE/SA Leadership Team, comprised of the heads of HSE for the businesses and the functional heads from corporate HSE/SA, meets at least three times a year to align on business needs and strategy, chaired by the SVP HSE/SA. That function also leads the HSE/SA Management Team, which meets every two months. This team is focused on operations and is responsible for making sure HSE/SA's strategies, plans and actions are in sync with ABB's business needs and corporate strategy. To this end, the HSE/SA Management Team initiates and directs sustainability policies, strategies, plans, actions, budgets and resources, adopting remedial measures when required. Its members include the Head of Health, Head of Safety, Head of Environment, Head of Security, Head of Sustainability and Head of Corporate Responsibility. The Sustainability Affairs annual plan coordinates all programs, processes and resources across all of these functional areas to support the businesses, improve performance, diminish risk and generate value.

ABB has established Country Sustainability Boards at the local level to maintain good governance and ensure compliance with local legislation, ABB's standards and customer expectations. A team of roughly 800 full-time and part-time employees support ABB's sustainability network.

A global HSE/SA management system
In 2018, we began implementing the ABB Way. This global management system updates our management and control standards for health, safety, the environment, security, sustainability and corporate responsibility. The ABB Way establishes shared expectations across our global businesses. Our goal is for all of our sites to be aligned with this new management system by January 2020. As of December 31, 2019, the implementation process was 65 percent complete. The ABB Way, which sets the minimum standards that must be implemented across all ABB operations and activities, features a far-reaching global audit assurance program. The structure of ABB's HSE/SA management system is based on internationally recognized sustainability standards, principles and commitments, including ISO 45001 and 14001:2015.



STAKEHOLDER ENGAGEMENT

Engaging and collaborating with stakeholders at all stages

We continuously seek to meet the expectations of our stakeholders via multiple channels and processes

We work to engage in meaningful dialogue and close cooperation with our stakeholders, with the object of delineating ABB's positions and policies, as well as of comprehending other perspectives.

As announced in the 2018 report, in 2019 we initiated a comprehensive stakeholder engagement process, involving external stakeholders of all categories. The process is being conducted via one-on-one interviews. All stakeholders are associated with one of ABB's businesses. Each business identified its key stakeholders in several categories, including customers, civil society, government representatives, analysts, suppliers, local communities and others. The goal of this exercise is to review stakeholder expectations and develop a qualitative basis for each business' materiality matrix. This process will conclude in the first half of 2020 and contribute to the definition of our future priorities and ambitions. The results are also being used to shape our activities in 2020. The engagement process additionally considers internal stakeholders. Our day-to-day activities also enable stakeholder interaction. Key areas of engagement with our stakeholders in 2019 included the following:

Customers
We meet regularly with customers to discuss the sustainability of ABB's offerings and how they can be used to meet specific sustainability requirements. We seek to make detailed information available on these issues and others and to maintain our standing as a trusted supplier.

Investors
In 2019, ABB engaged in one-on-one meetings with managers and analysts focused on sustainable investing. The ranks of socially responsible investors with an interest in our ESG performance continued to grow. Topics of interest included growth prospects for our eco-efficiency portfolio.

Suppliers
ABB maintains frequent contacts with our suppliers, taking precautions to ensure they measure up to our standards for sustainability. These efforts are managed through our Supplier Sustainability Development Program (SSDP). The program assesses conditions at our suppliers' sites and enables us to work with them to improve their performance.

Employees
In 2019 we held our first Global Employee Engagement Survey in 10 years, involving more than 95,000 ABB employees and resulting in an engagement score of 71. Their input is being used to help develop a groupwide culture of collaboration and dialogue. In our current transformation, we are working to ensure that our people understand our strategy and their roles. In our ongoing communications program, we held town hall meetings at various sites and published regular updates on internal news portals.

Public policy
In 2019, ABB participated in the UN Climate Change Conference (COP25) in Madrid, continuing our yearly engagement with the conference since COP21 in Paris. In other areas, we expanded our global activities in government relations in 2019, working with policymakers on issues including climate change, energy efficiency, industrial policy, digitalization, artificial intelligence and e-mobility.

Community
In 2019, ABB contributed to more than 580 charitable institutions and community projects around the globe. Education, diversity and healthcare were among key areas of focus. Our employees and businesses donated an estimated $12.1 million and volunteered roughly 4,300 person-days of time to charitable causes. More information is available in the Community Engagement chapter.

External partnerships
ABB worked with a range of external partners on solutions to major global challenges. These included the World Economic Forum, the ABB FIA Formula E Championship, the World Business Council for Sustainable Development's Low Carbon Technology Partnerships initiative, the International Committee of the Red Cross' Corporate Support Group, United for Efficiency and several of Sustainable Energy for All's accelerator programs, among others.

MATERIAL ISSUES

Priorities, actions and initiatives

Each of our businesses takes careful stock of its actions, operations, supply chains and interactions with stakeholders to assess their impact on sustainability

2019 materiality matrix

Click issues to reveal



Identification of key stakeholder issues

The process of determining the materiality of stakeholder issues has included review, particularly on the part of our external stakeholder panel. The current framework was based on surveys carried out in 2010 and 2011, supplemented with additional reviews in 2013 and 2014 and an annual stakeholder panel review. 2020 will be the last year in which to deliver on that framework.

Our key sustainability focus areas are regularly benchmarked against standards provided by industry organizations such as the World Business Council for Sustainable Development (WBCSD). ABB updates its benchmarks continuously in multiple ways. These include tracking the key sustainability focus areas of peer companies and mapping regulatory risks and macroscopic trends. These practices enable us to establish a comprehensive approach to current sustainability issues and adjust our strategies and modes of implementation accordingly.

We are presently developing an updated materiality matrix for each of our five businesses. These will be used to shape the Group's materiality matrix, targets and focus areas for our post 2020 sustainability strategy. Until that process is complete, our current materiality matrix is still in use, with only minor adjustments.

ABB's external stakeholder panel

Our external stakeholder panel was first formed in 2015. Since that time, it has provided advice and input on sustainability issues and has regularly reviewed our materiality matrix and our annual Sustainability Report.

The members of the panel are selected to represent our key stakeholders and are chosen on the basis of their expertise in matters of sustainable development. They are also selected to reflect issues of gender balance and geographical balance. In 2019, the six serving panel members had all served in previous years. The regular meetings of the panel are conducted by means of conference calls and are chaired by an external facilitator. Most of the panel participates in any given meeting and any member who is unable to do so is subsequently interviewed individually.

In 2019, the panel's feedback played an important part in providing direction for our Sustainability Report and influenced the continuing development of our sustainability programs. The statement released by this year's panel may be found online.

03 Leading technology

17 Energizing SDGs 9 and 11

18 Smart buildings

19 Smart mobility

20 Sustainable infrastructure

21 Innovative industry

LEADING TECHNOLOGY

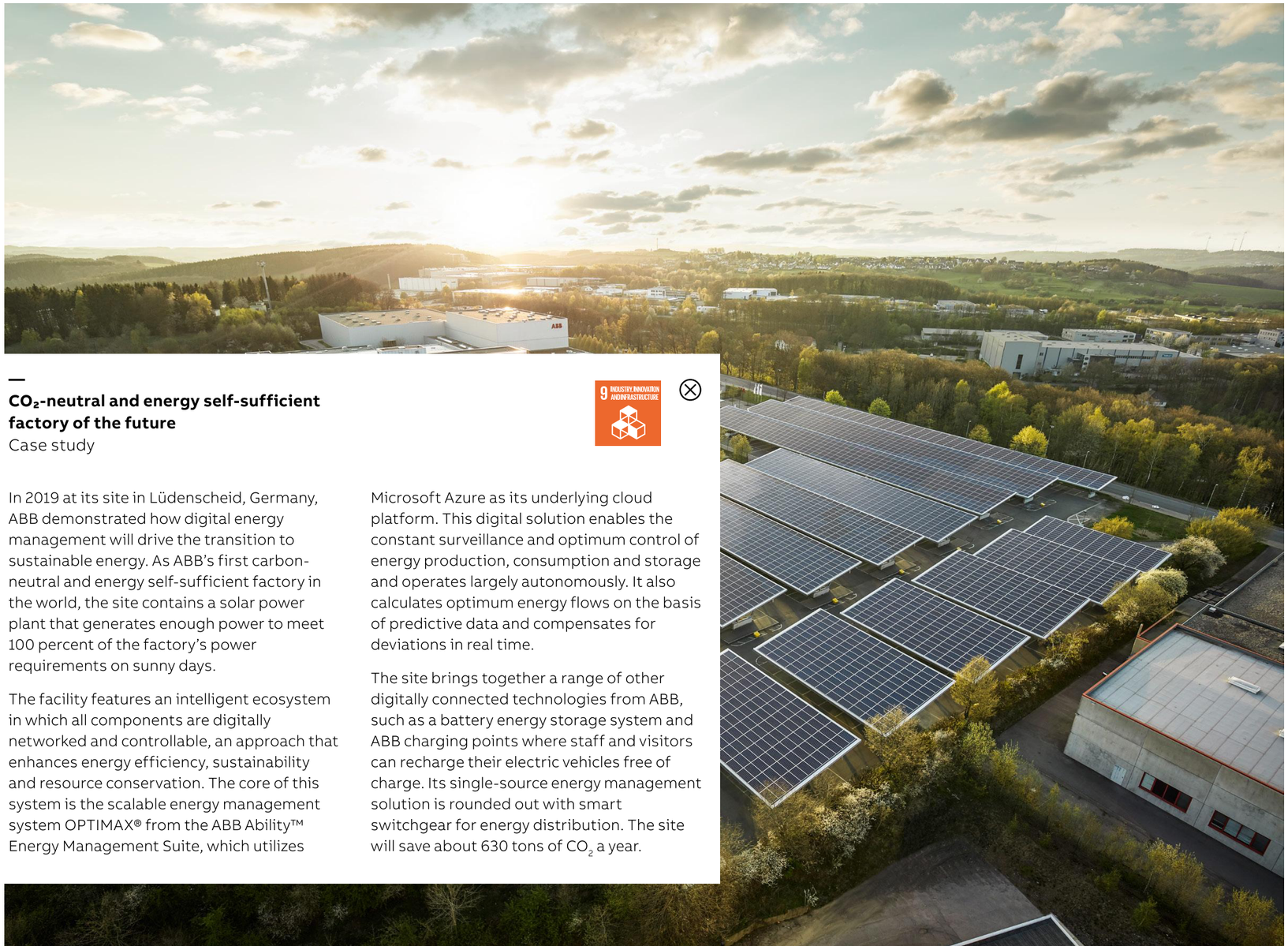
Making the world's cities and industries smarter and more efficient

ABB provides products, solutions and services that are enabling the cities and industries of the future to be cleaner, safer, more resilient and less resource intensive

For more than 130 years, ABB has created technologies that stimulate economic growth and improve people's lives. Today, we remain focused on delivering leading-edge solutions for our customers and are working to further enhance the eco-efficiency of these offerings to support the fight against climate change. Our extensive portfolio of products, solutions and services contributes to the economy and raises people's standard of living, while contributing to delivering the energy efficiency and resource conservation the world needs to achieve the goals of the 2015 Paris Agreement.

In 2014, we set a target to increase our revenues from energy efficiency and eco-efficiency related products, services and solutions by 20 percent. In 2017, we made this target more ambitious, aiming for our eco-efficiency portfolio to account for 60 percent of ABB's total revenue by 2020. This portfolio delivers positive use-phase impacts in three areas: energy efficiency, renewable energy and resource efficiency. Our eco-efficiency portfolio accounted for 57 percent of ABB's revenue in 2019, remaining on track to achieve our target by the end of 2020.

We continue to tailor our portfolio in line with the changes that are rapidly reshaping the world, while making progress toward our target.



—

CO_2-neutral and energy self-sufficient factory of the future
Case study

In 2019 at its site in Lüdenscheid, Germany, ABB demonstrated how digital energy management will drive the transition to sustainable energy. As ABB's first carbon-neutral and energy self-sufficient factory in the world, the site contains a solar power plant that generates enough power to meet 100 percent of the factory's power requirements on sunny days.

The facility features an intelligent ecosystem in which all components are digitally networked and controllable, an approach that enhances energy efficiency, sustainability and resource conservation. The core of this system is the scalable energy management system OPTIMAX® from the ABB Ability™ Energy Management Suite, which utilizes Microsoft Azure as its underlying cloud platform. This digital solution enables the constant surveillance and optimum control of energy production, consumption and storage and operates largely autonomously. It also calculates optimum energy flows on the basis of predictive data and compensates for deviations in real time.

The site brings together a range of other digitally connected technologies from ABB, such as a battery energy storage system and ABB charging points where staff and visitors can recharge their electric vehicles free of charge. Its single-source energy management solution is rounded out with smart switchgear for energy distribution. The site will save about 630 tons of CO_2 a year.

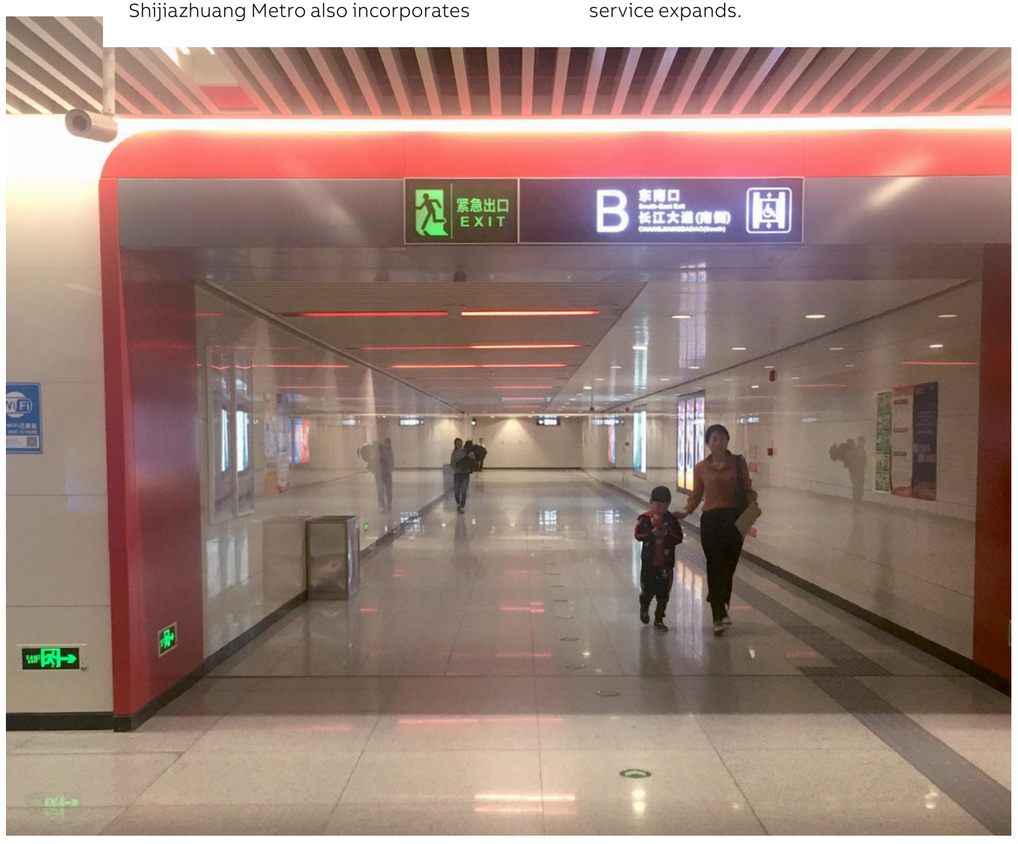
—

Smart lighting for the Shijiazhuang Metro
Case study

The Shijiazhuang Metro is an urban rail transit service in Shijiazhuang, Hebei, China. When complete, the metro's routes will extend more than 80 kilometers. The system will make Shijiazhuang more sustainable by not only reducing traffic, but also saving energy – thanks to an intelligent building control system provided by ABB.

ABB's i-bus® KNX intelligent building control system governs the lighting, temperature, ventilation and shading of a wide range of the system's structures by managing their associated electrical equipment. The Shijiazhuang Metro also incorporates third-party lighting control equipment, all of which was easily integrated into the ABB control system with the DALI control unit. ABB i-bus KNX is compatible with most third-party systems and devices and can connect electrical equipment in various applications to simplify system processes, improve efficiency and reduce power costs, resulting in a smart and streamlined experience.

ABB's intelligent building control system provides coverage to 26 stations and control centers on the Shijiazhuang Metro Line 1 and Line 3 Phase I – with more to come as the service expands.



Urbanization, population growth and economic expansion are surging even as the public, private and civil sectors are nearing consensus on the need to significantly reduce our reliance on the outdated technologies that contribute to climate change. For utilities and the construction, mobility and industrial sectors, among others, climate change and the responsible use of resources have moved to the top of the global agenda.
In addressing these new priorities, sustainable operations and products increasingly represent a competitive advantage in and of themselves.

The global consensus on climate change is driving demand for products, solutions and services that increase energy efficiency and reduce consumption of non-renewable resources. Technological innovation will play a critical role in meeting these needs – improving people's living standards while simultaneously reducing their impact on the environment. With this in mind, we believe ABB's mission is fully aligned with global efforts to bring the Sustainable Development Goals (SDGs) within reach by 2030.

Energizing SDGs 11 and 9

The ABB Sustainability Report this year largely focuses on how ABB's technologies contribute to SDG 11, which calls for sustainable and resilient cities and communities, and SDG 9, which calls for resilient infrastructure and inclusive and sustainable industrialization.

SDG 11 encourages the transition to smart cities, which leverage innovations in transport, renewable energy, waste management and digital technologies to manage resources more efficiently. The smart cities of tomorrow should be more livable, attractive and affordable, as well as sustainable.

Today, half the world's population lives in towns and cities. According to the International Energy Agency, urban areas, which are at the center of most economic activity, account for 64 percent of global energy consumption and are responsible for 70 percent of global carbon dioxide emissions. The smart, energy-efficient and low-carbon technologies required to significantly reduce the environmental impact of cities already exist, and they must be rapidly deployed on a wider scale to achieve the underlying targets associated with SDG 11 by 2030.

SDG 9 emphasizes the urgent need for industry and infrastructure to become cleaner and more efficient, even while contributing to economic growth and inclusivity. According to the Intergovernmental Panel on Climate Change, industry generates about 21 percent of global greenhouse gas emissions – not just from burning fossil fuels, but also from chemical processes, waste management and other production related activities. The advanced solutions required to make industry smarter and cleaner have also already been developed.

Cleaner industries can be located closer to urban areas, which can in turn provide manufacturers with access to the deep talent pools that will be needed to operate and maintain the digital factories of the future. Moving production sites closer to cities would also enhance employment opportunities for rural-to-urban migrants.

With respect to cleaner and more efficient infrastructure, existing technologies can be used to optimize water and waste treatment, energy services and other resources of critical importance to cities. New solutions can reduce the amount of electricity and water that is lost, either in transmission or due to extreme differences between peak and off-peak demand.

At ABB, we understand that SDGs 9 and 11 are interlocking and mutually supporting goals. Sustainable and resilient cities not only need buildings, transportation options and infrastructure that minimize emissions and conserve energy and non-renewable resources, but also need local industries that can provide residents with economic opportunities and an accessible supply of essential goods. Cities that are cleaner, safer and less polluted improve the quality of inhabitants' lives, and are thus in everyone's interest.

ABB supplies many of the products, solutions, services and systems that serve these needs. In fact, a large part of ABB's technologies relate directly to matters of sustainability, so it would not be practical to provide a comprehensive listing of them in this report. Nonetheless, in this chapter we highlight some of the key technologies that contributed in 2019 to achieving the targets associated with SDGs 9 and 11. These include smart and sustainable technologies for buildings, electric vehicles, water, power, and waste infrastructure, data centers and factories.

Underpinning nearly all of these solutions is our comprehensive digital offering, ABB Ability™, which drives substantial gains in efficiency. Solutions under the ABB Ability™ brand collect and analyze data from across the industrial internet and provide our customers with automated insights into their processes and equipment in order to increase the uptime, speed and yield of their operations. ABB Ability™ connects one of the world's largest installed bases of industrial devices – around 70 million of them – to industry-leading digital solutions in a wide range of sectors, including utilities, transportation, energy, construction and industry.

But while ABB Ability™ ties together many of our company's innovations through connectivity and the digital cloud, it represents just one aspect of what can be done to make the future a brighter place for us all. We recognize that policy is just as important as technology in paving the way for successful smart cities, infrastructure and industries.

Accordingly, ABB collaborates with policymakers around the world to realize a collective vision for modern smart cities that can combine data, people and technology. ABB is also working towards inclusive and sustainable solutions as an Associate Partner of the Smart Cities Council, a collaboration among technology companies that is developing a policy framework for the future, including the Smart Cities Readiness Guide.

To help further develop smart infrastructure and industry, ABB is closely cooperating with other leading, global companies. ABB has entered into strategic partnerships with digital market leaders Dassault Systèmes, Ericsson, Hewlett Packard Enterprise, Huawei, IBM and Microsoft to drive the digital transformation and enable customers to unlock unprecedented improvements in performance and productivity. Each strategic partnership brings ABB together with a world-class organization to create an unmatchable combination of technological expertise and domain knowledge focused on developing enhanced digital solutions.

Smart buildings

ABB remains firmly committed to SDG 11 – making cities and human settlements inclusive, safe, resilient and sustainable. We recognize that cities are facing unprecedented challenges that threaten their ability to achieve SDG 11. According to the United Nations, one in eight of the world's 7.6 billion inhabitants lives in a megacity today – 33 sprawling urban areas with populations of more

—

Upgrade of landmark buildings for smart city project in Zaragoza, Spain
Case study

ABB is helping the city of Zaragoza, the capital of Aragon, Spain, create a smart city ecosystem that can advance digital and societal inclusion. Among the focal points of the project are four major structures: the historical Seminario of Zaragoza, city hall, police headquarters and the Technology & Art Center.

To become successful smart city concepts, the buildings required an energy monitoring system that would bring them into compliance with the ISO 50001 standard. Furthermore, Zaragoza set itself the goal of reducing its total energy consumption by 20 percent and decreasing its CO_2 footprint through improved monitoring and control of its energy use.

ABB provided Zaragoza with an advanced cloud-based energy management platform that uses Ekip UP, part of the ABB Ability™ digital offering. Specifically designed for existing installations like the four buildings targeted in Zaragoza, Ekip UP upgrades the electronics of old facilities to make them digital. As a consequence of ABB's collaboration with the city, the buildings successfully met the initial requirements for compliance with ISO 50001.



than 10 million. By 2030, it is predicted that there will be 43 megacities, and the global population will surge to 8.6 billion.

As they expand, cities are in need of smarter, more eco-efficient technologies. In providing them with digital sensors, devices, solutions and services that enable them to run in cleaner and more sustainable ways, ABB has become a partner of choice for cities around the world.

One of the ways that we are helping cities to become more sustainable is through our ABB Ability™-branded digital offering, which supports smart buildings with integrated solutions that achieve energy efficiency and cut electric consumption and costs in industrial, commercial and residential environments. When fully implemented, these solutions typically deliver a 30 percent reduction in energy costs for heating, lighting and appliances. For example, ABB's energy-efficient motors and drives can radically enhance the performance of the heating, ventilation and air conditioning systems used for heating and cooling, reducing energy consumption by up to 50 percent.

For smart homes, our offering is centered on the ABB-free@home® platform. This complete automation platform enables occupants to centrally manage power consumption and cut costs. With up to 60 functions, ABB-free@home® can integrate up to 150 devices per system. Via a touch control panel, smartphone or wall-mounted switch and motion sensors, one can control everything from blinds, heating and air conditioning, to door communication and lighting.

Critically, this system is flexible. It can be easily integrated not only with ABB's video door entry system, but also with third-party products and services, such as smart home appliances, smart lighting systems, door entry systems, home entertainment devices and cloud-based voice services, not to mention a variety of solar-thermal and photovoltaic energy systems. This smart home solution leverages the Microsoft Azure cloud computing platform.

For smart buildings, ABB's offering is based on the widely used KNX open standard. Our ABB i-bus® KNX system gives occupants and building managers the ability to control lights, window shades and heating/cooling systems for improved temperature management and to program strategies that will optimize a building's energy demand and deliver maximum levels of comfort and safety.

ABB research and development paves the way for cities and industries of the future to become more sustainable, efficient, productive, cleaner, safer, resilient and less resource intensive.

Bazmi Husain – Chief Technology Officer

ABB technology is also being deployed in support of the Netherlands 2019 National Climate Agreement, in which the Dutch government committed to sustainably transforming the Netherlands' existing built environment and adapting the country's 7 million homes and 1 million buildings so that they are all well insulated and use or even generate clean energy. ABB is working together with Factory Zero, a company that builds homes that incur zero energy bills, to help the country create some of the 1.5 million zero-emission homes the Netherlands aims to construct by 2030.

Each of the new structures will use one of our smart energy management modules (SEMs) to coordinate and balance their energy demand and use, controlling a heat pump, ventilation and an ABB solar panel converter and reading energy meters. Energy generated by a home's solar panels and heat pump is monitored, kept within the home and optimally adjusted to consumption. This innovative solution uses data generation and visualization to provide residents with insights into their energy consumption. By continuously measuring and adjusting the amount of energy consumed by a home, SEMs reduce energy costs.

Smart mobility

In an effort to be more sustainable, cities today are looking for ways to get polluting internal combustion engines off the streets without disrupting the daily flow of people and goods. Going forward, e-mobility is the clear, clean choice. That is why ABB is active across the entire e-mobility value chain, offering a complete range of solutions for the electrification of buses, commercial vehicles, trucks, autonomous vehicles, automobiles, ships and railways. We have rapidly become a world leader in fast charging solutions, which are increasingly in demand as urban areas shift away from fossil fuels.

According to the International Energy Agency, the number of electric and plug-in hybrid electric cars on the road reached 5.6 million at the beginning of 2019 and is expected to rise to 125 million by 2030. ABB is supporting this trend in sustainable mobility by providing not only electric vehicle (EV) charging stations, but also critical EV charging network components, such as substations, energy storage systems and eco-friendly switchgear. These technologies are designed so that EV charging stations, once erected, will be both future-proof and scalable.



—
Electric fast chargers in Gothenburg, Sweden
Case study

The city of Gothenburg, Sweden, is committed to the development and testing of solutions for sustainable public transport. Electrifying line 60, one of the busiest bus lines in Gothenburg, together with lines 59 and 62, is the top priority. In 2018, almost 6.9 million trips were made on line 60, and another 780,000 trips on lines 59 and 62.

Electrifying a bus line is not just a matter of procuring e-buses. New charging infrastructure is required. That is why Gothenburg's public transport operator, GS Buss, reached out to ABB for a solution. Following an extensive review of the city's needs, GS Buss decided that the buses on line 60 should be energized by ABB's 300 kW high-power chargers.

The chargers offer a modular solution, based on OppCharge, and will enable Gothenburg's buses to be recharged in just three to six minutes at the depot in Kruthusgatan, with supplementary fast charging available at the ends of the line in Masthugget and Redbergsplatsen.

In line with the Swedish government's vision that Sweden should be climate-neutral by 2050, regional transport authority Västtrafik expects to have electrified all city traffic in Västra Götaland by 2030.

One of the EV solutions developed by ABB is the DC 50 kW Terra 54 fast-charging station, which provides charging on the go for the most common battery sizes within 30 to 45 minutes. The ABB Terra uses open standards to enable connectivity, remote monitoring and remote assistance functions via an ABB Ability™ solution, reliably connecting public EV charging stations to the power grid. Around 13,000 ABB fast chargers have now been sold in more than 80 countries, making ABB a global leader in DC fast-charging technologies.

ABB's Terra HP 350 kW next-generation fast chargers provide a more powerful solution, capable of adding 200 kilometers of range to an electric car in just eight minutes. ABB has already installed 200 of these units for Electrify America, the largest EV infrastructure project to date in the United States. In many other countries, including Germany, Switzerland and Iceland, ABB is the key technology supplier for sustainable mobility infrastructure.

ABB has also been selected as the main technology partner and supplier of fast-charging systems by IONITY, a consortium of major automakers that has opened 202 fast-charging stations across 18 European countries since 2018. Fastned, a Dutch startup that aims to create a European network of 1,000 fast-charging stations, also uses the Terra series of fast chargers, which run on the ABB Ability™ Connected Services Platform. This platform employs Microsoft Azure's cloud services to enhance uptime, scalability and speed of development, as well as to provide real-time remote support services.

For mass transit, ABB offers solutions for the electrification of buses. And for the electrification of railways, ABB supports sustainable mobility with power and automation technologies for customers ranging from train manufacturers to rail operators. We design, engineer and commission solutions to deliver safe, reliable and cost-effective rail freight and passenger transportation solutions. Our product offering includes traction transformers, motors and converters to move vehicles quickly and reliably. This includes leading integrated and collaborative digital solutions with ABB Ability™.

To further enhance our portfolio of EV charging solutions, ABB has invested some $10 million in a new e-mobility research and development facility in Delft, Netherlands, which opened mid-2019. The center focuses on EV charger interoperability and also incorporates large testing areas to accelerate the development of charging solutions for the rapidly growing electric bus segment.

Sustainable infrastructure

ABB contributes directly to the achievement of SDG 9 by developing advanced products, solutions and services that are changing the way facilities and systems deliver essential services to towns, cities and industries.

Since infrastructure comprises the foundation of any properly functioning city, we believe our SDG 9-related products, solutions and services are vital to the success of smart city initiatives. Indeed, ABB technology and leadership are behind many of the major projects that keep our cities and nations running. In cities around the world, ABB's sensors and systems provide real-time information and control for utilities and transport systems, enabling them to save energy, reduce losses of water and power and enhance management processes. And ABB's measuring and detection technology enables city managers to closely monitor and react to dangerous spikes in emissions.

The efficient and reliable distribution of renewable power is critical to any sustainable city and will be a prerequisite for industrial facilities in the future. ABB technology is perfectly suited to this application, as evidenced by our latest installation in Brazil. There, Enel Green Power chose our ABB Ability™-powered digital substation to deliver emission-free solar power from the São Gonçalo solar photovoltaic plant to Brazil's 500 kV transmission network. This solution will eliminate 600,000 tons of carbon emissions a year and make Brazil's grid stronger, greener and smarter.

In the city of Västerås, Sweden, ABB Ability™ digital solutions and expertise are being applied to good purpose in close cooperation with Microsoft. There, ABB is working in partnership with Swedish energy company Mälarenergi. Mälarenergi operates a broad range of essential services for the city of 150,000, including hydropower plants, the local power grid, a waste-to-energy plant, heating and cooling networks, water and wastewater treatment plants, a water distribution network and a fiber-optic network. For the management of all of these core functions, they rely on ABB Ability™ Collaborative Operations to make more information about these services available faster.

In Vietnam, Ho Chi Minh City's local utility, SAWACO, uses the ABB Ability™ Symphony® Plus supervisory control and data acquisition system (SCADA), reducing water leakage from 30 percent to 10 percent while supporting long-term growth. The smart collection of digital data offers real-time insights into the water network's status, enabling quality improvement of its drinking water and better living conditions for millions of people in the Vietnamese city.

Hospitals are also categorized as fundamental infrastructure assets, and ABB is at the forefront of efforts to empower them with smart technologies. The healthcare sector is now being challenged to keep pace with advances in the diagnosis and treatment of disease while coping with an aging population, increasing costs and a growing worldwide shortage of medical staff. In response, in 2019 we opened the first ABB global healthcare research hub, on the Texas Medical Center campus in Houston, Texas. The goal is to develop robots for repetitive, delicate and mundane processes, leaving highly skilled medical and laboratory staff free to take on more valuable roles, and ultimately treat more patients.

At the research hub, we will use our experience in industrial and collaborative robotics to create flexible automation solutions for healthcare. Cutting-edge robotics have the potential to reduce the number of manual procedures performed by medical staff, improve the accuracy of laboratory work and enhance patient satisfaction and safety. The hub will feature a number of concept technologies, including a mobile YuMi® robot, which will be designed to assist with laboratory and hospital logistical tasks. Additional YuMi® robots could be used for centrifuge tending and test tube handling systems, while an IRB 1200 robot may be used to execute liquid transfers in a pipetting application.

Innovative industry

ABB is developing advanced products, solutions and services that are radically reshaping the production landscape by making smart and sustainable factories of the future possible. Our portfolio enables manufacturers to respond to the increasing pressure for shorter product design cycles, the rise of mass customization, and increased environmental, safety and compliance regulations.

—

Energy savings enabled by intelligent motion solutions
Case study

A landmark hotel, the InterContinental Madrid, is meeting its environmental goals with ABB drives and high-efficiency motors. Energy usage has been reduced by 445,000 kWh a year – enough to boil two million kettles of water.

A detailed energy survey of the InterContinental revealed that the hotel's energy use was high, particularly for the eight pump groups that served its HVAC systems and hot water supply for guest rooms, kitchens and other facilities. HVAC systems can use between 60 to 80 percent of all the energy consumed by a hotel.

Based on these findings, the pumping systems were equipped with 13 ABB ACH550 variable-speed drives (VSDs) and 16 electric motors with an IE3 energy-efficiency classification, which were integrated into the hotel's building management systems. This upgrade provides the overall system with greater stability and higher energy efficiency, as the motor speeds are now precisely adjusted to match demand at any given time. These intelligent motion solutions enabled the hotel to achieve energy savings of around 40 percent.



As a technology leader in the fields of industrial automation, electrification, robotics, discrete automation and motion, ABB's work contributes directly to the achievement of SDG 9. Our suite of ABB Ability™ digital solutions and services uses sensors, network connectivity and data analytics to provide a real-time view into operations, enabling predictive maintenance, improved safety and reduced operating costs. And because ABB Ability™ uses the Microsoft Azure cloud as its integrated connectivity platform, our customers benefit from access to enterprise-grade cloud infrastructure.

Moreover, ABB is a world leading provider of automated control solutions that can increase output while reducing energy usage and waste of raw materials. We recently launched our first cloud application for original equipment manufacturers (OEMs). The new ABB Ability™ Asset Performance Monitor collects data on production rates, energy consumption and temperature and provides a continuous overview of an OEM's entire installed base, enabling more informed business decisions. The ABB Ability™ Asset Performance Monitor displays data on a digital dashboard, giving OEMs the necessary insights to initiate machine upgrades and advanced services. State-of-the-art security standards and transfer protocols ensure data integrity.

This is just one of the flexible, scalable and secure solutions that ABB offers to facilitate the shift to smart factories. Digitalizing production processes increases system reliability and throughput, reduces raw material and energy use and improves product quality. For instance, the virtual commissioning of drives and programmable logic controllers (PLCs) can cut project costs significantly while making more efficient use of engineering personnel.

To power the smart factories of the future, ABB offers a wide range of solutions for secure and efficient energy distribution. For example, our cloud platform can connect all of the electrical devices in a facility to the industrial internet, enabling precise information and control functions. Our compact, intelligent circuit breakers deploy integrated connectivity to link smartphones, tablets and PCs with data analysis tools in the ABB Ability™ suite in real time.

ABB believes the digital transformation of global industry – with AI at the center – will rise to the challenge of providing the clean and plentiful food, water, energy and mobility the future demands.

Guido Jouret – Chief Digital Officer

The ABB Ability™ Digital Powertrain solution also leverages digitalization to improve factory operations. This solution consolidates sensor and drive data with cloud-based analysis of all components in an industrial system within a single unit – covering everything from frequency converters and motors to pumps and bearings. The deep data insights it can provide enables customers to make better decisions to ensure safe, reliable and efficient operations.

Robotics and other factory automation solutions increase efficiency and reduce waste and energy consumption. This is particularly true in the fast-evolving field of collaborative robots, or cobots. ABB has been introducing new robotics breakthroughs that enable human-machine collaboration, allowing robots to share working spaces with people to achieve optimal efficiency.

The new robotics manufacturing and research facility we are building in Kangqiao, near Shanghai, China will be a perfect example of what the digital factories of the future will be like. Production in this complete digital manufacturing ecosystem will be based on cells of automation rather than on a fixed assembly line, which will allow robots to move from station to station for greater customization and flexibility than in traditional, linear production systems. Automated guided vehicles (AGVs) will deliver parts to the production robots just in time, while the latest collaborative technologies will ensure that humans and robots can work safely side by side, bringing greater flexibility and agility to production processes and combining the advantages of robots with the unique capabilities of people.

ABB's solutions for industry, just like its solutions for cities and infrastructure, leverage the latest digital technologies to deliver unprecedented levels of resource efficiency. Our world is a fragile one, with limited resources. These resources must be used sustainably and in a manner that minimizes the impact of their use on the environment itself. Intelligent technologies offer the key to protecting the earth while enabling continued economic growth. ABB is committed to developing the products, solutions and services required to make a brighter future possible for future generations.

04 Responsible operations

24 Safe operations

26 Climate action

28 Resource efficiency

30 Right materials

32 Responsible sourcing

SAFE OPERATIONS

Working to eliminate workplace incidents worldwide

ABB's license to operate depends on its ability to meet the highest safety standards

The safety of our people and assets is ABB's first priority, embedded in our core values. We remained focused on this priority even while undertaking the transformation of the ABB business model in 2019, using it as an opportunity to enhance the principles of our safety programs.

In 2019, ABB's safety performance showed clear, sustained improvements, fully supporting and mandating the HSE/SA global management system entitled "The ABB Way". Our HSE/SA global management system is a key element of our sustainability governance framework, as it enabled us in 2018 to reduce our more than 300 independently certified HSE/SA management systems down to one standard system for everyone.

Implementing "The ABB Way" clarified and simplified our expectations for performance, while enhancing awareness and knowledge of performance requirements across the organization. Once this single management system was firmly established, we were able to increasingly define and consolidate health, safety, environment, security, sustainability and corporate responsibility performance standards. In 2019, "The ABB Way" received third-party certification (two certificates, for ISO 14001:2015 and ISO 45001:2018), demonstrating we are well on our way to obtaining a single global multisite certification for our management system.

In parallel with this project, we continued to successfully implement further global applications from our new single Management Information System (MIS) for HSE/SA. In 2019, we formed a team of specialists to work with our businesses to enhance the MIS. Together, they further developed ABB's modules for crisis and incident management, trained more than 1,500 people in incident management alone and introduced a governance model for MIS that reinforces the principle of business-led responsibility.

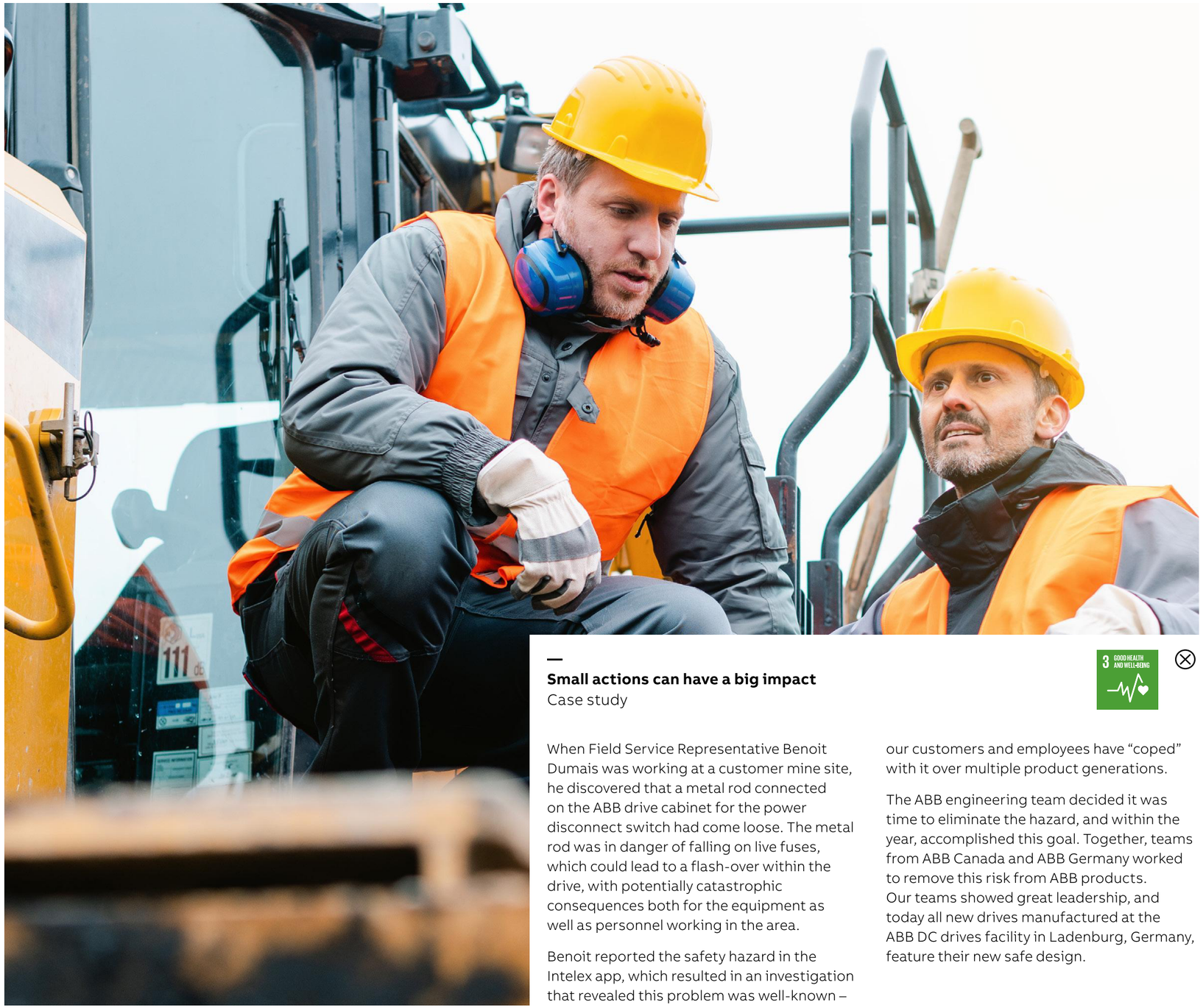
The MIS now reflects ABB's business structure and is fully integrated with ABB systems, providing strong support for our continued drive towards zero safety incidents. This includes a new Report Portal, which all ABB employees can use to analyze trends and indicators to inform decisions on safety. Data reported in the system is used in measuring HSE performance; more than 300,000 hazards were reported via the system, with 97 percent of them resolved.

A further safety highlight in 2019 was the formal launch of ABB's Group Life Saving Rules, which are eight simple actions for everyone across ABB to consistently and fairly apply.

Our target for safety was to reduce the employee total recordable injury frequency rate (TRIFR) to less than 0.7 by the end of 2020. We performed well in 2019, with our employee TRIFR in the workplace ending the year at 0.47, down from 0.58 in 2018. This continued progressive improvement to industry standards represents 134 fewer recordable injuries than the previous year. While we are currently ahead of our 2020 target, we are fully aware that past performance is no guarantee of future results. That is why we are committed to maintaining our strong positive momentum and to working toward achieving a TRIFR of zero.

Regrettably, ABB recorded one employee fatality and one contractor fatality in 2019. Both incidents were comprehensively investigated to understand their root causes and take action to mitigate risks of similar incidents in the future.

ABB's global independent HSE/SA audit and assurance program continued to be a valuable means of enhancing the company's knowledge and skills. In 2019, the second full year of the program, we reviewed more than 180 separate sites within our organization, using the process to assist ABB's businesses in identifying over 1,500 opportunities for improvement. Through our audits, we identified ABB's main challenges – the consistent application of risk assessment and electrical safety principles – and we reinforced our improvement programs in both of those areas.



—

Small actions can have a big impact
Case study

When Field Service Representative Benoit Dumais was working at a customer mine site, he discovered that a metal rod connected on the ABB drive cabinet for the power disconnect switch had come loose. The metal rod was in danger of falling on live fuses, which could lead to a flash-over within the drive, with potentially catastrophic consequences both for the equipment as well as personnel working in the area.

Benoit reported the safety hazard in the Intelex app, which resulted in an investigation that revealed this problem was well-known – our customers and employees have “coped” with it over multiple product generations.

The ABB engineering team decided it was time to eliminate the hazard, and within the year, accomplished this goal. Together, teams from ABB Canada and ABB Germany worked to remove this risk from ABB products. Our teams showed great leadership, and today all new drives manufactured at the ABB DC drives facility in Ladenburg, Germany, feature their new safe design.

With respect to risk assessment, in 2019 we prepared new corporate standards that seek to simplify and standardize our approach and increase its positive impact. In 2020, we will launch new processes that will initially focus on activity-based risk assessments, supported by a standardized module within the MIS.

With respect to electrical safety, although we successfully reduced all recordable electrical incidents and injuries from 75 in 2015 to 13 in 2019, in our eyes even a single electrical incident remains one too many. To better address the challenge of electrical safety, in 2019 we prepared for the introduction of a specific Electrical Competency Authorization Program (ECAP). This program defines four levels of electrical competency and will require local business line managers to authorize employees to perform work defined at each level of competency. The development of ECAP is complete and ABB’s businesses view its implementation as a priority in 2020.

In 2019, we also trained over 130 people to carry out safety audits within our businesses in advance of launching the second phase of our global assurance arrangements in 2020, which involves self-assessments.

While ABB has undergone transformation, our commitment to eliminating all workplace injuries has never changed. With a clear focus and understanding of our safety priorities, we are working to ensure every ABB employee returns home safely at the end of the day.

CLIMATE ACTION

Committed to reducing emissions

ABB strongly supports international and national measures to mitigate climate change

After a concerted, multi-year effort, we are pleased to note that, in 2019, we achieved our climate action goals for 2020.

ABB supports the 2015 Paris Agreement and sees it as the linchpin of all efforts to limit global warming and allay the potentially devastating consequences of climate change. Within our own operations, we are working to reduce GHG emissions from fossil energy and transportation, as well as from the handling of sulfur hexafluoride gas (SF_6).

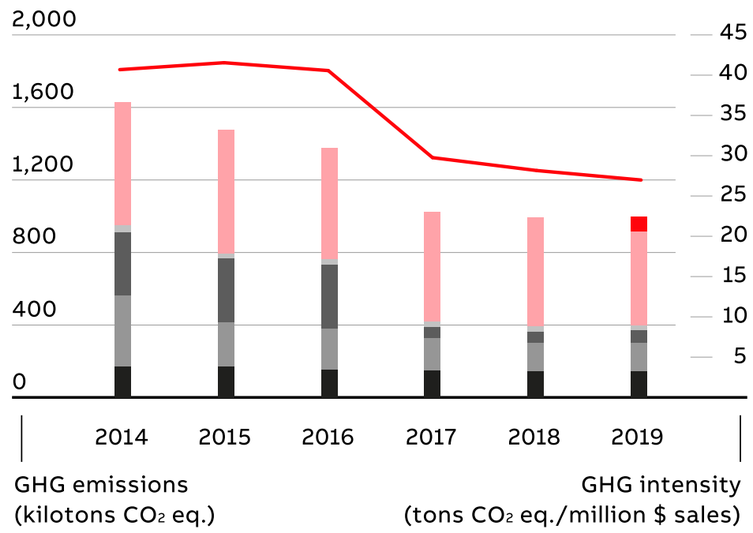
Externally, ABB actively collaborates with businesses, governments and non-governmental and civil society organizations around the world to raise awareness of society's need to transition to low- or zero-carbon energy systems. We participate in the Sustainable Energy for All initiative, the World Economic Forum's Alliance of CEO Climate Leaders and the Science Based Targets (SBT) initiative, among many others. For the SBT initiative, ABB has committed to establishing a science-based GHG emissions target for our post-2020 sustainability objectives and is currently working to calculate what this target should be. As a company with around 9,000 technologists and plans to invest some $23 billion in innovation between the date of the Paris Agreement and 2030, our advanced technologies represent ABB's main contribution to the global effort to mitigate climate change. Nearly 60 percent of ABB's global revenues are derived from technologies that directly address the causes of climate change by facilitating increased energy efficiency, the integration of renewables into the energy mix and the conservation of natural resources. Importantly, these technologies can enable circular economy principles and practices.

ABB's current target for climate action is to reduce our GHG emissions by 40 percent by the end of 2020 from a 2013 baseline. In 2019, ABB's total GHG emissions (Scope 1 and 2) amounted to 998 kilotons, representing an 8.7 percent reduction from 2018 and a 41 percent reduction from 2013.[1] Our progress to date is attributable in part to an improved methodology for monitoring emissions from our vehicle fleet. On its own, this new methodology accounted for 19 percentage points of the GHG emissions reduction we reported in 2017.

During 2019, we expanded our assessment of Scope 3 emissions to more completely understand the climate impact of ABB's supply chain. The results obtained indicate that our upstream Scope 3 emissions are roughly six times as large as our Scope 1 and Scope 2 emissions. Thanks to this assessment, we will be able to have more meaningful conversations with our suppliers on the topic of climate action.

1 Total GHG emissions from all ABB sites was 998 kilotons; total GHG emissions for all ABB sites except for the 39 new sites added in 2019, for which no 2013 baseline data exists, was 915 kilotons. The latter number is used in the evaluation of progress.

Total GHG emissions (Scope 1 and 2) and GHG intensity



In several European countries, all of our electricity is supplied from renewable sources. In 2019, 348 GWh, or 21 percent of all electricity used by ABB, was purchased as certified “green” electricity, an increase of 6 percentage points over 2018.

Importantly, the measures we took last year to strengthen the ability of our businesses to track their resource efficiency are starting to pay dividends. In 2019, for example, our Motion business started on its journey toward using 100 percent green electricity; Motion has already assured that 38 percent of its electricity use is green. This effort alone has cut ABB’s GHG emissions by 63 kilotons and contributed to reducing Motion’s GHG emissions by 49 percent from our 2013 baseline. The results delivered by Motion’s program enabled us to hit our 2020 emissions reduction target. We continue to install on-site photovoltaic power plants at our facilities, which resulted in ABB’s production of solar power for its own use increasing by 47 percent in 2019.

At present, more than 250 energy efficiency projects underway at ABB sites around the world are projected to deliver more than 39 GWh of annual savings.

At ABB’s Busch-Jaeger site in Lüdenscheid, Germany, we are proving that the energy transition can be sustainably achieved via digital energy management. ABB’s first carbon-neutral and energy-self-sufficient production site in the world, the Busch-Jaeger facility features a solar power plant that will deliver around 1100 MWh of climate-neutral solar power a year. Its installed ABB technology, which includes ABB’s scalable energy management system OPTIMAX® at its core, will generate enough power to cover 100 percent of the factory’s power requirements on sunny days and reduce the site’s CO_2 emissions by 630 tons per year. For context, the average citizen of an industrialized nation generates about 10 tons of CO_2 per year.

Also in 2019, ABB Real Estate’s energy savings program reported a total of US$8.7 million annual savings from 260 completed, ongoing and planned energy-saving projects in ABB buildings, cutting our greenhouse gas emissions by 23 kilotons per year. In addition, ABB Real Estate launched the global initiative “EV charging infrastructure at ABB sites” in cooperation with the Global Solutions Team for e-Mobility. A goal for 2020 is to increase the number of ABB sites equipped with EV-charging infrastructure from 17 to 35 percent.



All-electric delivery fleet
Case study

In 2019, ABB initiated a project to deploy an all-electric ABB delivery fleet in Switzerland by the end of 2022. The first two trucks will be garaged at ABB’s power electronics factory in Turgi, a municipality in northern Switzerland.

After a test phase of several months, ABB’s current fleet of 11 diesel vehicles will be replaced by a single-operator fleet of e-trucks over the next three years. This will make ABB the first company in Switzerland to implement fully electric truck deliveries. As no additional operating costs will be incurred by the switch, the change is projected to reduce ABB’s CO_2 emissions by some 400 tons per year.

During the testing period, the e-trucks will benefit from the established fixed routes between ABB facilities. The longest scheduled distance for delivery within Switzerland is 235 km – well within the 300 km range of the EF26 three-axle vehicles selected for the trial. A range of up to 500 km could be achieved by fitting the vehicles with the largest available battery pack. Energy supplied to the truck’s charging stations at Turgi will be sustainably sourced, thanks to solar panels and inverters already in place at the factory.

RESOURCE EFFICIENCY

Managing the environmental impact of our operations

ABB sites around the world are working to conserve resources

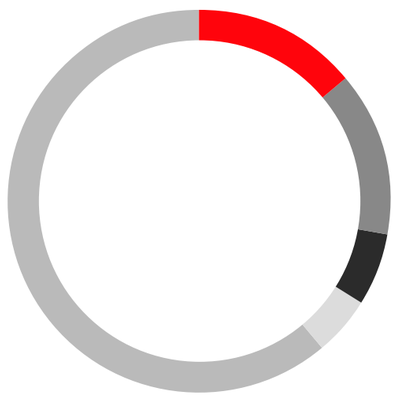
Over the past decade, we have successfully implemented a wide range of waste reduction and recycling initiatives to reduce ABB's environmental impact and bring cost savings to our business.

In the area of resource efficiency, we remain on track to meet the two targets we established for 2020. The first target is to reduce absolute water withdrawals by 25 percent from 2013 to 2020 at facilities located in watersheds with medium to extremely high baseline water stress. While the majority of our manufacturing processes are not water-intensive, we are highly motivated to minimize the water impacts of ABB's operations. We use the World Resources Institute's Aqueduct global water risk tool to assess our facilities according to the level of baseline water stress of the local watershed. Of the 573 ABB locations mapped in 2019, 74 face an extremely high level of water stress, 96 face a high level and 76 face a medium-to-high level.

For all ABB sites in stressed watersheds, total water withdrawals in 2019 amounted to 2,711 kilotons, representing a 2.4 percent[2] reduction from 2018. The overall reduction in water from water stressed sites (excluding GEIS sites acquired in 2018) since 2013 is 18.5 percent. While this overall result is good, our analysis revealed that ABB's water withdrawals in extremely stressed watersheds more than doubled this year; two of the highly stressed watersheds where our operations are water-intensive were reclassified as facing an extremely high level of water stress. In 2019, ABB's total water use went down by 4.9 percent, to 8,401 kilotons.[3] Both of these reductions were mainly due to structural changes at several ABB sites in Europe.

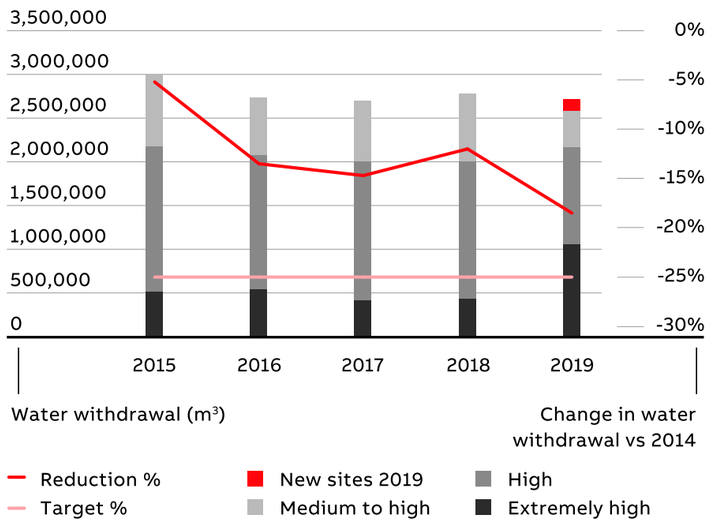
Closed-loop processes and other projects to recycle or reuse water comprise our primary water-saving practices; in 2019, such processes and projects saved 74 percent of all industrial water use and 45 percent of all cooling water use at ABB sites worldwide. There are more than 20 projects running to improve water management across ABB, with expected annual savings of 97 kilotons, or 1.2 percent of all the water we use. At our site in Auburn, Maine, United States, a rapid-impact project to better control the flow of water during a manufacturing process

Distribution of water withdrawal in 2019 (2013)



- Extremely high 14% (5%)
- High 14% (20%)
- Medium to high 6% (8%)
- Low to medium 5% (21%)
- Low 61% (43%)

Water withdrawal in water-stressed areas 2015–19



For details see indicator 303-1 on page 45.

2 Total water withdrawals in stressed watersheds, for all ABB sites was 2,711 kilotons; total water withdrawals for all ABB sites except for the 39 GEIS sites acquired in 2018, for which no water data exists prior to 2019, was 2,575 kilotons. The latter number is used for measuring target progress against the 2013 baseline.

3 Excluding the 39 new sites we added in 2019, ABB's total water use went down by 9.5 percent.

delivered water savings of 8,000 tons of water and annual cost savings of $300,000.

Our second resource-efficiency target is to reduce the share of waste ABB sends to final disposal – both hazardous and non-hazardous – by 20 percent from 2013 to 2020. Using the criteria established when our measures and targets were developed, we met this target one year ahead of schedule, having achieved a 21 percent reduction in the proportion of all waste we sent to final disposal in 2019, compared to the 2013 baseline.[4] In-house recycling and reuse, mainly of packaging materials and thermoplastics, reduced the amount of waste by 2,100 tons.

To increase transparency and drive improvement, in 2019 we started asking our sites to be more specific about how their general waste was disposed. This approach revealed that more than 40 percent of the general waste ABB sent for disposal was subject to incineration with energy recovery (the conversion of non-recyclable waste materials into usable heat, electricity or fuel through a variety of processes). We also found a difference in how ABB sites around the world have been reporting on waste sent for incineration with energy recovery: In 2018, around 75 percent was reported as disposed and some 25 percent as recycled. We believe this practice has been the same since we started measuring this statistic in 2013. Using the new, more precise method of reporting of waste disposed as the basis for the KPI would give a 13.5 percent reduction, as shown by the solid line in the "Waste and recycling" graph.

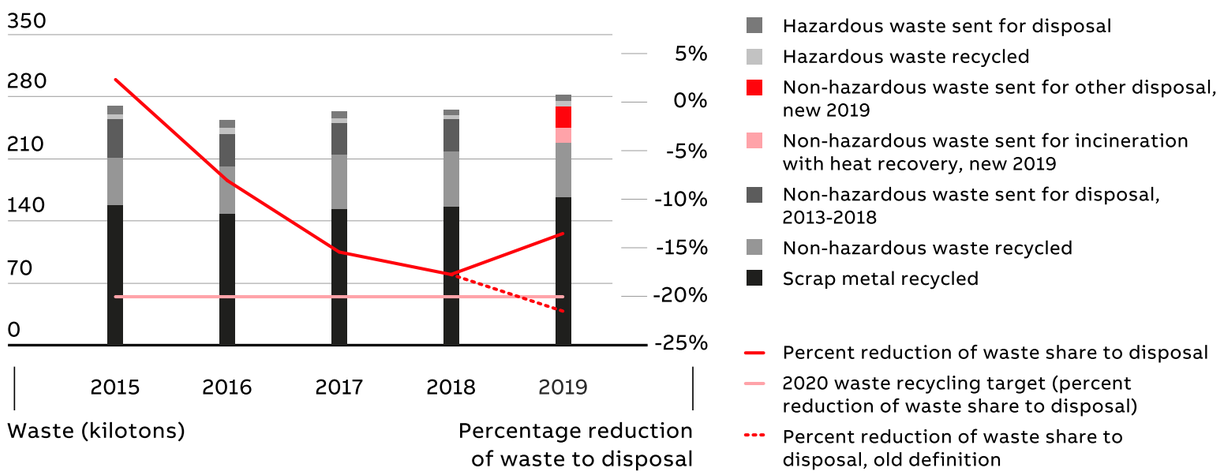
More than one hundred recycling and waste reduction projects were underway at ABB in 2019, bringing huge benefits to our operations.

For example, ABB Composites in Sweden saved 76 tons of silicone by reducing the scrap rate, which cut our costs by $550,000 per year. And our site in Schaffhausen, Switzerland, started recycling plastic granulate in their molding process, reducing material use by 10 tons and saving $80,000 per year. Steel, copper, aluminum, oil and plastics make up the majority of materials used in our products. Most of these materials are reclaimable at the end of a product's life, and we deliberately design ABB products to be recycled; almost all of our products come with recycling instructions and can be dismantled easily.

In addition, our facilities across the world take it upon themselves to innovate and improve manufacturing processes and recycling to address waste reduction. All ABB sites are required to analyze their waste management practices and work with their waste management vendors to optimize recycling options. In 2019, our High Voltage Direct Current (HVDC) power transmission business, while reviewing its environmental policies, boosted this waste management effort as it began pursuing a "Lean HVDC" concept that will reduce the use of materials and waste in the design of its converter stations. Across ABB, we have also taken steps to implement the principles of the circular economy to reduce waste. Using this approach, the Motion business in 2019 entered a new collaboration with Stena Recycling that will recycle end-of-life motors in a way that enables better separation of metals. By recycling aluminum, copper and iron, we save up to 95 percent of the energy it takes to produce those metals conventionally. These recycled metals will also be sold locally if possible, to further reduce carbon emissions.

The application of ABB's digital sensors to existing electric motors can further support the circular economy by enabling predictive maintenance that keeps them in use, optimizing energy efficiency and fostering an understanding of the real cost of ownership. To support the achievement of our waste reduction target in 2019, we continued to share best practices across ABB and provided further guidance on how to reduce waste generation and increase recycling rates.

Waste and recycling



4 This includes all ABB sites except for the 39 new sites we added in 2019, for which no 2013 baseline data exists.

RIGHT MATERIALS

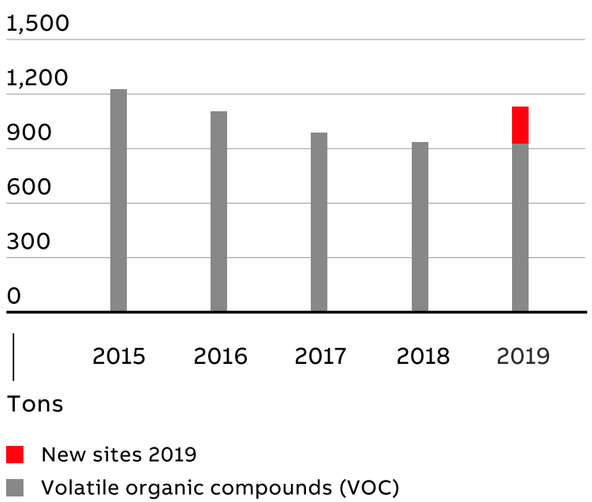
Removing hazardous substances from our operations

Wherever possible, ABB is eliminating unsafe materials from its products, processes and supply chain

The ABB List of Prohibited and Restricted Substances was developed as a clear guide to enable us to reduce and eliminate the use of hazardous materials. It applies to all our operations, including sourcing of goods, product development, production processes, products, packaging materials, service activities and construction sites, and is updated regularly in keeping with international regulations.

ABB's Global Terms and Conditions for suppliers and our ABB Supplier Code of Conduct address this issue in the context of regulatory compliance.

Emissions of volatile organic compounds (VOC)



To assist suppliers in meeting their obligations, we have developed a companion guide to the list. These obligations include partnering with us to identify restricted substances and conflict minerals and prevent them from entering ABB's supply chain.

ABB is strongly focused on avoiding the use of conflict minerals, as outlined in the ABB Policy on Conflict Minerals. We have taken action to support responsible mineral sourcing, establishing our Conflict Minerals Program in line with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. Under the Dodd-Frank Act, we annually report to the United States Securities and Exchange Commission on our use of conflict minerals. In May 2019, we provided our sixth report, which identifies products and components likely to contain tin, tantalum, tungsten and gold (also known as "3TG") and links them to their relevant suppliers. To date, 302 smelters and refiners of 3TG used by our extended supply chain have been identified. In addition, we continue to engage in the Responsible Minerals Initiative.

Our 2020 target for hazardous substances is to reduce ABB's emissions of VOCs by 25 percent from 2013 levels. This target further sharpens our strong focus on reducing the use of substances that are harmful to human health and the environment.

Since 2013, we have reduced ABB's VOC emissions by 24 percent,[5] and we are committed to making even greater reductions in the years ahead. The result was achieved through such measures as utilizing low-VOC paints and varnishes and installing active carbon filters and other equipment at our production facilities.

From 2015, we have made substantial progress in our efforts to reduce ABB's use of hazardous materials. In that time, we have reduced our use of chlorinated paraffins by 100 percent, dimethyl phthalate by 100 percent, asbestos-containing materials in our buildings by 32 percent, boric acid by 90 percent and aluminosilicates by 41 percent. Among the major initiatives underlying these achievements was a screening program developed by ABB's Electrification business with its suppliers. Its task is to monitor and eliminate hazardous substances from components supplied to ABB. In 2019, this program gathered data on more than 125,000 product components and worked with more than 5,000 suppliers to satisfy our mutual obligations under the European Union's REACH and RoHS regulations.

In 2019, our cross-functional material compliance team expanded the webinar training program launched in 2018. The program informs employees about our obligations under REACH, RoHS and the ABB List of Prohibited and Restricted Substances.

5 This includes all ABB sites, except for the 39 new sites added in 2019, for which no 2013 baseline data exists.

In 2019, we established a dedicated, Group-level program for product material compliance management, in addition to the cross-functional material compliance team and material compliance network. Our objective is to reinforce ABB's standardized and systematic approach to the increasingly complex material compliance regulations we face in our global markets. To this end, we promote and introduce business-wide best practices to help accelerate full product compliance with these regulations.

In 2019, 55 projects were underway to reduce and phase out hazardous substances and VOC emissions. Due to the variety and specialized nature of ABB's products and processes, hazardous substance reduction is typically addressed on a site-by-site basis.

In Xiamen, China, we installed a filtration device for our site's silicone injection process and reduced its VOC emissions by 720 kg, or 96 percent. In Athens, Tennessee, United States, we improved our manufacturing site's wastewater treatment process to clean the hazardous wastewater sludge resulting from alkaline zinc electroplating with a trivalent chromium conversion coating. Our annual savings from cleaning this hazardous wastewater are $120,000. And in Nogales, Mexico, we added an inhibitor to the varnish of our site's dip process; this helped save 25 tons of solidified varnish – thus eliminating the need to dispose of cured resin, which is a hazardous waste. This measure will deliver $70,000 in annual management cost savings for materials and hazardous waste.



RESPONSIBLE SOURCING

Ensuring sustainable supply chains

ABB's procurement processes help minimize social and environmental impacts

ABB is committed to improving the sustainability of our supply base. The ABB Supplier Code of Conduct (SCoC), which is published in 16 languages, lays out the standards that we require of our existing and potential business partners. The SCoC forms part of our suppliers' contractual obligations, highlighting expectations with regard to areas such as human rights, fair labor conditions, business ethics, health & safety and environment & material compliance, as part of ABB's general terms and conditions.

To further enhance responsible sourcing, we continue to deploy the ABB Supplier Sustainability Development Program (SSDP), which proactively screens and prioritizes (using a combination of geographical, category and economic factors) sustainability risks posed by suppliers, evaluates their adherence to the SCoC and engages them when necessary. The SSDP includes supplier trainings and onsite assessments on 42 parameters related to general management, labor rights, social benefits, health and safety and environment.

For every area of non-compliance identified by our supplier assessments, we launch a supplier support action to systematically address each issue in turn. Our support actions include capacity building, customized participatory workshops, sharing best practices, jointly implemented collaborative programs and the transfer of knowledge and expertise. We have found this proactive approach results in better supplier responses and improved performance standards.

Every year, ABB trains, coaches and assesses hundreds of suppliers on their sustainability practices. This is a continuous process, in which old risks are closed and new ones are identified each year. The time required to close a sustainability risk can range from one month to over a year, depending on its complexity. Since 2015, we have identified an average of 723 new risks each year. Due to the ongoing identification of new risks and the time required to mitigate them, our closure rate for identified risks can never be 100 percent.

Our 2020 target is to close 65 percent or more of identified risks from supplier assessments. In 2019, ABB continued to exceed this target, closing 78 percent of identified risks in 2019, up from 76 percent in 2018. We achieved this strong result thanks to our focused program management, continued engagement with our suppliers, onsite support, pre-assessment training and focused workshops for our suppliers.

While ABB believes in working with suppliers to improve their performance, there are consequences for suppliers who are unwilling to align their performance standards with our requirements. During 2019, ABB terminated business with three suppliers due to unsatisfactory progress on their respective corrective action plans.

In 2019, we analyzed supplier assessments conducted from 2014 to 2018 and found the most frequent major non-conformance issues observed were unsafe working practices, lack of environmental management system compliance, no health & safety risk analysis and no environmental risk analysis. To address these shortcomings, we continued to raise awareness through initiatives such as our specially designed workshops on health, safety, environmental and labor requirements of the SSDP.

Among other key initiatives in 2019, we designed and implemented multiple workshops in China on various sustainability compliance concerns that were identified during supplier assessment.

Top ten sustainability non-conformance issues in 2019[6]

General management	• Procedures not in place to evaluate and select sub-suppliers and sub-contractors based on their ability to meet ABB sustainability requirements
Labor and human rights	• Excessive working hours and overtime
Health and safety	• Unsafe/unhealthy working conditions • Inadequate first aid and firefighting equipment • Lack of health and safety risk assessment • Insufficient emergency preparedness, e.g. fire, evacuation, first aid • Ineffective programs for management and reduction of hazards in high risk areas • Inadequate communication of health & safety hazards
Environment	• Non-compliance with relevant environmental regulations/parameters • Improper waste management processes

6 Includes critical, serious and minor non-conformances.

More such workshops will be organized in other countries in 2020. We also continued our collaboration with suppliers to find solutions for some of the chronic challenges they face regarding working conditions. On the technical side, we supported suppliers with operational data analysis and visits to their factories to identify potential areas for intervention.

To address sustainability in our procurement activities, ABB assesses hundreds of suppliers on their sustainability practices and provides training on improvement actions. This engagement helps ABB to strengthen our supply base and gives our customers confidence in the sustainability of their extended supply chain.

Timo Ihamuotila – Chief Financial Officer

Risk is defined as the danger posed to ABB by the non-compliant operations of the supplier. Risk level is assigned as extremely high, high, medium or low, depending upon the severity of instances of supplier non-compliance identified during onsite audits. To reflect the degree of severity of the supplier's non-compliance, we multiply the total number of instances of extremely high risk by a factor of 5, the total number of instances of high risk by a factor of 3, the total number of instances of medium risk by a factor of 1, and the total number of instances of low risk by a factor of 0. The total risk identified is the sum of the weighted risks assigned to each supplier who has completed an on-site assessment and has outstanding corrective actions. Satisfactory completion of corrective actions by a supplier results in an increase in risks mitigated.



Implementing sustainable process improvements
Case study

ABB has been working with an important supplier in China to initiate a cross-functional project to reduce excess overtime. Together, we analyzed their full production cycle – from order receipt to dispatch – to identify major areas of concern. Among other issues, we noted a workforce skills gap, the unbalanced allocation of resources, machine breakdowns and the taking of unexpected sick leave.

This detailed analysis enabled the supplier to take targeted action to improve productivity and establish key performance indicators (KPIs). ABB teams worked together with the supplier to track these KPIs and realign actions where needed. In addition, process improvements were implemented for both the supplier's machinery and their production lines.

This collaborative effort brought about process changes, increased focus on waste reduction and put in place very strict control procedures. As a result, the supplier was able to reduce excess overtime by more than 20 percent and decreased in-process inventory on a particular production line by 20 percent. Productivity of the line was improved by 23 percent.

05
Responsible relationships

35 Integrity

37 Human rights

39 Our people

41 Community engagement

INTEGRITY

Emphasizing responsibility and ethics in our business

ABB does not tolerate violations of the law or the ABB Code of Conduct

Everyone who works for or with ABB must meet our integrity standards. These standards, which are made clear in our ABB Code of Conduct and our ABB Supplier Code of Conduct, are backstopped by a robust set of internal policies and instructions.

These include the five value pairs that serve as the backbone of our business, established to help create long-term value for all ABB stakeholders. The “Safety & Integrity” value pair is the foundation of our organization. It affirms that ABB does not conduct business in a way that puts people at risk or involves unethical practices.

In 2019, we continued to implement “Integrity Starts with You,” a training course on the ABB Code of Conduct. Launched during Q1 2018, the course achieved a completion rate of nearly 98 percent. In addition to our integrity e-learning curriculum, during Q2 2018 we began training our employees on global data protection; at the end of 2019, this course had achieved a completion rate of nearly 96 percent. Our 2018/19 integrity training campaign covered employees with company email accounts only. Both courses were rolled out to just over 103,000 employees, and we are encouraged by their high completion rates.



ABB recognized for leadership in ethical business practices
Case study

For the seventh consecutive year, in 2019 ABB was recognized for its ethical business practices by the research-based Ethisphere® Institute, a leading international think-tank dedicated to the creation, advancement and sharing of best practices in business ethics, corporate social responsibility, anti-corruption and sustainability. Ethisphere provides third-party verifications of corporate compliance programs and ethical cultures through their Compliance Leader Verification™ and Anti-Bribery Management System Verification™. ABB earned both of these certificates in 2019.

Due to long-term absences, organizational changes and timing issues, among other reasons, it is not possible to achieve a completion rate of 100 percent.

Integrity training has always been a key metric for us, as we believe raising awareness of integrity risks is a vital preventative measure. In addition to our efforts to prevent ethical lapses, our detection and resolution mechanisms continue to be central to our integrity program.

Integrity is the cornerstone and backbone of how ABB does business. This will continue to be the case and it will be even more essential as we transform and simplify our company's operations and governance model for the future.

Maria Varsellona – General Counsel

ABB's integrity program continues to be recognized externally for its excellence. In 2019, we retained our Ethisphere Compliance Leader Verification seal of recognition for the seventh consecutive year, as well as the Ethisphere Anti-Bribery Management Systems Verification seal of recognition.

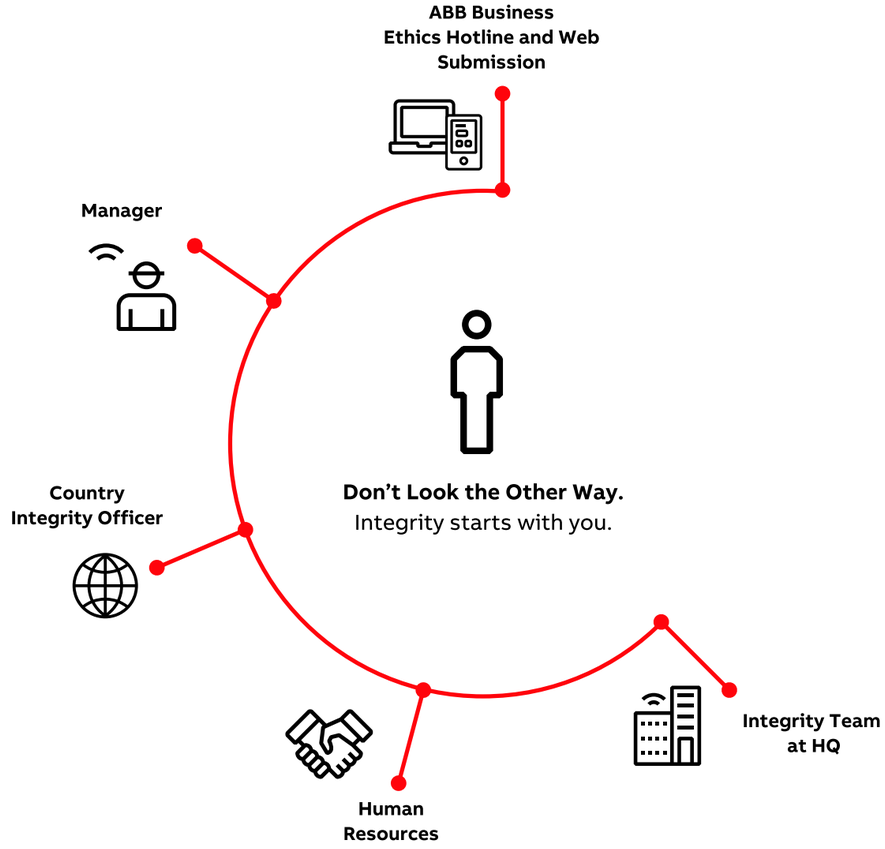
In 2019, we created another way for our people to report integrity concerns, adding a new web portal to the many other reporting channels we make available. The new portal, ABB EthicsPoint, is available in 10 of the major languages utilized within ABB and was designed to provide an alternative for those who would rather use the internet than our business ethics telephone hotline, which is run by a third party and available at all hours in over 180 languages. All reported concerns are treated confidentially, reviewed and appropriately investigated; exposures are mitigated, and disciplinary actions are taken as applicable and appropriate, including termination of employment. ABB enforces a strict, zero-tolerance policy for violations of the law or the ABB Code of Conduct.

In our requirements for a healthy workplace, harassment – be it face-to-face, written, electronic or verbal – is not tolerated. Our goal is to make all employees feel welcome and comfortable at ABB; to achieve this, we are constantly working to ensure that our employees, their coworkers and those who do business with ABB are not harassed.

In 2019, we eliminated our legacy matrix structure and provided our businesses with full ownership of their operations, subject to best practices in governance.

The simplification of ABB's business model inspired us to consider how we can further develop and adapt our existing integrity program, which is fully supported by senior management and the Board of Directors. As befits a leading technology company, ABB is committed to deploying data analytics and other advanced tools to help us more precisely target our integrity initiatives. Such measures will help ABB's integrity program to evolve in lockstep with our businesses as they grow and change.

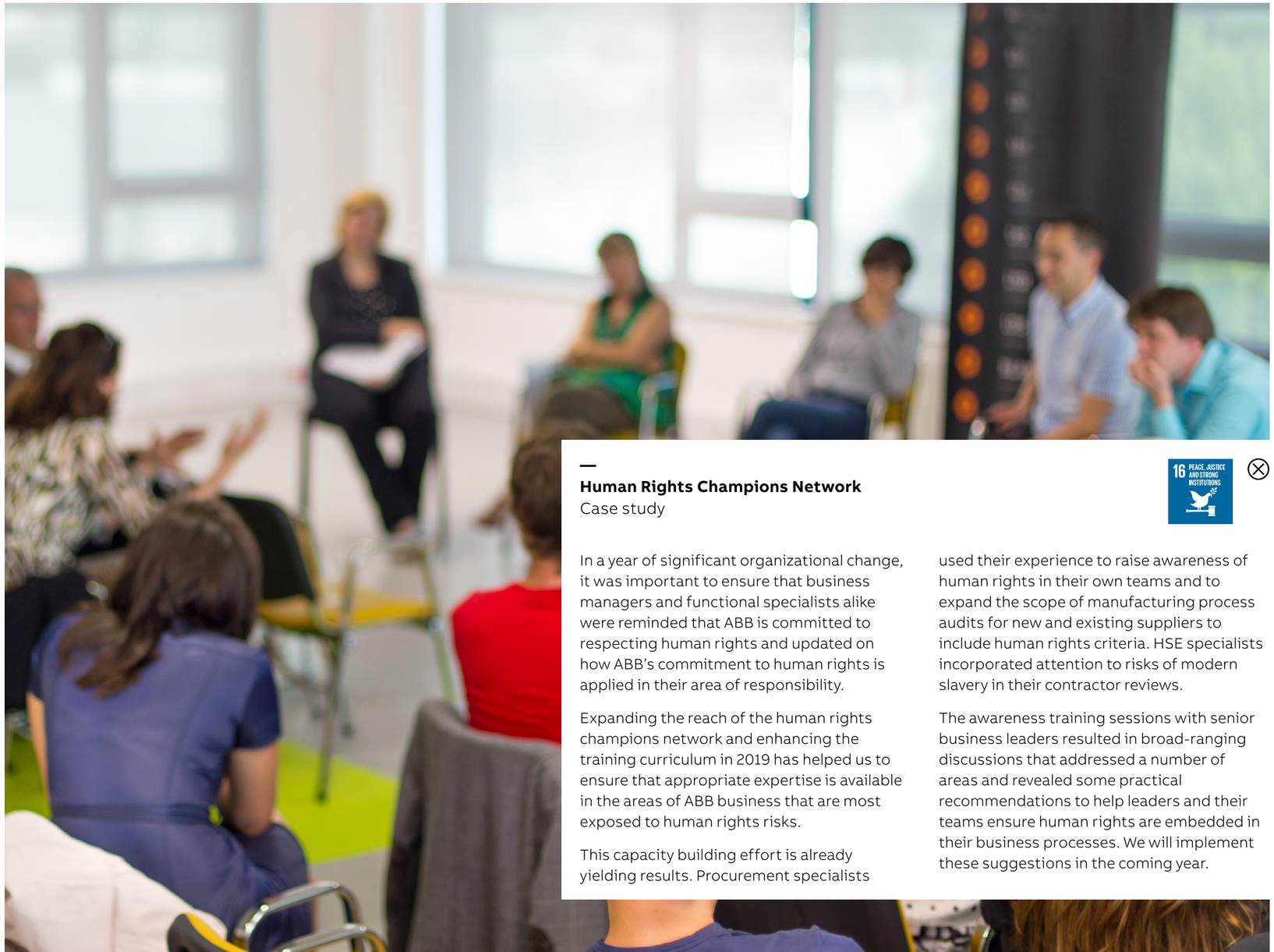
In 2019, the company did not face any significant fines or sanctions for non-compliance with laws and regulations. For further information, please refer to the Commitments and Contingencies note in the Notes to the Consolidated Financial Statements contained in the ABB Group Annual Report.



HUMAN RIGHTS

Respecting human rights is integral to our business

As a prerequisite for its license to operate, ABB is committed to respecting human rights along the value chain



We expect everybody who works for ABB, either directly as an employee or indirectly in our supply chain, to respect each individual's human rights.

ABB fully acknowledges its responsibility to respect human rights as expressed in the International Bill of Human Rights and is committed to implementing the United Nations Guiding Principles on Business and Human Rights (UNGP) throughout its operations. The ABB Supplier Code of Conduct, the ABB Policy Combating Trafficking in Persons and the ABB Human Rights policy and statement make clear that there is no place in ABB or within the operations of our contractors and suppliers for modern slavery or human trafficking.

In maintaining our social license to operate, it is vital for us to engage with stakeholders on labor and human rights issues. ABB interacts with a wide variety of stakeholders to understand their expectations and improve our performance. Major human rights issues of interest to our external stakeholders include conflict minerals, child labor, human trafficking and modern slavery, and diversity and inclusion.

—

Human Rights Champions Network
Case study

In a year of significant organizational change, it was important to ensure that business managers and functional specialists alike were reminded that ABB is committed to respecting human rights and updated on how ABB's commitment to human rights is applied in their area of responsibility.

Expanding the reach of the human rights champions network and enhancing the training curriculum in 2019 has helped us to ensure that appropriate expertise is available in the areas of ABB business that are most exposed to human rights risks.

This capacity building effort is already yielding results. Procurement specialists used their experience to raise awareness of human rights in their own teams and to expand the scope of manufacturing process audits for new and existing suppliers to include human rights criteria. HSE specialists incorporated attention to risks of modern slavery in their contractor reviews.

The awareness training sessions with senior business leaders resulted in broad-ranging discussions that addressed a number of areas and revealed some practical recommendations to help leaders and their teams ensure human rights are embedded in their business processes. We will implement these suggestions in the coming year.

Our goal is for human rights to be well understood and managed in all ABB operations along the value chain and integrated into ABB's daily business by the end of 2020. To achieve this goal, we have undertaken initiatives focused on capacity building, risk identification, performance improvement in our supplier base and limiting exposure to conflict minerals.

Capacity building underpins our ability to identify risks and improve performance. So we set a target to run at least two training campaigns per year, focused on employees whose roles specifically expose them to human rights risks. We met this target in 2019 with a pair of initiatives that focused on developing our human rights champions network and providing human rights awareness training for senior managers.

The human rights champions network aims to ensure we have qualified employees who can advise our businesses on how to identify, mitigate and avoid human rights risks. In 2019, a total of 83 champions representing all of ABB's global business lines completed a detailed curriculum. Additional champions will be selected and trained in 2020.

Our second training campaign of 2019 was designed to help ABB's senior managers more readily identify human rights risks at an early stage of the business process and consult with qualified advisors, when needed. During the year, the program trained the management teams of 13 out of 17 global business lines. It will train ABB's remaining management teams in early 2020.

In 2019, we also developed further training materials specific to functions with more exposure to human rights risks: procurement, sales & marketing and operations.

Human rights champions will be trained to deliver these sessions, and all business lines will be required to roll out this training in 2020.

This training complements our continuing work to map internal processes related to risk identification and risk assessment. At ABB, human rights specialists carry out due diligence to help us understand risks and avoid causing or contributing to negative human rights impacts. This due diligence – a cornerstone of the UNGPs – ranges from desktop research to site visits and the commissioning of third-party reports, as needed. In conducting this work, we emphasize internal risk assessment processes and research into potentially high risk projects or operations in high risk countries.

Human rights criteria are already included in the risk review process for screening major ABB projects, in prequalification and assessment work with ABB suppliers and in our process for examining potential ABB mergers and acquisitions. However, the training sessions for our human rights champions network gave us the opportunity to better understand how effectively human rights considerations are embedded in our business decisions. When ABB's new organizational structure is fully implemented in 2020, we will use the lessons learned to guide improvements that will make our processes even more robust and responsive to increasing reporting and legislative requirements.

Our new organizational structure will not affect the multiple reporting channels we already make available to employees and external stakeholders for reporting suspected violations of the ABB Code of Conduct or applicable laws. Channels include a web portal and telephone hotlines in multiple languages. All reports of suspected violations are reviewed and appropriately investigated.

In 2019, these mechanisms were used to report 19 substantiated cases of harassment and eight of discrimination, resulting in varying levels of corrective action, including five terminations of employment.

In ABB's 2018 Sustainability Report, we reported an instance of modern slavery at an electronics supplier in Malaysia. ABB revisited this facility twice during 2019 to ensure that the appropriate corrective actions had been completed and are being maintained.

The main initiative to promote respect for human rights in our supplier base is the ABB Supplier Sustainability Development Program (SSDP). The program focuses on improving the sustainability performance of high-risk suppliers in 17 countries. During 2019, an on-site SSDP assessment at a key supplier in Malaysia identified a case of modern slavery involving retention of migrant workers' passports. ABB has obtained the supplier's commitment to performing corrective actions and will monitor the supplier to ensure compliance.

We also continue our work to understand and limit ABB's exposure to conflict minerals. For the fifth consecutive year, ABB's work on responsible sourcing of minerals was recognized by an independent benchmark study from the Responsible Sourcing Network.

OUR PEOPLE

ABB believes in its people and invests in them

We value our employees and support them through many initiatives

We believe that our people are our most important asset. That is why ABB invests in personal and professional development. We seek to provide the best available tools, programs and opportunities. By doing so, we empower them to build rewarding careers, enjoy their personal lives and strengthen their health, resilience and sense of well-being.

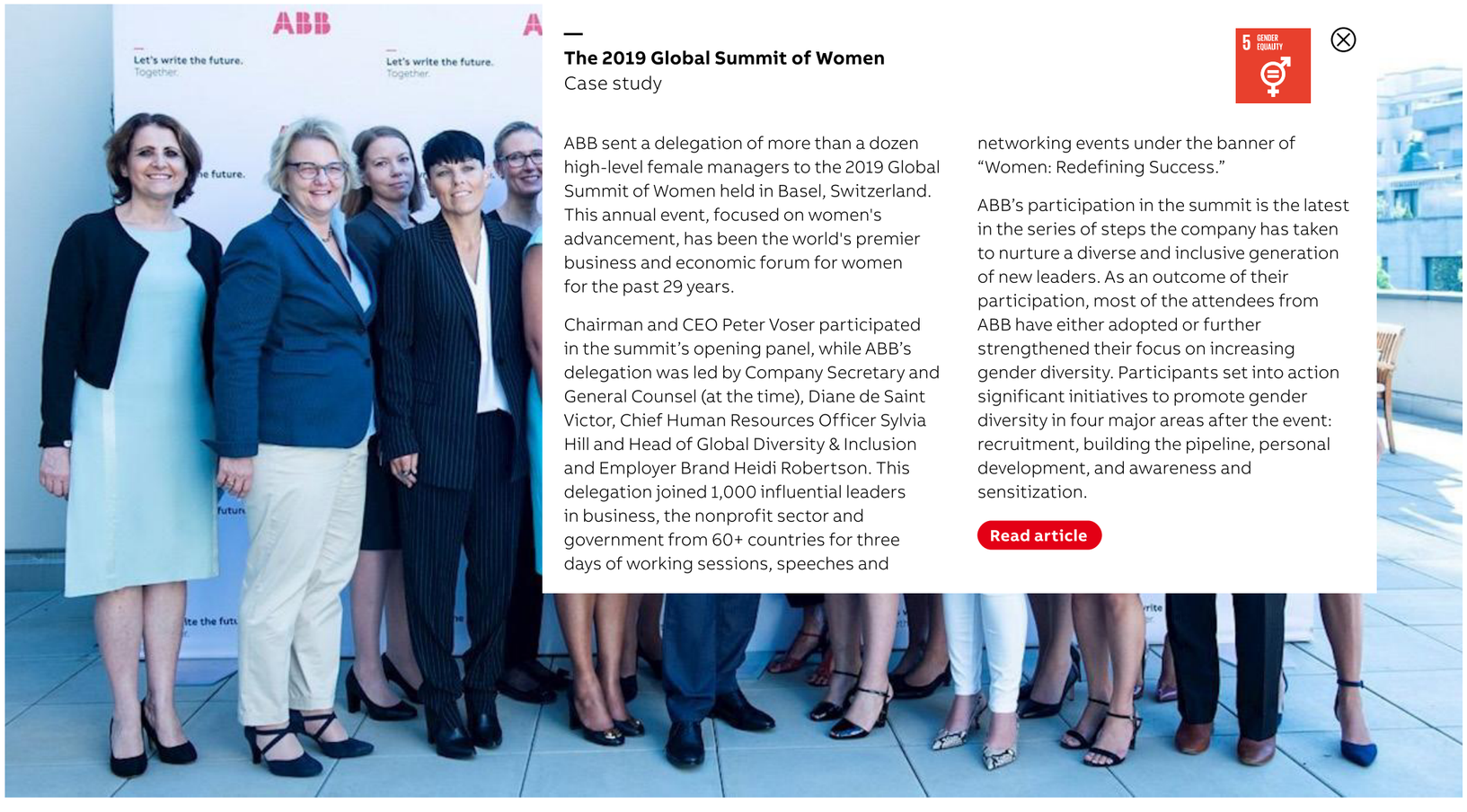
For 2020, our targets are to increase the number of women in senior management positions (Hay grades 1-7) by 30 percent from 2017 and to increase the proportion of employees covered by ABB's well-being program to 70 percent. Gender diversity and the health, well-being and resilience of our workforce are strategic priorities for ABB. They carry significant implications for our overall performance.

We made modest progress toward these targets over the past year. At present, 11.7 percent of the senior managers at ABB are women, up from 10.5 percent in 2018. We recognize that we can do more to raise this proportion going forward. Additionally, at the end of 2019, 77 percent of our employees were covered by ABB's well-being program, up from 67 percent in 2018. We achieved these results through a combination of continuing and new initiatives.

People

To promote gender balance in our workforce, ABB relies on the gender diversity framework implemented in 2017. Actions called for by this framework include shortlisting women during recruitment drives, increased focus on the Diversity Dashboard findings at the ABB Executive Committee meetings, creating opportunities for women to be mentored by senior leaders, conducting internal and external awareness campaigns and adopting flexible working practices.

While we made solid progress with new appointments, attrition diminished the total impact of the new hires. We also sought to identify 100 female candidates for senior leadership positions. Almost every business identified five or more women for this purpose.



—

The 2019 Global Summit of Women

Case study

ABB sent a delegation of more than a dozen high-level female managers to the 2019 Global Summit of Women held in Basel, Switzerland. This annual event, focused on women's advancement, has been the world's premier business and economic forum for women for the past 29 years.

Chairman and CEO Peter Voser participated in the summit's opening panel, while ABB's delegation was led by Company Secretary and General Counsel (at the time), Diane de Saint Victor, Chief Human Resources Officer Sylvia Hill and Head of Global Diversity & Inclusion and Employer Brand Heidi Robertson. This delegation joined 1,000 influential leaders in business, the nonprofit sector and government from 60+ countries for three days of working sessions, speeches and networking events under the banner of "Women: Redefining Success."

ABB's participation in the summit is the latest in the series of steps the company has taken to nurture a diverse and inclusive generation of new leaders. As an outcome of their participation, most of the attendees from ABB have either adopted or further strengthened their focus on increasing gender diversity. Participants set into action significant initiatives to promote gender diversity in four major areas after the event: recruitment, building the pipeline, personal development, and awareness and sensitization.

Read article

Altogether, 188 nominations were submitted – exceeding our goal. Additionally, in 2019, we met our goal of 30 percent of our early talent hires being female, i.e., recent university graduates. However, many of these hires have been in the functions, so we are increasing our efforts to meet this target for business roles as well. The year also saw the establishment of a global female mentoring program, which has now been rolled out to three of our businesses.

In 2018 we signed the EmbraceDifference pledge developed by the European Roundtable for Industrialists. To follow up on the pledge, we linked our 2019 initiatives to the six focus areas identified by the pledge: Inclusive Culture, Inclusive Leadership, Aspiration & Goal Setting, Clear Responsibility, Equal Opportunities & Societal Engagement and Responsibility.

We carried out unconscious-bias training, utilizing more than 65 trained, in-house facilitators. To date, more than 900 managers have participated in workshops held under this program. This year we also rolled out global guidelines for flexible working practices, offering six different options supported by a comprehensive toolkit and online learning program for managers. Furthermore, we refined our HR dashboard and metrics to ensure greater clarity on our targets and quarterly progress.

Health and well-being

Health initiatives and preventive occupational health are fundamental pillars of ABB's health programs, which are offered to all of our employees and their eligible dependents. Our well-being programs target stress reduction and positive working environments. These programs support our employees' efforts to develop their skills, knowledge and self-confidence, enabling them to manage their own health and work activities productively.

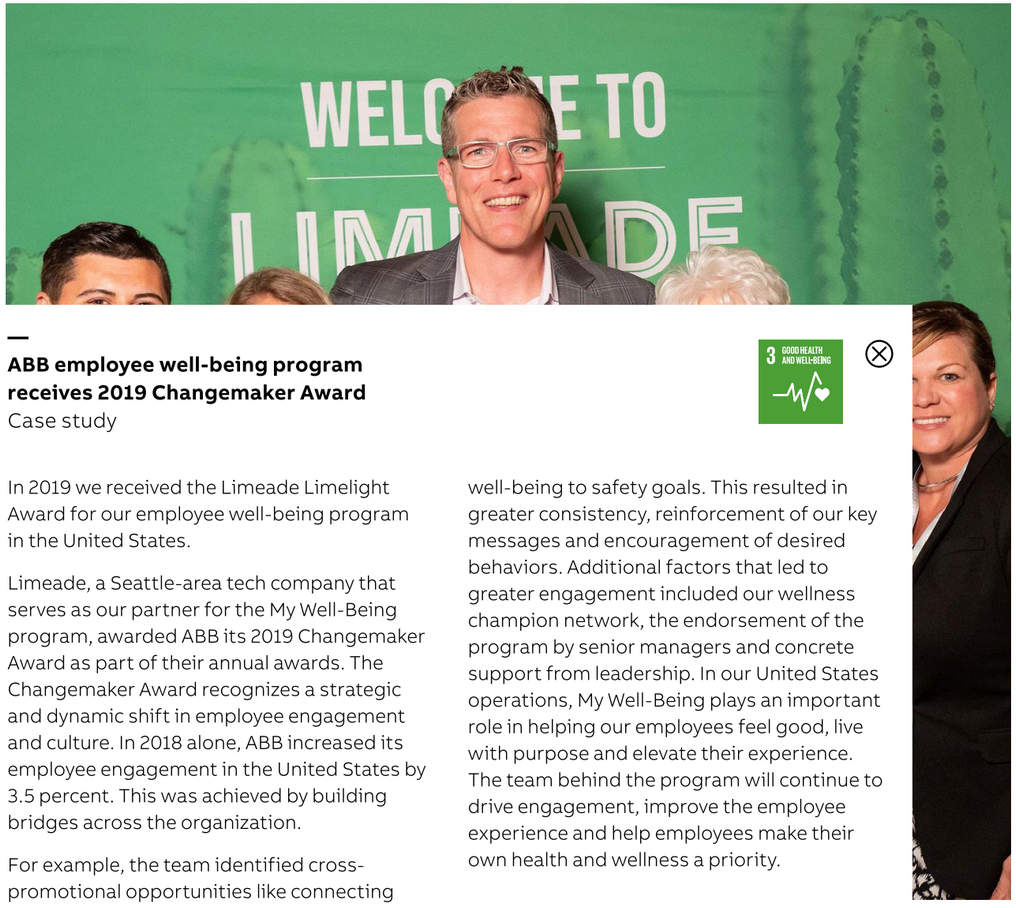
In 2019, we exceeded our 2020 objective of providing at least 70 percent of all ABB employees with access to one or more ABB well-being programs. Over the past year, the top three globally reported programs were fitness and physical activities, voluntary medical checks and healthy nutrition.

In the course of ABB's organizational transformation in 2019, our resilience-building program, launched in 2017, represented an important asset to support our employees. The program helps our employees manage stress, enhance health and improve productivity. It also builds a culture of flexible thinking and positive attitudes and behaviors. By the end of 2019, more than 53,000 employees had received training in 67 countries around the globe since the start of the program.

In 2019, we placed a stronger focus on mental well-being by enabling access to employee assistance programs that support those affected by personal or professional issues. Additionally, we released a medical travel risk management standard. The new TravelReady form (TRF) has become mandatory for employees traveling to 37 countries where there is a risk of malaria or yellow fever. The tool was developed to make our travelers and their line managers aware of the medical requirements associated with these destinations.

To address the important issue of workplace ergonomics, e-learning modules were made available for use by the businesses. Furthermore, we continued our partnership with Virgin Pulse for the third year to manage our company's Global Health Challenge, a company-wide program promoting physical activity, healthy eating, stress management and better sleep habits.

In 2020 one of our focus areas will be to assist our managers in understanding their roles in our health agenda, particularly with respect to work-life balance, sick leave management and resilience building.



—

ABB employee well-being program receives 2019 Changemaker Award

Case study

In 2019 we received the Limeade Limelight Award for our employee well-being program in the United States.

Limeade, a Seattle-area tech company that serves as our partner for the My Well-Being program, awarded ABB its 2019 Changemaker Award as part of their annual awards. The Changemaker Award recognizes a strategic and dynamic shift in employee engagement and culture. In 2018 alone, ABB increased its employee engagement in the United States by 3.5 percent. This was achieved by building bridges across the organization.

For example, the team identified cross-promotional opportunities like connecting well-being to safety goals. This resulted in greater consistency, reinforcement of our key messages and encouragement of desired behaviors. Additional factors that led to greater engagement included our wellness champion network, the endorsement of the program by senior managers and concrete support from leadership. In our United States operations, My Well-Being plays an important role in helping our employees feel good, live with purpose and elevate their experience. The team behind the program will continue to drive engagement, improve the employee experience and help employees make their own health and wellness a priority.

COMMUNITY ENGAGEMENT

A tradition of social engagement

As an integral part of society, ABB contributes to economic and social progress in many ways

ABB has a long history of working with communities to support education, healthcare and diversity and inclusion. Our approach is to combine strategic corporate partnerships with projects that focus on local needs in places where our businesses operate. Engaging with communities in this way improves people's lives and reinforces ABB's reputation.

ABB's major social engagement programs include the Jürgen Dormann Foundation, which assists financially disadvantaged engineering students, our corporate-level agreement with the International Committee of the Red Cross, which supports innovative water and habitat projects, and our Nobel International Partnership, which promotes knowledge of and interest in scientific education, sustainability and other important global issues.

Supporting healthcare, diversity and inclusion can have positive social and economic impacts among key company stakeholders, including our employees, suppliers and customers, as well as the communities around our facilities. In 2019, ABB contributed to more than 580 community projects and charities worldwide. A total of 44 countries out of the 69 reporting on their social activities supported community projects. Employees and ABB's businesses donated approximately $12.1 million to these projects and provided about 4,300 person-days of volunteer work.

Our global and local support for educational programs and institutions enhances learning, raises our company's profile and helps recruit qualified ABB staff. ABB works with students, schools and universities in a variety of ways, improving research, especially in science, technology, engineering and mathematics (STEM), and extending educational opportunities to more people.

ABB promotes STEM education and careers for girls and women in a variety of ways, including targeted scholarships and mentoring programs in Hungary, India, Poland, Sweden and other countries. In the United States, ABB is piloting a program with the Girl Scouts in Arkansas, Oklahoma and Texas in support of a "Girls Write the STEM Future" patch. This program aims to inspire girls to embrace scientific discovery in their lives and also creates volunteer opportunities for ABB employees involving the Girl Scout STEM badge curricula.

In many of our educational collaborations, volunteers from ABB play a vital role, inspiring, sharing experiences and encouraging students to pursue careers in technology. We are actively engaged in the United States, Brazil, Italy, Estonia, India, China and Zambia, among many other countries, and are proud to provide a wide variety of support for children, graduate students, recent graduates, disadvantaged students and other young talent.

Around the world, our businesses also support local education initiatives that promote diversity and inclusion. Among such initiatives, ABB in Australia launched the Reconciliation Action Plan in 2013 to help close the gap between indigenous and non-indigenous communities. Under the plan, ABB has partnered with the University of Technology Sydney on an outreach program called the Galuwa Engineering and IT Experience; the program aims to encourage indigenous high school students to continue their education and training. In 2019, the outreach program provided indigenous students with opportunities not only to see ABB robots in action, but also to program them.

Other ABB inclusion programs are focused on the differently abled, including a significant sponsoring partnership with the Special Olympics in Germany. Since the partnership was established in 2000, more than 3,300 ABB employees from sites across Germany have volunteered, dedicating their holidays to assist athletes with intellectual disabilities to participate in local and countrywide sporting competitions.

Digital substation donated to Zambia's School of Engineering
Case study

For engineering students seeking to achieve mastery of the latest technologies, nothing is better than the opportunity to work on state-of-the-art equipment. That is why ABB donated a digitally empowered high-voltage substation to the School of Engineering at the University of Zambia.

This high-tech equipment will be used for training purposes and forms part of a partnership ABB entered in 2015 with the University of Zambia in Lusaka and Copperbelt University in Kitwe. This combined project with Education Partnership in Africa (EPA), Copperbelt Energy Corporation and the German government provides students with opportunities to work with ABB equipment in an engineering laboratory.

As part of this partnership, ABB has collaborated with Professional Training Solutions to support curriculum development and train-the-trainer initiatives for quality teaching. ABB specialists provide lectures on smart grids, solar technologies and other topics of interest. The intention is to bridge the gap between industry needs and university offerings, ensuring that students are well-equipped for the workplace after graduation.

ABB is pleased to support Zambia's largest university and its talented engineering students, and believes that projects like this not only support economic growth, but also facilitate access to energy for all.



06 Reporting indicators

43 Approach to sustainability reporting

44 Summary of GRI indicators

53 Appendix: Contribution to sustainable development

APPROACH TO SUSTAINABILITY REPORTING

Reporting that matters to stakeholders

ABB aims to provide simple, clear, comprehensive information on how it measures and discloses its environmental, social and governance impacts

The Global Reporting Initiative (GRI) Standards and the EU directive on non-financial reporting provide the framework for ABB's sustainability reporting. We report on ABB's material economic, environmental and social impacts and how we manage them. Omission from the material issues addressed in our report does not mean an issue is not managed. ABB reports annually; the report for 2018 was published on March 15, 2019. The reporting period for the information provided in this report is from January 1 to December 31, 2019.

Reporting boundaries
ABB's formal sustainability reporting system covers all ABB Group companies worldwide, including wholly owned subsidiaries and majority-owned joint ventures. ABB's 2019 Annual Report contains a list of the Company's significant indirect subsidiaries (Appendix: page 224).

Changes in 2019
Entities acquired in 2018 – such as GE Industrial Solutions (GEIS) – are reflected in ABB's environmental and social reporting for the year. All entities acquired in 2019 will be reflected in the 2020 report. The divestment of ABB's Power Grids business is expected close in the first half of 2020. Power Grids is included in our sustainability reporting for 2019. Through the ongoing changes, ABB will seek to maintain alignment between its sustainability reporting and international best practices – including the GRI Standards. In line with ABB's 2018 commitment to the Science Based Targets initiative, in the second half of 2020 ABB will announce its post 2020 GHG emissions targets.

Data collection processes
To measure and gather data from across ABB, we rely on three online data reporting systems: a global system to report on hazards and sustainability observation tours; a system to collect annual social data from every country and environmental data from every production and service site, as well as a majority of our office locations; and a global system used by HSE professionals to report on incidents at ABB entities. As of Q2 2020, the first two systems are being combined to collect all key safety, social and environmental data, simplifying collection and facilitating greater transparency.
Data in this report relating to health, safety and our social performance covers 99 percent of ABB employees. Data relating to our environmental performance was sourced from 578 ABB sites and offices, covering approximately 93 percent of employees. Data on the environmental performance of all remaining employees, who are located at non-manufacturing sites with limited impacts, is generated by estimating energy, water and waste parameters pro rata.

Calculation of energy and greenhouse gas data
ABB uses a market-based method to calculate and report Scope 2 GHG emissions. For purchased electricity and district heat, we have obtained local emission factors from suppliers. For data prior to 2017, where necessary, we have sourced factors from the International Energy Agency's "CO_2 Emissions from Fuel Combustion 2013" database or from national or regional inventories. Emission factors for fuel used at ABB sites are sourced from the GHG Protocol's "Emission Factors from Cross-Sector Tools" (March 2017). From 2017, emissions from ABB's vehicle fleet are based on lease contract distances and CO_2 per kilometer factors per vehicle.

Scope 2 GHG emissions for electricity have also been calculated using the location-based method (source: IEA) and are provided for comparison below.

Scope 2 GHG emissions from electricity	**Kilotons CO_2e**
Market-based:	569
Location-based:	544

GHG emissions from air travel are calculated using emission factors published by the UK Department for Business, Energy & Industrial Strategy (BEIS) in its "2018 Government GHG Conversion Factors for Company Reporting."

Independent assurance summary
DNV GL Business Assurance Services UK Limited ("DNV GL") has been engaged by ABB Ltd to provide independent assurance for ABB's 2019 Sustainability Report. The assurance was completed using DNV GL's assurance methodology, VeriSustain™, and the report was evaluated for adherence to the principles of stakeholder inclusiveness, materiality, sustainability context, completeness and reliability. Performance data's scope was evaluated against the reliability principle. DNV GL's full Assurance Statement, including Opinion, Observations and Basis of opinion, is available on ABB's website.

SUMMARY OF GRI INDICATORS

ABB Group Sustainability Indicators 2019

Environmental

GRI ref.	Indicator description	Data assured in 2018	2019	2018	2017	2016	2015	2014
	Hazardous materials							
	Phthalates (tons)	√	102	99	106	191	878	258
	Brominated flame retardants (tons)	√	0	0.0	0.0	0.0	0.0	1.9
	Lead in submarine cables (tons) [1]		-	–[1]	0.017	8,246	8,376	7,842
	Organic lead in polymers (tons)	√	0.0	0.0	0.29	1.0	1.4	0.1
	Lead in other products (tons), e.g., backup batteries and counterweights in robots	√	2,316	2,686	2,548	3,321	1,684	1,884
	Cadmium in batteries (tons)[2]	√	15	113.3	71.3	53.0	98.3	79.5
	Cadmium in lead alloy and other uses (tons)	√	0.3	0.3	0.4	7.3	6.4	6.0
	Mercury in products (tons)	√	0.001	0.001	0.001	0.002	0.007	0.071
	SF_6 insulation gas (inflow to ABB facilities) (tons)[3]	√	1,211	1,286	1,425	1,653	1,658	1,483
	SF_6 insulation gas (outflow to customers) (tons)[3]	√	1,204	1,279	1,417	1,644	1,648	1,466
	No. of transformers with PCB oil in ABB facilities	√	14	6	0	0	0	0
	No. of capacitors with PCB oil in ABB facilities	√	89	0	0	0	0	0
	Mercury in instruments in ABB facilities (tons)	√	0.0570	0.2150	0.2150	0.2380	0.2250	0.3200
302-1	**Energy consumption (gigawatt-hours – GWh)**							
	Biofuels[4]	√	52.9	51.6	64.4	52	46	44
	Oil (11.63 MWh/ton)	√	49.0	48.5	58.5	71	79	85
	Diesel (11.75 MWh/ton)	√	4.4	4.8	5.8	9	8	11
	Coal (7.56 MWh/ton)	√	0.0	0	0	0	0	0
	Gas[5, 6]	√	728	658	647	658	737	708
	District heat consumption[5]	√	208	201	209	198	181	198
	Electricity consumption[5, 6]	√	1,635	1,571	1,561	1,620	1,608	1,628
	Total energy used	√	**2,677**	**2,535**	**2,546**	**2,607**	**2,658**	**2,675**
	Electricity sold	√	2	2	5	2	1	2
302-3	**Energy intensity (MWh/million $ sales)[7]**	√	72	72	74	77	75	67

Environmental continued

GRI ref.	Indicator description	Data assured in 2018	2019	2018	2017	2016	2015	2014
303-1	**Water withdrawal (kilotons)**							
	Purchased from water companies[5]	√	3,896	3,721	3,678	3,800	4,000	4,200
	Groundwater extracted by ABB	√	2,066	2,499	2,726	2,300	3,200	3,100
	Surface water extracted by ABB	√	2,406	2,561	2,849	3,000	2,400	2,800
	Collection of rainwater	√	9.8	<100	<100	<100	<100	<100
	Waste water from external source	√	21.7	<100	<100	<100	<100	<100
	Water withdrawal from areas of water stress[8]	√	2,711	2,778	2,694	2,730	2,993	2,951
	Total water withdrawal	√	**8,401**	**8,827**	**9,280**	**9,100**	**9,700**	**10,100**
303-3	**Water recycled and reused**							
	Volume of water reused and recycled (kilotons)		8,051	7,449	7,807	10,600	5,200	5,200
	As percentage of total water withdrawal (%)		96	84	84	116	54	51
Greenhouse gas (GHG) emissions[9] (kilotons CO_2 equivalent)								
305-1	**Scope 1**							
	CO_2 from the use of energy[6]	√	162	148	149	155	173	170
	SF_6 (in CO_2equivalents)[10]	√	159	164	180	228	244	394
	$CO_2$from transport by own fleet[11]		75	63	63	350	350	350
305-2	**Scope 2**							
	District heat consumption	√	33	30	28	31	29	35
	Electricity consumption[6]	√	569	597	606	614	684	682
	Total scope 1 and 2 GHG emissions	√	**915 [33]**	**1002**	**1,026**	**1,378**	**1,480**	**1,631**
305-3	**Scope 3**							
	Air travel[12, 13]	√	148	138	150	164	158	171
	Waste generated in operations[34]		12	–	–	–	–	–
	Energy-related activities not in scope 1/2 [34]		70	–	–	–	–	–
	Purchased goods and services[34]		4104	–	–	–	–	–
	Employee commuting[34]		249	–	–	–	–	–
	Up- and downstream transportation[34]		1150	–	–	–	–	–
	Up- and downstream leased assets[34]		219	–	–	–	–	–
305-4	**GHG emissions intensity (tons CO_2 equivalents/million $)[14]**							
	Tons CO_2 equivalents per million $ sales, scope 1+2	√	27	28	30	41	42	–

Environmental continued

GRI ref.	Indicator description	Data assured in 2018	2019	2018	2017	2016	2015	2014
305-7	**Emissions of volatile organic compounds (tons)**							
	Volatile organic compounds (VOC)[15]	✓	1,128	936	987	1,105	1,223	1,291
	Chlorinated volatile organic compounds (VOC-Cl)[16]	✓	2	4	3	6	13	20
	Emissions of NO_X and SO_X (tons SO_2 and NO_2)							
	SO_X from burning coal		0	0	0	0	0	0
	SO_X from burning oil and biofuels		77	72	89	82	97	97
	NO_X from burning coal		0	0	0	0	0	0
	NO_X from burning oil and biofuels		57	54	67	72	73	73
	NO_X from burning gas		156	142	140	142	159	153
306-1	**Water discharge by quality and destination (kilotons)**							
	Public sewer		3,591	3,649	3,039	4,200	3,100	3,000
	treated (percentage)		36%	36%	38%	21%	28%	30%
	untreated (percentage)		64%	64%	62%	79%	72%	70%
	Recipient[17]		1,123	761	444	4,500	2,600	2,900
	treated (percentage)		84%	90%	81%	15%	90%	90%
	untreated (percentage)		16%	10%	19%	85%	10%	10%
	Hazardous treatment company		140	47	45	300	360	400
	treated (percentage)		81%	47%	13%	71%	90%	75%
	untreated (percentage)		19%	53%	87%	29%	10%	25%
	External use		0	1	0	0	<100	<100
	treated (percentage)		0%	100%	–	–	63%	50%
	untreated (percentage)		100%	–	–	–	37%	50%
306-2	**Waste (kilotons)**							
	Scrap metal recycled	✓	167	156	153	148	158	162
	Non-hazardous waste recycled[5]	✓	61	62	61	53	53	49
	Non-hazardous waste sent for disposal[5]	✓	41	37	36	37	44	44
	Hazardous waste recycled[18]	✓	7	5	5	7	5	5
	Hazardous waste sent for disposal[18]	✓	7	6	8	8	10	13
	Total waste (generated)	✓	**283**	**266**	**263**	**254**	**270**	**273**

Environmental continued

GRI ref.	Indicator description	Data assured in 2018	2019	2018	2017	2016	2015	2014
306-3	**Numbers of significant spills**[19]							
	Oil spills		9	15	19	17	11	7
	Chemical spills		4	9	10	6	1	0
	Emissions to air		6	5	3	6	11	3
	Others		7	14	12	9	0	0
	Total number of significant spills		**26**	**43**	**44**	**38**	**23**	**10**

Social

GRI ref.	Indicator description	Data assured	2019		2018		2017		2016		2015		2014	
401-1	**Total number and rates of new employee hires and employee turnover**													
	Total workforce by region (ABB employees)[20]													
	Europe		68,400		68,300		63,000		61,400		61,600		63,000	
	The Americas		35,200		35,600		28,800		29,000		30,900		32,200	
	Asia, Middle East and Africa		40,800		42,700		43,000		41,900		43,300		45,200	
	Total		**144,400**		**146,600**		**134,800**		**132,300**		**135,800**		**140,400**	
	Employee turnover													
	Turnover of all employees[21]													
	Europe		9,732	14%	6,509	10%	7,105	11%	6,063	10%	5,891	9%	5,877	9%
	The Americas		5,443	16%	3,986	11%	3,148	11%	5,338	17%	5,409	17%	5,379	17%
	Asia, Middle East and Africa		6,860	17%	5,127	12%	3,749	9%	4,430	11%	4,946	12%	5,701	13%
	Total employee turnover: ABB Group		**22,035**	**15%**	**15,622**	**11%**	**14,002**	**10%**	**15,831**	**12%**	**16,246**	**12%**	**16,957**	**12%**
	Turnover of all female employees[21]													
	Europe		2,871	4%	2,053	3%	2,097	3%	1,571	2%	1,498	2%	1,370	2%
	The Americas		1,553	4%	1,154	3%	940	3%	1,265	4%	1,418	5%	1,307	4%
	Asia, Middle East and Africa		1,399	3%	967	2%	855	2%	882	2%	1,093	3%	1,311	6%
	Total female employee turnover: ABB Group		**5,823**	**4%**	**4,174**	**3%**	**3,892**	**3%**	**3,718**	**3%**	**4,009**	**3%**	**3,882**	**3%**
	Employee hires													
	Hires of all employees[21]													
	Europe		11,560	17%	7,848	11%	6,888	11%	5,656	9%	5,672	9%	6,195	10%
	The Americas		4,221	12%	3,525	10%	3,905	13%	3,354	11%	3,573	11%	4,142	13%
	Asia, Middle East and Africa		6,121	15%	5,281	12%	4,403	11%	2,920	7%	3,777	9%	5,493	13%
	Total employee hires: ABB Group		**21,902**	**15%**	**16,654**	**11%**	**15,196**	**11%**	**11,930**	**9%**	**13,022**	**10%**	**15,830**	**12%**
	Hires of all female employees[21]													
	Europe		3,898	6%	2,442	4%	2,161	3%	1,681	3%	1,520	2%	1,597	3%
	The Americas		1,357	4%	950	3%	1,030	3%	937	3%	769	2%	1,010	3%
	Asia, Middle East and Africa		1,275	3%	1,076	3%	900	2%	586	1%	761	2%	1,308	3%
	Total female employee hires: ABB Group		**6,530**	**4%**	**4,468**	**3%**	**4,091**	**3%**	**3,204**	**2%**	**3,050**	**2%**	**3,915**	**3%**

Social continued

GRI ref.	Indicator description	Data assured	2019	2018	2017	2016	2015	2014
403-2	**Occupational health and safety: Injuries, lost days, diseases and fatalities**							
	Employee work-related fatalities[22,24]	√	1	0	1	0	0	1
	Incident rate[23]	√	0.01	0.00	0.00	0.00	0.00	0.00
	Employee business travel fatalities[22, 25]	√	0	1	1	1	0	0
	Incident rate[23]	√	0.00	0.00	0.00	0.00	0.00	0.00
	Contractor work-related fatalities[24]	√	1	3	2	5	2	2
	Contractor business travel fatalities[22, 25]	√	0	0	0	2	0	0
	Members of the public fatalities[22]	√	0	0	0	0	1	0
	Employee total recordable incident number[24, 26]	√	744	830	1,049	1,140	1,310	1,500
	Injury rate[23]	√	0.47	0.58	0.73	0.79	0.87	0.99
	Contractor total recordable incident number[24,26]	√	149	203	205	277	343	333
	Injury rate[23]	√	0.46	0.58	0.52	0.70	0.80	0.78
	Employee lost time incident number[24]	√	372	386	472	441	531	652
	Injury rate[23]	√	0.23	0.27	0.33	0.30	0.36	0.43
	Contractor lost time incident number[24]	√	96	97	95	118	163	200
	Injury rate[23]	√	0.29	0.28	0.24	0.30	0.38	0.47
	Employee lost days due to industrial incidents[29]		6,757	6,650	7,331	6,905	7,831	8,415
	Days lost rate[23]		4.26	4.63	5.11	4.78	5.26	5.52
	Employee occupational health illness[24]	√	16	30	35	65	46	17
	Employee occupational health illness rate[23,24]	√	0.01	0.02	0.02	0.05	0.03	0.01
	Sustainability Observation Tours (SOT) conducted[28]	√	83,859	144,738	182,265	178,473	139,124	–
	SOT rate[28,30]	√	5.52	1.01	1.27	1.24	0.92	–
	Hazards reported[24]	√	336,747	389,733	585,627	621,849	520,942	–
	Hazards reporting rate[27]	√	2.12	2.72	4.08	4.31	3.51	–
	Data by region							
	Employee work-related fatalities: ABB Group[22,24]	√	1	0	1	0	0	1
	Europe	√	0	0	0	0	0	0
	The Americas	√	1	0	1	0	0	0
	Asia, Middle East and Africa	√	0	0	0	0	0	1
	Employee business travel fatalities: ABB Group	√	0	1	1	1	0	0
	Europe	√	0	0	0	0	0	0
	The Americas	√	0	0	0	1	0	0
	Asia, Middle East and Africa	√	0	1	1	0	0	0

Social continued

GRI ref.	Indicator description	Data assured	2019	2018	2017	2016	2015	2014
	Contractor work-related fatalities: ABB Group	✓	1	3	2	5	2	2
	Europe	✓	1	0	0	0	0	0
	The Americas	✓	0	1	1	0	0	0
	Asia, Middle East and Africa	✓	0	2	1	5	2	2
	Contractor business travel fatalities: ABB Group	✓	0	0	0	2	0	0
	Europe	✓	0	0	0	0	0	0
	The Americas	✓	0	0	0	2	0	0
	Asia, Middle East and Africa	✓	0	0	0	0	0	0
	Employee total recordable injury rate: ABB Group	✓	0.47	0.58	0.73	0.79	0.88	0.10
	Europe	✓	0.53	0.66	0.86	0.96	1.02	1.16
	The Americas	✓	0.68	0.97	1.17	1.18	1.40	1.57
	Asia, Middle East and Africa	✓	0.16	0.19	0.24	0.27	0.31	0.39
	Contractor total recordable injury rate: ABB Group	✓	0.456	0.58	0.52	0.70	0.80	0.78
	Europe	✓	1.38	1.52	1.38	1.69	1.88	1.97
	The Americas	✓	0.42	0.74	0.96	1.47	1.54	1.40
	Asia, Middle East and Africa	✓	0.20	0.26	0.24	0.35	0.37	0.35
	Employee lost time injury rate: ABB Group	✓	0.23	0.27	0.33	0.30	0.36	0.43
	Europe	✓	0.37	0.39	0.48	0.47	0.56	0.66
	The Americas	✓	0.20	0.30	0.34	0.29	0.33	0.40
	Asia, Middle East and Africa	✓	0.07	0.07	0.09	0.08	0.08	0.12
	Contractor lost time injury rate: ABB Group	✓	0.29	0.28	0.24	0.30	0.38	0.47
	Europe	✓	1.15	0.91	0.73	0.93	1.03	1.38
	The Americas	✓	0.19	0.29	0.35	0.81	0.84	0.86
	Asia, Middle East and Africa	✓	0.07	0.08	0.10	0.07	0.12	0.15
	Employee days lost rate: ABB Group		4.26	4.63	5.11	4.78	5.26	5.52
	Europe		5.95	6.19	6.95	5.98	7.32	8.25
	The Americas		4.20	6.46	6.43	7.81	6.02	8.28
	Asia, Middle East and Africa		1.71	1.05	1.49	0.99	1.74	1.72
	Employee occupational health disease rate: ABB Group	✓	0.01	0.02	0.02	0.05	0.03	0.01
	Europe	✓	0.02	0.04	0.05	0.09	0.06	0.02
	The Americas	✓	0.01	0.00	0.00	0.02	0.02	0.03
	Asia, Middle East and Africa	✓	0.00	0.01	0.00	0.05	0.00	0.00

Social continued

GRI ref.	Indicator description	Data assured	2019	2018	2017	2016	2015	2014
	SOT rate: ABB Group	√	5.52	1.01	1.27	1.24	0.92	–
	Europe	√	5.34	0.92	0.84	0.76	0.51	–
	The Americas	√	6.14	1.09	1.71	1.87	1.41	–
	Asia, Middle East and Africa	√	5.40	1.10	1.61	1.53	1.17	–
	Hazard rate: ABB Group	√	2.12	2.72	4.08	4.31	3.51	–
	Europe	√	2.04	2.38	3.37	3.65	2.67	–
	The Americas	√	1.61	2.66	4.81	4.78	4.25	–
	Asia, Middle East and Africa	√	2.82	3.28	4.64	5.03	4.19	–
406-1	**Non-discrimination**							
	Total number of incidents of discrimination		8	0	0	0	0	1
	Total number of incidents of harassment		19	25	9	5	8	10
415-1	**Public policy**							
	Financial and in-kind political contributions		$1,260	$11,500	$300	$10,400	$12,600	$13,000
404-1	**Training and education**							
	Training per year per employee (average hours)							
	China		17	16	17	25	22	26
	Finland		12	13	13	15	17	19
	Germany		18	18	18	18	18	18
	India		10	12	5	3	2	12
	Italy		16	16	12	10	12	12
	Mexico		7	134	98	15	16	23
	Poland		10	35	20	12	10	11
	Sweden		12	12	12	10	10	12
	Switzerland		12	14	14	15	14	16
	USA		16	16	24	24	27	32
404-3	**Employees receiving regular performance and career development reviews[31]**							
	Top and senior managers		73%	89%	94%	92%	85%	87%
	Middle and lower managers		89%	93%	96%	94%	90%	91%
	Other employees		89%	91%	91%	91%	87%	88%
	Total workforce		**89%**	**91%**	**91%**	**92%**	**87%**	**88%**

Social continued

GRI ref.	Indicator description	Data assured	2019	2018	2017	2016	2015	2014
405-1	**Diversity and equal opportunity**							
	Composition of governance bodies							
	Board of Directors							
	Women in Board (percentage)		18%	18%	10%	18%	13%	13%
	Age group diversity (percentage)							
	<30 years old		0%	0%	0%	0%	0%	0%
	30–50 years old		9%	18%	0%	0%	0%	0%
	>50 years old		91%	91%	100%	100%	100%	100%
	Number of nationalities		7	7	8	10	8	7
	Executive Committee							
	Women in Executive Committee (percentage)		16%	9%	9%	9%	9%	9%
	Age group diversity total (percentage)							
	<30 years old		0%	0%	0%	0%	0%	0%
	30–50 years old		8%	0%	27%	18%	27%	36%
	>50 years old		92%	100%	73%	82%	73%	64%
	Number of nationalities		8	8	8	7	8	8
	Employees in senior and middle management[33]							
	Women in senior and middle management		18%	17%	16%	18%	17%	15%
	Men in senior and middle management		82%	83%	84%	82%	83%	85%
	Total workforce (ABB employees)							
	Women in total workforce		24%	23%	23%	23%	23%	22%
	Men in total workforce		76%	77%	77%	77%	77%	78%

1 Reporting on lead in submarine cables is discontinued from 2018 due to the divestment of our high-voltage cables and cable accessories businesses in Q1 2017.

2 From 2018 we report all cadmium in batteries in one category. Data from 2013–2017 on cadmium in industrial and rechargeable batteries, respectively, have been summed up and are included here.

3 Data on inflow and outflow of SF_6 insulation gas have been restated for 2017, due to an error in the reporting from one site.

4 Biofuels were reported as a separate category in 2017. Biofuel consumption, total energy used and energy intensity have been restated for 2014–2016, since the use of biofuels was previously not reported at one of our large facilities.

5 Results for these indicators are based on reported data covering 94% of employees in 2018, 93% in 2017, 97% in 2016, 95% in 2015 and 93% in 2014, plus energy use per employee for the remaining employees pro rata. See the Approach to reporting section for more details.

6 Gas and electricity consumption and the associated greenhouse gas (GHG) emissions have been restated for 2014–2017, due to the correction of earlier conversion factor errors at one of our large facilities.

7 Includes sales from Power Grids division.

8 Water withdrawal from areas of water stress have been restated for 2013-2017, due to earlier errors in reporting of water for remediation projects at two sites.

9 See Approach to reporting chapter for more details on GHG emission calculation.

10 In 2019, we updated the factor used to convert SF_6 emissions to CO_2 equivalents to 23,500 kg CO_2e/kg SF_6, as recommended by the IPCC 2013 (Fifth Assessment Report), and we have applied that factor to SF_6 data reported for all years. SF_6 emissions for 2018 were restated from 155 kilotons to 164 kilotons due to a reporting error at a large manufacturing site.

11 For 2018 we use the same data as for 2017. For 2017 data see Approach to reporting; 2014–2016 data was estimated.

12 The air travel indicator included data from ABB Bulgaria, Croatia, Greece, Kazakhstan and Romania for the first time in 2016 and from ABB China and Thomas & Betts for the first time in 2014.

13 Data for air travel is calculated using the emission factors published by the UK Department for Business, Energy & Industrial Strategy in its "2018 Government GHG Conversion Factors for Company Reporting – Methodology Paper for Emission Factors – Final Report."

14 The GHG emissions intensity includes Scope 1&2 emissions. Includes sales from Power Grids.

15 VOC emissions for 2018 were restated from 882 tons to 936 tons due to a reporting error at a large manufacturing site.

16 Emissions of Chlorinated volatile organic compounds (VOC-Cl) are included in the Volatile organic compounds (VOC) reported in the line above.

17 Cooling water quality remains unchanged by its use at ABB and is discharged without treatment. Data for 2016 exceptionally included discharge of cooling water to recipient.

18 Hazardous waste as classified in the country where it is generated.

19 An environmental incident is regarded as significant if at least one of the following criteria applies to the incident: obligation to inform local authorities or a governmental agency about the incident and/or regulatory violation; inspection by an environmental agency results in a formal complaint; environmental Notice of Violation, a Consent Order or a Potential Responsible Party (PRP) notification; imposition of a penalty or fine; significant impact on an ecosystem; costs related to the incident exceed, or may exceed, $10,000.

20 Includes GE Industrial Solutions acquired in 2018.

21 Includes part-time employees. Turnover rate calculated as number of ABB employees (full- and part-time) leaving during the year/total number of ABB employees (full- and part-time) as at December 31, 2020. For the purpose of this calculation, employees and external workforce who leave the organization voluntarily or involuntarily whether due to dismissal, retirement, end of fixed-term contract or death in service or any other reason, are included. However, involuntary turnover arising out of divestments is excluded from the definition.

22 Fatalities include deaths occurring within one year as a result of injuries sustained and commuting is excluded.

23 Incident rates are according to the rate per 100 employees.

24 Data covers incidents that happened at workplace (ABB facility, customer site, project site) and excludes incidents that occurred during business travel.

25 Includes incidents during business travel by road. Air and rail travels are excluded.

26 Recordable incidents include fatal, lost time incidents, serious injury incidents, medical treatment injuries, occupational diseases and restricted work day cases.

27 Rate is calculated per employee.

28 SOT conducted by manager in 2019, in previous years by employees. Sustainability Observation Tour in 2019 and Safety Observation Tour previously.

29 Days lost are calendar days and are counted from the day after the incident.

30 Rate per manager in 2019 and per employee previously.

31 Eligible employees included in ABB HR system. Data covers previous year's cycle with completion by Q1 of the reporting year.

32 This indicator focuses on senior and middle management and includes employees in hay grades 1 to 10

33 Does not include GE Industrial Solutions acquired in 2018. Total GHG emissions including GE Industrial Solutions was 998 kilotons.

34 Calculated for the first time for 2019.

CONTRIBUTION TO SUSTAINABLE DEVELOPMENT

ABB enables seven of the United Nations' Sustainable Development Goals

The following case studies illustrate just some of the many ways ABB is enabling the global community to meet many of the underlying SDG targets. To read more, visit the online version of this report at www.sustainabilityreport2019.abb.com



Clean water and sanitation
At the ABB Ability™ Collaborative Operations Center in Genoa, Italy, experts are on call 24/7 to provide water utilities with data-driven insights. These insights enable utilities to keep water stress levels as low as possible and to ensure their water facilities are operating in line with all relevant regulatory, load, environmental and cybersecurity requirements.



Affordable and clean energy
The Indian Institute of Technology Madras (IITM) partnered with ABB to develop and pilot a model solar-based village microgrid to generate and augment power availability and resiliency, as well as to conduct joint R&D in the fields of rural electrification, utilization of natural, non-fossil resources, battery energy storage and their connections to loads and the main grid. Thousands of Indian villages are still off the grid and rely on expensive diesel fuel for power; ABB's decentralized microgrids are a viable solution for these communities and can serve as the starting point for additional development activities in villages. This project is a part of ABB's "Access to Energy" community initiative in India.



Decent work and economic growth
ABB is donating software solutions and pulp and paper automation expertise to the Sappi Skills Centre, based in Umkomaas, South Africa, near Sappi's Saiccor Mill – the world's largest single site dedicated to dissolving wood pulp. The donation supports the Skills Centre, which was established by Sappi in 2018 to equip local youth with the basic technical skills needed to prepare them for meaningful employment.



Industry, innovation and infrastructure
ABB is piloting its new ABB Ability™ Data Center Automation solution with a leading colocation data center in Singapore. Designed to help meet the challenges related to the rapid growth of data centers, ABB's new solution makes it possible to view and monitor power, cooling and environmental metrics from data centers, thus enabling the identification of opportunities for improvement.



Sustainable cities and communities
Aiming to achieve the full electrification of its bus fleet by 2030, German public transport operator Hamburger Hochbahn AG has asked ABB to install a turnkey solution that will supply 44 of its high-power 150C chargers for the network. This will allow 44 buses in the fleet, each with a range of up to 150 km under normal conditions, to be charged overnight in the central bus depot.



Responsible consumption and production
ABB is supplying the new voestalpine BÖHLER Edelstahl steel plant in Kapfenberg, Austria, with its ABB ArcSave® electromagnetic stirrer technology. This technology, which will be installed on an energy-efficient 55-ton electric arc furnace, will reduce the environmental impact of the steel manufacturing process by reducing electricity usage, process additions such as alloys and lime and consumables such as electrodes.



Partnerships for the goals
ABB is a founding partner of United for Efficiency (U4E), a public-private multi-stakeholder collaboration partnership led by the United Nations Environment Programme. U4E helps governments develop and implement national and regional strategies for improved energy efficiency, and ABB is sharing its know-how in motors and transformers, policies, regulations and standards, as well as potential applications for the best available technologies.

CONTRIBUTION TO SUSTAINABLE DEVELOPMENT

ABB contributes to 10 of the United Nations' Sustainable Development Goals

The following case studies illustrate just some of the many ways ABB is enabling the global community to meet many of the underlying SDG targets. To read more, visit the online version of this report at www.sustainabilityreport2019.abb.com



No poverty
For more than 20 years, Instituto ABB, a project funded exclusively by our company, has been leveraging the power of education to transform the lives of children in the impoverished neighborhoods near our facilities in São Paulo, Brazil. The project is impactful, as Lucas Azevedo can attest. He was once an underprivileged youth participating in our "Mais Energia" two-year vocational program. Today, he is a proud ABB employee, thanks in part to the hands-on experience the program provided him at ABB facilities, together with technical courses at a renowned educational center located nearby.



Gender equality
Early in the academic careers of young girls, ABB in Switzerland raises their interest in technology by carrying out "Girls Technician Days" and by taking part in the annual national Future Day, which addresses pupils of both genders. In partnership with the Lila Poonawalla Foundation, ABB provides scholarships for talented but financially disadvantaged women to earn undergraduate engineering degrees. The program not only provides financial support, but also skills development training and mentoring to empower the women and build self-confidence and independence. ABB contributes financial resources, mentoring and industrial visits to ABB factories and locations.



Peace, justice and strong institutions
ABB has maintained a decade-long partnership with the International Committee of the Red Cross (ICRC) that was renewed for three years at the end of 2017. Regular exchanges between ABB and ICRC staff have helped identify focus areas to improve ICRC's energy efficiency. We will expand our exchanges to include human resources challenges related to leadership development and diversity and inclusion.



Zero hunger
The Akshaya Patra Foundation's new centralized kitchen in the Mohan Cooperative Industrial Area of New Delhi was inaugurated in 2019. Sponsored by ABB India, the kitchen has the capacity to cater to the nutritional needs of students by serving 25,000 midday meals across various government schools in the surrounding area. Initially it will serve over 21,000 children at 24 government schools in the national capital and will gradually extend its reach.



Good health and well-being
In October 2019, ABB opened its first global healthcare research hub on the Texas Medical Center (TMC) campus, in Houston, Texas. Together with its partners at TMC, ABB will work to develop cutting-edge robotics solutions that will reduce the number of manual procedures performed by medical staff, improve the accuracy of laboratory work and enhance patient satisfaction and ultimately patient safety.



Quality education
ABB started its first youth apprenticeship program in the United States in Fort Smith, Arkansas, in June 2019. In partnership with the University of Arkansas at Fort Smith and the local school district, ABB hosted nine local apprentices as part of its long-term effort to strengthen the area's pipeline of young talent. ABB is keen to continue to promote the benefits of the Swiss-style vocational system for the countries in which it works.



Climate action
The United States has begun its formal withdrawal from the Paris Agreement after stating its intention to do so in 2017. That is why, in December 2019, ABB's CEO Peter Voser added his voice to more than 70 CEOs in the US who came together to call for the country to remain within the landmark climate agreement.



Reduced inequality
Students from the Warsaw University of Technology, with support from ABB, engineered an electric racing car for a 10-year old boy who suffers from muscular dystrophy. This project demonstrated how e-mobility can help us create a more inclusive society. During the project, the students consulted with ABB on how to integrate components in a way that would make them compatible with the ABB Wallbox charger in the future.



Life on land
ABB and Sweden's Stena Recycling have forged a long-term partnership focused on the recycling of old electric motors. While outdated low-voltage motors are responsible for massive energy losses, they also contain large quantities of recyclable valuable metals. When recycled, aluminum, copper and iron deliver energy savings of between 75 and 95 percent, compared to new production of these metals. ABB and Stena will work together to take old motors out of service, recycle them and then replace them with advanced, high-efficiency motors.



Life below water
ABB won a contract from Arctic Offshore Farming to power its first-ever remote-controlled, submersible, offshore salmon farm in the Arctic Ocean. ABB will provide a comprehensive package of its leading electrical, automation, instrumentation and telecom technologies that ensure maximum efficiency and minimal environmental impact. The submerged fish pens are less prone to sea lice, which have been linked to a decline in salmon production in Norway – one of the top salmon exporters in the world.

Read article **Watch video**

ABB Ltd
HSE and Sustainability Affairs
Affolternstrasse 44
8050 Zurich
Switzerland
Tel: +41 (0)43 317 71 11
Fax: +41 (0)43 317 79 58
Email: HQ-sustainability@abb.com

www.abb.com

© Copyright 2020 ABB. All rights reserved.

American Hydrotech Inc.

Sustainability

Construction is no longer just about building and development, it's about being smart.

That entails limiting the impact of the construction process on the very environment that nurtures us. This means building for the long term and catering to global needs and issues.

Hydrotech has developed products, systems and alliances that reflect our commitment to environmental sustainability. Along with producing one of the industry's best performing membranes, Hydrotech has also introduced some of the industry's most sustainable waterproofing assemblies. For instance, our MM6125® is a hot-applied rubberized asphalt that can be formulated with a minimum 40% post consumer recycled content.

Monolithic Membrane 6125, the foundation for all our assemblies, helps generate LEED® points on projects around the country each and every day. Hydrotech assemblies feature recycled content in the membrane and reduced lifecycle costs due to project longevity (which also reduces its impact on landfills). In addition, the Ultimate Assembly® delivers energy savings through reflective pavers, while our Garden Roof® Assembly delivers storm water management capabilities.

In short, Hydrotech has the solutions that fit long-term sustainability strategies building owners and operators are demanding of the products and assemblies they specify.

Hydrotech Roofing, Waterproofing, Ultimate and Garden Roof Assemblies - Possible LEED V.4 points

	Protect or Restore Habitat SS	Open Space SS	Rainwater Management SS	Heat Island Reduction SS	Places of Respite SS	Direct Exterior Access SS	Outdoor Water Use Reduction WE	Optimize Energy Performance** EA	Building Life Cycle Impact Reduction MR	Environmental Product Declarations MR	Sourcing of Raw Materials MR	Material Ingredients MR	Integrative Process IP	Innovation IN
PMR Assembly	-	-	-	-	-	-	-	1-18	1-3	1-2	1-2	1-2	1	1-2
Ultimate Assembly	-	1	-	1-2	1*	1*	-	1-18	1-3	1-2	1-2	1-2	1	1-2
Garden Roof Assembly	2	1	2-3	1-2	1*	1*	1-2	1-18	1-3	1-2	1-2	1-2	1	1-2

* Healthcare projects only ** Energy performance influenced by many factors

HYDROTECH BUILDING TRUST Sika®

American Hydrotech, Inc.
541 N. Fairbanks Ct, Chicago, IL 60611
Find us on Google Maps

P: 800-877-6125
F: 312-661-0731

Working on a project?

Contact Us »

Sitemap »

Follow us

Copyright © 2022 American Hydrotech, Inc., All rights reserved.

Ameristar Fence Products



Ameristar's Commitment to Sustainability

Sustainability is a Natural Part of What We Do

Ameristar Perimeter Security USA Inc., ASSA ABLOY (Ameristar) manufactures and distributes high quality fence, gates, bollards, and barriers for residential, commercial, industrial, and high security applications.

Ameristar is committed to sustainable business practices through:

- Preventing pollution and minimizing waste generation;
- Reducing consumption of natural resources;
- Maintaining compliance with relevant environmental regulations;
- Decreasing energy consumption, thereby decreasing CO_2 emissions;
- Reducing the overall environmental impact from our activities, products, and services.

We strive to continually improve our environmental protection efforts through the engagement of our employees, continual improvement of our environmental management system (EMS), and commitment of our top management.

Proof is in our Everyday Business Practices

- ASSA ABLOY, Ameristar's parent company, has committed to Science Based Targets with a goal of reducing carbon emissions by 50% by 2030, and reaching net-zero by 2050. Ameristar is an important part of that reduction journey and employs the divisional sustainability coordinator to drive energy reduction projects.
- Ameristar tracks sustainability KPIs including energy, waste generation, water consumption, and organic solvent consumption. We continuously work to draw down our consumption in all these areas.
- In 2020 Ameristar created a Green Team to raise awareness around sustainability and help drive sustainability projects in the facility.
- Our products have a long life with little-to-no maintenance or replacement required, thereby reducing waste in the value chain.
- 99% of Ameristar's product can be recycled at the end of its life.

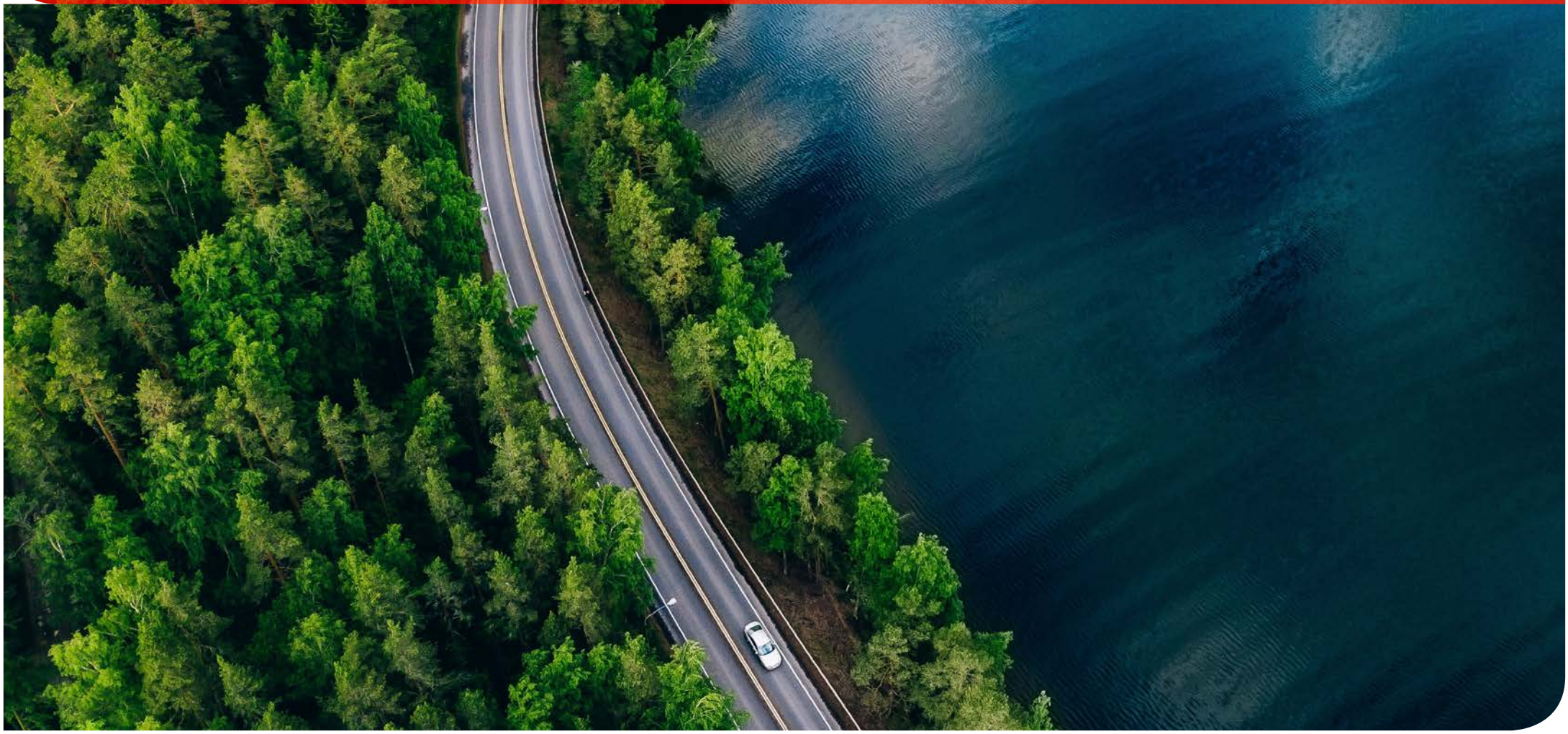
© ASSA ABLOY

Experience a safer and more open world

Arcelor Mittal Climate Report

ArcelorMittal

Climate Action Report 2
July 2021



Forward-looking statements

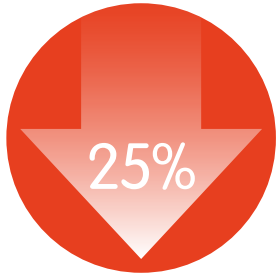
This document contains forward-looking information and statements about ArcelorMittal and its subsidiaries. These statements include financial projections and estimates and their underlying assumptions, statements regarding plans, objectives and expectations with respect to future operations, products and services, and statements regarding future performance, as well as statements regarding ArcelorMittal's plans, intentions, aims, ambitions and expectations, including with respect to ArcelorMittal's carbon emissions. Forward-looking statements may be identified by the words "believe", "expect", "anticipate", "target", "accelerate", "ambition", "estimate", "likely", "may", "outlook", "plan", "strategy", "will" and similar expressions. Forward-looking statements include all statements other than statements of historical fact. Although ArcelorMittal's management believes that the expectations reflected in such forward-looking statements are reasonable, investors and holders of ArcelorMittal's securities are cautioned that forward-looking information and statements are subject to numerous risks and uncertainties, many of which are difficult to predict and generally beyond the control of ArcelorMittal, that could cause actual results and developments to differ materially and adversely from those expressed in, or implied or projected by, the forward-looking information and statements. These risks and uncertainties include those discussed or identified in the filings with the Luxembourg Stock Market Authority for the Financial Markets (Commission de Surveillance du Secteur Financier) and the United States Securities and Exchange Commission (the "SEC") made or to be made by ArcelorMittal, including ArcelorMittal's latest Annual Report on Form 20-F on file with the SEC. In particular, ArcelorMittal's carbon emissions targets are based on current assumptions with respect to the costs of implementing its targets (including the costs of green hydrogen and their evolution over time), government and societal support for the reduction of carbon emissions in particular regions and the advancement of technology and infrastructure related to the reduction of carbon emissions over time, which may not correspond in the future to ArcelorMittal's current assumptions. For example, the Company could face significant financial impacts in Europe if it is unable to make the necessary investments to decarbonise and reach its 35% target by 2030 due to the design of European policy. ArcelorMittal undertakes no obligation to publicly update its forward-looking statements, whether as a result of new information, future events, or otherwise.

Cover image: © Adobe

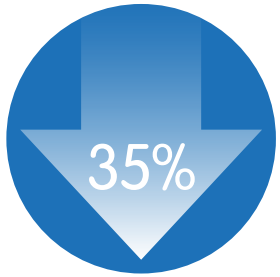
Highlights from this report

Leading the industry

- New Group target of a 25% reduction in CO_2e emissions intensity by 2030 (scope 1 and 2)



- Europe target increased to 35% reduction in CO_2e emissions intensity by 2030 (scope 1 and 2)



World's first zero carbon-emissions steel plant

- World's first full-scale zero carbon-emissions steel plant in Sestao, Spain, by 2025



- Plans for further steelmaking transformation in Europe and NAFTA

First to market

- Customer appetite for low-carbon steel is real, as demonstrated by demand for our XCarb™ product

XCarb™
Towards carbon neutral steel

- Competitive advantage with greater volumes, capturing commercial opportunities

Funding

- $10 billion total investment required to achieve 2030 Group decarbonisation target
- Securing public funding support is a key focus and an opportunity to accelerate
- ArcelorMittal's expectation is that public funding covers 50% of the total cost of decarbonisation (capex and higher opex) so that companies are not rendered uncompetitive during the transition period

Photo: © ArcelorMittal

Contents

Forward-looking statements 1

Highlights from this report 2

Introduction 4

Section 1 Progress overview 6

1.1 Progress in 2020 6

1.2 ArcelorMittal's timeline since publication of its first Climate Action Report 7

Section 2 Our decarbonisation strategy 11

2.1 Our targets 11

2.2 Our net-zero roadmap 12

2.3 Our plans: the DRI-based route 15

2.4 Costs, investments, and funding 30

2.5 The role of policy 31

2.6 Leading and collaborating 38

Section 3 Our opportunities, risks and governance of climate change 41

3.1 Opportunities 41

3.2 Risks 43

3.3 Governance 47

Section 4 Metrics 49

4.1 Carbon performance in 2020 49

Section 5 Technology 50

5.1 Technology pathways 50

Section 6 The bigger picture 53

6.1 Circularity in our world and in the steel industry 53

6.2 The carbon challenges facing steel 58

Appendix 60

A. How steel is made today 60

B. Glossary 62

C. Index of the Climate Action 100+ net-zero company benchmark 64

C. Alignment with TCFD recommendations 66

Introduction

"Steel is already the material of choice due to its lower carbon footprint and infinite recyclability. Crucially, as we decarbonise further, zero carbon-emissions steel has the potential to be the backbone of the buildings, infrastructure and transport systems that will enable governments, customers and investors to meet their net-zero commitments."

Aditya Mittal, CEO ArcelorMittal

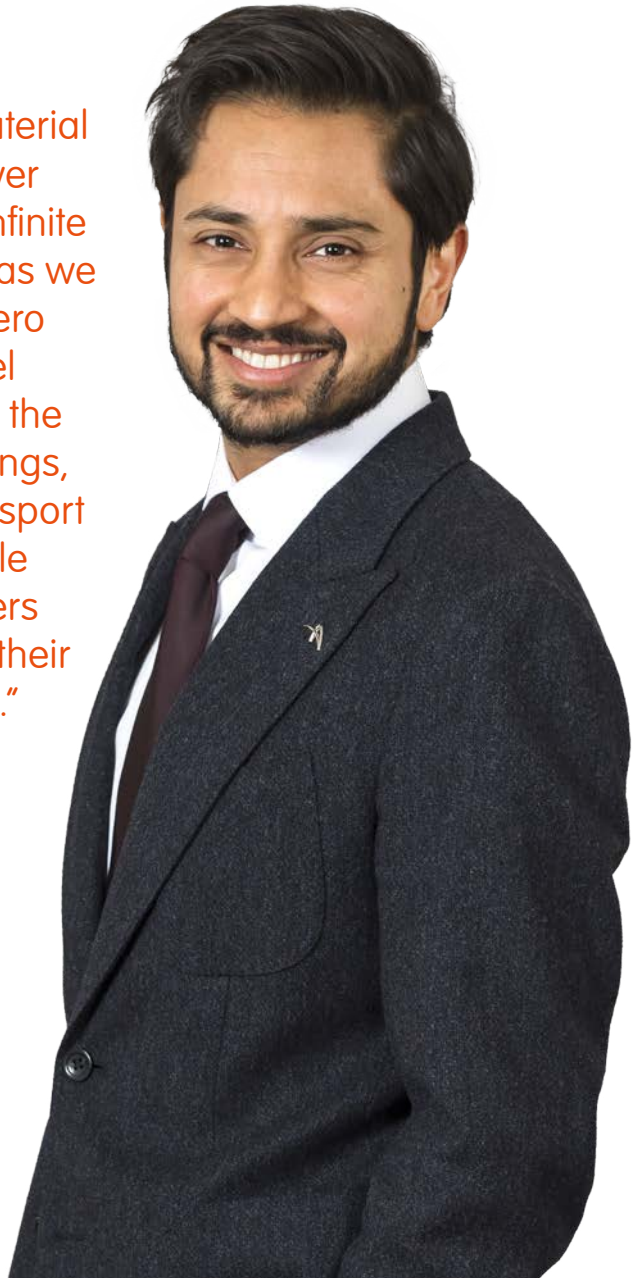


Photo: © ArcelorMittal

Dear Stakeholders,

Welcome to ArcelorMittal's second Climate Action Report (CAR2). This follows our first group-wide Climate Action Report published in 2019 and our first Europe Climate Action Report published in 2020.

We have seen a lot of progress since we published our first report – globally and within ArcelorMittal.

Covid-19 has only further increased the momentum. The requirement to stimulate the economy post-Covid is aligning with a desire to "build back better" thereby tackling two crises simultaneously.

In May 2019, just 2.4% of the global economy was covered by a net-zero target. Two years later, more than 70% of the economy is now covered – although we must acknowledge that this is not yet backed up by plans to deliver.

ArcelorMittal now has a net-zero by 2050 target and has recently announced plans for the world's first full-scale zero carbon-emissions steel plant in Sestao, Spain. These plans will enable us to be ahead of our sector in the net-zero transition, generating significant opportunities in multiple aspects of our business.

Our progress enables us to offer customers net-zero equivalent steel for the first time via an audited certification scheme. The first XCarb™ certified tonnes were sold in 2020. In 2021, the amount of this product available will increase to 120,000 tonnes, rising to 600,000 tonnes in 2022 as we continue to drive down our emissions following investments in new technologies.

This is real and meaningful progress that is testament to the capabilities of our people. But we know we must continue to challenge ourselves to move faster. As we look ahead to COP26 at the end of the year, and even further ahead to what will be a decisive decade for charting the course to a net-zero economy, we must play our part in driving the systems change required globally to achieve net-zero by 2050.

This is important because steel has a vital role to play in a net-zero world. Indeed, we believe zero carbon-emissions steel has the potential to be the backbone of the buildings, infrastructure, industry and machinery, and transport systems that will enable governments, customers, and investors to meet their own net-zero commitments.

This report represents a further step forward in this regard.

We have, for the first time, set a 2030 group CO_2e emissions intensity reduction target. At 25%, this reflects the unequal pace of change that is the reality of the world's decarbonisation journey. In regions like Europe, where we are observing an 'Accelerate' policy scenario, we can be more ambitious – with plans to reduce CO_2e emissions intensity by 35% within the next decade. In other regions, we must recognise that without sufficient incentives and policy support, it is much harder for steel to decarbonise – and being a first mover will only result in being rendered uncompetitive in that market.

Introduction

We expect the pace of change to accelerate as other parts of the world become more ambitious with their transition plans. That optimism has given us the confidence to commit to publishing a Science Based Target within two years. We look forward to collaborating with the Science Based Targets initiative through a project to define a fit-for-purpose methodology to develop additional science-based target resources for the steel industry, building on the work we have been leading with our peers across our sector. Our hope is that this accelerates progress not only for ArcelorMittal, but across the entire industry.

For our target setting today, midway through 2021, we assume progress in other regions of the world will be at least five years behind Europe.

Policymaking therefore has a catalytic role to play. The Energy Transitions Commission, of which we are an active member, estimates that the required additional investments to achieve a zero carbon-emissions economy in 2050 – while significant in absolute dollar terms – will amount to no more than 1% to 1.5% of global GDP (~US$1 trillion to US$2 trillion per year). Steel represents approximately 7-9% of global emissions. Investments that are comparatively small by global standards but massive for the industry have the potential to deliver outsized returns on the global carbon footprint. That makes it a sound goal of policy.

We will continue to step up our advocacy for policies that support the acceleration of this transition, addressing the fact that both capex and opex costs will be significantly higher, at least in the short to medium term. This includes developing clean energy infrastructure, providing access to transition finance, and addressing the carbon leakage resulting from the unequal regional pace of change in an industry that is globally traded.

Against this context, we believe it is sensible to continue to develop two pathways that have the potential to achieve zero-carbon emissions steel: Innovative DRI (Direct Reduced Iron) and Smart Carbon. A third pathway, Direct Electrolysis of Iron, also represents considerable potential – albeit within a longer time horizon.

In Europe, our strategy at present is largely focused on the Innovative DRI pathway. This reflects the commitment in Europe to prioritise the availability of green hydrogen at competitive prices. Countries including Spain and Germany plan to accelerate the availability of renewable energy that will support the introduction of green hydrogen. This is the foundation of zero carbon-emissions through the DRI-EAF (Direct Reduced Iron-Electric Arc Furnace) route and supports our plans in these countries.

Smart Carbon also has the potential to achieve zero carbon-emissions. With the potential to also become carbon-negative, Smart Carbon harnesses bio-energy and carbon capture utilisation and storage (CCUS) – all technologies that the International Energy Agency and the UN Intergovernmental Panel on Climate Change see as critical to achieving net-zero by 2050.

We are convinced that both of these technologies offer a real pathway for the steel industry to be competitive.

However, these technologies today are still far from being competitive.

The intention is that over time low carbon technologies will become more competitive as the carbon price increases and is applied globally and the decarbonisation technologies themselves become more mature and efficient. But this will take at least ten years and in the transition period support will be required to support the development of innovation while moderating capital spend which will not yield an immediate return and ensuring operational competitiveness.

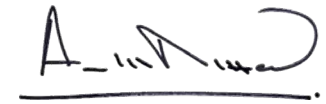
That is why we are asking for support with capex – estimated to be US$10 billion – to achieve our 25% target, as well as support on opex costs in the short to medium term.

In many respects, the challenges confronting steelmaking today resemble those faced by renewable energy over a decade ago. In that case, the importance of solar and wind power was widely acknowledged yet the technology remained economically prohibitive. The levels of investment, innovation and adoption we have seen since, have reached up to 90 billion of annual European subsidies per annum and have driven the cost of solar and wind power down to be cheaper than coal. They were assisted by targeted, reliable and thoughtful policies that enabled both companies and their financing partners to make long-term planning decisions. We are optimistic that the same will happen in steel. It is too critical a material on so many levels for that not to be the case. And, as developing economies continue to grow, the world will need more steel – not less – to give a better quality of life to millions of people.

Our activity and progress will continue to be overseen by a robust governance structure that includes an executive-level Climate Change Committee and the board-level Sustainable Development Committee, chaired by our lead independent director. Having set a 2030 group target, we will now link this to executive remuneration. In terms of our investment decision-making, each major capex project proposal is required to demonstrate its CO_2 impact to the Investment Allocation Committee (IAC). The IAC considers both the potential future carbon cost as well as the capital cost of decarbonisation, to maximise our chances of achieving our targets while ensuring each project is economically justifiable and earns its cost of capital. It is a crucial part of our strategy to manage risk and deliver long-term growth.

Over this past year, we have engaged with our stakeholders on climate more than ever before. I hope this report demonstrates how seriously we take your input, how closely we have listened to your questions, and how committed we are to providing solutions.

We expect that the year ahead will enable us to make further progress on our journey to decarbonise. We look forward to leading the steel industry's path to decarbonise.



Aditya Mittal
Chief executive officer

Section 1 Progress overview

1.1 Progress in 2020

The steel industry's transition to net zero by 2050 is a big challenge. Clearly, the steel sector has a central role to play in a successful transition. Additionally, as we have explained in our previous Climate Action Reports, the industry's progress will be faster if there is a collaborative effort by all its stakeholders.

Since the publication of our first Climate Action Report in July 2019, we have joined a number of important platforms that bring critical stakeholder groups together to identify the key levers required for the steel industry's net-zero transition. These include the Energy Transition Commission (ETC), the World Economic Forum and the Centre for Climate Aligned Finance – all part of the Mission Possible Partnership – as well as other stakeholders in order to play an active role in accelerating progress, including ResponsibleSteel, the International Energy Agency and the Science-Based Targets Initiative.

Over the past two years, we have been encouraged by the active interest these groups and organisations have shown, the time they have taken to understand the unique challenges faced by the sector, and the willingness they have shown to work together to unlock and accelerate progress.

Similar to Mission Possible Platform, we believe a number of key goals will support transition: coalition building, finance, policy engagement, demand signals and net-zero roadmap. Those levers can be powerful tailwinds to help us achieve our short-, medium- and long-term targets.

- **Technology roadmap:** Technology progress continues to be encouraging. We remain confident that both the Innovative DRI route and the Smart Carbon route offer the potential to achieve net-zero by 2050. Low and zero carbon-emissions steelmaking projects are under construction and are expected to be operational in 2022. We are also developing a third technology route that utilises direct electrolysis.
- **Demand signal:** One of the main challenges of the transition is that low-carbon steel costs considerably more to produce than the current ways of steelmaking. A customer demand signal for this premium steel is therefore an important foundation of the transition. Earlier this year, ArcelorMittal launched the first products under its new XCarb™ brand. XCarb™ green steel certificates and XCarb™ recycled and renewably-produced steel have both been very well received by customers and attracted a premium price. This gives us confidence that a demand signal, at least in Europe where the first products have launched, is real.
- **Finance:** Given the high levels of capex and opex required for the transition, it is critical there are policies in place to support regional and global competitiveness of assets that are first movers in the transition to net zero carbon steel and to create the necessary market conditions to ensure net zero steelmaking is commercially viable. Access to "green" or "transition" finance will be imperative for hard-to-abate sectors like steel. We continue to see encouraging progress on this front with considerable funds being made available by governments at both a national and continental level, for example, the EU Innovation Fund for which our CarbHFlex project was shortlisted. Financial institutions also have a vital role to play and the creation of a sub-group of the Centre for Climate Aligned Finance to look specifically at the steel sector is another welcome development. It is critical that both funding and finance is available to companies for which the transition is costly, but which cannot finance the transition by themselves.
- **Policy engagement:** It is now generally well understood that without a supportive policy environment the steel industry will find it very hard to make significant decarbonisation progress. We are encouraged that stakeholders have taken the time to understand the specific policy instruments that will be required to accelerate the transition and are open to publishing joint policy positions with the industry. Policy is not uniform across the world and therefore it is logical to accept that those regions that are more ambitious with targeted policy will decarbonise their steel industry faster, provided they also take into account the requirement to protect against carbon leakage. As our own thinking on the optimum policy combination to accelerate progress develops, we intend to actively engage with governments in the regions where we operate to share that thinking and help shape policy.



Photo: © Shutterstock

Section 1 Progress overview

1.2 ArcelorMittal's timeline since publication of its first Climate Action Report

May 2019

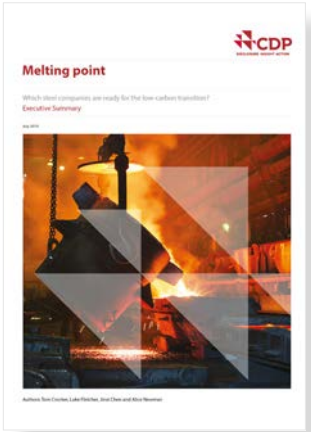
ArcelorMittal publishes first Climate Action Report

In its first Climate Action Report, ArcelorMittal announced its ambition to significantly reduce CO_2e or greenhouse gas emissions globally and become carbon-neutral in Europe by 2050. The report set out two technology pathways that can lead to net zero steelmaking and a range of low and zero carbon-emissions technologies.

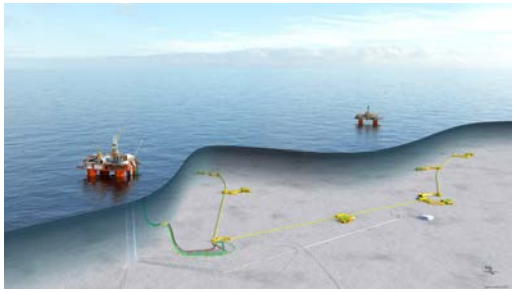
July 2019

ArcelorMittal ranked best steel company for low carbon innovations

CDP's Melting Point report ranked ArcelorMittal first in five categories relating to steel companies' readiness for a low carbon transition. The categories were low carbon innovations, transition opportunities, data transparency, renewable energy use, and board and executive climate management.



© CDP 2019



© Equinor

September 2019

ArcelorMittal commits to Equinor-led carbon capture and storage project

The company signed a Memorandum of Understanding with international energy firm, Equinor to develop value chains in carbon capture and storage. ArcelorMittal will participate in a number of joint activities, including the development of logistics, exploring potential commercial models, and advocating on the topic of carbon capture and use (CCU) or storage (CCS).

ArcelorMittal commissions design of demonstration plant for hydrogen steel production in Hamburg

ArcelorMittal commissioned technology provider Midrex Technologies to design a demonstration plant at its Hamburg site to produce steel with hydrogen. The demonstration plant will produce around 100,000 tons of direct reduced iron per year, initially with grey hydrogen sourced from natural gas and eventually green hydrogen from renewable energy sources.

ArcelorMittal unveils Belgium's largest solar roof

The installation of more than 27,000 solar panels on the roof of ArcelorMittal in Ghent was completed, creating the largest solar roof in Belgium. The project will aid ArcelorMittal Belgium's journey to low-carbon steelmaking as the power generated will be used internally in Ghent.

October 2019

worldsteel acknowledges ArcelorMittal's excellence in sustainability

For the third consecutive year, ArcelorMittal won worldsteel's Steelie Award for excellence in sustainability. The award highlights the company's industry leadership on sustainability and was given in recognition of ArcelorMittal publishing the steel sector's first Climate Action Report in May 2019.

December 2019

ArcelorMittal Europe sets target to cut carbon emissions by 30% by 2030

ArcelorMittal Europe announced its roadmap and plans to reduce CO_2e emissions by 30% by 2030. The target is in line with the company's ambition to become net zero in Europe by 2050 which was announced in May 2020.

Section 1 Progress overview

1.2 ArcelorMittal's timeline since publication of its first Climate Action Report

January 2020

CDP recognises ArcelorMittal as a global leader on climate action

CDP recognised ArcelorMittal for its leadership on corporate transparency and action on climate change from among over 8,000 companies worldwide that were scored on their 2019 disclosures. ArcelorMittal scored an A- in the 2019 CDP Climate Change assessment, an improvement from C in 2017, which means the company has now reached leadership level. The score put ArcelorMittal amongst the top 11% of companies within our industry.

May 2020

European Investment Bank makes €75 million loan to finance breakthrough technology

The European Investment Bank, with the support of the European Commission, granted a €75 million loan to ArcelorMittal for the construction of two ground-breaking projects at the company's Ghent facility in Belgium. The Carbalyst and Torero projects require total investment of €235 million and will save 350,000 tonnes of CO_2 by converting waste and by-products into valuable new products.

You can read more about these projects in chapter 2.2.2

June 2020

ArcelorMittal Europe sets out path to net-zero by 2050

In its Climate Action in Europe Report, ArcelorMittal Europe announced details of how it plans to become net-zero by 2050. By investing in two routes for low carbon-emissions steelmaking – Smart Carbon and Innovative DRI – ArcelorMittal Europe can significantly reduce CO_2e emissions by 2030 over a 2018 baseline.





Photo: © ArcelorMittal

September 2020

ArcelorMittal sets 2050 net-zero target

ArcelorMittal announced a group-wide commitment to becoming net-zero by 2050, building on the commitment made in 2019 for its European business to reduce emissions by 30% by 2030, and become net zero by 2050.

October 2020

ArcelorMittal Europe starts producing 'green steel'

ArcelorMittal Europe announced details of the CO_2e emissions technology strategy that will enable it to offer its first green steel solutions to customers. Production will rise from 30,000 tonnes in 2020 to 120,000 tonnes in 2021 and 600,000 tonnes by 2022.

December 2020

ArcelorMittal ranked at global leadership level on climate action

ArcelorMittal was again recognised by CDP for its strong performance in corporate transparency and action on climate change. ArcelorMittal successfully retained its A- score in the 2020 CDP Climate Change assessment, putting the company within the top quartile of all metal smelting, refining and forming companies and the top 10% of the steel industry.

Section 1 Progress overview

1.2 ArcelorMittal's timeline since publication of its first Climate Action Report

January 2021

Vow ASA and ArcelorMittal join forces to build biogas plant in Luxembourg

Specialist provider of technology for decarbonising industry, Vow ASA, signed a strategic Memorandum of Understanding with ArcelorMittal to work on a project to build a biogas production plant that will reduce CO_2 emissions produced during the steelmaking process. The Rodange biogas plant is planned to come online in 2023.



Photo: © Shutterstock

February 2021

ArcelorMittal Asturias starts coke-oven gas injection for Blast Furnace B

ArcelorMittal Asturias announced its coke-oven gas injection project for Blast Furnace B in its Gijón plant. The Smart Carbon technology allows gases from various sources to be injected into the blast furnace, resulting in a reduction in CO_2 emissions of 125,000 tonnes a year, equivalent to the emissions generated by the annual consumption of 84,000 Spanish households.

March 2021

Air Liquide and ArcelorMittal join forces to decarbonise steel production in Dunkirk

Air Liquide and ArcelorMittal signed a Memorandum of Understanding with the objective of implementing solutions to produce low-carbon steel in Dunkirk. The companies will join forces to develop innovative solutions involving low-carbon hydrogen and CO_2 capture technologies.

ArcelorMittal launches XCarb™

ArcelorMittal launched its first three XCarb™ initiatives as part of the company's journey to deliver on its 2050 net-zero commitment. XCarb™ will bring together all of ArcelorMittal's reduced, low and zero-carbon products and steelmaking activities, as well as wider initiatives and green innovation projects, into a single effort focused on achieving demonstrable progress towards net zero steel. The three XCarb™ branded initiatives launched include: XCarb™ green steel certificates, XCarb™ recycled and renewably produced and the XCarb™ innovation fund.

ArcelorMittal plans major investment in German sites

ArcelorMittal announced plans to build a large-scale industrial plant for DRI and EAF-based steelmaking at the company's site in Bremen. It also disclosed plans for an Innovative DRI pilot plant and EAF in Eisenhüttenstadt, following the announcement of the planned expansion of Germany's hydrogen infrastructure. Using green hydrogen, up to 3.5 million tonnes of steel could be produced by the Bremen and Eisenhuttenstadt sites by 2030, with significantly lower CO_2 emissions.

June 2021

ArcelorMittal XCarb™ innovation fund makes its first investment

ArcelorMittal announced the completion of its first XCarb™ innovation fund investment since launching the initiative in March 2021. The Company has invested an initial $10 million in Heliogen, a renewable energy technology company that focuses on "unlocking the power of sunlight to replace fossil fuels". Heliogen's technology will harness solar energy by using a field of mirrors that will act as a multi-acre magnifying glass to concentrate and capture sunlight. The sunlight will then be subsequently converted into heat (HelioHeat™), electricity (HelioPower™) or clean fuels (HelioFuel™). All three Heliogen products have the potential to be applicable to the steelmaking process and support the steel industry's transition to carbon-neutrality.
In addition to the $10 million investment, ArcelorMittal and Heliogen have signed a Memorandum of Understanding that aims to evaluate the potential of Heliogen's products in several of ArcelorMittal's steel plants.

XCarb™
Towards carbon neutral steel

Section 1 Progress overview

1.2 ArcelorMittal's timeline since publication of its first Climate Action Report



Photo: © ArcelorMittal

July 2021

ArcelorMittal Sestao to become the world's first full-scale zero carbon-emissions steel plant

The development is the result of a memorandum of understanding signed with the Government of Spain that will see an investment of €1 billion in the construction of a green hydrogen DRI plant at its plant in Gijón, as well as a new hybrid EAF. The DRI installation in Gijón will also enable ArcelorMittal Sestao to be the world's first full-scale zero carbon-emissions steel plant. By 2025, the Sestao plant – which manufactures a range of flat steel products for the automotive and construction sectors, and general industry – will produce 1.6 million tonnes of zero carbon-emissions steel.

ArcelorMittal celebrates industry-first with ResponsibleSteel™ site certifications

The company's steelmaking sites in ArcelorMittal Belgium (Geel, Genk, Gent and Liège), Luxembourg (Belval, Differdange and Rodange) and Germany (Bremen and Eisenhüttenstadt) are the first steel plants globally to be independently audited and found to meet the standards required for ResponsibleSteel, the industry's first global multi-stakeholder standard and certification initiative.

Agreement concludes second investment in ArcelorMittal's XCarb™ innovation fund

ArcelorMittal announced it has completed its second investment in the Company's recently launched XCarb™ innovation fund, serving as lead investor in Form Energy's $200 million Series D financing round, with a $25 million equity injection.

ArcelorMittal and SEKISUI CHEMICAL announce carbon recycling partnership

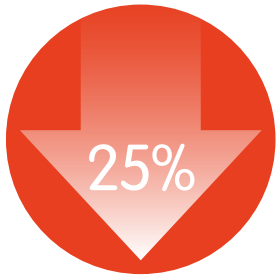
ArcelorMittal and SEKISUI CHEMICAL announced they are partnering on a project to capture and re-use carbon waste gases from the steelmaking process, which holds the potential to reduce dependence on fossil resources and contribute to the decarbonisation of steelmaking.

ArcelorMittal publishes second Group Climate Action report

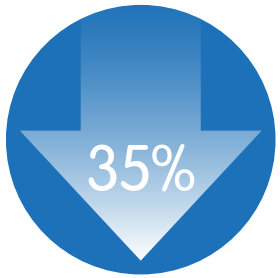
ArcelorMittal announced publication of the second Group Climate Action report targeting 25% global reduction in CO_2e emissions intensity by 2030 (scopes 1+2) with anticipated cost of US$10 billion; Europe target increased to 35% reduction in CO_2e emissions intensity by 2030 (Scopes 1+2) reflecting recent announcement that Sestao will become Europe's first full-scale zero carbon-emissions plant; new collaboration announced with Science Based Targets initiative; targets to be linked to executive remuneration.

Section 2 Our decarbonisation strategy

2.1 Our targets



New Group target of a 25% reduction in CO_2e emissions intensity by 2030 (scope 1 and 2)



Europe target increased to 35% reduction in CO_2e emissions intensity by 2030 (scopes 1 and 2)

ArcelorMittal is committed to reaching net-zero on a global basis by 2050.

We have now adopted an ambitious set of carbon targets with which to lead our sector: by 2030, we are targeting a 25% reduction in our CO_2e emissions intensity across our global steel and mining operations, with an increased European target of 35% (up from 30%). Both targets cover both scope 1 and 2.

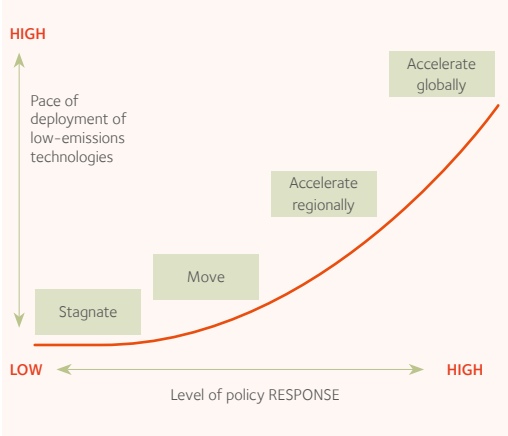
These targets create the milestones we need to achieve in order to meet our long-term target of net-zero by 2050, and are set against our 2018 baseline.

For the purpose of setting a group target, we have made a key set of assumptions as a base case:

- The cost of green hydrogen will become increasingly competitive over the next decade but will still require government support
- Carbon capture, utilisation and storage infrastructure will take time to be built at scale. While Europe is expected to take the lead, CCUS infrastructure has the potential to expand quickly in the US and Canada – providing some potential upside to our assumptions
- Different regions of the world will continue to move at very different paces and the level of climate ambition will differ between jurisdictions at any given time
- The introduction of climate-friendly policies in other regions will be 5-10 years behind Europe
- As it has been reported, 2060 may not be a realistic net-zero target for developing economies, which may mean emissions do not peak until 2030

These assumptions form the basis of the policy-based outlook we outlined in our first Climate Action report, in which we demonstrated how the speed of decarbonisation by steelmakers is linked to policy developments.

Our decarbonisation strategy in each part of the world where we operate is now based on the same assumptions. In some countries, for example Europe and Canada, we see sufficient policy incentives to enable ArcelorMittal to 'Accelerate' its decarbonisation plans. Where these conditions do not yet exist, we will continue to make improvements to 'Move', but it is difficult to 'Accelerate' without becoming uncompetitive in that market.



Our policy-based scenarios demonstrate the role of policy support in driving the pace of decarbonisation.

ArcelorMittal's decarbonisation plans will accelerate in each jurisdiction as the necessary policy conditions are in place. See section 2.5 for more details.

ArcelorMittal's expected response
Based on anticipated policy developments in next 5 years

Jurisdiction	2021-25	2026-30	2031-35
EU*	Accelerate	Accelerate	Accelerate
Canada**	Accelerate	Accelerate	Accelerate
USA	Move	Accelerate	Accelerate
Mexico	Move	Move	Accelerate
Kazakhstan	Move	Move	Accelerate
Ukraine	Move	Move	Accelerate
Brazil	Move	Accelerate	Accelerate
South Africa	Move	Accelerate	Accelerate

* Scope and extension conditional upon appropriate level of European Union and Member States financial support as well as final revised ETS system and CBAM Canada

** Federal + Ontario, Quebec

Section 2 Our decarbonisation strategy

2.2 Our net-zero roadmap

For the first time, we are disclosing a roadmap that shows our journey to net zero.

2.2.1 Five levers

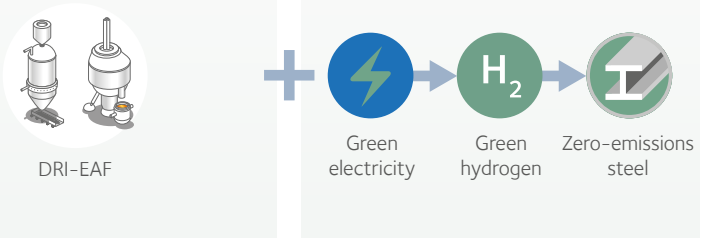
Our roadmap features five levers – in essence, groupings of actions and initiatives – that act as stepping stones to achieving carbon neutrality by 2050. These are:

- **A.** Steelmaking transformation
- **B.** Energy transformation
- **C.** Increased use of scrap
- **D.** Sourcing clean electricity
- **E.** Offsetting residual emissions

A. Steelmaking transformation

In the course of the coming decades, the steel industry will undergo a transformation of the assets used to make steel on a scale not seen for over 100 years. This includes switching ironmaking from the BF-BOF (Blast Furnace-Basic Oxygen Furnace) to the DRI, and from iron ore preparation in the sinter plant (using heat or pressure to compact a material) to the pellet plant (which compresses or moulds the iron material into the shape of a pellet). Ironmaking with pellets in the DRI is usually coupled with EAF.

Historically there has been limited use of the DRI-EAF route except in regions with a very low natural gas price. However, given the increasing cost of carbon and the requirement to reduce emissions, transitioning to natural-gas based DRI-EAF can be a first step with a proven technology that has the potential to further innovate and decarbonise through the use of green hydrogen.



B. Energy transformation

Over recent decades, the steel industry has made enormous efficiency improvements in the efficient use of energy in BF-BOF steelmaking via multiple technologies. Further innovations continue to evolve which reduce CO_2 emissions, such as the use of coke oven gas in the tuyeres of the blast furnace, drawing on the rich hydrogen content of the gas. However, these innovations continue to rely significantly on the use of fossil fuels.

The energy used to make steel in future years will undergo a further and more radical transition of the industry to clean energy vectors, as we have described in our previous climate action reports. This will involve shifting to one or combination of three alternatives: clean electricity (which could be in the form of green hydrogen), continued use of fossil carbon coupled with CCS to ensure no carbon is emitted, and use of circular carbon either through natural or synthetic carbon cycles. Natural carbon cycles include use of sustainable forestry and agriculture residues, to produce bioenergy for use in steelmaking. Emissions from use of this bioenergy will be captured by the regrowth of the biomass waste used. Synthetic carbon cycles rely on use of waste plastics as energy source, transforming the carbon in waste gases through CCU into equivalent new plastics, and ensuring no emissions are generated.

C. Increased use of scrap

As well as using scrap in the EAF, we can increase the use of low-quality scrap in BF-BOF steelmaking process by improving steel scrap sorting and classification, installing scrap pre-melting technology and adjusting the steelmaking process to accommodate scrap.

D. Clean electricity

Reducing our scope 2 emissions means mainly focusing on sourcing low-carbon electricity. This will be an increasing challenge for ArcelorMittal as we launch projects to transition from BF-BOF technology to scrap and DRI-EAF technology, which will result in electricity becoming a greater part of the energy mix we use to make steel.

We recognise we cannot rely on the electricity grid becoming more decarbonised as a whole and need to focus on increasing the amount of clean electricity we consume. We plan to do this by purchasing renewable energy certificates and by direct power purchase agreements (PPA) with suppliers from renewables projects.

E. Offsetting residual emissions

While ArcelorMittal is committed to achieving net zero by reducing CO_2e emissions to the atmosphere from its operations, there are likely to remain residual emissions for which either there will be no feasible technological solution or the solution involves excessively high economic or social costs.

For these residual emissions – today we estimate less than 5% of total emissions – ArcelorMittal will buy high-quality offsets or launch projects to generate high-quality carbon credits that would not have happened without the company's intervention.

Section 2 Our decarbonisation strategy

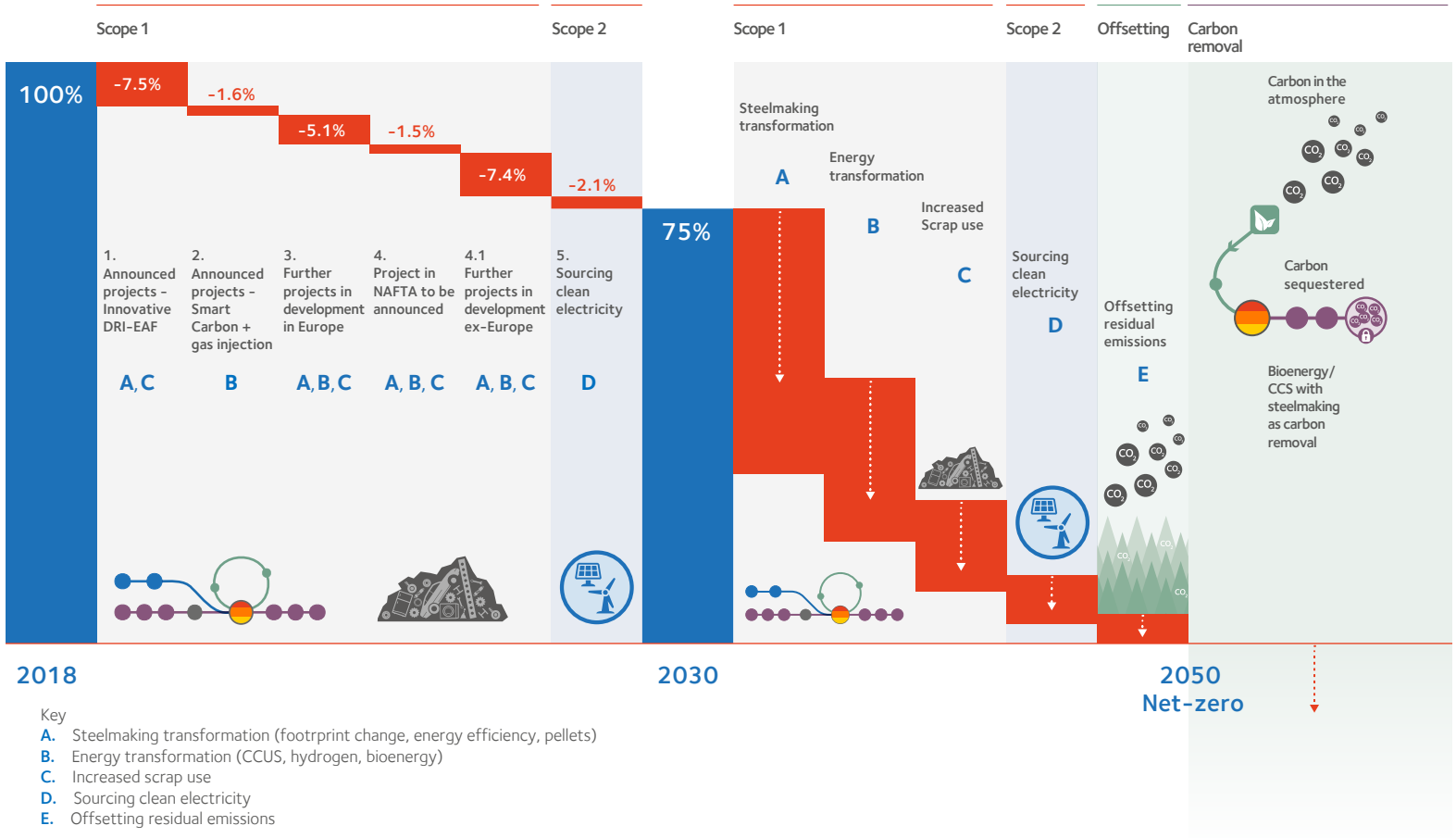
2.2 Our net-zero roadmap

Up to 2030, the waterfall chart shows a breakdown of the 25% global reduction in CO_2e emissions intensity we are targeting, taking into account announced projects and initiatives we expect to announce over the coming years.

1. Announced projects – Innovative DRI-EAF
2. Announced projects – Smart Carbon and gas injection
3. Further projects in development in Europe
4. Project in NAFTA to be announced; further projects in development ex-Europe
5. Sourcing clean electricity

We provide details of announced projects in Section 2.3.

The waterfall chart 2030-2050 breakdown is for illustrative purposes only



Key
- **A.** Steelmaking transformation (footrprint change, energy efficiency, pellets)
- **B.** Energy transformation (CCUS, hydrogen, bioenergy)
- **C.** Increased scrap use
- **D.** Sourcing clean electricity
- **E.** Offsetting residual emissions

Section 2 Our decarbonisation strategy

2.2 Our net-zero roadmap

2.2.2 Technology pathways

As we have explained in previous climate action reports, we have identified two viable decarbonisation technology pathways for steel: Innovative DRI and Smart Carbon, and a third pathway, direct electrolysis, which is promising but not yet mature.

We have done a lot of work developing technologies for the two viable routes since the publication of our last report. While these technologies are still far from being commercially competitive, this work has reinforced the potential that both pathways have to produce net-zero steel.

In Europe, the policy environment has enabled ArcelorMittal to accelerate plans to decarbonise steel. EU policy combined with support for significant projects to kickstart the development of hydrogen infrastructure in Europe and reduce the costs, alongside ambitious national commitments to deliver abundant supplies of clean energy and provide funding support for decarbonisation, make it possible to envision zero carbon-emissions steelmaking in first-mover countries across scope 1 and 2 emissions within the next five years: as set out in our detailed plan for our Sestao plant in Spain.

As renewable and low-carbon electricity becomes increasingly available, the production of affordable, industrial-scale green hydrogen becomes a possibility and the prospect of zero carbon-emissions steel made via the green hydrogen–DRI–EAF route becomes viable. In Europe, our strategy is largely focused on the Innovative DRI pathway. This reflects the commitment in Europe to prioritise the availability of green hydrogen at competitive prices. Given the significant variation across countries and regions in existing CO_2 policy frameworks and in the availability and cost of the clean energy, we will continue to develop our Smart Carbon route. This combines bio-energy, carbon capture and utilisation – all technologies that the International Energy Agency (IEA) and the UN Intergovernmental Panel on Climate Change (IPCC) see as critical to achieving net-zero by 2050. Crucially, Smart Carbon gives us flexibility to adjust our carbon emission reduction plans to local steelmaking conditions.

We are also cautiously optimistic about a third potential technology pathway – direct electrolysis of iron – which is currently in the research and development phase and showing good potential in our Siderwin project (see section 5.1 for more information).

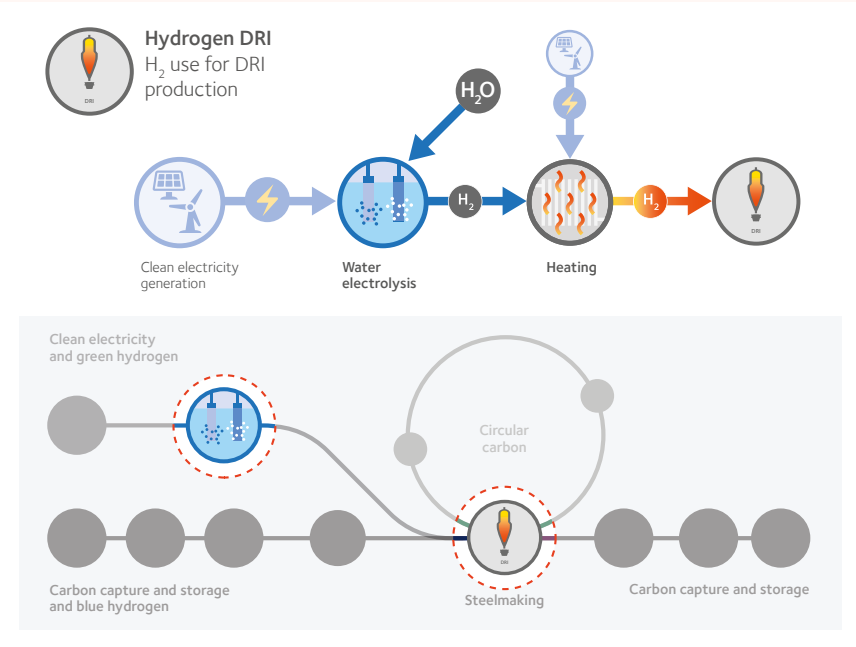
Hydrogen costs

Hydrogen DRI technology continues to advance, yet at today's green hydrogen cost of $3.5-5/kg, we estimate that green hydrogen based DRI production would increase the cost of steel production by $150 to $250 per tonne compared to natural gas based DRI. On a like-for-like basis (excluding CO_2 costs), hydrogen would need to fall below $1/kg to compete with natural gas DRI in Europe, and below $0.7/kg to compete in USA.

If renewable energy costs – the highest contributor to green hydrogen costs – continue to fall, we estimate green hydrogen costs could drop to ~$1.5/kg by 2030. This still means that green hydrogen DRI would require significant public support beyond 2030 to be competitive versus other carbon neutral steelmaking routes.

ArcelorMittal has recently joined the Hydeal consortium, which is focussed on creating the right environment to improve both the supply and market conditions required to drive down the price of green hydrogen to €1.5/kg. At this level it can start to be competitive with fossil fuels in the steel-making process.

Should the costs of green hydrogen fall more quickly than our estimates – which could happen as a result of accelerated regulation and strong government support – then we will be ready to utilise green hydrogen in our DRI-EAF plants. At this point, we expect green hydrogen DRI-EAF to play a significant part in our emissions reduction after 2030.



Section 2 Our decarbonisation strategy

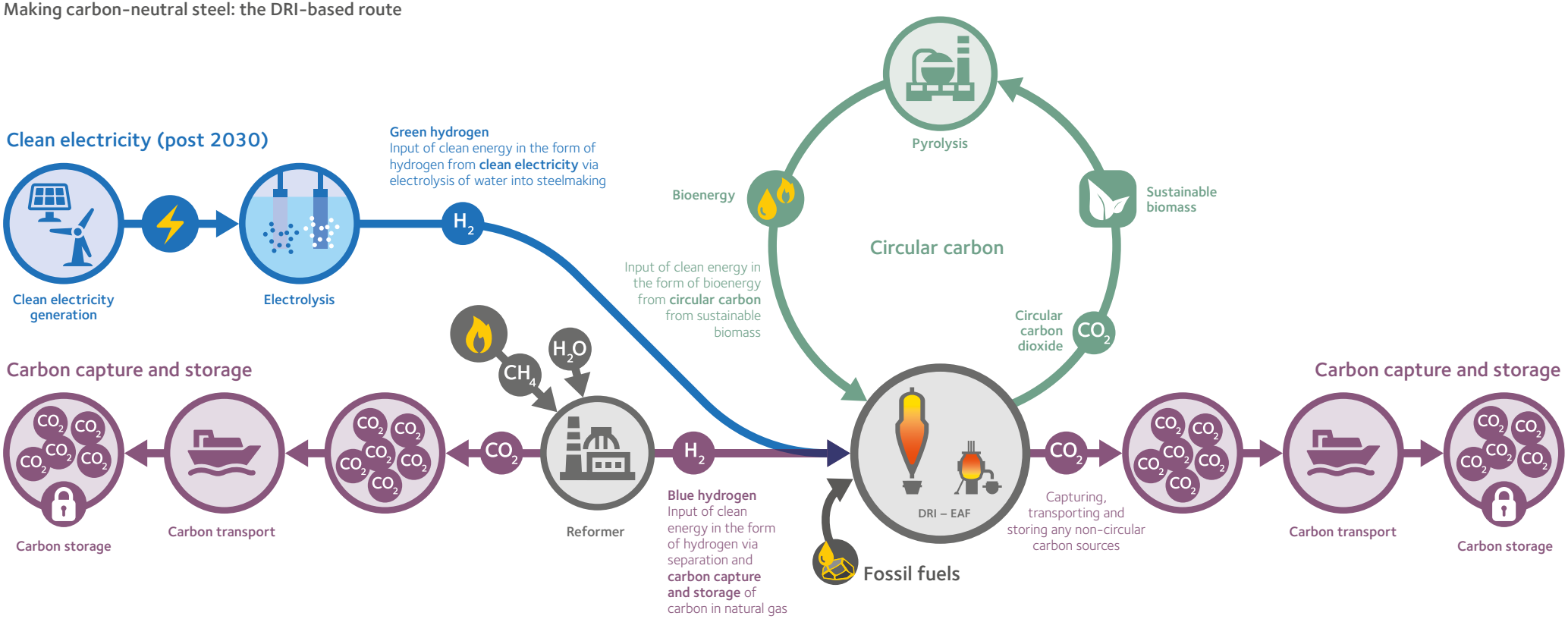
2.3 Our plans: the DRI-based route

2.3.1 Decarbonisation projects 2021-2030

2.3.1.1 Announced projects – Innovative DRI-EAF

At the forefront of our announcements in 2021 are detailed plans to develop a zero carbon-emissions steel plant in Sestao, Spain. It will produce zero carbon-emissions steel across scope 1 and 2 emissions by 2025. We are also working on other new technologies for low carbon-emissions steelmaking.

Making carbon-neutral steel: the DRI-based route



Section 2 Our decarbonisation strategy

2.3 Our plans: the DRI-based route

ArcelorMittal Spain

Sestao: zero carbon-emissions steel plant
Gijon: new DRI and EAF

ArcelorMittal's facility in Sestao will become the world's first full-scale zero carbon-emissions steel plant. To achieve this, a ~2 million tonne green hydrogen-powered DRI unit will be constructed at our nearby Gijón plant, from which tonnes of DRI will be transported to Sestao to be used as feedstock for its two EAFs.

By 2025, the Sestao plant – which manufactures a range of flat steel products for the automotive and construction sectors, and general industry – will produce 1.6 million tonnes of zero carbon-emissions steel by:

- Changing the metallic input by increasing the proportion of circular, recycled scrap, and using green hydrogen-produced DRI from Gijón in its two existing EAFs. This means the metallic input into Sestao's EAFs will be from zero carbon emission sources (covering scope 1 and 2).
- Powering all steelmaking assets (EAFs, rolling mill, finishing lines) with renewable electricity, either by establishing a renewable energy power purchase agreement (PPA) or buying renewable energy guarantees of origin (GOOs) certificates.
- Introducing several key emerging technologies that will replace the small, remaining use of fossil fuel in the steelmaking process with carbon-neutral energy inputs, such as sustainable biomass or green hydrogen. This will bring the plant to zero carbon-emissions on a scope 1 and 2 basis.

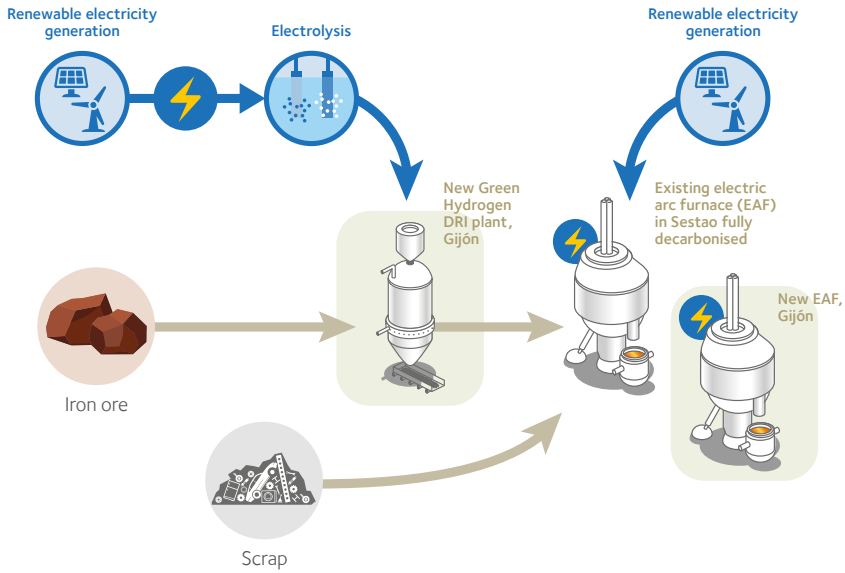
We will also construct a new hybrid EAF in Gijón. The construction of the DRI and EAF units will transition the Gijón plant away from BF-BOF steelmaking to DRI-EAF production, which generates a significantly lower carbon footprint.

We have signed a Memorandum of Understanding with the Spanish government that will underpin the EUR1 billion required for the transition.

Government support for this project is crucial, firstly from a funding perspective, given the significant cost associated with the transition to net zero steelmaking. Secondly, because it will enable ArcelorMittal to have access to green hydrogen supplied through a consortium of companies that will cooperate in the construction of the infrastructure required in order to produce hydrogen in the Iberian Peninsula using solar-powered electrolysis and to transport it directly through a network of pipelines. The initiative involves the construction of multiple large-scale solar farms, with the hydrogen produced in the same location, thereby reducing production costs, and transported directly via pipeline to Gijon and Sestao.

Expected completion date: 2025

This is how we will reduce CO_2 from ArcelorMittal Spain by 2025



Section 2 Our decarbonisation strategy

2.3 Our plans: the DRI-based route



ArcelorMittal Germany

Bremen and Eisenhüttenstadt: supporting zero carbon-emissions steelmaking

We are planning to build a large-scale industrial plant for DRI and EAF-based steelmaking at our site in Bremen, as well as an innovative DRI pilot plant and EAF in Eisenhüttenstadtat. The Bremen plant will produce ~2 million tonnes of DRI per year and supply ArcelorMittal EAFs in Bremen and Eisenhüttenstadt.

Bremen and Eisenhüttenstadt will produce up to 3.5 million tonnes of steel by 2030, with significantly lower CO_2e emissions.

Depending on the amount of hydrogen available, CO_2e savings of more than 5 million tonnes could be possible.

Hamburg: Europe's only EAF-DRI facility

In Germany, ArcelorMittal already operates Europe's only DRI-EAF plant in Hamburg, where the switch to using hydrogen instead of natural gas in the iron ore reduction process is being prepared. A project is underway to test the ability of hydrogen to reduce iron ore and form DRI on an industrial scale, as well as testing carbon-free DRI in the EAF steelmaking process. The objective is to reach industrial commercial maturity of the technology by 2025, initially producing 100,000 tonnes of DRI a year.

The process of reducing iron ore with hydrogen will first be tested using grey hydrogen generated from gas separation.

In the future, the plant should also be able to run on green hydrogen when it is available in sufficient quantities at affordable prices, with the clean energy for hydrogen production potentially coming from wind farms off the coast of Northern Germany.

Supporting green hydrogen production

To support and enable the availability of hydrogen for steel production, ArcelorMittal is participating in the establishment of regional hydrogen networks. These include North German hydrogen projects: the Clean Hydrogen Coastline to benefit Bremen and the Hydrogen Cluster East Brandenburg to enable hydrogen supply for Eisenhüttenstadt.

ArcelorMittal is also collaborating with Shell, Mitsubishi and other cross-industry companies to form the Hamburg Green Hydrogen Hub, with the goal of generating energy from renewable sources.

Section 2 Our decarbonisation strategy

2.3 Our plans: the DRI-based route



ArcelorMittal France

Dunkirk: preparing for the transition

ArcelorMittal is currently studying the implementation of an innovative solution to produce low carbon steel in Dunkirk in partnership with Air Liquide. The project aims to combine a Direct Reduction Plant with arc furnaces to produce 2 Mt/y hot metal which would be a first of a kind. The project includes low carbon hydrogen use and would lead to CO_2e savings.

Commissioning is planned for 2025.

This partnership between Air Liquide and ArcelorMittal is a first step towards the creation of an ecosystem at the forefront of low-carbon hydrogen and CO_2 capture solutions that will be a source of competitiveness and attractiveness for various players in the Dunkirk industrial and port basin.



ArcelorMittal Canada

Contrecoeur: Testing incremental use of hydrogen in existing facilities

Status: Operational

Our existing DRI plant in Quebec produces 1.7 million tonnes of DRI each year. In 2021 we are testing hydrogen injection in our DRI facility. The test is a "proof of principle" type aiming at building our knowledge about this greenhouse emission abatement technique and exploring its potential and viability beyond theoretical calculations or process modelling. The test will start with a limited injection of 5% within the energy mix and further phases are planned in the future. This is mostly attractive because renewable sources – specifically hydroelectric – provide 99% of Quebec's energy.

The role of hydrogen

There is growing international consensus that clean hydrogen can and should play an important role in the world's transition to a sustainable energy future. Hydrogen is a versatile energy carrier and is easy to use with many potential applications. These include powering road vehicles and ships, and serving as a primary fuel for steelmaking. Hydrogen – especially green hydrogen – has an important role to play in the future of steelmaking, in both the Innovative DRI and Smart Carbon technology pathways.

Hydrogen can be produced from a range of sources with little to no carbon emissions. Green hydrogen uses solar or wind power to separate the hydrogen from water through electrolysis. Blue hydrogen extracts the hydrogen in natural gas and sequesters the resulting CO_2 to minimise emissions. It has the potential to be a game-changer, as our recent announcement in Spain demonstrates, but widespread adoption of clean hydrogen faces significant challenges.

Producing clean hydrogen today is expensive, 2 to 5 times costlier than CO_2-emitting hydrogen produced today (grey hydrogen) and cannot compete on its own with other fuels such as natural gas, even when factoring in CO_2 costs.

Easy to use as a fuel, manipulating and transporting hydrogen is difficult due to its low density and logistics challenges are a formidable obstacle to widespread hydrogen use. Being one of the lightest gases with low energy density, transporting pure hydrogen long distances requires dedicated piping network, or alternatively hydrogen needs to be liquefied for road or ship transport. Only some of the necessary transport technology is commercially mature today and transporting hydrogen, particularly in liquid form, adds significant additional costs to using hydrogen.

Policymakers, particularly in Europe and Japan, are supporting the development of green hydrogen production, pipeline and liquefaction infrastructure through to 2030 through various forms of public funding. This investment drive in hydrogen, together with further anticipated reductions in solar PV and wind power costs, will have a scale effect that is likely to lead to electrolyser and transport costs for hydrogen coming down significantly.

However, with a high cost starting point, we believe that significant policy support may be needed in many jurisdictions beyond 2030 in both hydrogen production and the necessary transport infrastructure to sustain and expand hydrogen use in the steel industry.



Photo: © Adobe

Section 2 Our decarbonisation strategy

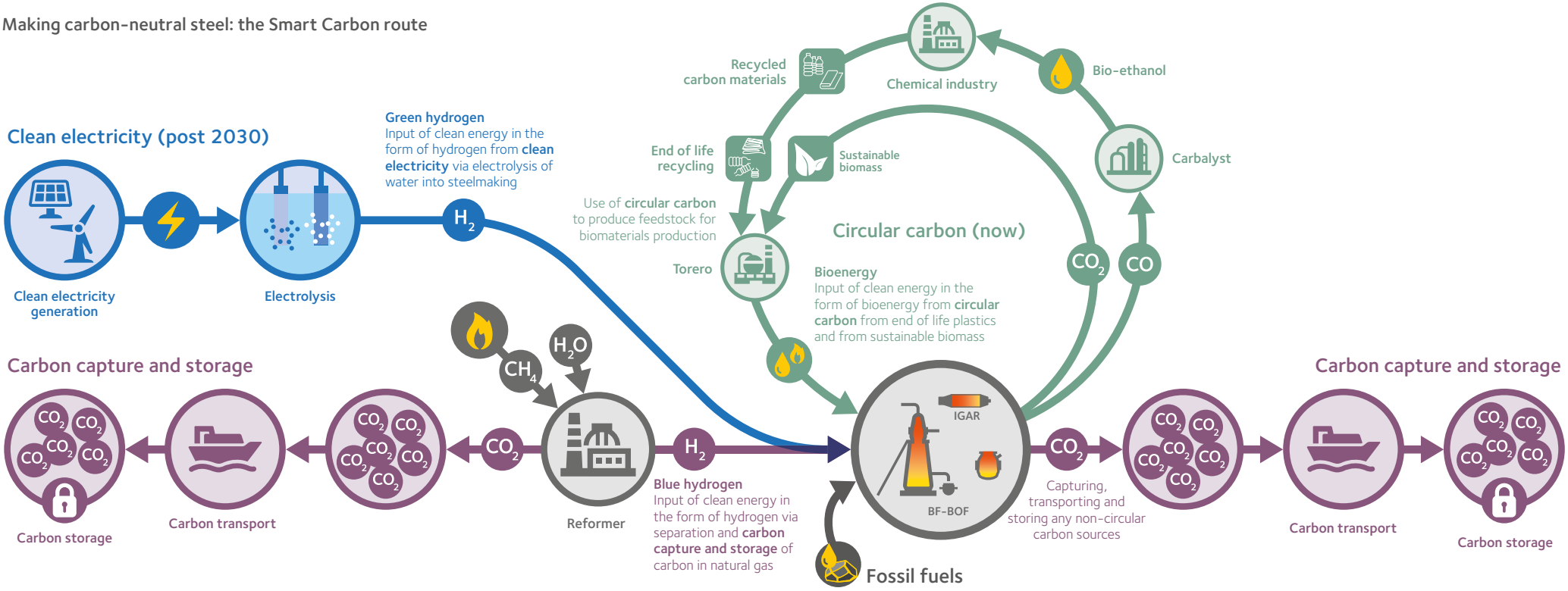
2.3 Our plans: the Smart Carbon route

2.3.1 Decarbonisation projects 2021-2030

2.3.1.2 Announced projects – Smart Carbon

We are constructing several commercial-scale projects to test and prove a range of Smart Carbon technologies, with key projects coming on-stream from 2022.

Making carbon-neutral steel: the Smart Carbon route



Section 2 Our decarbonisation strategy

2.3 Our plans: the Smart Carbon route

Circular carbon: "Torero" and "Carbalyst"

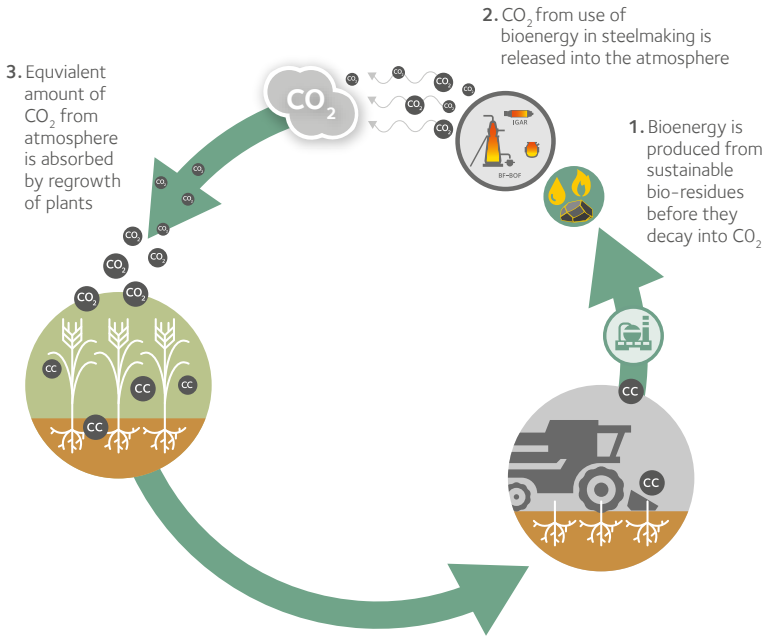
Circular carbon uses carbon-based energy that does not add carbon to our biosphere. It can be in the form of bioenergy from the natural carbon cycle, such as waste from sustainably-sourced construction wood, agriculture and forestry residues, where regrowth of managed forests and crops will recapture the CO_2 emitted from the bioenergy used.

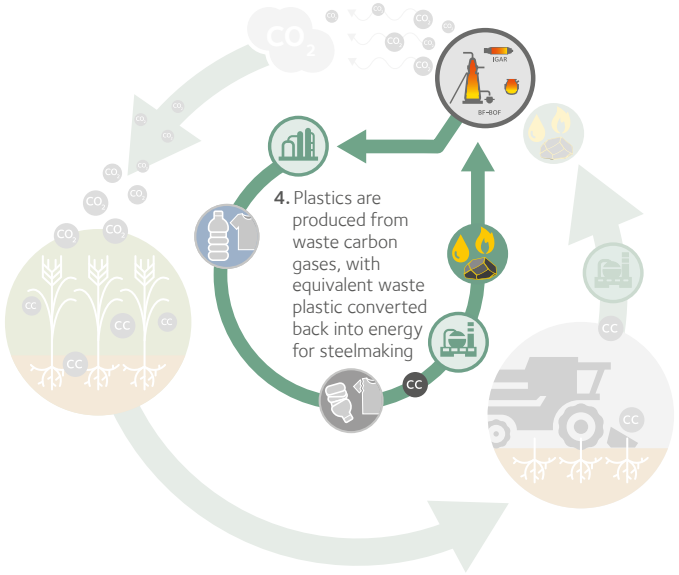
It can also be from capturing carbon gases produced by the iron and steelmaking process and converting into recyclable products. For example, plastic waste used as energy, for which exhaust carbon gases are turned back into equivalent amount of new plastics. Equivalency in the carbon content of waste plastics used and new plastics produced ensures the process is carbon neutral. This cycle also provides the plastics industry a circularity that it lacks today.

We are developing two key technologies to enable use of circular carbon.

"Torero" is a torrefaction process to make steel-specific renewable energy from waste wood and waste plastic.

"Carbalyst" allows us to use steelmaking waste gases to produce basic chemicals such as bio-ethanol, which are the key building blocks of plastics.





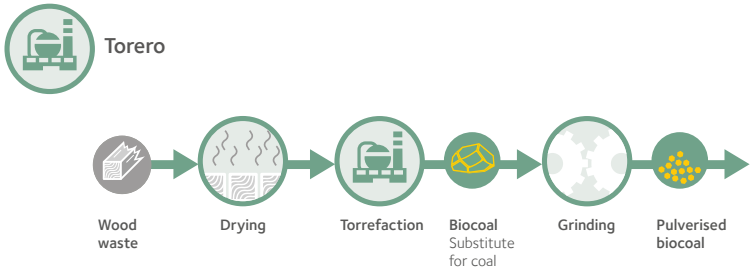
Section 2 Our decarbonisation strategy

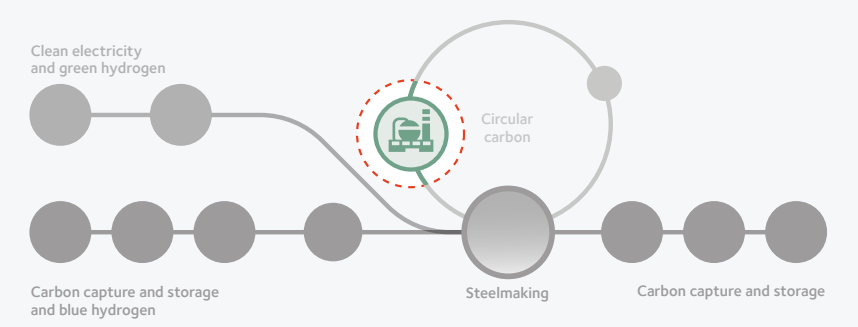
2.3 Our plans: the Smart Carbon route

ArcelorMittal Ghent, Belgium

"Torero": At ArcelorMittal Ghent, we are constructing an industrial-scale demonstration plant that converts waste wood into renewable energy through a process called torrefaction. This source of waste wood is considered hazardous material if burnt in an incinerator as it emits harmful gasses. However, in a blast furnace no such pollutants can be formed. At the Ghent plant, two reactors will each produce 40,000 tonnes of bio-coal annually that can be used in the blast furnace as a substitute for coal. Construction of the €55 million project started in 2018: reactor #1 is expected to start production in 2022 and reactor #2 in 2024.

Expected completion date: 2022 (reactor 1) & 2024 (reactor 2)





Section 2 Our decarbonisation strategy

2.3 Our plans: the Smart Carbon route

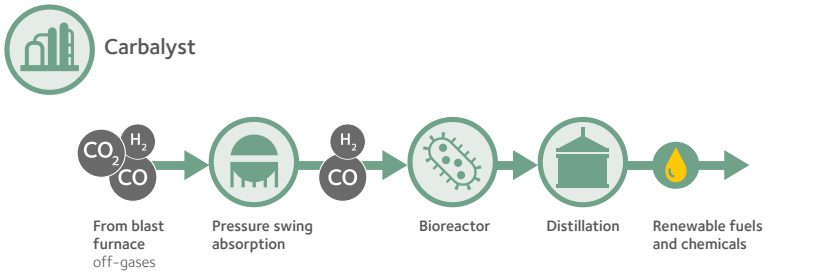
"Carbalyst" is a family of technologies that capture carbon from the steel-making process for use elsewhere, either a biofuel or biochemical for use by the plastics industry.

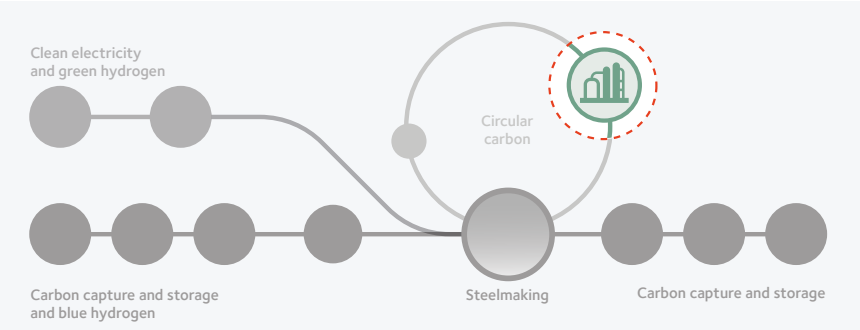
"Steelanol" uses gas-fermentation technology to transform carbon-rich industrial waste gases into advanced bioethanol for use in the transport sector and to make plastics.

We are in the process of constructing an industrial scale Steelanol demonstration plant in Ghent, Belgium that will capture carbon off-gases from the blast furnace and convert them into bioethanol using microbes. The ~€180 million plant is expected to be completed in 2022 and will produce 80m litres of bioethanol annually.

"CarbHFlex" is a process that uses microbes to produce acetone and isopropanol, both basic chemicals used to make plastics. This project has been shortlisted for IPCEI funding.

Expected completion date: Steelanol 2022





Section 2 Our decarbonisation strategy

2.3 Our plans: the Smart Carbon route



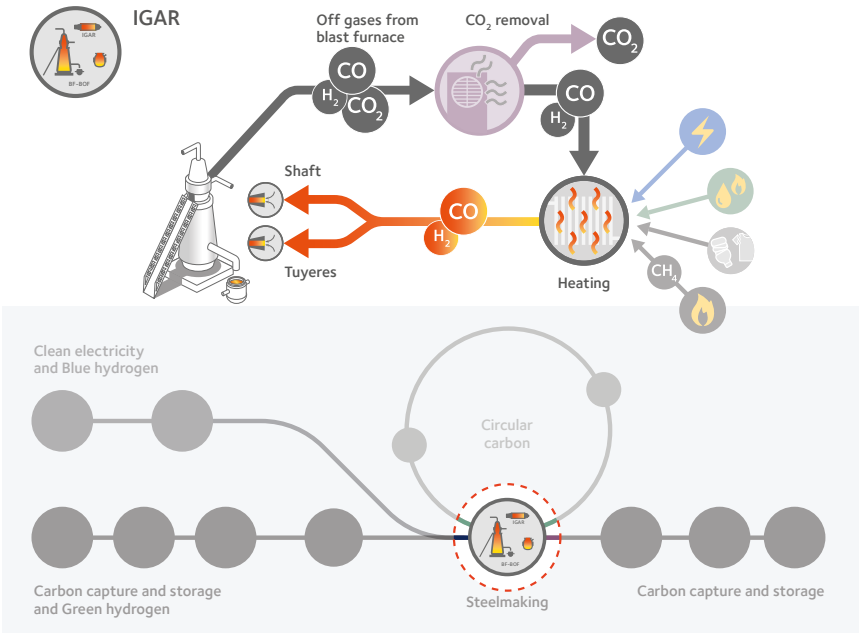
Circular gas and IGAR

Status: demonstration

IGAR (Injection of Gas Reductant in blast furnace) is a transformative technology for the blast furnace, key to transition to carbon neutral blast furnace technology. IGAR increases the re-use of off-gases in the blast furnace, reducing the consumption of coal per tonne of steel produced and cutting CO_2e emissions by up to 20%.

It will capture waste carbon monoxide and hydrogen from steel gases and reinject into the blast furnace as a reductant gas. Additionally, this technology increases the concentration of hydrogen in blast furnace off-gases, increasing the amount of carbon captured in Carbalyst processes by increasing the production of biofuels and biochemicals. This technology will also allow green hydrogen to be injected directly into the blast furnace, as and when it becomes available and commercially viable.

This technology can be further leveraged by injecting additional carbon monoxide and hydrogen from external clean energy sources, such as green hydrogen, further reducing coal use, CO_2e emissions and waste gases of other industries e.g. chemicals.



Section 2 Our decarbonisation strategy

2.3 Our plans: the Smart Carbon route

Dunkirk: 3D

Status: Pilot

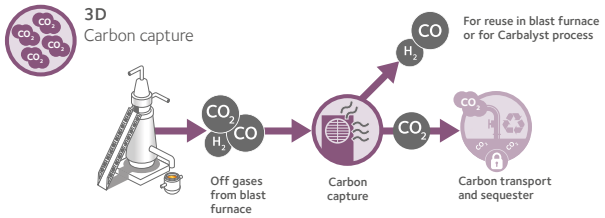
A pilot project in Dunkirk aims to capture CO_2 off-gases at a rate of 0.5 metric tonnes of CO_2 per hour for transport and storage. The process uses low temperature heat available across the plant to separate CO_2 from other off-gases from the blast furnace to create a pure low-pressure CO_2 gas stream suitable for internal reuse or piping for storage. This process could significantly lower CO_2 capture costs versus alternative technologies. Regional infrastructure would be requested for all local industrial companies in order to optimise usage and efficiency of the solution.

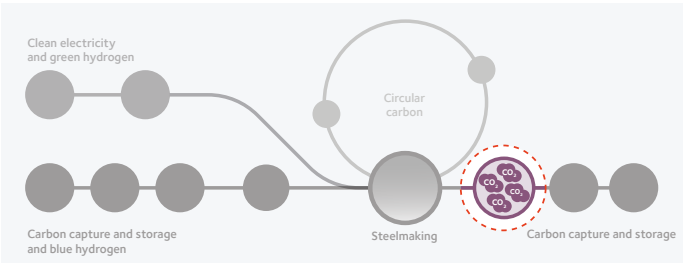
Expected completion date: 2023

3D impact and ramp up

This carbon capture technology has the potential to be adopted across our blast furnace footprint but scaling will be highly dependent on development of CO_2 transport and storage infrastructure in the regions we operate. We are actively engaged in carbon transport and storage at several locations in Europe and exploring the possibility in other regions.

Deployment of our 3D technology will be linked to the development of CO_2 pipeline infrastructure, as well as deployment of CO_2 reuse technologies in our blast furnaces.





2.3.1.3 Announced projects – Blast furnace gas injection across ArcelorMittal Flat Europe sites

ArcelorMittal Europe is implementing projects in almost all its flat products sites to use gases from different sources for blast furnace injection. Injecting hydrogen-rich coke oven gas is an efficient, cost-effective method that allows steelmakers to reduce CO_2 emissions now.

ArcelorMittal Asturias has the most advanced coke oven gas project, with injection of recovered hydrogen and methane containing gases from the coke ovens, announced in February 2021.

The use of this innovative technology will result in a reduction in CO_2 emissions of 125,000 tonnes a year.

Section 2 Our decarbonisation strategy

2.3 Our plans: increased use of scrap

Increased use of scrap

As well as using scrap in the EAF, we can increase the use of low-quality scrap in BF-BOF steelmaking process by improving steel scrap sorting and classification, installing scrap pre-melting technology and adjusting the steelmaking process to accommodate scrap.

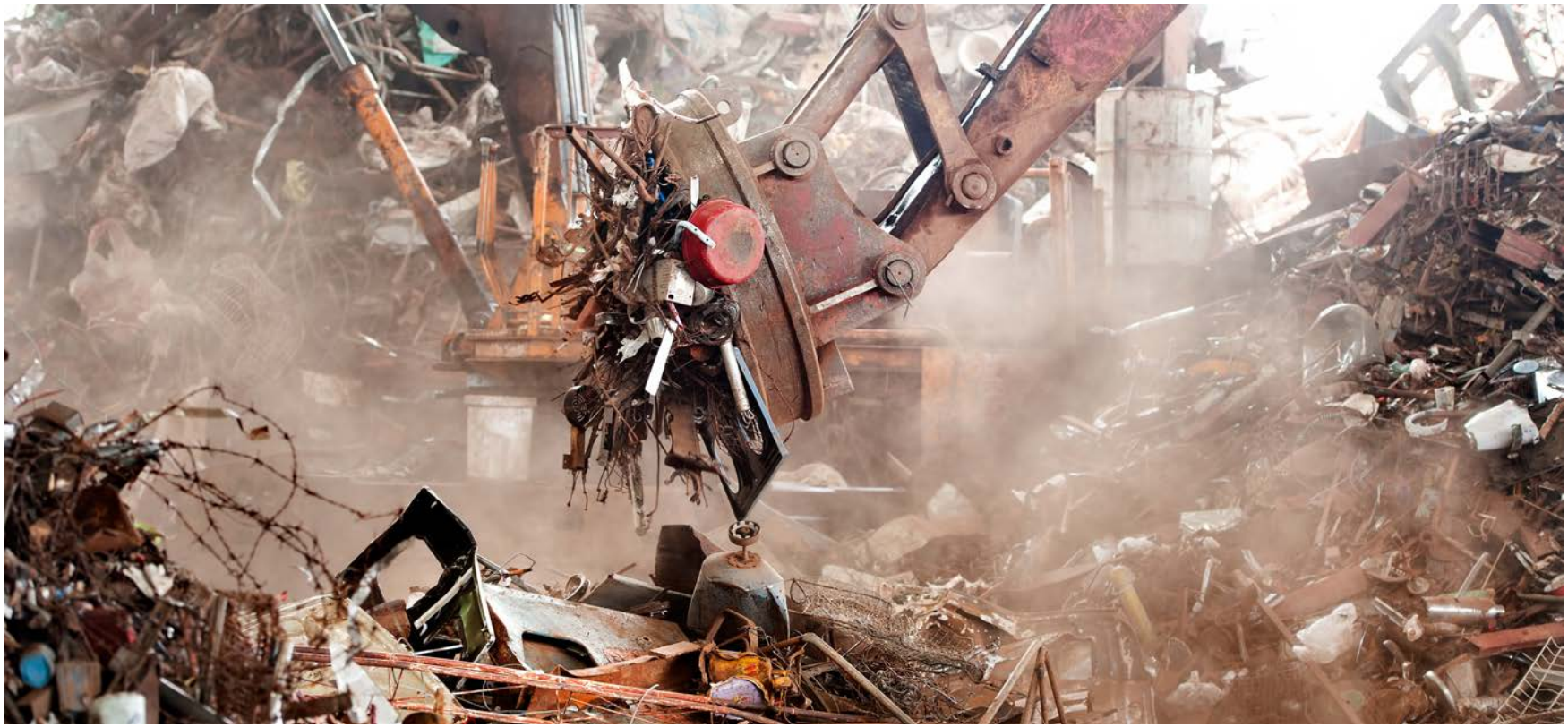


Photo: © Adobe

Section 2 Our decarbonisation strategy

2.3 Our plans: further projects under development

2.3.2 Further projects under development

Our 2030 target also includes projects that are currently under discussion and development but have not yet been announced.

These include but are not limited to the following:

Europe:

- Further investment in DRI and EAF installations linked to certain BF relines scheduled within the next decade
- Additional smart carbon projects if and when current pilot projects prove successful

ROW:

- Implementation of upstream optimisation, specifically in the CIS region
- Increased use of scrap and natural gas within the current footprint
- Implementation of pelletising projects which will over time replace Group sintering processes
- Project in NAFTA to be announced

2.3.3 Mining and shipping

ArcelorMittal is developing different solutions to reduce its greenhouse gas emissions from its mining and processing operations.

ArcelorMittal Mining Canada (AMMC) continues to study and trial zero carbon emissions iron ore pellet production. AMMC has undertaken trials to reduce its CO_2e emissions associated with bunker fuel and solid fuels at the pellet plant through liquid fuel substitutions. It is working with the Global R&D team and ArcelorMittal's experts to develop pellets with the objective of becoming the first zero carbon-emissions pellets supplier for the ArcelorMittal Group. These potential pathways include carbon capture, among other technologies. ArcelorMittal Liberia is exploring opportunities to reduce its GHG emissions by switching from largely diesel to the new West African 'green power grid'.

ArcelorMittal Mining will also act as an enabler for ArcelorMittal's current steelmaking transition from blast furnace processes to cleaner DRI-based EAF processes by increasing the ratio of DR pellet production capacity.

ArcelorMittal Termitau is developing a renewed strategy for its metallurgical coal mining operations, to ensure they meet the best safety standards possible whilst also significantly reducing the greenhouse gases that result from their methane-rich coal seams. Already at the Lenina mine, ArcelorMittal is developing a methane capture project, which converts the captured methane into electricity to power the underground mining equipment. When at full scale, such projects will enable the operations to be fully circular in terms of energy sourcing and use.

Through its joint venture Global Chartering with Drylog, ArcelorMittal also co-owns a small shipping business, enabling us to capture value in both upstream and downstream transportation aspects of our value chain. In line with the International Maritime Organisation (IMO)'s decarbonisation strategy, our existing ships comply with the latest Energy Efficiency Index benchmarks. Any new ships we purchase are designed to align with environmental expectations of the industry. With our technical partners, we are exploring the potential for the transition to alternative fuels such as hydrogen and ammonia; and given the capital-intensive nature of this transition, the policy conditions that will make this possible.

Section 2 Our decarbonisation strategy

2.3 Our plans: beyond 2030

2.3.4 Beyond 2030 – achieving net zero by 2050

We recognise the importance of defining the constituent elements of net-zero to ensure we make necessary progress towards the challenge. The fundamental aspects of our net-zero outlook include:

- Steelmaking: this means that all emissions within the boundary of core steelmaking emissions sources are incorporated into a net-zero target, incorporating the core carbon emissions of steelmaking, regardless of the level of vertical integration, including emissions from waste gas used for power generation, and the processing of iron ore reductants and other semi-processed inputs that are integral to iron and steelmaking, such as lime, pellets and coke and, in future, hydrogen and biomass. This has been outlined in the recent report by the Net-Zero Steel Pathway Methodology Project.
- Co-products: It is important to recognise that different steelmaking technologies produce various other products that directly substitute production needs of other industries, such as cement. Thus, it is important that carbon emissions are allocated to all co-products we produce apart from steel, placing the right carbon burden on products and ensuring the optimal technological decisions are taken to become carbon neutral. These include cement, electricity and, shortly, the basic building blocks for plastics.
- Mining and shipping: Ultimately, we need to work towards net-zero across our entire value chain as part of our net-zero by 2050 goal, including our mining and shipping emissions. ArcelorMittal's significant iron ore mining activity provides an advantage. This vertical integration strengthens our ability to develop long term plans for the production and sourcing of DR pellets. In addition, we are working with our shipping partners to develop levers to decarbonise in line with the IMO strategy. See section 2.3.4, Shipping and Mining.

Key to ensuring ArcelorMittal becomes net-zero by 2050 across all these parameters will be the five levers outlined earlier – steelmaking transformation, energy transformation, increased use of scrap, clean electricity and offsetting.

For those residual emissions that would remain hard to abate, we may rely on high quality offsets, removing equivalent volumes of GHG emissions from other activities outside ArcelorMittal's control in order to ensure that our own operations do not, on balance, contribute to increased concentrations of greenhouse gases in the atmosphere.

Furthermore, we believe the steel industry is ideally positioned to become a key sector in carbon removals that will be increasingly necessary through 2050, and will dominate world's decarbonisation efforts in the second half of this century. As one of the most efficient energy users of various streams of limited bioenergy available, and ease of capture of CO_2 at the end of the process compared with other sectors such as power and cement, steel has potential for becoming the key industry to leverage bioenergy and carbon capture and storage (BECCS) to remove CO_2 from the atmosphere.



Photo: © ArcelorMittal

Section 2 Our decarbonisation strategy

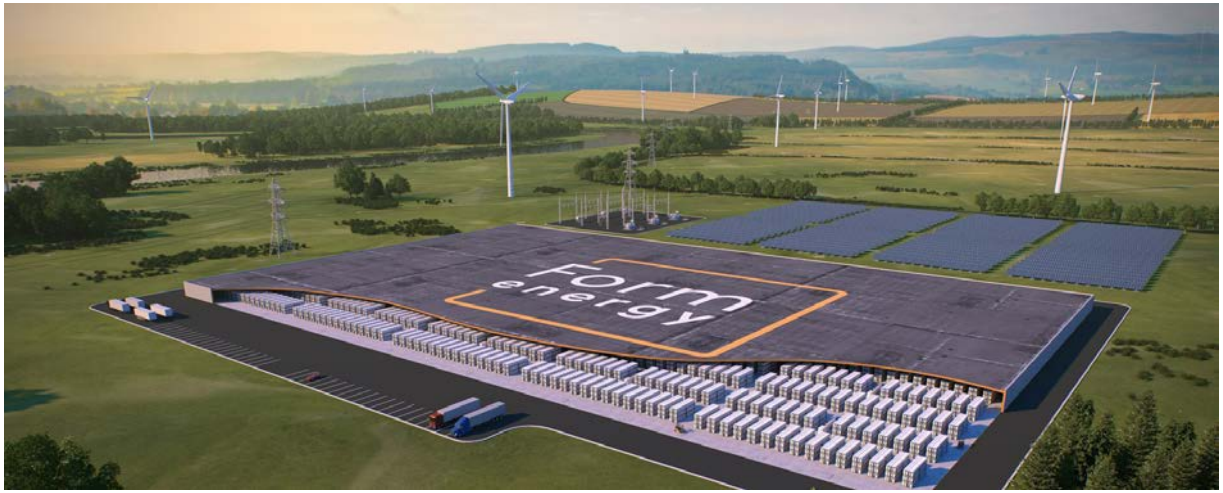
2.3 Our plans: beyond 2030

XCarb™ Innovation Fund

Given the breadth and scale of the challenge, we know innovation will play an accelerator role in achieving net-zero by 2050. In March 2021, ArcelorMittal launched its $500 million innovation fund with the intention of making awards of up to $100 million a year to innovative businesses and technologies.

The first award of $10 million was made in June 2021 to Heliogen, a technology company focused on developing heat, electricity and fuels from concentrated solar energy. The Heliogen technology will be capable of creating 100% green hydrogen, which Heliogen is working to develop as its first fuel. ArcelorMittal and Heliogen have signed a Memorandum of Understanding which aims to evaluate the potential of Heliogen's products in several of ArcelorMittal's steel plants.

In July, ArcelorMittal announced it has invested $25 million in Form Energy, developer of breakthrough low-cost energy storage technology to enable a reliable, secure, and fully-renewable electric grid year-round. Alongside the investment, the two companies have signed a joint development agreement to explore the potential for ArcelorMittal to provide direct reduced iron, tailored to specific requirements, to Form Energy as the iron input into their battery technology.



ArcelorMittal invests $25 million in Form Energy. Photo: © Form energy

Section 2 Our decarbonisation strategy

2.4 Costs, investments, and funding

The Energy Transitions Commission, of which we are an active member, estimates that the required additional investments to achieve a zero-carbon-emissions economy in 2050 – while significant in absolute dollar terms – will amount to no more than 1% to 1.5% of global GDP (~US$1 trillion to US$2 trillion per year).

The costs from the perspective of the steel industry however are significant, vastly exceeding the margins typically generated by the steel industry throughout the cycle. Even as costs decline as technologies mature and clean energy infrastructure is scaled up, the steel industry will not be able to absorb the extra costs under normalised market conditions. While the steel industry must take the lead on technology developments, a complementary and concerted effort will be needed from suppliers, customers, the energy industry and policy makers to create the right market conditions for the industry to transition to zero carbon-emissions steel. In section 2.5 we outline the policy conditions that are needed, and multiple stakeholder initiatives that are helping drive these changes. We will need to accelerate this collaboration to drive forward solutions in sufficient time to achieve our targets.

To achieve ArcelorMittal's 2030 global target of 25%, we estimate the gross capital cost required for the Group to be approximately US$10 billion. It is the expectation that 35% of this capex will be deployed up to 2025 with the remainder in the second part of the decade.

The intention is clearly that over time low carbon technologies will become more competitive as the carbon price increases and is applied globally and the decarbonisation technologies themselves become more mature and efficient.

Realistically however this will take at least ten years and therefore during that interim period policy support will be essential to both moderate capital spend and ensure operational competitiveness.

In terms of support with initial capital spend, as these investments will not generate returns in the transition period, these technologies will require further development and refinement. There will be front end loading of Capex required in the next five years which is beyond the industry's ability and further innovation will need to be supported and nurtured. Therefore, we believe that funding in the region of 50% would be appropriate.

Additionally, the costs associated with operating these technologies will likely be higher in the short-to-medium term than higher carbon technologies. It is critical therefore there are policies in place to support regional and global competitiveness of assets that are first movers in the transition to low carbon steel. Policy instruments like contracts for difference, which were used to positive effect in the development a competitive renewable energy sector, have an important role to play.

As a leader in developing technologies needed to transition steelmaking to net-zero, achieving our climate targets also requires us to play a leading and active role with policymakers in different geographies. This will allow us to promote policy ideas that will accelerate the development of these technologies and to create the necessary market conditions to ensure zero carbon-emissions steelmaking is commercially viable.

In terms of our investment decision-making, each major capex project proposal is required to demonstrate its CO_2e impact to the Investment Allocation Committee (IAC). The IAC considers both the potential future carbon cost as well as the capital cost of decarbonisation, to maximise our chances of achieving our targets while ensuring each project is economically justifiable and earns its cost of capital.

Section 2 Our decarbonisation strategy

2.5 The role of policy

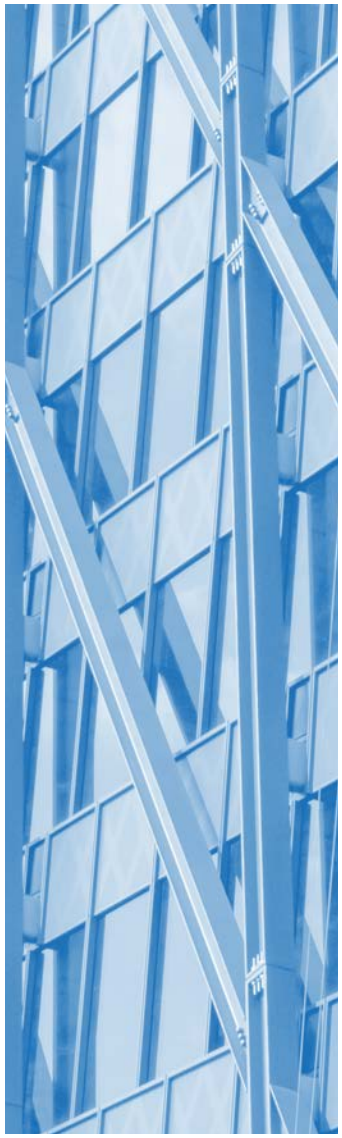


Photo: © ArcelorMittal

Policy has a key supporting role to play in transitioning the global economy to net-zero. Well designed, targeted policy can yield very significant results and enable new technologies to become competitive over a relatively short timeframe. The emergence of renewable energy as a competitive energy source is a clear example of this.

We are similarly optimistic about the role policy can play in transitioning the steel industry to net-zero. Indeed, the right policy will, over time, be able to create the market conditions to make low and zero carbon-emissions steel more competitive than higher carbon-emissions steel. That will enable the steel industry to invest in and operate the low and zero carbon-emissions technologies required to meet the challenge of becoming a net zero industry by 2050.

We must be clear about the starting point as the market conditions necessary for this transition are not yet in place.

Steel is a globally traded commodity and not all regions of the world are moving at the same pace when it comes to the introduction of regulation to address climate change. Furthermore, the low margins and high capital costs associated with the industry mean there is limited headroom to make the investments required and remain competitive without policy intervention.

Ensuring all market participants operate under the same competitive rules is key in these market conditions. The greater the level of global coordination in developing effective policies, the better progress we will make towards decarbonisation.

2.5.1 The need for a supportive policy environment

The most effective mechanism to transition the steel industry to net-zero would be a suitably ambitious and globally applied carbon price covering every region, country and market. However, there is little probability of that happening in the short to medium term.

Instead, we are faced with a situation where each jurisdiction develops its own policy framework with no unified customer and GHG policy response for the steel industry globally. This has created a sub-optimal situation with often complicated and overlapping policy landscapes that do very little to advance the required market conditions to deliver competitive carbon-neutral steel.

We do believe, however, there are many policies developed for other industries that can be implemented for the steel industry. One example is contracts-for-difference, which have provided valuable policy support and customer demand signal for the renewables industry for many years. New policies will also need to be developed, such as a carbon border adjustment mechanism that ensures domestic producers and imports share the same CO_2e cost on the road to decarbonisation.

We believe that policy instruments need to deliver five market conditions to ensure that low and zero carbon-emissions steelmaking is at least as competitive as higher carbon-emissions steel:

1. Measures to incentivise the transition to low and zero carbon-emissions steelmaking
2. A fair competitive landscape that accounts for the global nature of the steel market, ensuring domestic production, import and exports are subject to equivalent GHG reduction regulations
3. Financial support to innovate and make long-term investments and neutralise the higher operating costs of low and zero carbon-emissions steelmaking
4. Access to sufficient clean energies at affordable price level
5. Incentives to encourage the consumption of low and zero carbon-emissions steel over higher carbon-emissions steel

Section 2 Our decarbonisation strategy

2.5 The role of policy

2.5.2 Creating the right steelmaking conditions

There are multiple policy instruments that, when appropriately designed and applied, can be combined to encompass these five areas to allow for the smooth decarbonisation of the steel industry. These include:

- Emissions Trading System (ETS)
- Indirect compensation
- Public funding via innovation awards, grants, loans etc.
- Carbon Border Adjustment Mechanism (CBAM)
- Carbon Contracts for Differences (CCfDs)
- Consumer carbon charge
- Clean energy policies
- Green Public Procurement (GPP)

It is important to understand how each policy instrument works and its purpose before looking at how they can be most effectively combined to incentivise and accelerate the decarbonisation of the global steel industry.

Emissions Trading System (ETS)

A well-designed GHG emissions trading system – also known as 'cap and trade' – should incentivise firms to reduce their GHG emissions. A government sets a cap on the maximum level of GHG emissions and creates permits, or allowances, for each unit of GHG emissions (i.e. 1 tonne of CO_2e) allowed under the cap. Firms must obtain and surrender a permit for each unit of their emissions. They can obtain permits from the government or through trading with other firms.

When it comes to steelmaking, an ETS will only incentivise investment in decarbonisation if it combines a sufficiently-high CO_2 price and a fully effective instrument to address carbon leakage. Ideally, ETS revenues would also flow back to heavy industries to provide further incentives – such as through the EU Innovation Scheme.

The combination of all these measures is essential for steel to remain competitive where it is not supported with free allocations of units to prevent carbon leakage to higher GHG emitting jurisdictions.

ETS in the EU

The European Union Emission Trading System ("EU-ETS") was launched in 2005 and completed its third phase in December 2020. In order to prevent carbon leakage, the ETS contains a system of allocation of free allowances based on a benchmark system that is periodically reviewed and indirect cost compensations (of part of the extra costs incurred by the installations covered by the ETS due to ETS application on energy production passed on). The EU-ETS sets a cap on greenhouse gas emissions, which is then reduced year after year. The build-up of a surplus of emission allowances in the EU-ETS kept prices below €10 per ton of CO_2 equivalent (€/tCO_2e) from 2009 until 2018.

To boost the price of a European Union Allowance ("EUA") – which gives the holder the right to emit one tonne of CO_2 – and to provide an incentive to the steel industry and the power sector to cut CO_2 emissions, the European Commission implemented reforms to the EU-ETS for the Phase 4 period which runs from 2021-2030.

The adoption of the revised ETS Directive in 2018, defining the rules for the 4th trading period (2021-2030), anticipating a decline of the ETS cap, and the reinforcement of the MSR applying as from 2019, were considered to be drivers of the EUA price increase that in early 2018, surpassed the historical high of €25/tCO_2 – a 360% price increase in less than a year. In early 2020, the pandemic-driven lockdown prompted the CO_2 price to drop sharply, falling by €10/ tCO_2e (40%) in a matter of weeks. Since then, the market has steadily recovered and ended the year at over €30/tCO_2 with prices rising above €50/tCO_2 in 2021.

Carbon price development since Q1 2020



Source: Refinitive

As a result, today's EU ETS is an additional cost burden for European steel companies that is not yet complemented by a carbon border adjustment (CBAM), although we note this has now been proposed as part of the "Fit for 55" package as described below. As the price increases throughout Phase 4, this will become even more critical than it is today. It is also critical that the roll out and increase in the price of CO_2 is aligned with the technology maturity and footprint realities in different countries.

In July 2021, the European Commission published a package of proposals to make the EU's climate, energy, land use, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55% by 2030 called "Fit for 55". To become EU law, this set of proposals now needs to be adopted by both the European Parliament and the Council of the European Union. Given the controversial nature of the proposals and the expected social and economic impact, longer negotiations and changes can be expected.

The proposals should enable the necessary acceleration of greenhouse gas emission reductions in the next decade.

The proposals are all interconnected and combine:

- tightening of the existing EU Emissions Trading System, extending it to maritime and setting a new parallel ETS to buildings and road transport sectors;
- increased use of renewable energy;
- greater energy efficiency;
- a faster roll-out of low emission transport modes and the infrastructure and fuels to support them;
- an alignment of taxation policies with the European Green Deal objectives;
- a Carbon Border Adjustment measure (CBAM) to prevent carbon leakage; and
- tools to preserve and grow our natural carbon sinks.

The biggest impact for the steel industry comes from the ETS review and the introduction of a CBAM.

In this respect, the ETS proposal increases the reduction ambition of the ETS sector from 40% reduction by 2030 to 55% (when compared to 1995 reference levels). To achieve this it plans to set a steeper decline of the cap, foreseeing as well stricter rules for the update of the benchmarks in the second sub-period of phase 4 (2026-2030) that could result in a reduction in the benchmarks of up to 50%.

In addition, the CBAM proposal is intended to accompany a progressive reduction of the free allocation granted to sectors in its scope, with a yearly 10% decrease starting as from 2026.

The implementation of an effective carbon-border adjustment mechanism (CBAM) in Europe, the continuation of free allocations, and the availability of public support, are all vital to ensure we can make sufficient investments to decarbonise our European assets.

Today, Europe, California and other US states, as well as some Canadian provinces, have ETS systems in operation, resulting in an increase in carbon costs for steelmakers. Ukraine, Brazil, Kazakhstan, Mexico and South Africa are expected to implement an ETS over coming years. It is essential that experience gained from regions with a mature ETS is applied in the design and roll out of nascent ETSs so that they genuinely incentivise rather than just add additional cost burdens.

Section 2 Our decarbonisation strategy

2.5 The role of policy

Indirect compensation

Indirect compensation schemes help heavy industry in regions with an ETS to remain competitive despite the impact of higher energy costs.

The carbon costs incurred by the power sector from an ETS result in increased electricity prices for customers. This means that energy intensive industries exposed to an ETS not only have additional direct costs for their emissions, but also additional indirect costs from higher electricity prices.

Electricity is a key competitive factor in heavy industry, particularly for commodity products exposed to global markets. The increased electricity costs resulting from an ETS also pose the risk that heavy industry would relocate from Europe to laxer GHG reduction jurisdictions without these additional direct and indirect costs.

Indirect compensation schemes cover energy-intensive industries participating in the ETS system such as steel, plastics and chemicals, cement, and aluminium sectors. They provide heavy industry with some support to remain competitive in international markets.

Public funding

Public funding supports the development and implementation of innovative technologies to reduce CO_2e at scale, and may in some jurisdictions include funding streams from different levels of government. This may be provided in the form of grants, loans with favourable conditions, or equity investments in decarbonisation projects.

For example, the EU Innovation Fund launched in 2020 is one of the world's largest programmes and will invest up to €10 billion between 2020-2030 to support the commercial demonstration of innovative low-carbon technologies.

Funded from EU-ETS receipts, it aims to bring market industrial solutions that could help to decarbonise Europe and support its transition to climate-neutrality. It will focus on:

- innovative low-carbon technologies and processes in energy-intensive industries, including products substituting carbon-intensive ones;
- carbon capture and utilisation (CCU);
- construction and operation of carbon capture and storage (CCS);
- innovative renewable energy generation;
- energy storage.

Carbon Border Adjustment Mechanism (CBAM)

A carbon border adjustment mechanism, applied initially to primary goods, should ensure imports are subject to the same CO_2e costs as domestic producers. Using the example of the EU, an effective CBAM would mean that steel imported into the EU would have similar CO_2e cost as that borne by EU producers, creating a fair market and encouraging investment in lower CO_2e emissions steel production.

The European Commission's proposal includes the introduction of a CBAM. As critical as its introduction is, to be genuinely effective, it must be designed in a way that takes away any competitive advantage from importers in regions with less ambitious climate change regulation. This means introducing a border adjustment that does not enable importers to be more competitive than any producer within a region with ETS just because it does not have the same carbon tax, including the least carbon-efficient producer today. Therefore, the carbon cost these producers will pay from the ETS should be the same cost charged on imports through the border adjustment. This will ensure all European assets will be able to decarbonise sustainably, without it being rendered uncompetitive.

When designed this way, a border adjustment has the added advantage of being more likely to stimulate other regions of the world to speed up the introduction of equivalent climate change legislation to accelerate decarbonisation of their industry.

Over time, once the application of a CBAM is fully implemented and proven to work, free allocations can be gradually withdrawn. Before that can happen, European producers would need certainty that all decarbonisation costs, including full auction costs, can be passed through.

The current proposal aims at meeting these goals; however, several details are not clearly spelt out yet and will only come in the implementation rules and whether it will achieve to be effective will need to be seen. It is supposed to be introduced in 2023 in a first phase as reporting and monitoring tool only and from 2026 producing its full financial impact. From 2026 onwards those installations covered by the CBAM will also see its free allocation gradually decreased by 10% each year.

Section 2 Our decarbonisation strategy

2.5 The role of policy

Carbon Contracts for Differences (CCfDs)

Carbon Contracts for Differences (CCfDs) provide government-guarantees to those investing in innovative climate-friendly technologies that reward GHG emission reductions, by neutralising the higher operating costs of zero-emissions steelmaking.

CCfDs pay out the difference between the price of emissions allowances (in Europe, EUAs) and the contract price, thus effectively ensuring a guaranteed carbon price for the project. In exchange for this insurance, investors are liable for payment if the carbon price exceeds the contract's strike price. As a result, companies have an incentive to make climate-friendly, innovative investments and reduce their CO_2e emissions.

By lowering financing costs, CCfDs support the roll out of low and zero carbon-emissions projects that are not competitive in the existing market environment. CCfDs can also be combined with indirect compensation grants to further support investment.

CCfDs have been used with great success in the renewable energy transition and could play a similarly important role in the decarbonisation of the steel industry.

Consumer carbon charge

A consumer carbon charge on steel and other carbon intensive materials could be an instrument to fund the higher capex and opex funds needed to develop and deploy low carbon-emissions technologies. It would also incentivise customer behaviour to choose lower CO_2e intensive solutions.

While there is a significant amount, the CO_2e reduction impact per investment dollar of the steel industry is significantly better than in the transition of the power and transport sectors. The European renewables sector, for example, receives more than US$80 billion annually in funding from customers to reach only 34% of electricity generation. Similarly, US$10 billion has been publicly funded in transport renewables, with only a 9% impact.

A consumer carbon charge could be introduced at the point where steel is purchased as a raw material and then be passed through the value chain to the end customer of the finished product, for example a car. A charge of as low as US$75 per car could be sufficient to fund accelerated deployment of low and zero carbon-emissions steelmaking technologies.

Clean energy policies

Access to affordable clean energy will be critical to accelerate decarbonisation of the steel industry and policymakers can play an important role in incentivising the development of sufficient clean energy infrastructure and the necessary scale up of carbon-neutral technologies. This will require concerted cross-sector and government efforts to develop the necessary clean energy infrastructure and to guarantee sufficient supply of renewable energy for the transition of heavy industry.

The clean energy infrastructure for each country and region will vary significantly based on the availability and effectiveness of different clean energies available, including wind, solar, bioenergy and CCS. Working with local policymakers to unlock the optimum clean energy infrastructure will be critical. An example of this is our work with the Brazilian government to ensure use of existing sustainable bioenergy in the steel industry is recognised and supported as a clean energy.

Green public procurement

Public authorities are major consumers and if they use their purchasing power to choose environmentally friendly goods and services, they can make an important contribution to sustainable consumption and production. Green Public Procurement (GPP) or green purchasing can help stimulate a critical mass of demand for more sustainable goods and services which otherwise would be difficult to get into the market.



Photo: © ArcelorMittal

Section 2 Our decarbonisation strategy

2.5 The role of policy

2.5.3 Supportive policy instruments

The impact of these policy instruments on steelmaking conditions

	Measures to incentivise production of zero carbon-emissions steel	Fair competitive landscape	Financial support to make long-term investments	Access to sufficient, affordable clean energy	Incentivised consumption of zero carbon-emissions steel
ETS (emissions trading system)	●	●	●		
Indirect compensation		●			
Public grants and soft loans	●		●		
CBAM (carbon border adjustment mechanism)		●	●		
CCID (carbon contract-for-difference)	●	●	●		
Consumer carbon charge			●		●
Clean energy policies				●	
Public green procurement		●			●

2.5.4 Policy routes to zero carbon-emissions steelmaking

Different combinations of the policy instruments described above can be used to deliver the desired end result: when the five policy conditions outlined above are achieved, then low and zero carbon-emissions steel will be at least as competitive as higher carbon emissions steel.

For example, if implemented correctly, a well-designed ETS coupled with a CBAM would provide sufficient support to enable zero-emissions steelmaking. This requires keeping current carbon leakage protection measures, free allocation to the level of the benchmark and indirect cost compensation, complemented by the CBAM that covers the carbon costs not covered by them.

The same could be achieved by a combination of a consumer carbon tax being comprehensively introduced to fund a programme of CCfDs.

It is possible we will see different combinations used in different regions, but in all cases, such tools must be accompanied by policies that enable the development of sufficient affordable clean electricity.

Given the scale of investment needed, significant public funding support will be required in each steelmaking region. Developed country governments can create the mechanisms for their steel industries to fund the transition to zero carbon-emissions steel, while the steel industry in developing countries may need additional support from international funding.

Recognising that governments have limited funding capabilities under existing policies, policy support to the steel industry needs to be done in lockstep with policies that directly and indirectly raise funds to support such policies. Hence the need for a CBAM to support an ETS or a consumer carbon tax to fund a programme of CCfDs.

Section 2 Our decarbonisation strategy

2.5 The role of policy

2.5.5 Policy scenarios determine pace of decarbonisation

In our first Climate Action Report, we outlined the conditions of four policy based decarbonisation scenarios, in which the industry will 'stagnate', 'wait' or 'accelerate regionally'. Only if all conditions are in place worldwide can the industry 'accelerate globally' and therefore contribute to a 1.5°C scenario. Here we apply these scenarios to ArcelorMittal in different jurisdictions in which we operate.

As the cost of carbon rises, our incentive to decarbonise increases. This, together with our confidence that the five key policy conditions outlined above are forthcoming, are the twin factors driving the speed of our decarbonisation programme. Only where both factors exist can we accelerate our decarbonisation efforts. Where they are not, ArceloMittal will be ready to decarbonise but will be in 'move' mode, hampering our ability to achieve net-zero by 2050 and the industry's contribution to a 1.5°C scenario.

To date, we envisage carbon price coupled with the necessary policy conditions being in place in Europe by mid-decade. All other regions are five to ten years behind Europe.

This table shows how our plans reflect the anticipated situation in each jurisdiction where we operate, and the policy conditions needed to enable us to achieve net zero by 2050. Clearly, only when policy support frameworks across different jurisdictions are aligned can ArcelorMittal, and the steel industry, 'accelerate globally' and contribute to a 1.5°C scenario.

		Confidence that policy conditions will materialise within 5 years					ArcelorMittal's expected response			Resultant risk
Jurisdiction	CO_2e price risk	**Condition 1** Measures to incentivise production of zero carbon-emissions steel	**Condition 2** Fair competitive landscape	**Condition 3** Financial support to make long-term investments	**Condition 4** Access to sufficient, affordable clean energy	**Condition 5** Incentivised consumption of zero carbon-emissions steel	2021-25	2026-30	2031-35	ArcelorMittal 5 year outlook on financial risk from carbon prices
EU*	↑						Accelerate	Accelerate	Accelerate	Mitigating
Canada**	↑						Accelerate	Accelerate	Accelerate	Mitigating
USA	N/A						Move	Accelerate	Accelerate	Low
Mexico	↑						Move	Move	Accelerate	Mitigating
Kazakhstan	→						Move	Move	Accelerate	Low
Ukraine	↑						Move	Move	Accelerate	Low
Brazil	→						Move	Accelerate	Accelerate	High
South Africa	↑						Move	Accelerate	Accelerate	Mitigating

* Will be impacted by final design of ETS allocation system and CBAM, and assumes additional support from individual member states is forthcoming.

** Federal + Ontario, Quebec.

Section 2 Our decarbonisation strategy

2.6 Leading and collaborating

2.6.1 Working with policymakers to achieve the support necessary to accelerate decarbonisation

ArcelorMittal is committed to playing a leading role in decarbonising the steel industry and clearly this means we need to actively and directly engage with policymakers and organisations that advocate for the policies and conditions that will enable steel to achieve its net zero transition.

In order to maximise ArcelorMittal's policy influence in this regard, we must be as effective as possible in our advocacy work. We are committed, therefore, to ensuring it is always consistent with the policy objectives outlined at the start of this chapter. This includes both our direct advocacy activities with policymakers and our indirect influence via stakeholder climate initiatives and also our industry associations. We will continue to reassure our stakeholders of our efforts to increase alignment in our influence by transparently reporting on this regularly, mapping our advocacy and the alignment of our membership organisations, as we did in our June 2020 report.

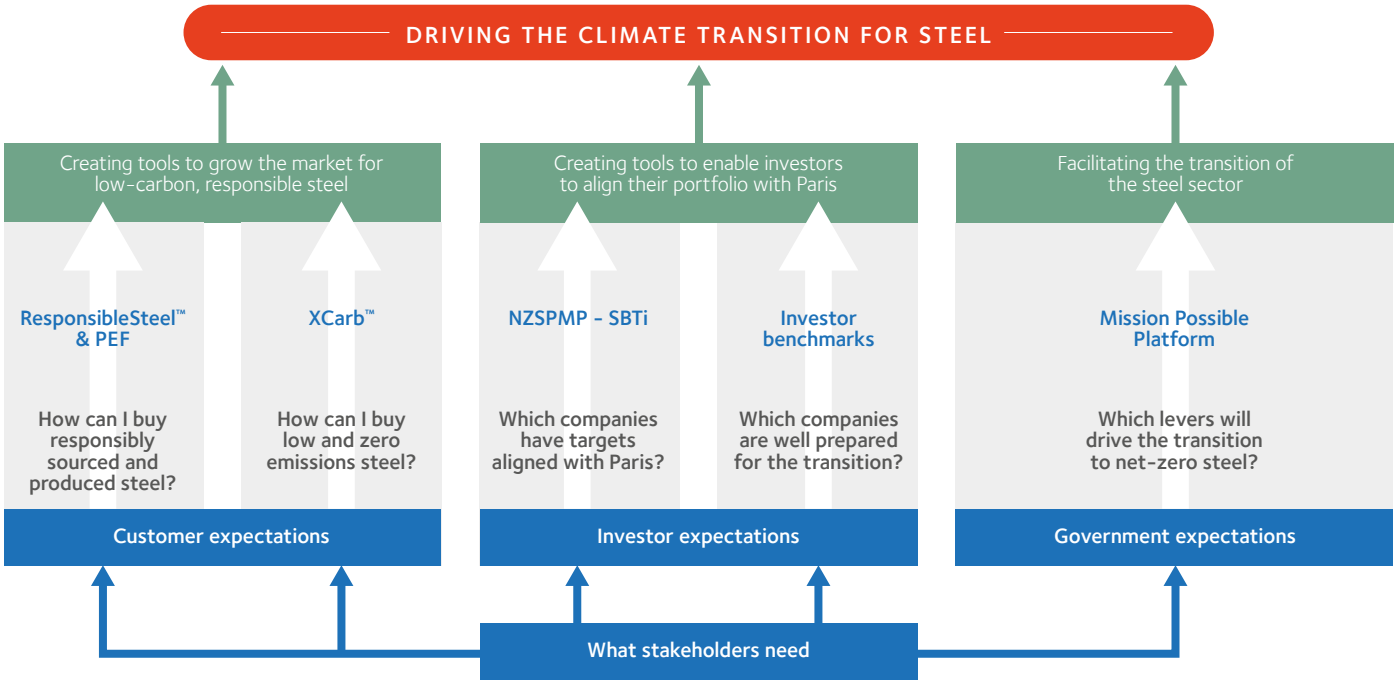
While we are actively advancing the climate change regulation agenda in all jurisdictions, we are focusing on developing significant traction between industry advocacy platforms and governments in both Europe (for example via Eurofer) and Canada. We will leverage these experiences to advance our advocacy across all our other jurisdictions.

2.6.2 Working with stakeholder initiatives to frame the transition to net-zero steelmaking

While policy frameworks determine the rules for the incentives and disincentives that affect business, there are a range of other initiatives, led by both business and civil society organisations, that will impact on other levers in the market – the behaviour of customers, investors and lenders for example – in the form of ratings, standards and benchmarks.

ArcelorMittal understands the importance of these initiatives, and engages with those it believes may have a strategic influence on future market dynamics for the steel industry.

Numerous initiatives have emerged to tackle the transition to net-zero steelmaking



Section 2 Our decarbonisation strategy

2.6 Leading and collaborating

Energy Transitions Commission (ETC) and the Mission Possible Partnership's Net-Zero Steel Initiative

Over the past two years, the ETC has actively convened a core group of steel companies and other experts with an active interest in the decarbonisation of the sector to help refine its thinking and create alignment on the key aspects of technology, policy, finance and demand signals needed for the sector's net zero transition. ArcelorMittal's EVP, Bradley Davey, is a commissioner of the Energy Transitions Commission and the company is an active participant in the ETC's work.

The Mission Possible Partnership's Net-Zero Steel Initiative was formed by the ETC with the World Economic Forum, the Rocky Mountain Institute and others to bring together the thinking on these four aspects with that of a broader group of initiatives.

Net Zero Steel Pathway Methodology Project (NZSPMP)

ArcelorMittal is a co-founder of this initiative, which aims to enable the steel sector to target CO_2e reductions in line with the Paris objectives by developing the principles of a credible, well informed sectoral methodology for steel.

The project published a report in July 2021 with recommendations, including the need to use disaggregated Paris aligned carbon 'budgets' for iron ore-based as well as scrap-based steelmaking in the formation of a steel company's science-based target, to align such targets on the basis of a consistent system boundary, to consider cross-sector CO_2e impacts of steelmaking, and to outline the dependency of a steelmaker's science-based target on the introduction of supportive policies.

The project has drawn on the expertise of its 16 member steel organisations, and has liaised with a range of other carbon initiatives focused on steel via its stakeholder reference group. The project's report aims to become a credible reference for the further development of methodologies assessing companies' transition to net zero.

Science Based Targets Initiative (SBTi)

The SBTi – a partnership between CDP, the United Nations Global Compact, the World Resources Institute and the World Wide Fund for Nature – develops methodologies and guidance for companies to set emission reduction targets in line with limiting warming to 1.5°c, and validates company targets that meet its requirements. Currently there is limited sectoral guidance for integrated steelmakers.

ArcelorMittal has agreed to collaborate with the Science Based Targets initiative through a project to define a fit-for-purpose methodology to develop additional science-based target resources for the steel industry. As part of this project, the SBTi's Technical Working Group will consider the recently published recommendations of the NZSPMP – and in particular, the different carbon intensities of making steel from iron ore and scrap will be reviewed for integration.

ResponsibleSteel™

ArcelorMittal has played a leading role in establishing ResponsibleSteel™, the steel industry's only global, multi-stakeholder certification initiative. ResponsibleSteel™ aims to give businesses and consumers confidence that steel certified under this standard has been produced responsibly at all levels of the supply chain, from mining to production processes through to steelmaking. The initial 'site' certification standard includes requirements on carbon alongside other air emissions, water responsibility, biodiversity, human rights, labour laws, local communities, business integrity and supply chain management. Additional certification – to provide customers with further reassurance on supply chain de-risking and decarbonisation achievements – is currently undergoing consultation.

Section 2 Our decarbonisation strategy

2.6 Leading and collaborating

Global Framework Principles for the decarbonisation of Heavy Industry

ArcelorMittal is a signatory to these principles, which provide a simple framework for how leading economies can both stimulate economic growth and recalibrate toward a 1.5°C climate trajectory. The principles, developed by the civil society organisation, Mighty Earth, in partnership with the Climate Group, aim to accelerate the decarbonisation of heavy industry by avoiding capital being 'locked in' to high carbon-emitting industrial activities, stimulating the investment of public and private capital in low emissions technologies through finance and industrial policy and tools.

Investor benchmarks and frameworks

The investor community is increasingly expected to align their portfolios with the goals of the Paris Agreement, and many use third party ratings or proxies in order to do so. The longest standing of these is the CDP Climate survey, but a number of other frameworks have emerged in recent months and years, focusing on heavy industry or steel in particular.

- **Climate Action 100+ Net-Zero Benchmark**

  As a coalition of institutional investors, Climate Action 100+ has developed a common approach to engaging companies in hard-to-abate sectors on their response to climate change. ArcelorMittal has engaged with representatives from the coalition since 2018 to ensure its investors understand the context for and progress in the company's decarbonisation strategy, and with its parent body the Institutional Investors Group on Global Climate Change (IIGCC) on the policy conditions we believe the industry needs to enable this.

  In March 2020, CA100+ released its Net-Zero Benchmark. With its broad-based approach, covering not only targets but plans and policies, we view this as a useful way for stakeholders to track the progression in companies' climate strategies. We have included the benchmark in Appendix C, with our own assessment of how this report improves our alignment.

- **The Centre for Climate Aligned Finance (CCAF)**

  The Rocky Mountain Institute's CCAF is hosting the Steel Climate-Aligned Finance Working Group as part of the Mission Possible Partnership. The group aims to define a collective agreement on how banks assess steel companies' decarbonisation progress. ArcelorMittal is liaising with this working group in particular on those aspects of the NZSPMP where the thinking has been provided by ArcelorMittal.

- **CDP and ACT**

  CDP Climate – and also CDP Water and CDP Forests – aim to provide investors with a signal of the level of progress a company has made in its response to climate change and related aspects of sustainable development, by rating a company based on their response to a detailed survey. Over the past year, CDP has worked with The French Agency for Ecological Transition (ADEME) to develop a new framework, Assessing the Climate Transition (ACT), on a sector by sector basis. ArcelorMittal participated in the ACT working group in 2020 to develop the framework for steel, encouraging ACT to incorporate some elements outlined in the NZSPMP.

2.6.3 Working towards a just transition

The steel industry will undergo a transformation over the next two decades unparalleled since the 19th century, with many aspects of industrial activity along the value chain changing beyond recognition. An important aspect of this will be the social transformation that accompanies it, and ensuring that this brings enhanced qualify of life and standards of living across the value chain. As we plan for the transition of each of our steelmaking sites, we are working with government and unions to optimise these impacts. In Spain, for example, where we plan to move from blast furnace steelmaking to DRI/EAF route, we anticipate a positive employment impact along the value chain, both in the construction of the new assets, the decommissioning of existing assets, and in the development of the renewable energy infrastructure and hydrogen production and transportation systems. In addition, the transition will contribute to improvements in environmental impacts across the steel value chain.

ArcelorMittal has also developed a tool which will help us understand the social impact of our decarbonisation strategy. Based on best practice principles developed by UNEP and with a Roundtable on Social LCA group of leading companies, we will be able to use this tool alongside our environmental impact expertise to consider the overall impacts of our transition plans, starting with a pilot at our Sestao facility. This will provide further data to support our work with key stakeholders, including the need for policy to support the industrial and social transition.

Section 3 Our opportunities, risks and governance of climate change

3.1 Opportunities

As stakeholder expectations increase in Europe and beyond, and governments strengthen their policy frameworks to pursue their Nationally Determined Contributions under the Paris Agreement, we can expect to see a step change in the pace of demand growth for steel solutions that help our customers reduce their emissions, and steel with low-embodied CO_2e. We are already generating revenues from branded products in these markets of some US$3.9* billion in 2020, and we believe there is a positive future outlook for these markets on a significant scale.

Across the board, ArcelorMittal will capture value where it can meet the needs of customers in these growing markets through innovative product design. Where we can also offer steel with an advantageous embodied CO_2, there is further value to be gained, as we have seen with our XCarb™ products launched in March 2021.

We break down these opportunities below into a number of different markets, in line with the EU taxonomy regulation's categorisation of those economic activities that make a substantial contribution to climate change mitigation and adaptation.

Renewable energy

A seismic shift in the energy system is underway and is likely to intensify in the next decade as the world accelerates its efforts to decarbonise in line with the Paris Agreement. The IEA's Net-Zero by 2050 Scenario envisages a rapid growth in renewable energy capacity in the years to 2030, with 8TW solar and wind power capacity installed by that year. Even its less aggressive Sustainable Development Scenario (net-zero by 2070) implies an increase of 4.7TW by that time, compared to just 1.4TW solar and wind capacity installed today. ArcelorMittal has a promising outlook in these markets, with a strong business supplying heavy plate for wind towers, specialist electrical steels for generators, and weather-resistant Magnelis™ steel proving a successful innovation for use in solar farms and other projects exposed to harsh environmental conditions.

As hydrogen networks are developed as part of society's decarbonisation, steel will again play a key role both in the hydrogen electrolysis plants and in new hydrogen transportation networks. As much as 850GW electrolyser capacity could be developed by 2030 under the IEA's Net-Zero by 2050 Scenario.

EU taxonomy classification:

3.1 Manufacture of renewable energy technologies
4.9 Transmission and distribution of electricity
4.14 Transmission and distribution networks for renewable and low-carbon gases

Low carbon buildings

Built environment stakeholders are increasingly showing interest in the life-cycle emissions of a construction project, rather than simply those emissions from the use phase. This brings an enhanced focus on the embodied CO_2e of the building materials and assembly methods used. Through the work of our global R&D team, ArcelorMittal has developed a growing business, offering a wide-range of innovative products and engineering solutions designed to assist architects and specifiers to minimise the lifecycle CO_2e emissions of buildings. Our new Steligence business (see Section 6), launched in 2019, demonstrates the value we can bring to this market, with a 19% year on year volume increase in Europe in Q1 2021 and a 28% volume increase in Brazil (vs the same quarter last year). Our R&D in this area continues apace, and in 2020 we launched 27 products and solutions to support sustainable construction, infrastructure and energy generation.

EU taxonomy classification:

3.5 Manufacture of energy efficiency equipment for buildings
7.1 Construction of new buildings
7.2 Renovation of existing buildings

Mobility

A wholesale switch to electric mobility is a key element in the economic transformation needed in a net zero world. This could involve as much as a 3500% increase in electric vehicles on the road by 2030 compared to 2020 under a 1.5°C scenario REF: IEA.

Expanding the availability of electric vehicles on the scale required necessitates making them affordable to the mass market, and steel is widely seen as the material of choice among automotive customers since it offers the optimum combination of strength, light weight and cost-effectiveness needed to make safe, affordable vehicles.
In addition, as is already the case in the built environment sector, the emphasis on lifecycle emissions rather than only in-use emissions means that the CO_2e embodied in the materials used becomes a key focus for automotive customers. Steel performs well against alternatives: its production emits fewer greenhouse gases than aluminium.

Similar trends are seen within the rail and heavy transport sectors. In addition, as society transitions towards the low-carbon economy, we expect increased demand for innovative steel solutions for transport that enable the construction of urban and mass transport systems i.e. railways and subways.

The design of solutions that meet the complex and changing needs of our automotive customers is a key focus of our global R&D team. The development and roll-out of our S-in-motion® portfolio is one of the major success stories of ArcelorMittal's R&D. Our catalogue of solutions for the electrified vehicles market and the company's S-in Motion® projects for Hybrid vehicles, Battery Electric Vehicles and battery packs, enables our customers to build these solutions into the growing number of EV designs.

In 2020 we launched a total of 29 new products and solutions to accelerate sustainable lifestyles.

EU taxonomy classification:

3.3 Manufacture of low carbon technologies for transport
6.14 Infrastructure for rail transport
6.13 Infrastructure for personal mobility, cycle logistics

Footnote:

*Sales of branded steel solutions that help our customers reduce their emissions, and steel with low-embodied CO_2e, represent 7.3% of total revenues in 2020.

Section 3 Our opportunities, risks and governance of climate change

3.1 Opportunities for steel in a circular, low-emission economy

Other sectors will also demand innovative steels

Similar trends can be seen across many other sectors. In the packaging sector, for example, where customers are demanding lighter and stronger steels to enable reduced embedded carbon and transport emissions of the products, ArcelorMittal has responded with lighter weight packaging solutions. In the shipping, agricultural and industry sectors, where the demand for specialised vehicles and capital equipment are following a similar trend in the automotive sector, albeit at a slower pace, ArcelorMittal can deliver solutions with high degrees of strength and lower volumes of steel.

EU taxonomy classification:
3.6 Manufacture of other low-carbon technologies

Materials recovery, and development of co-products

Many of the efficiencies gained in the steel industry in recent decades have been the result of innovations in materials recovery and recycling. The wide recovery of scrap steel is the best known example, but the industry also recovers and reforms a wide range of 'residues' – from slags, sludges and refractories to waste gases and heat – in order to create additional value either within ArcelorMittal or in external markets.

New circular carbon products such as bio-ethanol, produced from the waste gases of the blast furnace, promise particular value since they will displace CO_2e emissions in the chemicals industry as part of that industry's decarbonisation journey. We aim to start producing Carbalyst® bio-products by the end of 2022, at a scale of 80 million litres of bio-ethanol per year, and are working to develop partnerships with potential customers in the use of this new product. The sales of bio-ethanol from our Carbalyst® process are forecast to translate into increased revenues, forecast initially at ~€75 million a year. These could expand as we develop other biochemicals and biomaterials, including bio-plastic, bio-fabrics and bio-chemicals.

ArcelorMittal also has a wide portfolio of co-products which use residues from the steelmaking products. Dust, sludges and slags, for example, are captured and reformed into products which can be reused in industry, agriculture and elsewhere. The most prominent example is our successful business in granulated blast furnace slag, which can be used as a replacement for Portland cement, and in 2020, we sold over 10 million tonnes of such slag to the cement industry.

EU taxonomy classification:
4.13 Manufacture of biogas and biofuels for use in transport and of bioliquids
3.7 Manufacture of cement
5.9 Material recovery from non-hazardous waste

Zero emissions steelmaking

The interest of our customers in low-embodied CO_2e steel has been growing in recent years. ArcelorMittal has made investments in those decarbonisation technologies that are already viable, as outlined in this report, yet the policies to enable the sheer scale of investment necessary to make physically decarbonised primary steel have to date been in short supply.

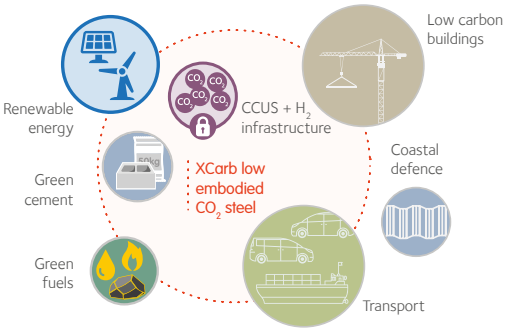
As the cost of emitting carbon increases in certain jurisdictions and supportive policy develops, we see an increasing opportunity to decarbonise our integrated steelmaking sites and benefit from the market rewards of being a 'first mover'. On this basis, ArcelorMittal is planning a number of projects, outlined in this report, which will enable the production of the physical zero carbon-emissions steel.

In order to take meet the demand from customers, and take advantage of ArcelorMittal's existing decarbonisation investments, we decided to offer our customers products which enable them to benefit directly from these investments. Our XCarb™ green steel certificates represent direct CO_2 savings from blast furnace transformation projects, verified by an independent auditor, across our European operations in quantities equivalent to tonnes of net zero steel, and these are offered to the customer alongside our steel shipments. Our XCarb™ recycled and renewably produced steel is made in the EAF using both scrap and certified renewable energy, enabling it to reach very low levels of embodied CO_2e.

Over time, we intend to develop our portfolio of XCarb™ products to enable customers to take advantage of all our efforts to decarbonise as we progress towards our net zero by 2050 target.

EU taxonomy classification:
3.9 Manufacture of iron and steel

Revenue opportunities in the next 10 years



Section 3 Our opportunities, risks and governance of climate change

3.2 Risks

ArcelorMittal identifies, assesses and manages risks – including climate-related risks – on an ongoing basis through a variety of mechanisms.

At a strategic level, keeping pace of the latest stakeholder and scientific trends on climate change, including the expectations of investors, customers and policymakers, is important to ensuring the company's response minimises risk and takes advantage of opportunities. This is the purpose of the Group Climate Council, made up of senior managers of relevant corporate functions, each of which may have their own working groups which support the company's focus on its climate response. It is chaired by the EVP in charge of business optimisation, who reports to the Executive Office. Reports from this committee are regularly made to the Appointments, Remuneration, Corporate Governance and Sustainability (ARCGS) Committee of the Board.

3.2.1 Identifying and managing climate-related financial risk

ArcelorMittal identifies, assesses and manages short, medium and long term risks – including climate-related risks – on an ongoing basis.

In 2020, Group Assurance formalised a quarterly process enabling corporate functions to identify medium and long term risks and opportunities to the business – based on social, environmental, regulatory, workforce, stakeholder, resource, technological and other trends – and specify mitigation actions. A consolidated report is shared on a quarterly basis with the Executive Office and Audit and Risk Committee.

In the medium to long term, climate change poses a number of risks to the business and the key risks are identified in the table below. These are analysed by building models and developing scenarios to understand potential financial impacts, such as our exposure to carbon costs in different jurisdictions.

Short-term risks within a 12-month timeframe are identified through a bottom-up process by site management teams. Business segments consolidate the identified risks and report the top risks to the Executive Office quarterly. The company uses a risk management framework based on a blend of a COSO, ISO 31000 and an in-house model. Sites assess risks by assigning them a probability of occurrence and a potential financial impact and/or non-financial consequence such as environmental harm.

Climate-related trends, and the risks and opportunities identified as arising from them, are used to inform the company's strategic outlook and planning on climate. This work is coordinated by ArcelorMittal's executive officer for business optimisation, Brad Davey, in consultation with segment CEOs, discussed on a regular basis by the group management committee, and overseen by the Executive Office, which provides leadership and guidance. The company's climate strategy is reviewed regularly by the ARCGS of the board.

At segment level, key climate-related financial risks are brought to the attention of the management committee, and where financially significant at a group level they are addressed at the Corporate Finance and Tax Committee.

Central to our approach is our work to advocate for policy support strategy to ensure we can respond to rising carbon prices with viable investments in decarbonisation technologies, as outlined in this report. At the same time, all our business segments are required to prepare CO_2e reduction plans to reach net zero by 2050 as part of the annual planning cycle.

This report, and the assessment of the resilience of our business to the transition and physical risks described in this report, has been discussed and approved by EVP business optimisation, Bradley Davey; chief financial officer, Christino Genuino; CEO, Mr. Aditya Mittal; lead independent director and ARCGS committee chair, Bruno Lafont; and Executive Chairman Mr. Lakshmi N. Mittal.

Read more on our Alignment with TCFD recommendations in Appendix C.

Section 3 Our opportunities, risks and governance of climate change

3.2 Risks

3.2.2 Our climate related financial risks

Risk and status	Nature of risk	Mitigation
TRANSITION RISKS		
Policy risk Time horizon: short and medium term Status: increasing	Our most substantial climate-related risk will arise where we are unable to make the necessary investments to decarbonise and reach our 35% European target by 2030 due to the design of European policy. We could face a financial impact in phase 4 of the EU ETS resulting from a rising carbon price in combination with reduced allocations under the EU-ETS cap and trade system whilst competing with imported steel in the absence of a fair and competitive landscape. Such financial impacts could limit our ability to make the significant investments needed to reach our 2030 target unless public funding is available. This applies to all our European plants, making up 50% of our total capacity. Therefore in Europe, the implementation of an effective carbon-border adjustment mechanism (CBAM), the continuation of free allocations, and the availability of public support, are all vital to ensure we can make sufficient investments to decarbonise our European assets. We are encouraged by the recent announcements from the EU Commission in its Fit for 55 package, which is moving in the right direction, although many details need to be refined in order for it to be an effective package. The successful implementation of the group's decarbonisation strategy, including advocacy to ensure decarbonisation investments are viable in a fair and competitive landscape, could in time significantly reduce ArcelorMittal's sensitivity to changes in the price of carbon in Europe. However, given the difficulty in forecasting the relevant variables (such as changes in our production levels, free allocation levels, the impact of the CBAM on the steel market in Europe, or the availability of public support for decarbonisation investments), here we show our annual sensitivity to a €5 increase in the price of carbon in Europe under two scenarios to reflect the fact that several factors, including the level and carbon intensity of production at the group's European steel operations as well as the level of free allocation of allowances. In the first scenario, based on levels of free allocations, production and CO_2 intensity from 2019, the approximate annual impact of a EUR5 increase in the price of carbon would be €50 million. In the second scenario, where the level of free allocations are reduced to zero, the sensitivity to a EUR5 change in the carbon price would increase to over €290 million per annum. Any decarbonisation investments we make will reduce this exposure but these cannot be done without the appropriate level of public support. We are also tracking the potential impact of carbon market policy developments in all other jurisdictions where we operate. We consider that the financial risks arising from these are less significant in the next 5 years.	Our decarbonization strategy to achieve a 35% CO_2 intensity reduction by 2030 over a 2018 baseline includes the following levers to mitigate this risk: • advocacy to influence the development of an effective policy framework – in Europe and other jurisdictions where a carbon price applies, to ensure a fair and competitive landscape for low-emission steel, including an effective CBAM, the funding to enable the rollout of new technologies, access to sufficient clean energy, and a market for low carbon steel. • the successful implementation of our decarbonization target plans at affected sites, which will depend on government support to ensure these investments are viable. • short term hedging to mitigate short term risks arising from shortages in allocations. Success in moving these levers together could in time significantly reduce the company's sensitivity to changes in the price of carbon, particularly in Europe.

Section 3 Our opportunities, risks and governance of climate change

3.2 Risks

3.2.2 Our climate related financial risks

Risk and status	Nature of risk	Mitigation
TRANSITION RISKS (cont.)		
Reputation Time horizon: short to medium term Status: stable	The credibility of our decarbonisation plans, as evidence of our net zero commitments, will affect the ratings we receive from customers, investors and other initiatives. The quality of our disclosures on these plans and the extent to which we have engaged stakeholders to understand our intent behind will also be key factors.	We engage widely with our investors on climate change alongside other sustainable development topics throughout the year, and share the evolution in our transition planning with all stakeholders via our series of Climate Action Reports. We benchmark our progress against the Climate Action 100+ Net-Zero Benchmark, as can be seen in Annex 1.
Technology Time horizon: short to medium term Status: increasing	Our continuing low-carbon innovation programme is vital for our long term resilience and competitiveness. The risk of our breakthrough technologies failing is dependent the availability of innovation funding to test and develop them appropriately, and the emergence of suitable policy to support them. For example, the viability of our Smart Carbon route depends on circular economy policy incentivising the reuse of carbon.	A significant part of the $10 billion capital costs we outline for our global 25% target will be allocated to our European operations. In addition, we have made a series of applications to the ETS Innovation Fund to support the development of several new technologies, and continue to ask for supportive policy instruments.
PHYSICAL RISKS		
Acute Time horizon: medium term Status: stable/increasing	Adverse weather events, such as extreme low temperature, very high winds and flooding may on occasion hamper our supply and distribution routes. Our Mexico and Calvert JV plants are in an area prone to hurricanes, for example, and wildfires are a risk to our sites in Kazakhstan and South Africa. Meanwhile northern Europe has recently experienced extreme flooding. These events can cause significant disruptions for our supply chain partners, transport routes, own production of steel, and customer deliveries which translate into increased operating costs, higher raw materials costs, reduced production, sales and reputation damage for the company. We have undertaken initial modelling of this risk over the next 10 years to inform the business. This is corroborated by independent studies and/or prediction models conducted by recognised third-parties, universities and scientific research institutions. Currently, the magnitude of impact is considered to be medium-low.	Our risk management process enables us to understand our exposure to existing and new emerging risks and to build appropriate resilience and recovery plans for our plants and supply chains, including emergency procedures, engaging fire fighting services etc. Our experience in this area is at the early stages and will evolve where extreme events are currently rare but may be more frequent or intense in the future. We will undertake further analysis of our physical risks as part of a comprehensive scenario analysis in line with TCFD recommendations.

Section 3 Our opportunities, risks and governance of climate change

3.2 Risks

3.2.2 Our climate related financial risks

Risk and status	Nature of risk	Mitigation
PHYSICAL RISKS (cont.)		
Chronic Time horizon: medium term Status: stable	Although water is recycled many times in a steel plant, its regular supply is crucial to our steelmaking processes. Some facilities such as in Brazil and South Africa have been at higher risk of being affected by long periods of chronic drought conditions. If the authorities were to restrict a licence to withdraw water as a result this could increase operational costs, reduce production capacity and so revenues. Also in areas of chronic water-stress, we could face reputation impacts. We have modelled these risks for Brazil and are in the process of conducting assessments for other sites in water-stressed areas, including South Africa and Mexico. We consider the potential impact to be medium-low.	We developed a water management plan in Brazil and South Africa to mitigate our risk exposure to chronic water risks. In Brazil, the actions set out in site-level resilience plans reduced the company's water intake by more than six million m^3/year, despite a 17% increase in production. This program was recognised by worldsteel when it was awarded the annual Steelie Award for 'Excellence in Sustainability' (2018). To increase water security and ensure the stability of our operations, we have invested in a desalination plant in Tubarao, Brazil.

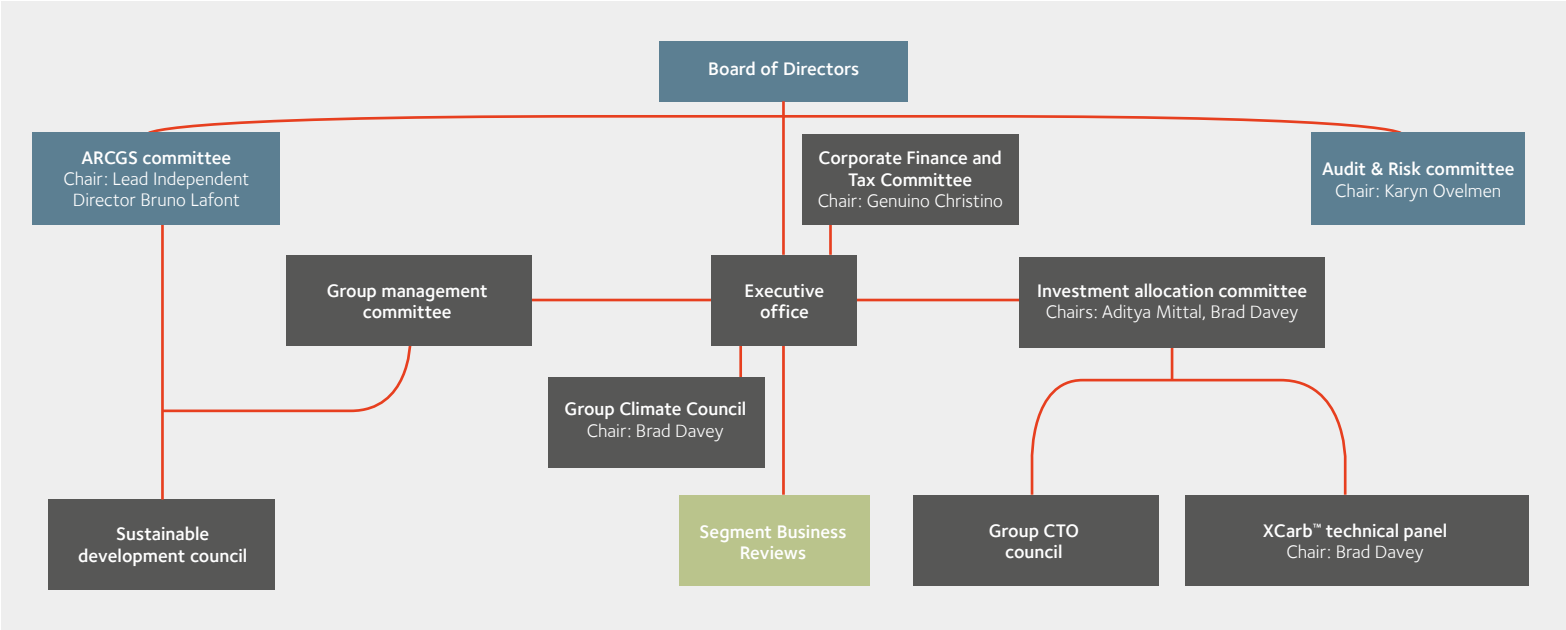
Section 3 Our opportunities, risks and governance of climate change

3.3 Governance

Board of Directors

Chaired by Executive Chairman Mr. Lakshmi N. Mittal

The Board led by the Chairman have overall responsibility for the governance and strategic direction of ArcelorMittal, which includes taking into account the effects of climate change and other sustainable development trends. Directors have experience of leading companies in heavy industry, mining and consulting sectors, with expertise in strategy, climate and safety, while the lead independent director has experience leading a global cement company and has been a board member of the World Business Council for Sustainable Development for three years. 36% of directors are female. The Board's two committees are made up of independent directors to ensure further oversight, with responsibilities including climate-related issues. Risks are also considered by boards of subsidiaries worldwide. CEO Mr. Aditya Mittal is a member of the Board.



Section 3 Our opportunities, risks and governance of climate change

3.3 Governance

Appointments, Remuneration, Corporate Governance and Sustainability (ARCGS) committee
Chaired by lead independent director Mr. Bruno Lafont

The ARCGS oversees the implications of sustainable development issues for the company under five sustainability themes, of which one is climate change. Members of the ARCGS are independent and receive regular training on climate change-related issues. Their experience of sustainability has been gained through their leadership roles in the cement, mining and global consulting sectors. The committee is chaired by the lead independent director on the Board, Mr. Bruno Lafont, who has been a board member of the World Business Council for Sustainable Development for three years.

The Committee considers the implications of climate change for the business and oversees the company's strategic planning of resources and investments in response to the risks and opportunities that arise, as well as having oversight of policy and stakeholder trends. It receives regular reports from senior management on stakeholder expectations, the company's low-emissions technology strategy, climate-related policy engagement and carbon performance.

Each year the ARCGS Committee spends time undertaking a deep dive on climate change to ensure they remain updated with the latest science, technology and stakeholder developments. The chair of the ARCGS liaises closely with the chair of the Audit & Risk Committee, and provides a summary of its work on climate change to the full Board.

Audit & Risk Committee
Chaired by non-executive independent director Ms. Karyn Ovelmen

The Audit & Risk Committee ensures that the interests of the company's shareholders are properly protected in relation to risk management, internal control and financial reporting. It oversees both the identification of risks to which the ArcelorMittal group is exposed, via regular senior management reports, and the management response to these risks.

Executive Office
Executive Chairman Mr. Lakshmi N. Mittal, and CEO Mr. Aditya Mittal

The Executive Office works closely with executive officers and members of the Management Committee on key strategic issues.

Group Management Committee
Chaired by Group CEO Mr. Aditya Mittal

The Group Management Committee regularly considers climate-related risks and group-level strategy. Members includes the leaders of all segments and major corporate functions.

Corporate Finance and Tax Committee
Chaired by Mr. Genuino Christino, CFO

The CFTC meets regularly to review the financial performance, tax planning and treasury analysis of the business. It is responsible for introducing policies and controls and implementation of strict policies and procedures to manage and monitor financial market risks. The CFTC approves all corporate finance/funding/treasury files including for example the Revolving Credit ESG facility.

Group Climate Council
Chaired by Mr. Brad Davey, EVP business optimisation

Group Climate Council is responsible for informing and shaping the company's climate change strategy, considering both technology and stakeholder relations. Members of the group include VP government affairs, VP corporate communications and corporate responsibility; VP head of corporate strategy; VP technology strategy; CTO Europe, VP climate action Europe, GM, head of sustainability; CMO Global Automotive.

Investment Allocations Committee
Chaired by CEO Mr Aditya Mittal and Mr. Brad Davey, EVP business optimisation

The Investment Allocations Committee authorises large capex projects, including those designed to deliver carbon and environmental improvements, and reviews CO_2 impact of all proposals. Committee members include EVP and chief financial officer, Mr. Genuino Cristino, chief technical officer, Mr. Pinakin Chaubal, and VP head of corporate strategy, Mr. David Clarke. The IAC reviews the CO_2 impact of all projects as part of the evaluation process.

For decarbonisation projects in particular, investment project concepts are given the green light at executive level as part of the investment strategy discussed at the Climate Investment Strategy Committee. These are then scrutinised at the IAC which, after the launch of our new global targets, will also ensure that no approved project that is not specifically aimed at decarbonisation, will reduce the company's chances of achieving our CO_2 reduction targets.

Group CTO Council
Chaired by Chief Technical Officer Mr. Pinakin Chaubal

The technical council coordinates and oversees progress on the global technology roadmap via regional and project-based committees involving CTO and R&D.

Sustainable Development Council
Chaired by EVP business optimisation Mr. Brad Davey

The Sustainable Development Council ensures that material sustainability issues and progress reports are brought to the attention of the ARCGS, and that guidance from the ARCGS is duly followed up in action plans.

XCarb™ Technical Panel
Chaired by EVP business optimisation Mr. Brad Davey

The purpose of the panel is to review requests from the network to have their products or projects appearing beneath the XCarb™ brand.

Section 4 Metrics

4.1 Carbon performance in 2020

Following the formation of ArcelorMittal in 2006, we set ourselves a target of reducing our CO_2 per tonne of steel by 8% by 2020 over 2007. By the end of 2020, we had achieved a 7.9% reduction.

Note: Figures below include ArcelorMittal USA and Acciaierie d'Italia (ex ArcelorMittal Italia).

In 2020, the absolute CO_2 footprint for our steel and mining operations was 160.3 million tonnes, an 18% decrease against 2019. For our steel operations, our footprint fell 20% to 148.5 million tonnes. While most of this decrease was as a result of the fall in the Group's steel output due Covid-19, to some extent it is also the result of a number of carbon and energy efficiency projects implemented in our steel operations in 2020.

In 2020, the average carbon intensity in our steel business was 2.08 tonnes of CO_2 per tonne of steel, a 1.6% improvement over 2019. In relation to the sites we operate today that we operated in 2007, in 2020 the specific Group footprint for the steel business decreased by 7.9% compared to 2007. These metrics cover scopes 1, 2 and 3 as defined in our Basis of Reporting. This is based on data for almost 100 steelmaking sites across the Group.

Due to the variable impacts of Covid-19, production at some sites reduced more than at others. On analysis, a general pattern has emerged that those sites where production was most reduced were also those which perform better in terms of CO_2. Therefore, the average impact of our CO_2 reduction measures on CO_2 intensity across the Group was lower than anticipated, and as a result we did not fully reach our 2020 CO_2 reduction target.

By comparison, the global average figure provided by the World Steel Association is 1.83tCO_2/ts (worldsteel 2019). The key reason for our higher carbon intensity is that the share of our production from the more carbon-intensive primary steelmaking route stands at 81% – compared with 72% in the global steel market as a whole (worldsteel 2019).

Making primary steel via the BF-BoF route emits more CO_2 than secondary steelmaking in the EAF. Yet making primary steel is a necessary investment to generate the recyclable scrap stocks of the future that we need to enable fully circular steelmaking. In 2020, the average carbon intensity of our primary (BF-BoF) steelmaking operations fell by 0.86% year on year.

The table on the right shows the baseline for our new 2030 targets, based on the steel and mining assets we own and operate today. It includes both CO_2 equivalent emissions (scopes 1 + 2). Sites we have sold or no longer control since 2018 have been excluded from these figures.

Summary of key metrics with 2018-2020 data excluding ArcelorMittal USA and Acciaierie d'Italia (ex ArcelorMittal Italia)

Absolute Emissions	scope 1+2	2018	2019	2020
million tonnes CO_2e	ArcelorMittal Steel+Mining	152.2	145.8	124.4
million tonnes CO_2e	Europe	67.4	63.8	51.2

Intensity & Target (scope 1 and 2)	CO_2 equivalent Emissions per ton Crude Steel	2018	Targeted % improvement 2018-2030	2030 target
tonnes CO_2e per tonne of steel*	ArcelorMittal Steel+Mining	2.06	25%	1.54
tonnes CO_2e per tonne of steel	Europe	1.70	35%	1.11

Footnote:

2018-2020 data excluding ArcelorMittal USA and Acciaierie d'Italia (ex ArcelorMittal Italia).

For more metrics please see our Fact Book 2020

Section 5 Technology

5.1 Technology pathways

As we have explained in previous Climate Action Reports and in section 2.2.2 of this report, we have identified two viable decarbonisation technology routes for steel: Smart Carbon and Innovative DRI.

We have done a lot of work developing technologies for these routes since the publication of our last report, with tangible progress made on several industrial-scale demonstration projects, particularly the Smart Carbon investments in Gent. This work has reinforced the potential that both Innovative DRI and Smart Carbon have to achieve net zero.

We are also cautiously optimistic about a third potential technology pathway – direct electrolysis of iron – which is currently in the research and development phase but showing good potential.

There is much emphasis today on developing a hydrogen economy and there is no doubt that hydrogen will play a very important role in the decarbonisation of the steel industry.

Existing natural gas based DRI technology can be transitioned to solely use hydrogen as the main energy and reductant. The transition to DRI production based on green hydrogen (produced using renewable energy) and blue hydrogen (which captures and stores any CO_2 created during production) will help the steel industry to achieve net-zero by 2050.

While DRI based on green hydrogen has significant public support, hydrogen-DRI technology is still in development and hydrogen remains an expensive source of clean energy compared to alternatives.

There is much emphasis today on developing a hydrogen economy and there is no doubt that hydrogen will play a very important role in the decarbonisation of the steel industry. Our Innovative DRI pathway can also use other sources of energy such as biogas and natural gas by incorporating carbon capture and storage to avoid CO_2e emissions.

As a result, Innovative DRI has a broader and more immediate potential to reduce CO_2e than DRI solely based on green hydrogen. Indeed, an initial transition to natural gas-based DRI production would more than halve existing CO_2e emissions from a BF-BOF facility on a per tonne basis. As clean energies become more readily available and commercially viable, these facilities can transition to net-zero. Another advantage of transitioning to DRI technology is the reduction in other pollutants.

Although many steelmakers have started to develop hydrogen-DRI projects, ArcelorMittal has a development advantage as we are already a major DRI producer with over 10 DRI facilities globally, and the only one in Europe to date.

We have also announced plans to expand this technology at our German plants in Bremen and Eisenhüttenstadt, Sestao in Spain, and at France in Dunkirk, where we are also partnering with Air Liquide to source low-carbon hydrogen. See Section 2.3.1 for more information on these projects.

Section 5 Technology

5.1 Technology pathways

Smart Carbon

We also remain excited by the potential of our Smart Carbon pathway.

Smart Carbon transitions blast furnace technology to zero carbon-emissions steelmaking through use of clean electricity (including in the form of hydrogen), circular carbon (such as sustainable biomass and waste from end-of-life plastics), and carbon capture and storage of emission of residual remaining fossil fuels use.

Although other steelmakers are also developing elements of a Smart Carbon route, ArcelorMittal is focusing on development of the complete Smart Carbon ecosystem incorporating 'natural' and 'synthetic' circular carbon, external hydrogen injection and carbon capture and storage technology to deliver carbon-neutrality.

We are constructing several commercial-scale projects to test and prove a range of Smart Carbon technologies, with key projects coming on-stream from 2022. These technologies also have the potential to use hydrogen as a substitute for fossil fuels within the blast furnace, further reducing CO_2 emissions.

Smart Carbon, apart from having the potential to be the most cost competitive route to carbon-neutral steel, also has other benefits. For example, it gives steelmaking a role in achieving carbon-neutrality in the cement and plastics industries and provides plastics with a circularity it lacks today.

Currently, global cement production averages 0.8 tonnes of CO_2e per tonne of cement produced, while emissions from the manufacture of most plastics and fabrics can be up to 4 tonnes of CO_2e per tonne of material produced (excluding delayed emissions from end-of-life disposal or degradation). Each tonne of Smart Carbon steel generates 250kg of slag, a substitute for cement, and 200kg of biomaterials for plastics and fibres industries.

In addition, combining use of circular carbon with scaling up of CCS has the potential to transform steelmaking intro a carbon removal system called Bioenergy Carbon Capture and Storage (BECCS). Here the growth of the original biomass draws CO_2 from the atmosphere and then, when used to make electricity, the carbon is stored underground in CCS projects rather than realised into the atmosphere. This would have the net effect of removing carbon from the atmosphere for every tonne of steel produced.

Once the relevant technologies have been fully implemented, the Smart Carbon would result in:



One tonne of carbon-neutral steel



250kg carbon-neutral cement

The high temperature-controlled reduction environment of iron making produces 250kg carbon-neutral slag, a direct substitute for cement. Production of slag through this route in Europe covers approximately 10-15% of demand for cement.



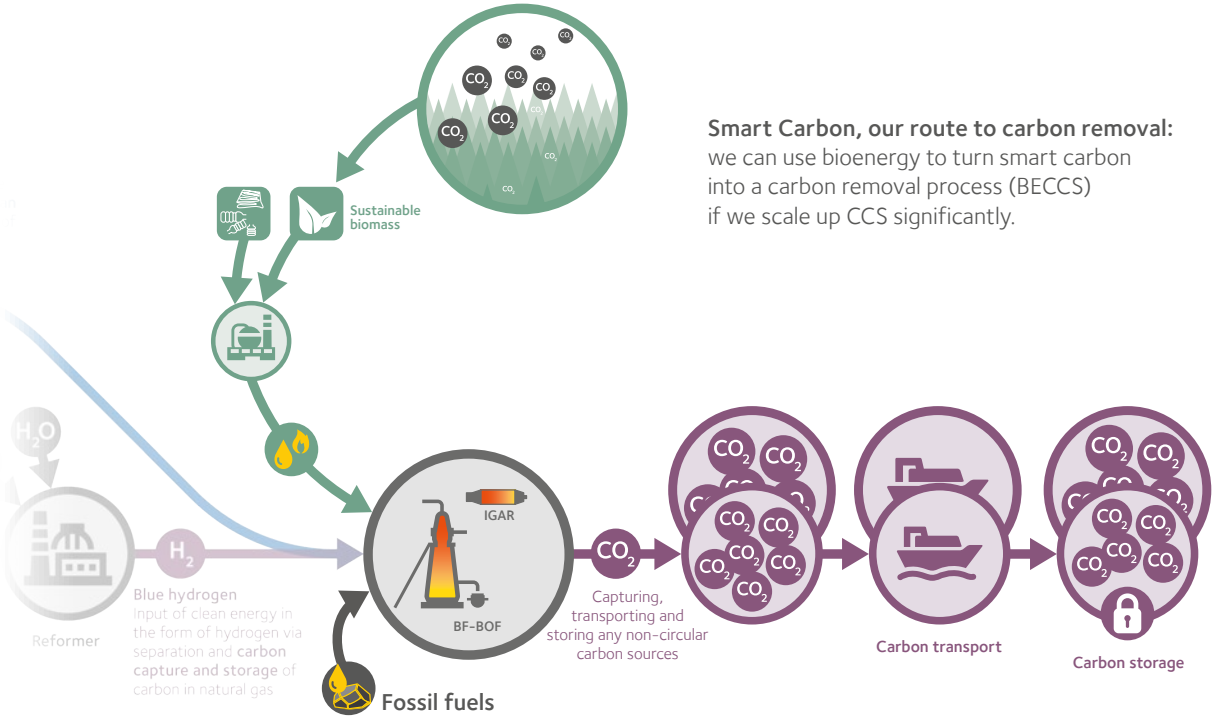
200kg carbon-neutral biomaterials

In Europe, polyethylene-based plastics account for more than half of the 64 million tonnes of plastics and fibres produced. If the entire European steel industry switched to Smart Carbon, we could supply more than 60% of Europe's polyethylene-based plastic needs, equivalent to 30% of the entire demand for plastic and fibre.



Carbon removal potential

Increased use of circular carbon, using sustainable biomass and waste combined with scaling up CCS not only makes steelmaking carbon neutral, but can turn the industry into a net contributor to removing CO2 from the atmosphere.



Smart Carbon, our route to carbon removal: we can use bioenergy to turn smart carbon into a carbon removal process (BECCS) if we scale up CCS significantly.

Carbon capture and storage

Section 5 Technology

5.1 Technology pathways

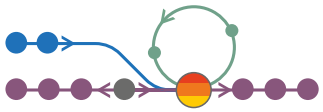
Innovative DRI and Smart Carbon: two complementary pathways

Both Innovative DRI and Smart Carbon will be necessary to reduce CO_2e, yet neither are fully technically or commercially proven. There is significant variation across countries and regions in existing climate change policy frameworks and in the availability and cost of the clean energy, as well as the differences in social acceptance of differing technology solutions.

It is important that we are able to make real and meaningful progress in the coming decade, both in increasing scrap use where possible and in preparing for the more widespread use of these technologies.

That includes transitioning to natural gas based DRI as a precursor to introducing hydrogen and continuing to evolve the Smart Carbon offering which involves multiple technologies and therefore affords greater flexibility to adjust to local steelmaking conditions.

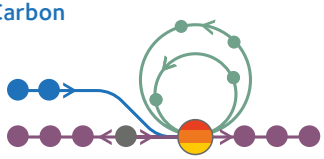
Innovative DRI



+ Zero carbon-emissions if green hydrogen as fuel
+ Reduction of other air emissions
+ Increased employment opportunities in the clean electricity – green hydrogen value chain

- Limited availability of green hydrogen
- Expensive
- Less direct employment

Smart Carbon



+ Lower cost vs. hydrogen-DRI
+ Capable of being deployed and making a CO_2 impact before 2030
+ Capable of generating carbon-negative steel
+ Supports decarbonisation of cement and plastics
+ Improves circularity of plastics
+ Greater flexibility to adjust to local steelmaking conditions
+ Additional employment to existing BF-BOF via CCUS technologies and related business activity

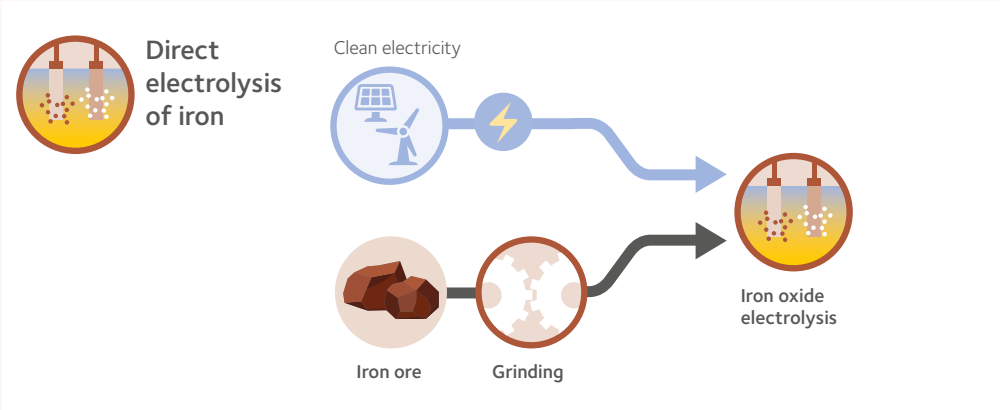
- Continues to generate other air emissions
- Continues to use fossil fuels (albeit with CCS)

Direct electrolysis of iron: future potential technology

The decade after 2030 may bring with it prospect of a new technology maturing to offer a third route for the decarbonisation of steelmaking. ArcelorMittal is one of seven partners and the coordinator of the "Siderwin" project based in Maizières, France. The project is developing a technology using electricity for the direct electrolysis of iron, by-passing the use of carbon or hydrogen.

The Siderwin development is advancing rapidly, currently deploying an engineering-scale prototype with a production capacity of 100kg of pure iron slabs. The project, fully-funded by the European Union's Horizon 2020 fund is due to complete installation and testing in 2022.

Figure X : Direct electrolysis route



Section 6 The bigger picture

6.1 Circularity in our world and in the steel industry

6.1.1 The shift to towards a circular economy

Meeting the targets in the 2015 Paris Agreement and preventing the average global temperature rising by more than 1.5°C, requires a long-term, fundamental shift in the way we consume goods and products.

Given the threat posed by climate change, it is right for global efforts to focus on rebalancing the planet's carbon cycle to eliminate human induced concentrations of greenhouse gases in the atmosphere.

The drive to decarbonise aligns with a broader drive to transition to a truly circular economy. In simple terms, a circular economy is an economic system that seeks to eliminate waste through the continual use of resources. By reusing, sharing, repairing, refurbishing, remanufacturing and recycling, circular systems create a closed-loop that minimises both the use of resources and the creation of waste, pollution and carbon emissions. Circular systems can be contrasted to the traditional "take, make, use, dispose" approach of linear economic models. Long-term policies should therefore be designed to transition the economy towards carbon-neutrality and also towards a fully circular economy.

For the material world, this means ultimately transitioning to producing all materials from recycled materials with clean energy when they reach their end of life, minimising stress to the environment for extractive industries such as mining. To be sustainably circular, society will need to have reached a level of material intensity where there is no need to increase the amount of material stock in the economy.

Steel's circular advantage

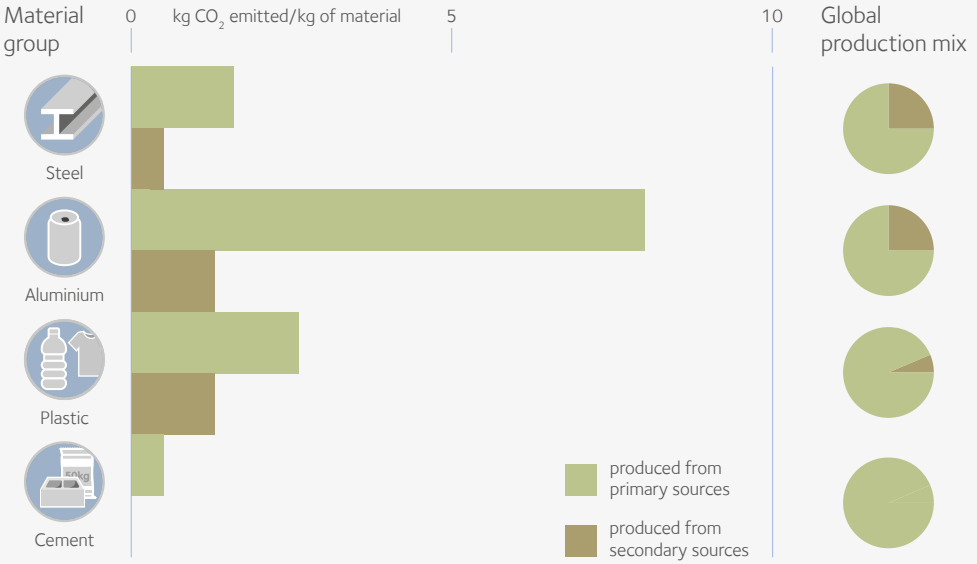
As a permanent material – and one that is infinitely and fully recyclable with no loss of quality in most cases – steel is an important material group and fundamental to achieving a truly circular economy. Today, already 85-95% of steel reaching its end of life is re-melted to produce new steel products. These circularity credentials are unmatched by the other key material groups.

Plastics, cement and, to a lesser extent, aluminium have limited circularity as they are not always easy to segregate and are not easily recycled back into replacement products. Products like cement can, at best, be downcycled at the end of their life to create aggregate materials.

This is reflected in the lower recycling rates for these material groups. Along with sustainably-sourced wood, steel's intrinsic circularity credentials stand out. Its magnetic properties make it easy to segregate and be recycled back into new steel products. Additionally, scrapped steel can be melted back to make new steel with similar properties, to replace the materials it was originally used for.

At the point when scrap availability is large enough, the steel-making process will be able to be truly circular. This stands steel apart from other materials.

Steel's circularity is unmatched by any other major material group



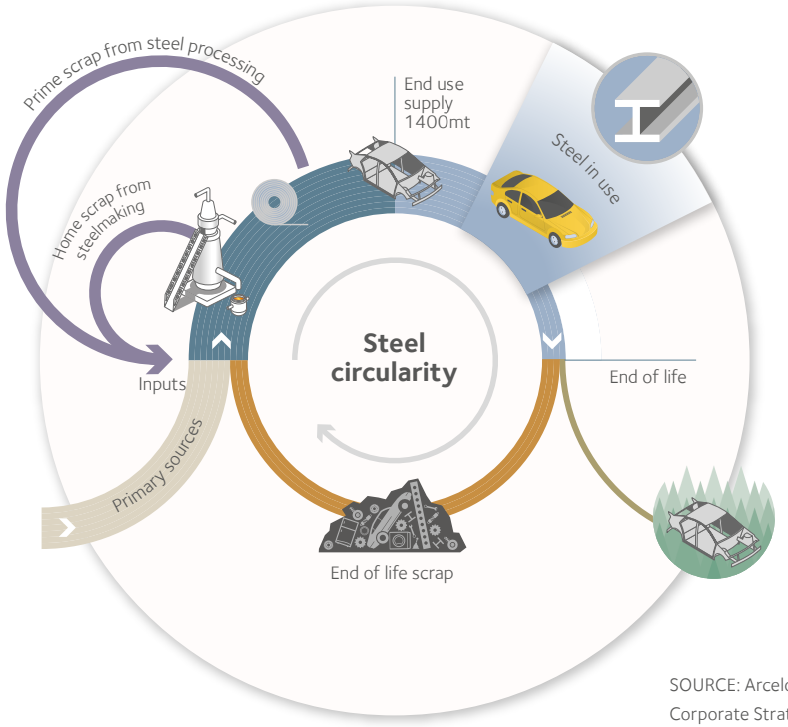
SOURCE: ArcelorMittal estimates from public sources

Section 6 The bigger picture

6.1 Circularity in our world and in the steel industry

Steel

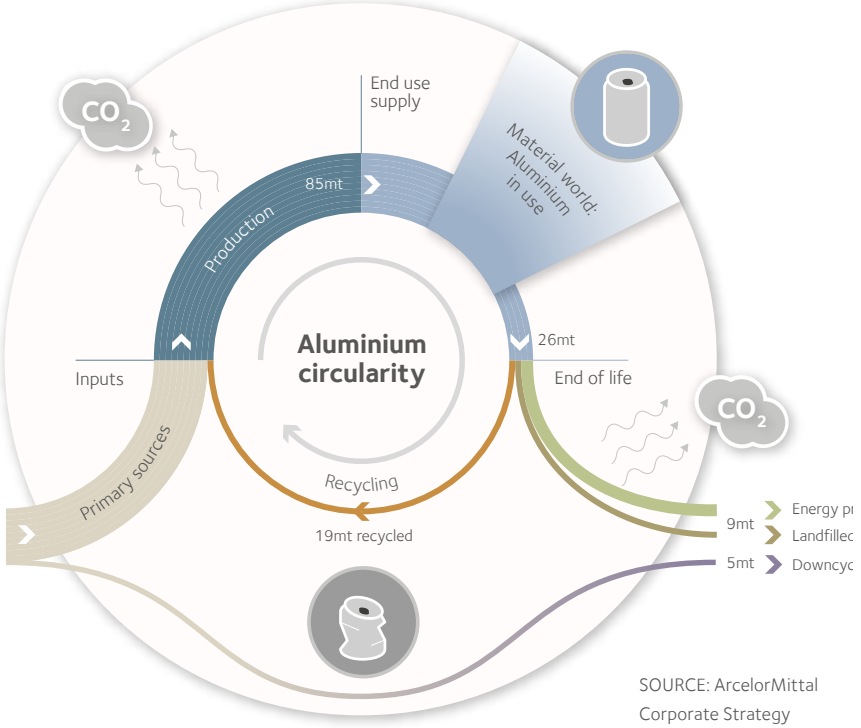
- Steel is not only a vital material that builds the infrastructure of our world, but also one with leading circularity credentials.
- Steel is an iron-based metal alloy that uses few alloying elements, as many of its properties are achieved through thermal treatment. Most alloying elements can be removed in the remelting process, rendering steel as one of the most versatile materials to recycle into equivalent products.
- Steel is infinitely and fully recyclable with no loss of quality in most cases.
- 85-95% of end-of-life steel is currently recycled back into new steel products and accounts for over 20% of today's steel production.



SOURCE: ArcelorMittal Corporate Strategy

Aluminium

- Like steel, aluminium is an infinitely recyclable material.
- Yet aluminium is a highly alloyed metal, with different alloy mixes for different applications. Mixing different aluminium alloys diminishes aluminium's recyclability as alloys are difficult to remove once incorporated, and unnecessary alloys will act as pollutants in new aluminium alloys.
- The intrinsic high value of aluminium has led to tight closed loop recovery systems for the same aluminium alloys, such as beverage cans, meaning recycling rates remain relatively high for aluminium.
- Currently, around 76% of end-of-life aluminium is recycled into new aluminium products and makes up around 32% input of global aluminium production. Source: World Aluminium Recycling Factsheet 2020.



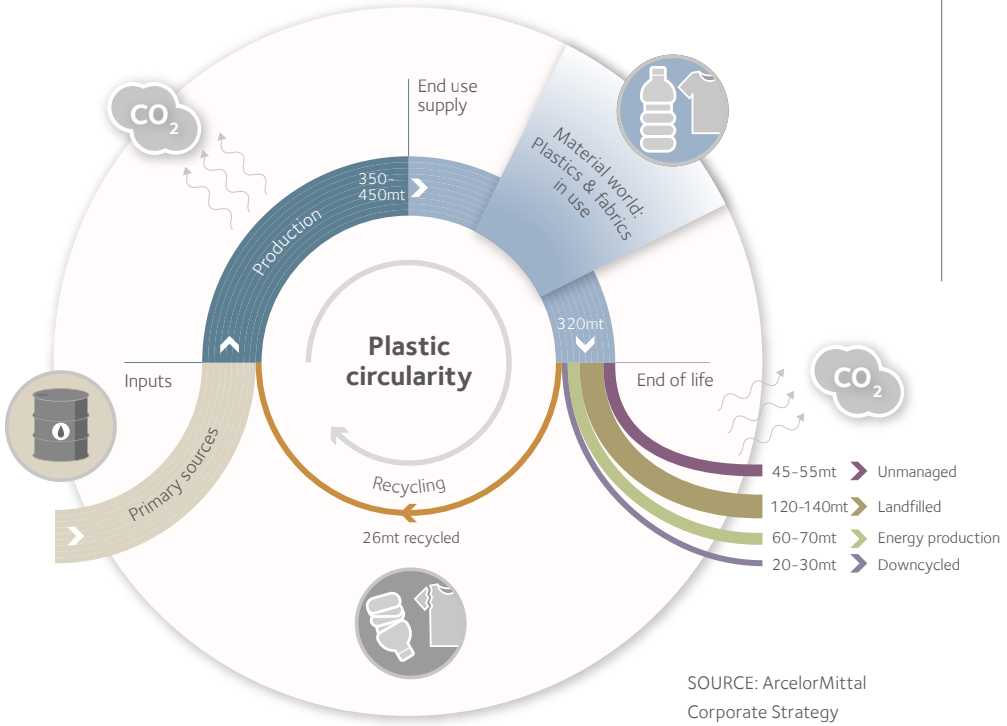
SOURCE: ArcelorMittal Corporate Strategy

Section 6 The bigger picture

6.1 Circularity in our world and in the steel industry

Plastics

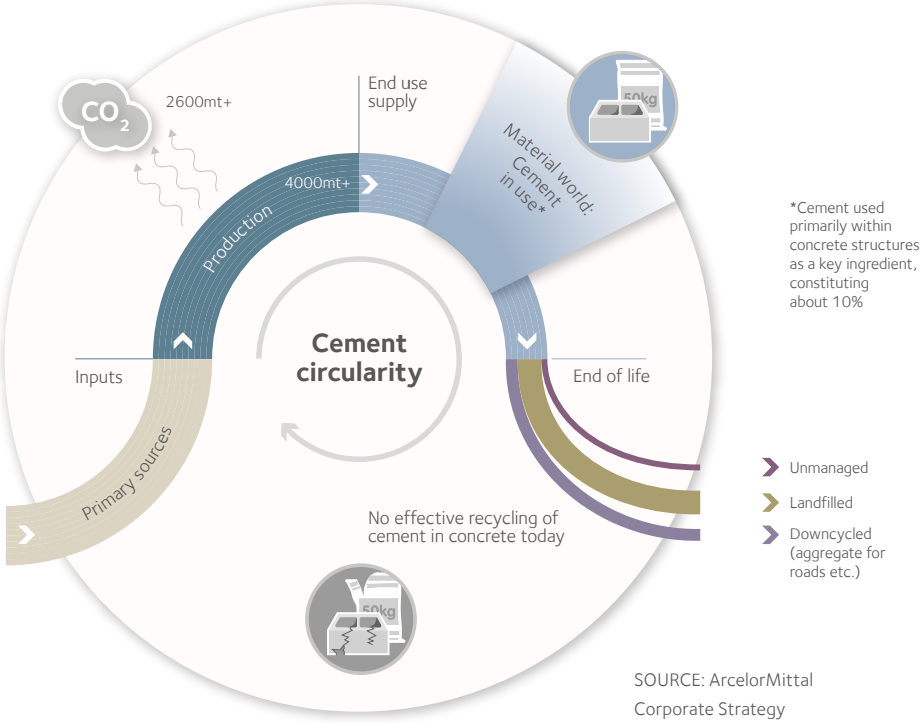
- Although demand for recycled plastics is growing rapidly, in 2018 recycled plastic accounted for only 6% of plastic demand in Europe. Source: European Parliament
- Only a limited range of plastics such as polyethylene terephthalate (PET) can be currently recycled back to new products
- Technologies that deconstruct waste plastics into the basic building blocks to make new plastics are being deployed, which may bring circularity to a broad family of plastics. However, technologies to produce inputs for plastics from end-of-life material are currently energy intensive and very expensive relative to the cost of deriving them from fossil fuels.



SOURCE: ArcelorMittal Corporate Strategy

Cement

- Today there is no effective way to recycle cement at its end of life.
- It can be downcycled to use in aggregate mix.
- There are technologies in development to attempt to recycle cement from end-of-life concrete, but these technologies are today at small scale and are at very high cost.



*Cement used primarily within concrete structures as a key ingredient, constituting about 10%

SOURCE: ArcelorMittal Corporate Strategy

The intelligent construction choice

Steligence®

A move to a circular economy is much more than just recycling a material. It's also about extending the life of that material, reducing the need for it, reusing it and repurposing it at the end of its life.



Photo: © ArcelorMittal. Illustration: © Adobe

2019 marked the first full year of Steligence®, a new concept developed by ArcelorMittal to facilitate high-performance buildings and sustainable construction techniques.

Steligence® revolves around the idea of the building as a holistic entity. Traditional approaches to construction seek to optimise buildings in relation to one or another product or building function, but Steligence® integrates the needs of architects, engineers, investors, the construction sector and building users, and delivers advanced steel knowledge at an early stage. This enables us to optimise the combination of products used and create innovative and highly efficient solutions. As the only steel producer with a full portfolio of high-tech steel products and solutions for the construction market, as well as leading expertise in their use, ArcelorMittal is uniquely positioned to offer such levels of integrated service. This is a major strength for our company and is evidenced by the fact that every building project that has started with Steligence® has stayed with this concept through to its completion. Our customers trust us to help them find the right product for the right place.

Steligence® enables building optimisation on multiple fronts, for example:

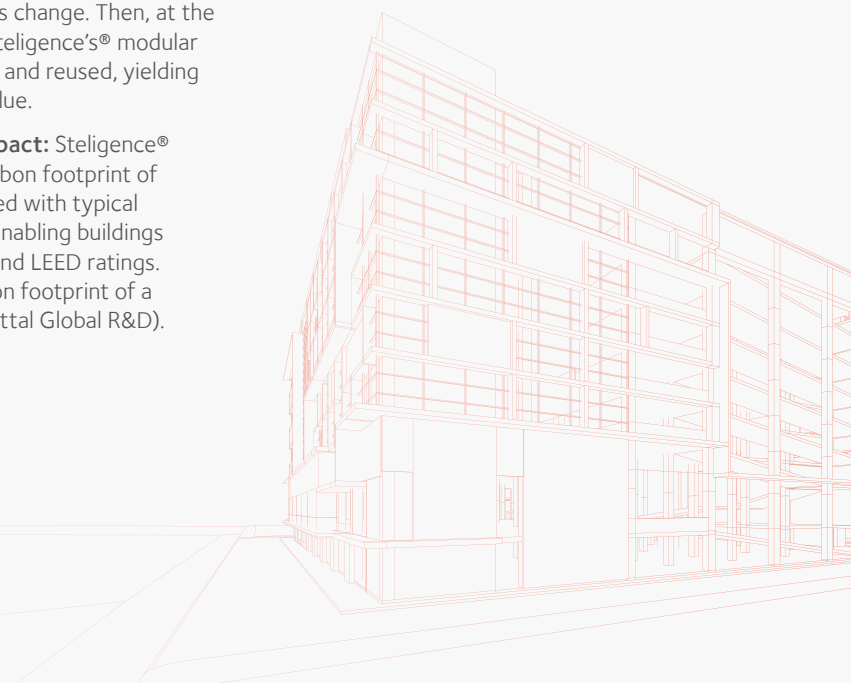
Optimised construction cost and speed: by facilitating weight reductions and integrating modular parts, Steligence® saves on costly foundations and makes buildings faster to assemble.

Higher utilisation efficiency: by reducing floor heights and thereby incorporating more storeys within a given building height, Steligence® achieves 15% gains in volume to surface ratios.

Transformational refurbishment and reuse potential: by creating longer free spans between columns, and removing load-bearing walls, Steligence® maximises the flexibility of interior layouts and creates dynamic buildings that transform as user demands change. Then, at the end of the building's life, Steligence's® modular parts can be disassembled and reused, yielding unprecedented residual value.

Lower environmental impact: Steligence® decreases the lifecycle carbon footprint of a building by 20% compared with typical construction techniques, enabling buildings to attain higher BREEAM and LEED ratings. (Based on Life Cycle Carbon footprint of a building, source: ArcelorMittal Global R&D).

The sustainability benefits of Steligence® are a particular factor in its favour. With approximately 40% of the world's carbon emissions coming from buildings and construction, we anticipate an ever-increasing focus on environmental performance. Lifecycle analysis demonstrates steel's superiority over other materials such as concrete, and we see steel becoming more dominant throughout the construction sector, with Steligence® as the most advanced steel solution that actively delivers upon the needs of the circular economy.



Section 6 The bigger picture

The journey to full material circularity requires essential primary steel

World demand for materials is increasing, driven by the construction of infrastructure in developing countries that is necessary to achieve the United Nations' Sustainable Development Goals. Under current consumption patterns, global demand for steel is forecast to increase from 1.7 billion tonnes in 2018 to over 2.6 billion tonnes by 2050.

While world material consumption of all material groups increases, the availability of end-of-life material becoming available can only supply a comparatively small part of the input needed to produce new materials. The availability of recyclable material is fixed by the amount of products that have reached the end of their life. In the case of steel, today end-of-life steel represents ~20% of the inputs for new steel produced globally with recycling rates already at a very high level.

Unfortunately, for most materials – including steel – the world cannot immediately increase the use of secondary sources (i.e. scrap) to achieve full circularity.

Strong growth in demand means all main material groups today, not only steel, require significant primary sources of raw material as demand outstrips stock available for recycling.

The availability of end-of-life scrap is projected to increase globally over the coming decades as equipment and buildings produced or constructed over the past 30 to 80 years approach the end of their life. The recent IEA report estimates that by 2030 37% of steel will be produced through scrap-based EAF, compared with 24% in 2020. By 2050 we believe this will increase to approximately 50%. By 2100, we envision the world transitioning to a fully and sustainable circular steel industry, where the amount of equipment and buildings coming to their end of life will be a sufficient input to meet society's replacement steel needs. Once renewable energy is readily available, secondary based steel making – which requires much less energy and emits a current average of 0.6 tonnes of CO_2 per tonne of steel – falls below 0.1 tonnes of CO_2 per tonne of steel.

While the increased use of scrap is therefore an important mechanism to reduce CO_2 emissions, its availability is limited and therefore primary steel will remain necessary for the next 50+ years, not only to meet demand for steel but as a valuable and vital contributor to the transition to a fully circular economy.

Achieving net-zero by 2050 will therefore require the decarbonisation of the primary steel-making process. Fundamentally this means a shift to clean energies and using alternative steelmaking technologies, as well as improving efficiency within the steelmaking process. This is vital if the industry is to make its full contribution to a net-zero economy by 2050.



Photo: © ArcelorMittal

Section 6 The bigger picture

6.2 The carbon challenges facing steel

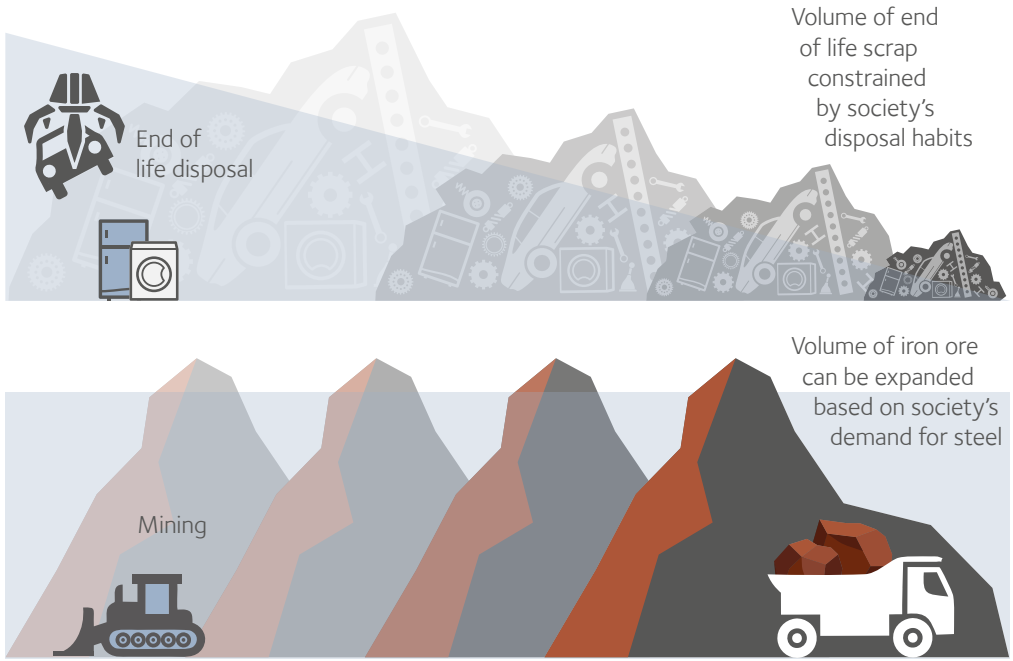
The steel industry is a large carbon emitter and responsible for 7-9% of global CO_2e emissions.

The majority of this today is the result of BF-BOF steel production, which mainly uses coking coal in the blast furnace to turn iron oxide into iron which is then cast into steel. BF-BOF steelmaking currently accounts for 1.4 billion tonnes of the 1.9 billion tonnes in annual steel production and has an emissions intensity of an average of 2.2 tonnes of CO_2e per tonne of steel (source: WSA, 2021; IEA, 2020).

While the use of scrap will increase for the coming decades that means achieving a zero carbon-emissions steel industry by 2050 is predominantly reliant on making net zero primary steel.

While ArcelorMittal produces lower-carbon steel via scrap and EAF (approximately 11% of our global production is via this route), our efforts are focussed on successfully decarbonising primary steel-making.

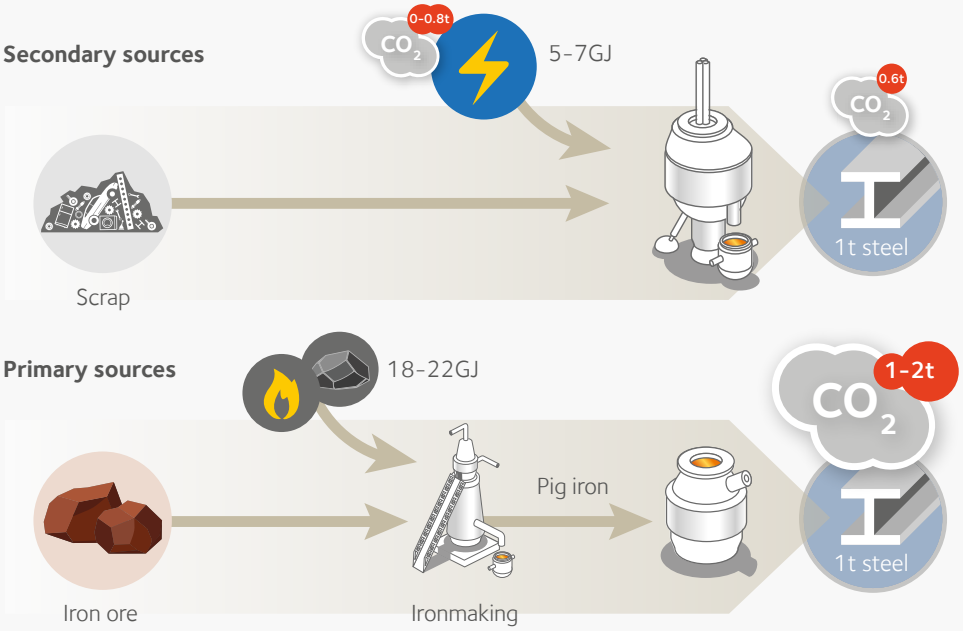
We are increasingly confident this is achievable and are actively developing two technology pathways that have the potential to reach net-zero or more by 2050, with a third (direct electrolysis of iron) in the research and development phase.



Section 6 The bigger picture

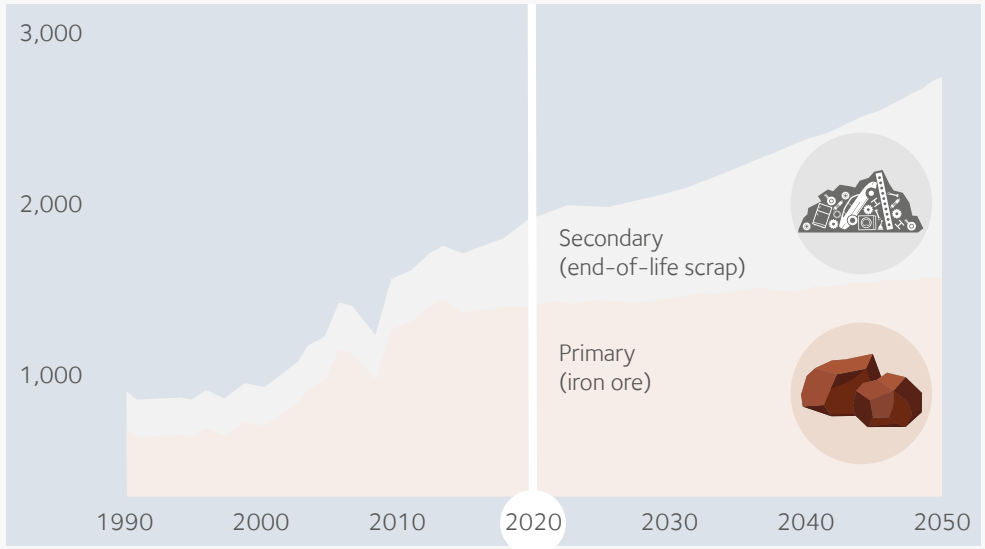
6.2 The carbon challenges facing steel

Today, steel from primary sources (iron ore) has much higher CO_2e emissions than from secondary sources (scrap)



As with most materials, the world is going to need to rely mainly on primary sources (iron ore) beyond 2050

Global steel demand outlook, without taking into account additive manufacturing or behavioral circular economy trends



See Appendix A for more information on the primary and secondary steelmaking process.

Appendix

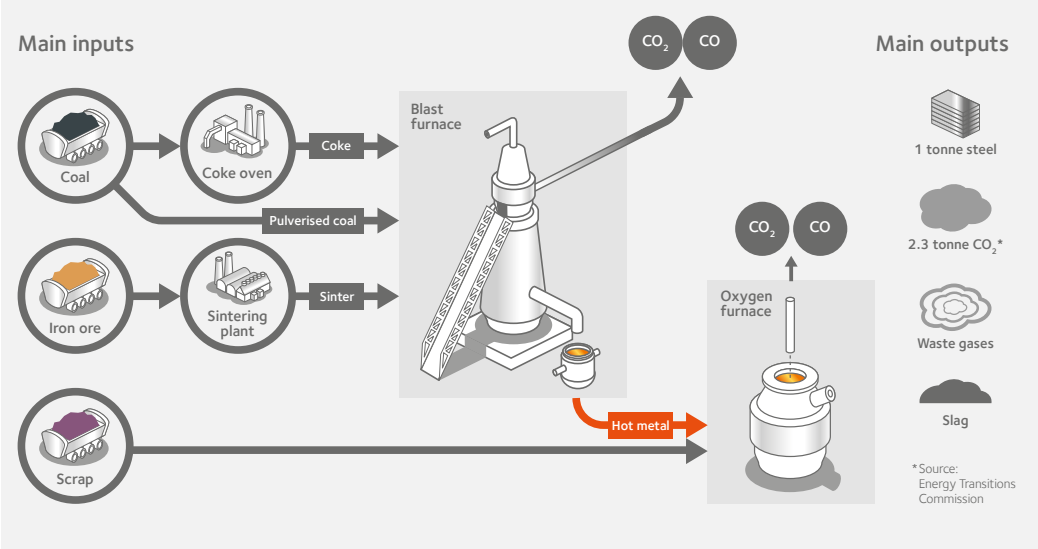
A. How steel is made today

Steel consists almost completely of iron, with small amounts of carbon and even smaller amounts of other elements such as manganese and nickel. Today, most steel is made using two different technologies: an integrated steel plant comprising a blast furnace and basic oxygen furnace, and the EAF.

Steel is made using iron ore (primary) or scrap (secondary) as metallic sources, or a mix of the two. Making steel using a blast furnace and basic oxygen furnace relies mainly on primary sources, although it can consume up to 20% secondary sources.

There is much greater flexibility when producing steel from an electric arc furnace. It can use any amount of scrap or scrap substitutes such as direct reduced iron (DRI).

Blast furnace and basic oxygen furnace steelmaking



- Coke is made by heating metallurgical coal at high temperatures in a coke oven in the absence of oxygen.
- Sinter accounts for about 70 to 90% of the metals loaded into the blast furnace and is produced from a mixture of iron ores, coal and coke particles. The remaining metal consists of pellets and lump ore.
- The blast furnace converts coke and sinter into hot liquid metal for use in the basic oxygen furnace.
- Oxygen is injected into the basic oxygen furnace, which reacts with carbon and other impurities in the liquid hot metal.
- Liquid purified metal is used to make steel.
- The impurities from the blast furnace and the basic oxygen furnace are converted into slag, some of which can be used to make cement in place of clinker. In Europe, this slag accounts for around 15% of all cement production.

In primary ore production, most of the energy consumed in the steelmaking process comes from removing the oxygen from the iron ore using fossil fuels containing carbon to create iron, emitting CO_2 as a by-product.

On average, producing one tonne of primary steel produces 1-2 tonnes of CO_2. However, as shown in section 2, we believe it will be possible for primary steel to be produced on a net-zero or even carbon-negative basis by 2050.

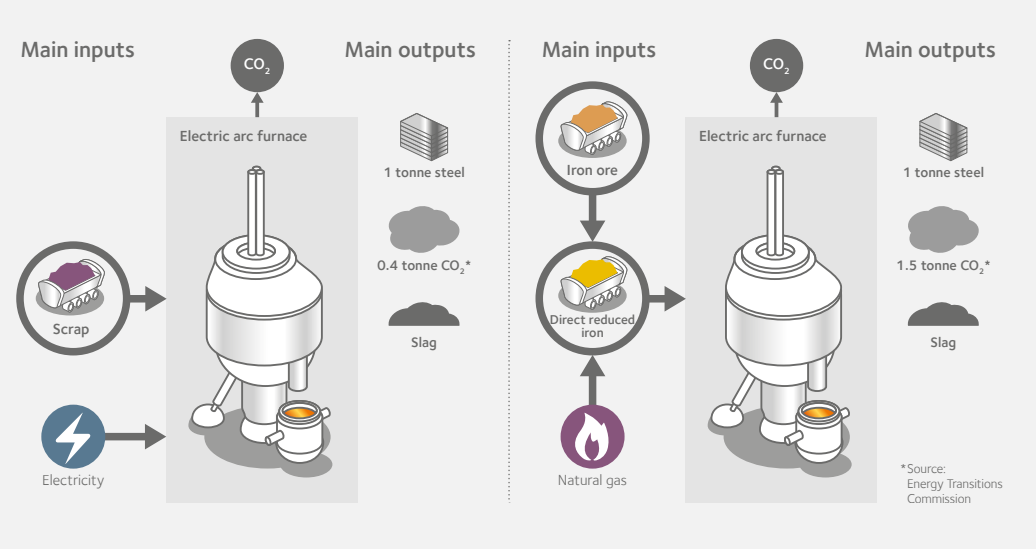
ArcelorMittal had 47* blast furnaces across the world and produced 80% of our total steel output from these furnaces in 2020.

*The 2020 BF footprint presented above includes 7 BFs at ArcelorMittal USA's operations: Indiana Harbor East (1), Indiana Harbour West (2), Burns Harbor (2), and Cleveland (2); and 4 BFs at Acciaierie d'Italia (ex ArcelorMittal Italia), (to be deconsolidated as from 2Q 2021 onwards). On December 9, 2020, ArcelorMittal completed the sale of ArcelorMittal USA's operations.

Appendix

A. How steel is made today

Electric arc furnace steelmaking



- Most electric arc furnaces (EAFs) use scrap steel to make recycled (secondary) steel.
- As a result, the process mainly involves melting scrap steel using electricity rather than separating iron from oxygen.
- Direct CO_2 emissions are mainly associated with the consumption of the carbon electrodes and indirect CO_2 emissions are produced from the carbon intensity of the electricity grid.
- Slag is also a by-product of EAF steelmaking.
- The quality of secondary steel produced by the EAF route is primarily limited by the quality of the metallic raw materials used in steelmaking, which in turn is affected by the availability of high-quality scrap. Due to limited availability of scrap, it is most efficient to make lower grades of steel in an EAF, which have fewer constraints on impurities.
- EAFs can also use DRI (made by separating iron and oxygen using natural gas). Steel made using this route can reach the qualities obtained by an integrated steel plant, since DRI has fewer impurities than scrap steel.

Remelting scrap steel at the end of its life to produce new steel requires less energy as most of the metal in the scrap is already in the form of iron. While energy is required to rearrange the chemistry of the new steel, there is no need for significant energy to remove the oxygen. Creating secondary steel via an electric arc furnace, emits less than 0.1 tonnes of CO_2 per tonne of steel when clean electricity is used.

ArcelorMittal had 32* electric arc furnaces around the world and, in 2020, we produced 20% of our steel from these furnaces.

*The 2020 EAF footprint in 2020 includes 2 EAFs at Coatesville and Steelton (part of the ArcelorMittal USA sale in 2020).

Appendix

B. Glossary

Basic oxygen steelmaking	The process whereby hot metal and steel scrap are charged into a basic oxygen furnace (BOF). High purity oxygen is then blown into the metal bath, combining with carbon and other elements to reduce the impurities in the molten charge and convert it into steel.
Blast furnace (BF)	A large cylindrical structure into which iron ore is combined with coke and limestone to produce molten iron.
Carbon leakage	Carbon leakage refers to the situation that may occur if businesses transfer production to other countries with laxer emission constraints in response to policies that impose climate-related costs.
CCU (Carbon Capture and Utilisation)	Carbon capture and utilisation (CCU) is the process of capturing CO_2 to be recycled for further usage. CCU differs from Carbon Capture and Storage (CCS) in that CCU does not aim nor result in permanent geological storage of carbon dioxide. Instead, CCU aims to convert the captured carbon dioxide into more valuable substances or products; such as plastics, concrete or biofuel; while retaining the carbon-neutrality of the production processes.
CCS (Carbon Capture and Storage)	Carbon capture and storage (also carbon capture and sequestration and carbon control and sequestration) is the process of capturing waste CO_2, transporting it to a storage site, and depositing it where it will not enter the atmosphere. The aim is to prevent the release of large quantities of CO_2 into the atmosphere. While CO_2 has been injected into geological formations for several decades to increase oil recovery, long-term storage of CO_2 is still a relatively new concept.
Circular carbon	Circular carbon energy sources include bio-based and plastic wastes from municipal and industrial sources and agricultural and forestry residues. The term may also refer to the reuse of carbon in circular flows throughout the economy, for example, in the production of plastics made from waste carbon.
Circular steel (also Secondary steel)	Steel produced from recycled end-of-life steel.
Coal	The primary fuel used by integrated iron and steel producers.
Coke	A form of carbonised coal burned in blast furnaces to reduce sinter, iron ore pellets or other iron-bearing materials to molten iron.
Coke ovens	Ovens where coke is produced. Coal is usually dropped into the ovens through openings in the roof, and heated by gas burning in flues in the walls between ovens within the coke oven battery. After heating for about 18 hours, the end doors are removed and a ram pushes the coke into a quenching car for cooling before delivery to the blast furnace.
Crude steel	Steel in the first solid state after melting, suitable for further processing or for sale. Synonymous with raw steel.
Direct reduction	A family of processes for making iron from ore without exceeding the melting temperature. No blast furnace is needed.
Electric arc furnace	An electric arc furnace is used to melt steel scrap or direct reduced iron.

Appendix

B. Glossary

Green hydrogen	Green hydrogen is made by using clean electricity from renewable energy technologies to electrolyse water, separating the hydrogen atom within it from its molecular twin oxygen. Contrast with blue hydrogen, made from natural gas in the process of steam methane reformation, with the resulting emissions curtailed through carbon capture and storage, and grey hydrogen, produced using fossil fuels such as natural gas. Grey hydrogen accounts for roughly 95% of the hydrogen produced in the world today.
Green steel	Green steel is a certification programme that quantifies the CO_2 emissions savings made thanks to the decarbonisation projects rolled out by ArcelorMittal. Starting in 2021, customers will be able to buy green steel based on verified emissions compared with a 2018 baseline.
Iron ore	The primary raw material in the manufacture of steel made up of iron and oxygen.
Limestone	Used by the steel industry to remove impurities from the iron made in blast furnaces. Magnesium-containing limestone, called dolomite, is also sometimes used in the purifying process.
NDC (also INDC) Nationally Determined Contributions (also Intended Nationally Determined Contributions)	NDCs are national climate plans highlighting climate actions, including climate related targets, policies and measures that governments aim to implement in response to the 2015 Paris Agreement on climate change. So far, 192 countries have submitted NDCs.
Pellets	An enriched form of iron ore shaped into small balls.
Pig iron	High carbon iron made by the reduction of iron ore in the blast furnace.
ResponsibleSteel™	ResponsibleSteel™ is a global multi-stakeholder certification programme. The certification process aims to align with the Codes of Good Practice from ISEAL. ISEAL is a global membership organisation focused on credible sustainability standards.
Science-Based Targets	Science-based targets are goals developed by a business to provide it with a clear route to reduce greenhouse gas emissions. An emissions reduction target is 'science-based' if it is developed in line with the scale of reductions required to keep global warming below 2°C from pre-industrial levels.
Sintering	A process which combines ores too fine for efficient blast furnace use with flux stone. The mixture is heated to form lumps, which allow better draught in the blast furnace.
Sponge iron (see also Direct Reduced Iron)	Direct reduction of iron is the removal of oxygen from iron ore or other iron bearing materials in the solid state, i.e. without melting, as in the blast furnace.
Steelanol	The process for ethanol production that makes use of a technology, whereby gases produced during the chemistry of steel production are fermented by microbes that secrete ethanol.
TCFD (Task Force on Climate-related Financial Disclosures)	TCFD was established in 2015 by the Financial Stability Board (FSB) as a means of coordinating disclosures among companies impacted by climate change. It is a set of voluntary climate-related financial risk disclosures that can be adopted by companies to inform investors and other members of the public about the risks they face related to climate change.

Appendix

C. Index of the Climate Action 100+ net-zero company benchmark

Benchmark indicator	CA 100+ assessment, March 2021	ArcelorMittal self-assessment, July 2021	Explanation	Reference in this report, section:
Indicator 1 Net-zero greenhouse gas emissions by 2050			In September 2020, ArcelorMittal made a commitment to achieve carbon-neutral steelmaking by 2050	1,2
Indicator 2 Long-term (2036-2050) greenhouse gas reduction targets			ArcelorMittal's net-zero target covers 95% of its greenhouse gas emissions from steelmaking	2
Indicator 3 Medium term (2026-2035) greenhouse gas reduction targets			ArcelorMittal has provided 2030 and 2035 targets for its global operations. We believe these are in line with the IEA Net-zero 2050 scenario for steels.	2
Indicator 4 Short term (2026-2035) greenhouse gas reduction targets			ArcelorMittal has provided a 2030 target for CO_2 emissions reduction	2
Indicator 5 Decarbonisation strategy			ArcelorMittal has outlined its a decarbonisation strategy and roadmap to meet its medium and long-term CO_2 targets and quantified the reductions from different sources.	2
Indicator 6 Capital stock alignment			ArcelorMittal outlines the approach of the Investment Allocations Committee in ensuring its capex decisions do not disable the company from achieving its Paris aligned CO_2 reduction targets.	2

Appendix

C. Index of the Climate Action 100+ net-zero company benchmark

Benchmark indicator	CA 100+ assessment, March 2021	ArcelorMittal self-assessment, July 2021	Explanation	Reference in this report, section:
Indicator 7 Climate policy engagement			ArcelorMittal supports climate policy that facilitates our sector's alignment with the Paris agreement and commits to ensuring all company and our engagement with the policymakers is consistent with this position.	**2.5**
Indicator 8 Climate governance			ArcelorMittal has clear board oversight for the delivery of its CO_2e targets. The 2030 Group's target will be now linked to executive remuneration.	**3.3**
Indicator 9 Just transition	n/a	n/a	ArcelorMittal will undertake further assessments of the social impacts of its decarbonisation transition as mentioned.	**2.6.3**
Indicator 10 TCFD disclosure			ArcelorMittal has committed to implement TCFD recommendations and includes a TCFD index in this report. Its analysis is based on the outcomes of policy/technology scenarios to test the opportunities for CO_2 reduction, rather than temperature scenarios to test its operational resilience.	**Appendix C**

Appendix

C. Alignment with TCFD recommendations

TCFD recommended disclosures	Section:	Further information (where applicable)
GOVERNANCE		
A) Describe the board's oversight of climate-related risks and opportunities	**3.3**	2020 CDP Climate Change response C1.1
B) Describe management's role in assessing and managing risks and opportunities	**3**	2020 CDP Climate Change response C1.2
STRATEGY		
A) Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.	**3** **3.1** **3.2**	2020 CDP Climate Change response C2.1, C2.2a, C2.3a, C2.4a
B) Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning.	**3** **3.1** **3.2**	P 33 – 35 Form 20-F Item 3 Section D. Risk Factors* 2020 CDP response C2.3, C3.1d, C3.1e
C) Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	**3**	2020 CDP response C3.1

TCFD recommended disclosures	Section:	Further information (where applicable)
RISK MANAGEMENT		
A) Describe the organisation's processes for identifying and assessing climate-related risks	**3** **3.2**	2020 CDP response C2.2
B) Describe the organisation's processes for managing climate-related risks.	**3** **3.2**	2020 CDP response C2.2
C) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.	**3.2**	2020 CDP response C2.2
METRICS & TARGETS		
A) Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.	**3** **3.1** **3.2**	2020 CDP response C4.1b
B) Disclose scope 1, scope 2, and, if appropriate, scope 3 greenhouse gas (GHG) emissions, and the related risks	**3.2** **4.1**	2020 CDP response C5.1, C6.1, C6.3, C6.5
C) Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.	**2** **3**	2020 CDP response C4.1b

* https://corporate-media.arcelormittal.com/media/0gxcmlsb/2020-annual-report-on-form-20-f.pdf

Architectural Fence Guide

ARCHITECTURAL FENCE GUIDE

CONSTRUCTION SPECIFICATION **32 31 00**





ORNAMENTAL STEEL FENCES & GATES | ORNAMENTAL ALUMINUM FENCES & GATES
HIGH SECURITY FENCES & GATES | ENGINEERED CANTILEVER, ROLL & PEDESTRIAN EGRESS GATES

FENCE PRODUCTS

AMERISTARPERIMETER.COM | 800-321-8724

Experience a safer and more open world

AMERISTAR®

ASSA ABLOY



ARCHITECTURAL SUPPORT AND SOLUTION SERVICES

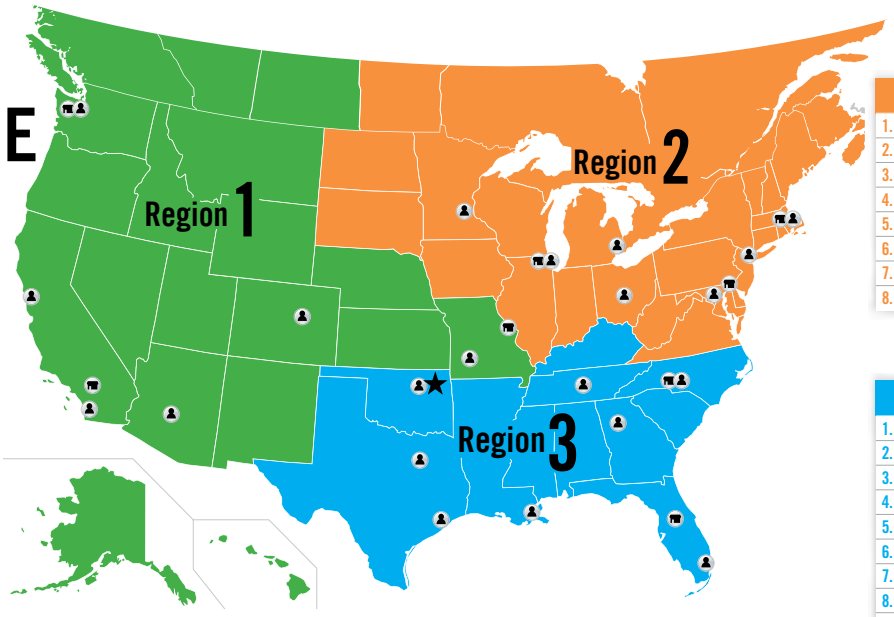
Ameristar's Project Solution Specialists are experienced in every facet of perimeter security design. Our goal is to assist the architectural community in finding the best perimeter and entry solutions for their projects.

SERVICES

- Extensive library of project photos
- BIM & CAD drawings
- Architectural specifications
- Project budget quotes

AVAILABLE NATIONWIDE

Market Developer
Sales and Service Centers
Ameristar Headquarters



REGION 1		
1. SEATTLE, WA	●	■
2. SAN FRANCISCO, CA	●	
3. SAN DIEGO, CA	●	
4. RIVERSIDE, CA		■
5. PHOENIX, AZ	●	
6. DENVER, CO	●	
7. SPRINGFIELD, MO	●	
8. ST. LOUIS, MO		■

REGION 2		
1. MINNEAPOLIS, MN	●	
2. CHICAGO, IL	●	■
3. DETROIT, MI	●	
4. COLUMBUS, OH	●	
5. BOSTON, MA	●	■
6. NEWARK, NJ	●	
7. BALTIMORE, MD	●	
8. PHILADELPHIA, PA		■

REGION 3		
1. TULSA, OK	●	★
2. DALLAS, TX	●	
3. HOUSTON, TX	●	
4. NEW ORLEANS, LA	●	
5. NASHVILLE, TN	●	
6. ATLANTA, GA	●	
7. CHARLOTTE, NC	●	■
8. ORLANDO, FL		■
9. MIAMI, FL	●	

Continuing to add additional locations.

EDUCATION

As a registered AIA/CES provider, we offer a variety of educational LU, HSW and CE programs to help you make informed decisions, including the following:

- Architectural Perimeter Security Alternatives
- Bollards – Perimeter Security and Traffic Management Design & Practices
- Codes and Standards Affecting the Perimeter Security Industry
- Fence Framework – Design and Construction Standards
- Integration of Safety Standards Site/Climate Conditions with Gates and Automation
- Perimeter Security Planning, Site Planning Through Assessment
- Understanding Modern Ornamental Fence Products and Applications

All programs listed above qualify for AIA/CES learning units.

See complete list of all programs offered at ameristarperimeter.com/us/en/resources/architect-resources

AFFILIATES

- Airports Council International ACI-NA (ACI)
- American Association of Airport Executives (AAAE)
- American Fence Association (AFA)
- American Institute of Architects (AIA)
- American Society for Industrial Security (ASIS)
- American Society of Landscape Architects (ASLA)
- Chain Link Fence Manufacturers Institute (CLFMI)
- Security Industry Association (SIA)
- Society of American Military Engineers (SAME)

See full list of affiliates on our website



MONTAGE® PRODUCTS

Profusion Welded Ornamental Steel Fence

MONTAGE II®
Industrial Ornamental Steel Fence

MONTAGE COMMERCIAL®
Commercial Ornamental Steel Fence

MONTAGE PLUS®
Ornamental Steel Fence

Montage fence systems are coated inside and out for maintenance-free protection.

Montage fence systems are backed by over 30 years of excellence in the fencing industry.

Ameristar is committed to providing products that meet the Buy American Act.

Ameristar products have the opportunity to earn LEED points.



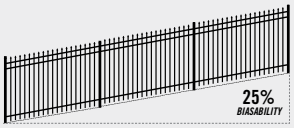


PROFUSION WELDING

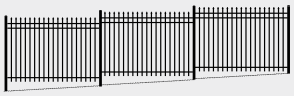
Montage fence panels are fabricated through a welding technique that combines laser and fusion technology to create a virtually invisible structural connection at every picket to rail intersection. Montage welded steel construction is unmatched in strength and durability.

RAKEABLE VS STAIR-STEP

The ProFusion welded picket to rail connection is the method used to construct Montage panels, which allows a minimum biasability of 25%, eliminating any possible security risks due to large gaps under the fence panels.

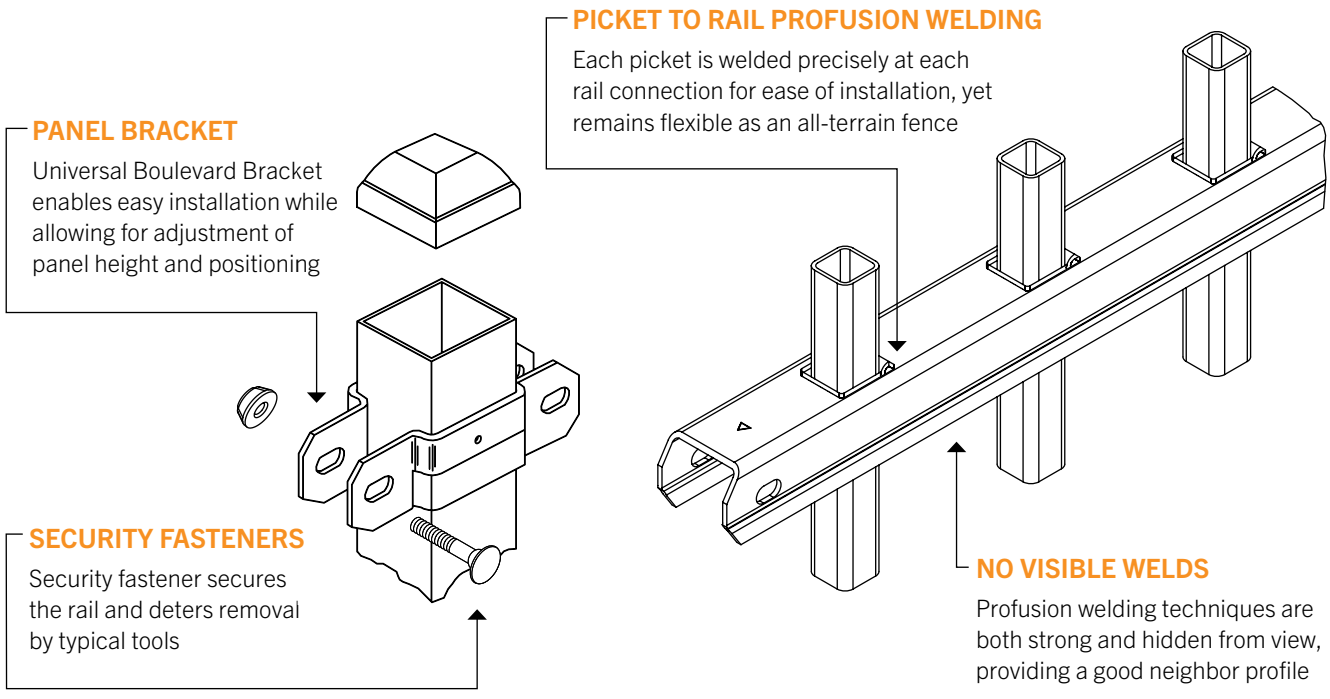


FULLY RAKEABLE PANELS



STAIR-STEPPING PANELS



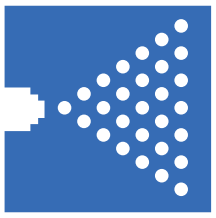


E-COAT™

Major corrosion problems start from the inside. That's why all products in the Montage® family are coated inside and out. Our galvanized steel framework is subjected to a multi-stage pre-treatment/wash, followed by a duplex cathodic electrocoat system consisting of an epoxy primer, which significantly increases corrosion protection, and an acrylic topcoat, which provides the protection necessary to withstand adverse weathering effects.



PRE-TREATMENT



ALKALINE SPRAY WASH

1



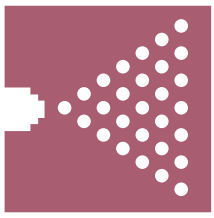
ALKALINE IMMERSION

2



WATER IMMERSION

3



SPRAY CONDITIONER

4



PHOSPHATE IMMERSION

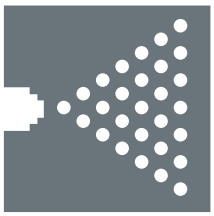
5

EPOXY PROCESS



ELECTRO COAT EPOXY PRIMER

10



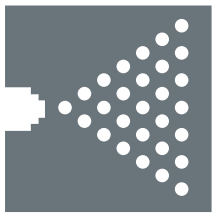
PERMEATE SPRAY RINSE

11



PERMEATE IMMERSION

12



PERMEATE SPRAY RINSE

13



REVERSE OSMOSIS HALO RINSE

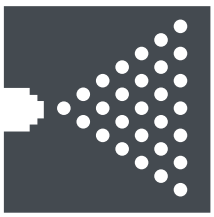
14

ACRYLIC FINISH



ELECTRO COAT ACRYLIC FINISH

17



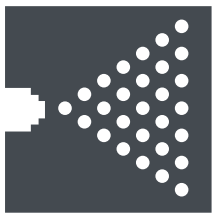
PERMEATE SPRAY RINSE

18



PERMEATE IMMERSION

19



PERMEATE SPRAY RINSE

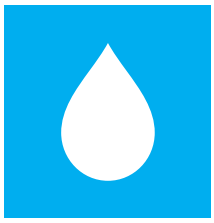
20



REVERSE OSMOSIS HALO RINSE

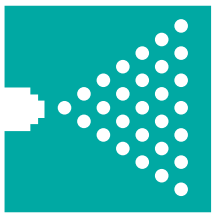
21





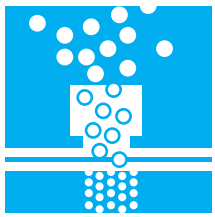
WATER IMMERSION

6



NON-CHROMATE SPRAY SEAL

7



REVERSE OSMOSIS IMMERSION

8



REVERSE OSMOSIS HALO RINSE

9

Immersion processes coat and cleanse the inside of the fence components as thoroughly as the outside. This prevents corrosion, giving Montage products the ability to withstand the elements and be maintenance-free.



FINISH CURING OVEN

15



COOLING TUNNEL

16



FINISH CURING OVEN

22



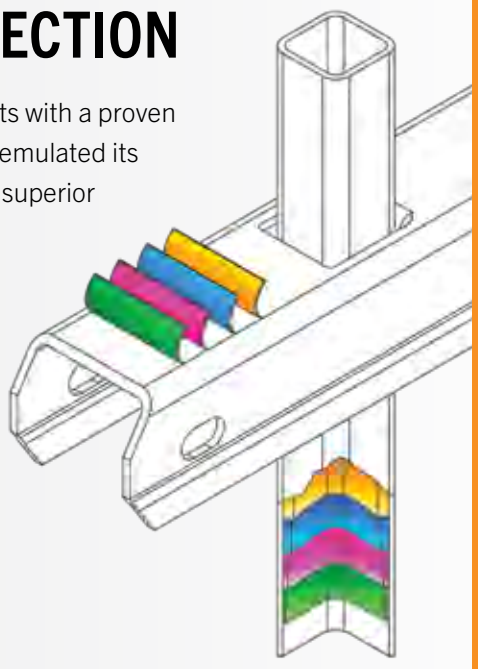
COOLING TUNNEL

23

LAYERED PROTECTION

Protection against corrosion starts with a proven process, which is why Ameristar emulated its PermaCoat method to develop a superior E-Coat process that protects the product with complete coverage inside and out.

- ACRYLIC TOPCOAT
- EPOXY PRIMER
- PHOSPHATE
- GALVANIZED STEEL



MONTAGE II®

Industrial Ornamental Steel Fence







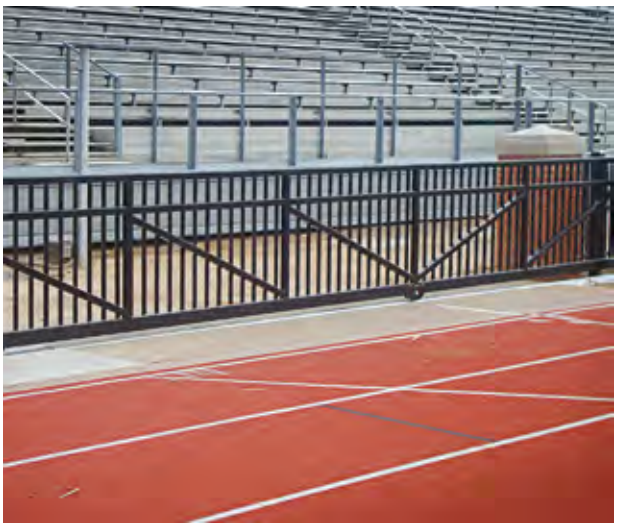


Built for strength yet a penchant for beauty, Montage II is an industrial grade steel fence that delivers on both levels. Superior welding techniques create a profile that lends itself to landscaping design while maintaining a level of perimeter security that is unmatched.

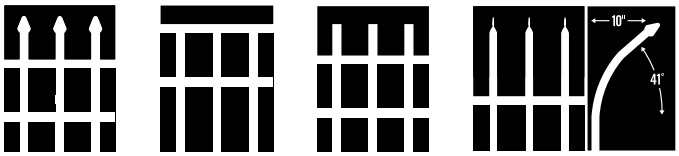
PRIMARY APPLICATIONS

- State Facilities
- Government Facilities
- Airports
- Water Treatment & Storage
- Public Housing Authorities
- Parks & Recreation
- Stadiums & Event Centers
- Universities
- Hospitals
- K-12 Schools

PICKETS	RAILS	POSTS	HEIGHTS
1" SQ. x 14 GA.	1.75" x 1.75" x 12 GA.	2.5" SQ. x 12 GA. 3" SQ. x 12 GA.	3', 3½', 4', 4½', 5', 6', 7', 8'

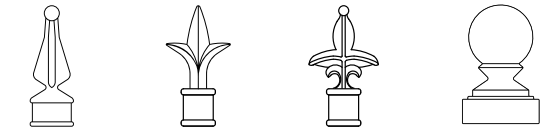


STYLES



CLASSIC™ MAJESTIC™ GENESIS™ INVINCIBLE™

ADORNMENTS



QUAD FLARE TRIAD ROYALTY BALL CAP

Montage II gate options vary from swing gates for pedestrian or vehicle access to sliding gates for high-functioning points of entry. Each of these gate systems is individually constructed to provide project specific performance.

COLOR

Refer to color sample for actual color



BLACK



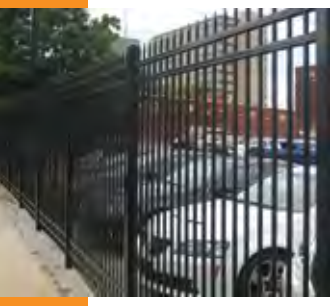




MONTAGE COMMERCIAL®

Commercial Ornamental Steel Fence









Montage Commercial steel fences have redefined the commercial fence industry with strength that matches the level of security demanded. In the past commercial fencing was defined as a chain link fence with three strands of barb wire, today Montage Commercial ornamental fences are the standard for security fencing.

PRIMARY APPLICATIONS

- Commercial Developments
- Municipal Facilities
- Self Storage
- Parking Facilities
- Parks & Recreation
- Universities
- K-12 Schools

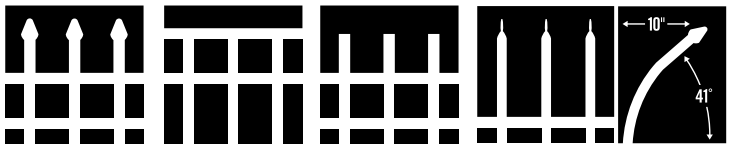
PICKETS	RAILS	POSTS	HEIGHTS
.75" SQ. x 14 GA.	1.4375" x 1.5" x 14 GA.	2.5" SQ. x 14 GA.	7', 8'



Montage Commercial gate options vary from swing gates for pedestrian or vehicle access to sliding gates for high-functioning points of entry. Each of these gate systems is individually constructed to provide project specific performance.

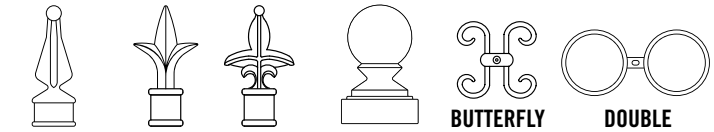
STYLES

*Also available in Pool, Pet & Play (3" air spacing)**



CLASSIC™* MAJESTIC™* GENESIS™* INVINCIBLE™

ADORNMENTS



QUAD FLARE TRIAD ROYALTY BALL CAP BUTTERFLY SCROLL DOUBLE RINGS

COLOR

Refer to color sample for actual color



BLACK





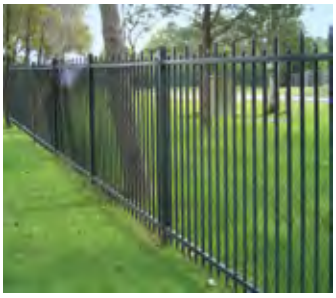


MONTAGE PLUS®

Ornamental Steel Fence









The Montage Plus ornamental steel fence has the versatility to fit many different project applications. With its ability to traverse varying grades, variety of distinct product styles and unmatched coating performance, Montage Plus is the preferred choice for ornamental fence.

PRIMARY APPLICATIONS

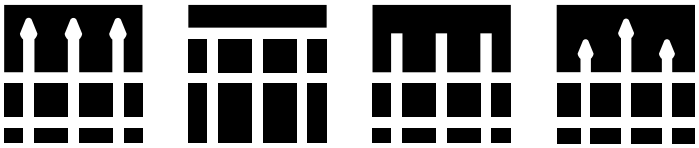
- Commercial Developments
- Self Storage
- Apartments (Multi-Family)
- Parks & Recreation
- Schools & Universities
- Childcare Facilities

PICKETS	RAILS	POSTS	HEIGHTS
.75" SQ. x 18 GA.	1.4375" x 1.50" x 14 GA.	2.50" SQ. x 16 GA.	3', 3½', 4', 4½', 5', 6'



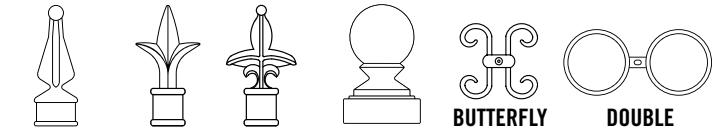
STYLES

*Also available in Pool, Pet & Play (3" air spacing)**



CLASSIC™* MAJESTIC™* GENESIS™* WARRIOR™

ADORNMENTS



QUAD FLARE TRIAD ROYALTY BALL CAP BUTTERFLY SCROLL DOUBLE RINGS

COLOR

Refer to color sample for actual color



BLACK

Montage Plus gate options vary from swing gates for pedestrian or vehicle access to sliding gates for high-functioning points of entry. Each of these gate systems is individually constructed to provide project specific performance.









AEGIS® PRODUCTS

Internally secured Ornamental Steel Fence

AEGIS II® Xtreme
Pedestrian Ornamental Railing

AEGIS II®
Industrial Ornamental Steel Fence

AEGIS PLUS®
Commercial Ornamental Steel Fence

Ameristar's Aegis fence systems are protected to endure the elements and are maintenance-free.

PROTECTED BY PERMACOAT®

Ameristar's Aegis fence systems are backed by over 30 years of excellence in the fencing industry.

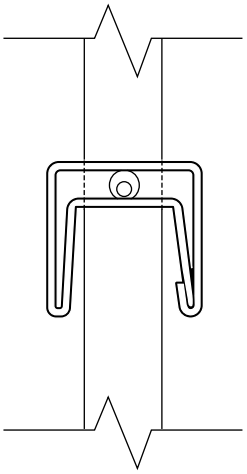
10 YEAR WARRANTY

Ameristar is committed to providing products that meet the Buy American Act.

MEETS BUY AMERICAN ACT

Ameristar products have the opportunity to earn LEED points.

FORERUNNER® LOCKING SYSTEM



Ameristar crafted the ForeRunner rail to increase strength through architecture. The innovative design of the ForeRunner rail contains an internally secured rod that allows for variable pitch connection, high-angle biasability and eliminates the need for visually unappealing external fasteners. The ForeRunner rail is galvanized inside and out to protect against internal corrosion, putting it in the upper echelon of fencing solutions.

Increased security

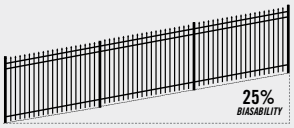
The ForeRunner Rail with internal retaining rod prevents the attachment from being compromised. Fasteners are not exposed.

Aesthetic details

"Good Neighbor Design" rod follows ForeRunner centerline providing a clean and uninterrupted look, void of visible screws or rivets.

RAKEABLE VS STAIR-STEP

Having a unique picket to rail connection allows Aegis products a minimum biasability of 25%, eliminating any possible security risks due to large gaps under the fence panels.

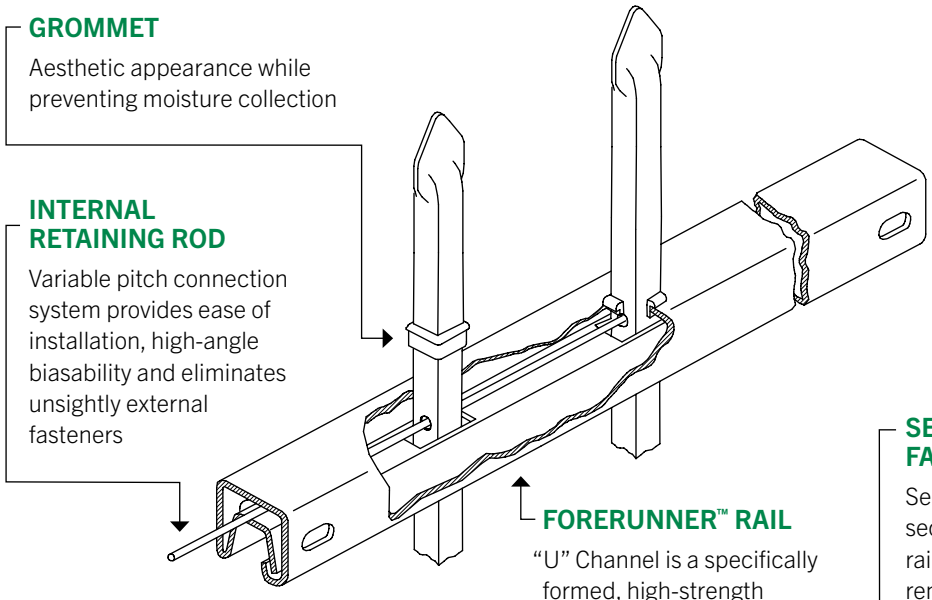


FULLY RAKEABLE PANELS



STAIR-STEPPING PANELS





GROMMET

Aesthetic appearance while preventing moisture collection

INTERNAL RETAINING ROD

Variable pitch connection system provides ease of installation, high-angle biasability and eliminates unsightly external fasteners

FORERUNNER™ RAIL

"U" Channel is a specifically formed, high-strength architectural shape

PANEL BRACKET

Universal Boulevard Bracket enables easy installation while allowing for adjustment of panel height and positioning

SECURITY FASTENERS

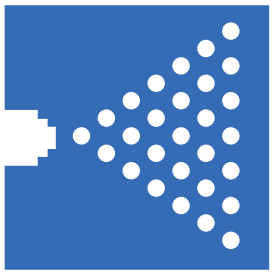
Security fastener secures the rail and deters removal by typical tools

PERMACOAT™

The majority of Ameristar products are protected by the unique PermaCoat process. Our pre-galvanized steel base material is subjected to an 11-stage process to cleanse & prepare the steel for a dual top-coat finish. PermaCoat's corrosion resistant abilities far surpass those of painted surfaces and have a "no-mar" polyester powder top coat. This dual coating not only provides resistance from weathering but also reduces scratch and burnishing marks typically encountered during shipping.

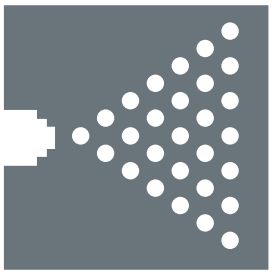


PRE-TREATMENT



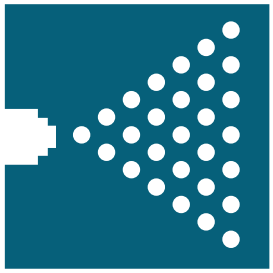
ALKALINE WASH
Cleans metal for proper adhesion of zinc phosphate

1



FIXIDINE RINSE
Rinses excess alkaline prior to zinc phosphate application

2



PHOSPHATE
Corrosion resistant layer that assists in bonding powder coating

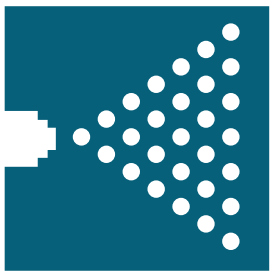
3



CLEAR WATER RINSE
A bit of clean H2O to prep for the next phase

4

DOUBLE COATING



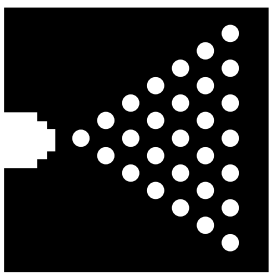
EPOXY POWDER COAT
Epoxy powder is electrostatically applied

8



EPOXY GEL OVEN
Powder is gelled & cured to finish coat

9



POLYESTER POWDER
TGIC powder is electro-statically applied

10



FINISH CURING OVEN
Seals finish for years of maintenance-free use

11



NON-CHROMATE SEAL
Barrier to prevent moisture from reaching base metal

5

CLEAR WATER RINSE
Final wash in H2O to remove any excess debris or particles

6

DRYING OVEN
Eliminates all moisture prior to double coating

7

Once completed, these 7 stages will have removed everything from the surface of the steel that might inhibit the finish from properly adhering during the next 4 stages of the coating process.

CORROSION TESTING

Corrosion occurs more easily without the proper preparation and protection, which is why Ameristar has put our fence products to the test based on ASTM B117 standards. The results speak for themselves.

100 HOURS	168 HOURS	200 HOURS	1,500 HOURS	3,500 HOURS
PAINTED STEEL	*PRIMED & PAINTED STEEL*	*SINGLE COAT PROCESS* Iron Phosphate + Polyester Powder Coat	*SINGLE COAT PROCESS* Phosphate + Polyester Powder Coat	*PERMACOAT PROCESS* Phosphate + Epoxy Powder Coat + Polyester Powder Coat

AEGIS II® XTREME

Pedestrian Ornamental Railing









PRIMARY APPLICATION

- Pedestrian Railing for Bridges

Engineered to meet AASHTO LRFD

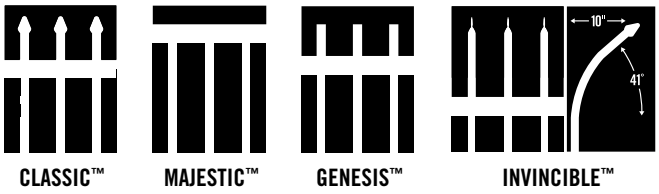
Aegis II Xtreme is the obvious front-runner in strength and durability for decorative pedestrian bridge railing. With a dual ForeRunner rail and multi-layer coating, this pedestrian railing is unmatched in overall product performance. In addition, the manufactured design of Aegis II Xtreme allows for a simplistic installation that yields extreme project savings.

PICKETS	RAILS	POSTS	HEIGHTS
1" SQ. x 14 GA.	1.75" x 3.5" x 14 GA. DUAL FORERUNNER™ RAILS	4" SQ. x 11 GA.	3½', 4', 5', 6', 7' & 8'



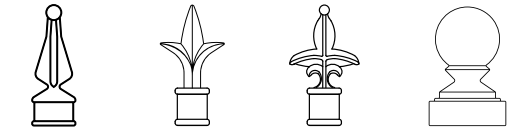
The innovative design of the Dual ForeRunner rail contains an internally secured galvanized retaining rod that allows for variable pitch connection, biasability and eliminates the need for visually unappealing external fasteners. Galvanized inside and out to protect against internal corrosion, the Dual ForeRunner rail is in the upper echelon of decorative railing options.

STYLES



CLASSIC™ MAJESTIC™ GENESIS™ INVINCIBLE™

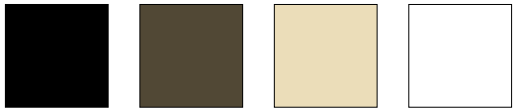
ADORNMENTS



QUAD FLARE TRIAD ROYALTY BALL CAP

COLORS

Refer to color sample for actual color

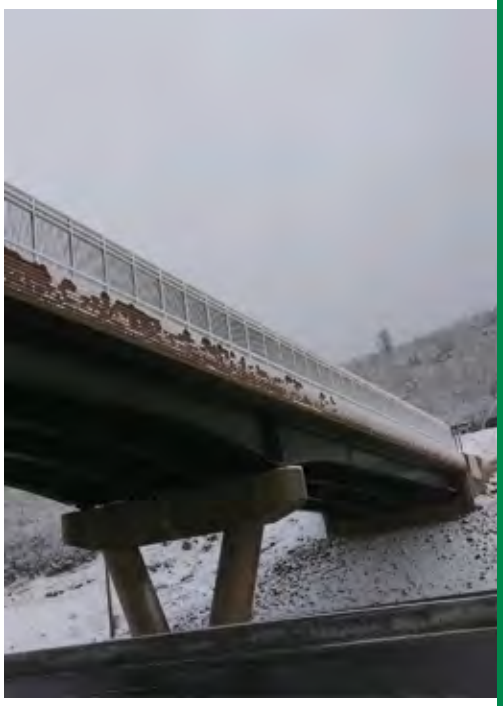


BLACK BRONZE SAND WHITE

Custom colors also available

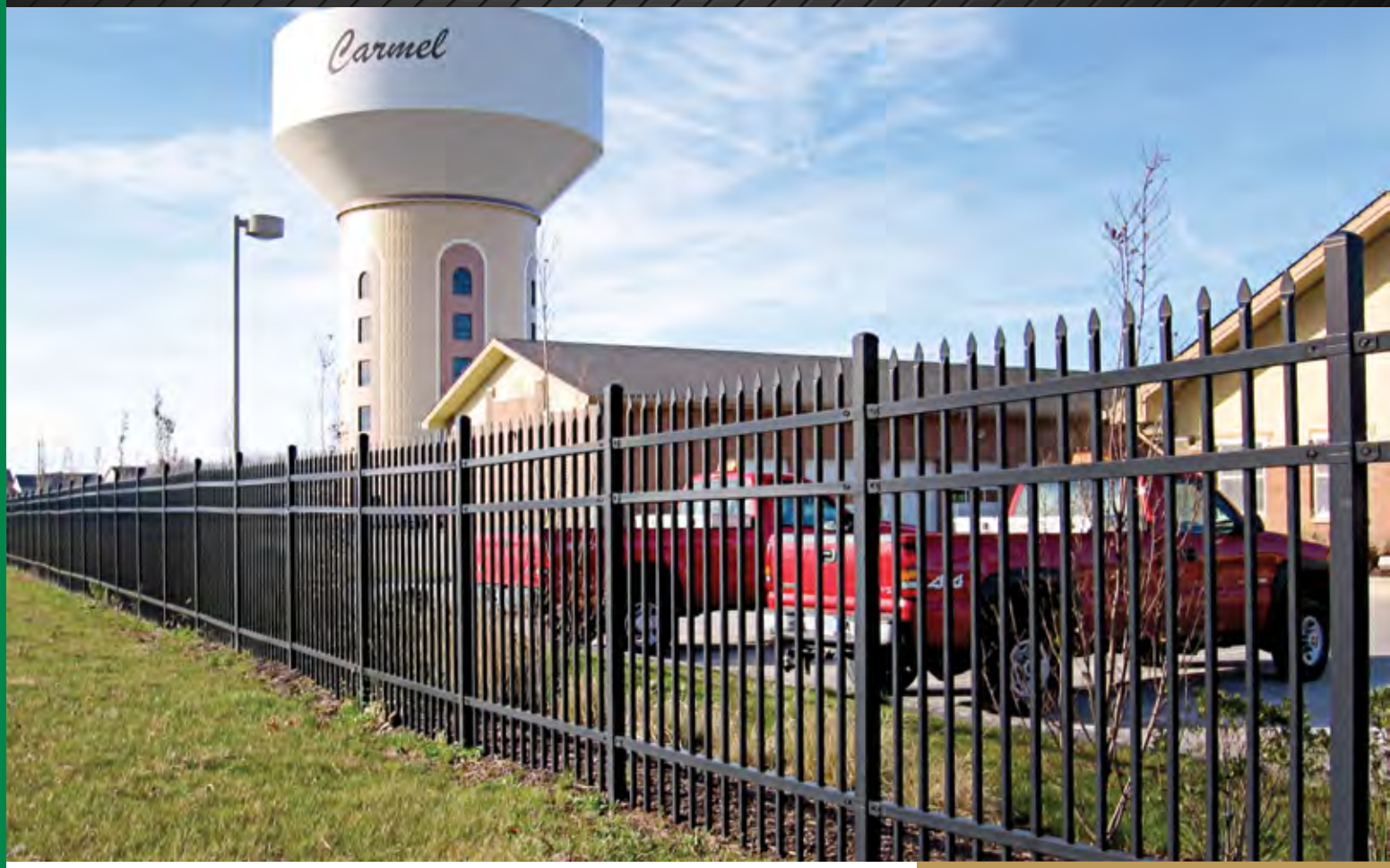






AEGIS II®

Industrial Ornamental Steel Fence









The strength of Aegis II is rivaled only by the elegance of its profile. Manufactured as an industrial grade fence system, it is designed for strength and durability. Balanced by the beauty of its design features, Aegis II matches the level of security demanded by any application.

PRIMARY APPLICATIONS

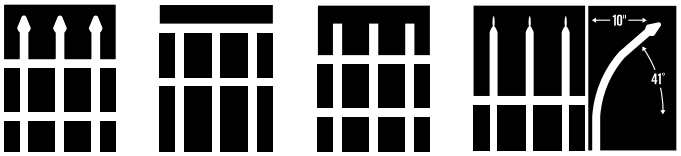
- Stadiums & Event Centers
- Universities
- Airports
- Water Treatment & Storage
- Public Housing Authorities
- State Facilities
- Municipal Facilities
- Parks & Recreation
- Hospitals
- K-12 Schools

PICKETS	RAILS	POSTS	HEIGHTS
1" SQ. x 14 GA.	1.75" x 1.75" x 14 GA. FORERUNNER™ RAILS	2.5" SQ. x 12 GA. 3" SQ. x 12 GA.	3', 3½', 4', 5', 6', 7', 8', 9', 10' *Custom heights also available*



Aegis II gate options vary from swing gates for pedestrian or vehicle access to sliding gates for high-functioning points of entry. Each of these gate systems is individually constructed to provide project specific performance.

STYLES



CLASSIC™ MAJESTIC™ GENESIS™ INVINCIBLE™

ADORNMENTS



QUAD FLARE TRIAD ROYALTY BALL CAP RING *(internally secured)*

COLORS

Refer to color sample for actual color



BLACK BRONZE SAND WHITE

Custom colors also available







AEGIS PLUS®

Commercial Ornamental Steel Fence









Aegis Plus combines strength greater than most commercial steel fences with a surface finish that is essentially maintenance-free. The size of Aegis Plus works well for numerous applications where users are seeking greater strength and a more substantial look without the high cost of industrial fencing.

PRIMARY APPLICATIONS

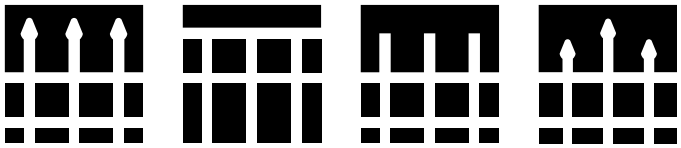
- Municipal Facilities
- Self Storage
- Parks & Recreation
- Event Centers
- K-12 Schools
- Childcare Facilities

PICKETS	RAILS	POSTS	HEIGHTS
.75" SQ. x 17 GA.	1.5" x 1.5" x 14 GA. FORERUNNER™ RAILS	2.5" SQ. x 12 GA.	3', 3½', 4', 5', 6', 7', 8' *Custom heights also available*



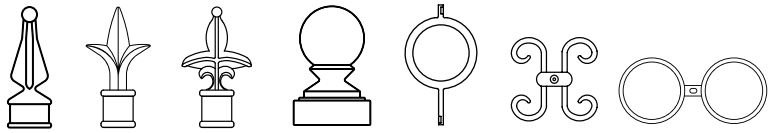
Aegis Plus gate options vary from swing gates for pedestrian or vehicle access to sliding gates for high-functioning points of entry. Each of these gate systems is individually constructed to provide project specific performance.

STYLES



CLASSIC™ MAJESTIC™ GENESIS™ WARRIOR™

ADORNMENTS



QUAD FLARE | TRIAD | ROYALTY | BALL CAP | RING *(internally secured)* | BUTTERFLY SCROLL | DOUBLE RINGS

COLORS

Refer to color sample for actual color

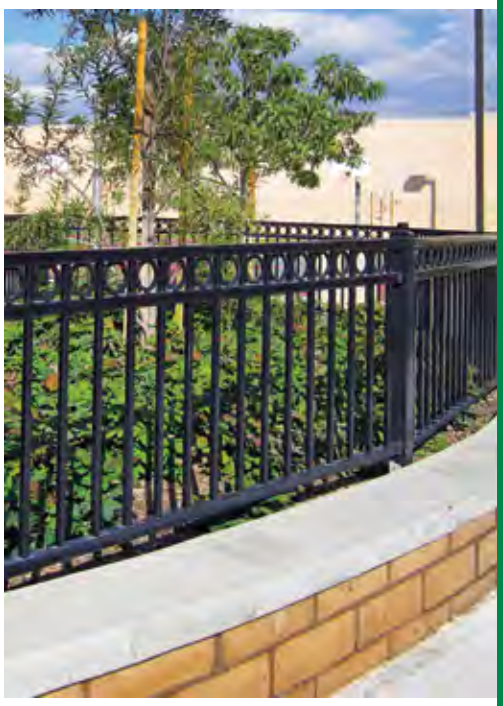


BLACK | BRONZE | SAND | WHITE

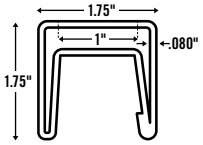
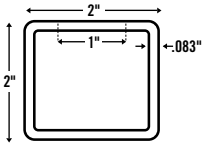
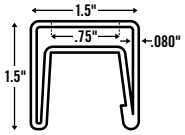
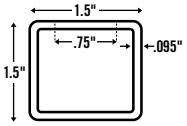
Custom colors also available







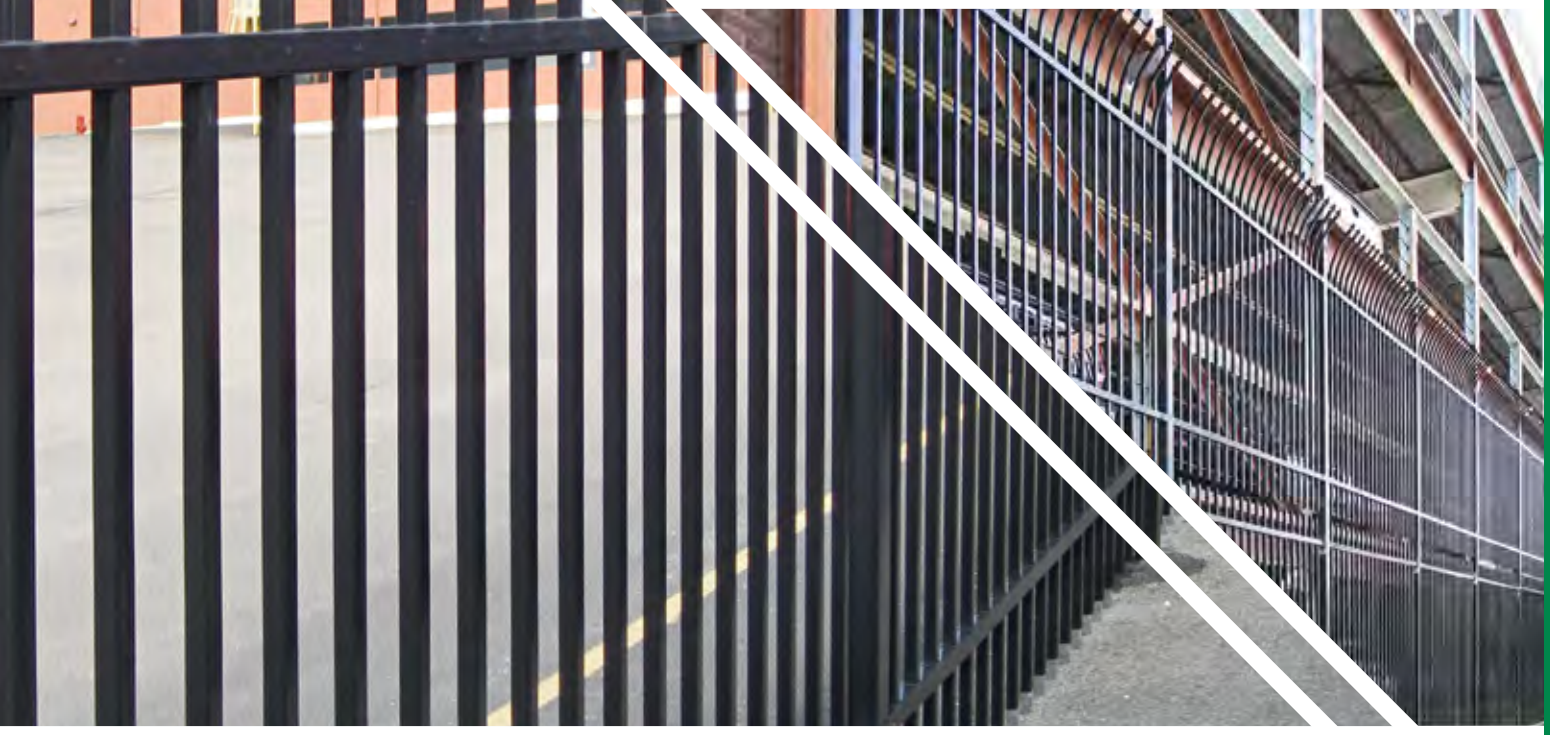
AEGIS STEEL RAIL
STRENGTH COMPARISON

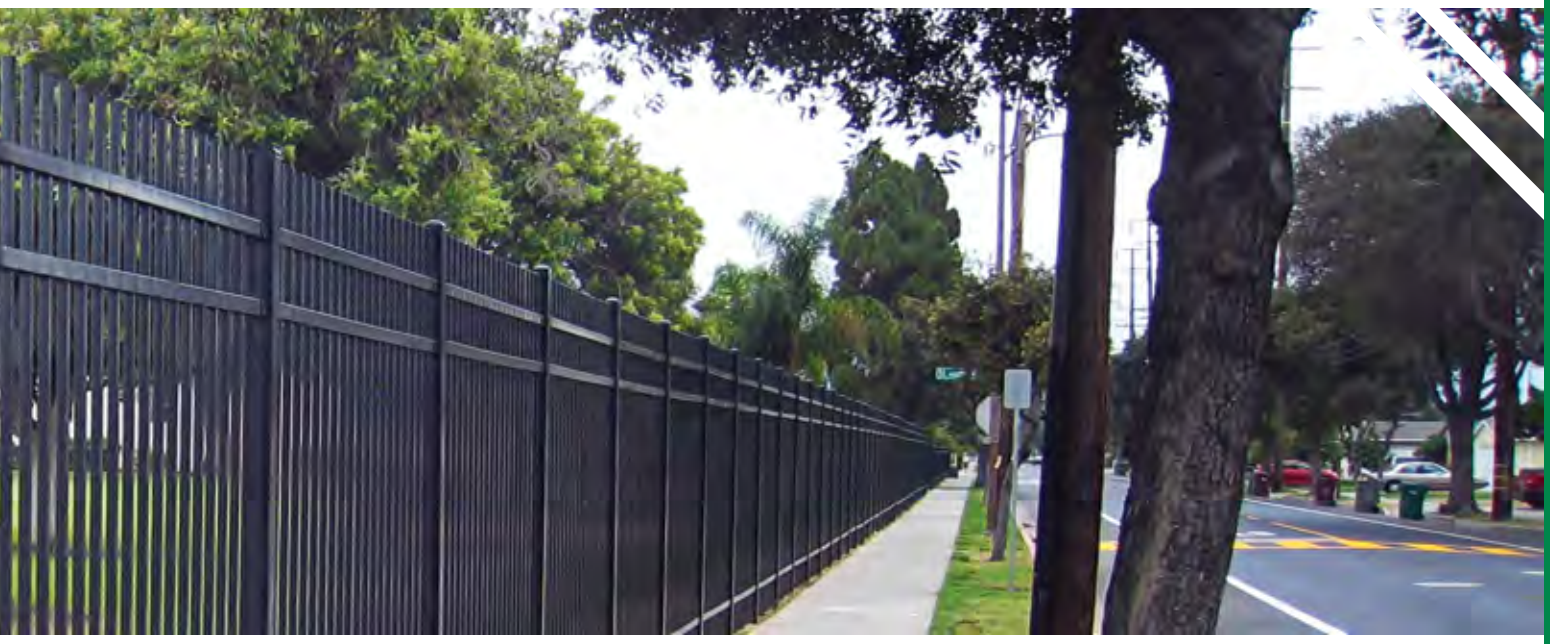
STRUCTURAL PARAMETERS		FORERUNNER™ AEGIS II®	SQUARE RAIL INDUSTRIAL	FORERUNNER™ AEGIS PLUS®	SQUARE RAIL COMMERCIAL
Architectural Profile of rail shape. Vertical Design Loads are per rail. *(For capacity of fence panel, multiply by number of rails)*					
T_{eff} = Effective Wall Thickness *(inches)*		.160	.083	.160	.095
S_v = Section Modulus *(inches vertical)*		.1624	.188	.1612	.115
S_h = Section Modulus *(inches horizontal)*		.367	.309	.254	.147
Vertical Load Data PV_f = Ultimate Vertical	6' span	676#	523#	652#	320#
	8' span	506#	392#	492#	239#
Horizontal Load Data PH_f = Ultimate Horizontal	6' span	1,020#	859#	639#	409#
	8' span	765#	644#	482#	306#
Vertical Load Data* PV_d = Vertical Design Load @ 66° F_y	6' span	446#	345#	430#	211#
	8' span	334#	259#	325#	158#
Horizontal Load Data* PH_d = Horizontal Design Load @ 66° F_y	6' span	673#	567#	422#	270#
	8' span	505#	425#	318#	202#

** Recommended load value for safe structural design / allowable strength = .66° F*











ECHELON® PRODUCTS

Internally Secured Ornamental Aluminum Fence

ECHELON II®
Industrial Ornamental Aluminum Fence

ECHELON PLUS®
Ornamental Aluminum Fence

Echelon fence systems are protected to endure the elements and are maintenance-free.

PROTECTED BY POWDER COATING

Echelon fence systems are backed by over 30 years of excellence in the fencing industry.

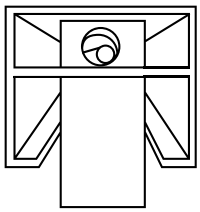
LIFETIME WARRANTY

Ameristar is committed to providing products that meet the Buy American Act.

MEETS BUY AMERICAN ACT

FORERUNNER® LOCKING SYSTEM

Ameristar crafted the ForeRunner rail to increase strength through architecture. The innovative design of the ForeRunner rail contains an internally secured rod that allows for variable pitch connection, high angle biasability and eliminates the need for visually unappealing external fasteners.



Increased security

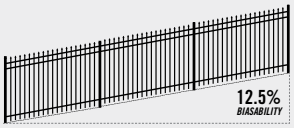
The ForeRunner Rail with internal retaining rod prevents the attachment from being compromised. Fasteners are not exposed.

Aesthetic details

"Good Neighbor Design" rod follows ForeRunner centerline providing a clean and uninterrupted look, void of visible screws or rivets.

RAKEABLE VS STAIR-STEP

Having a unique picket to rail connection allows Echelon products a minimum biasability of 12.5%, eliminating any possible security risks due to large gaps under the fence panels.

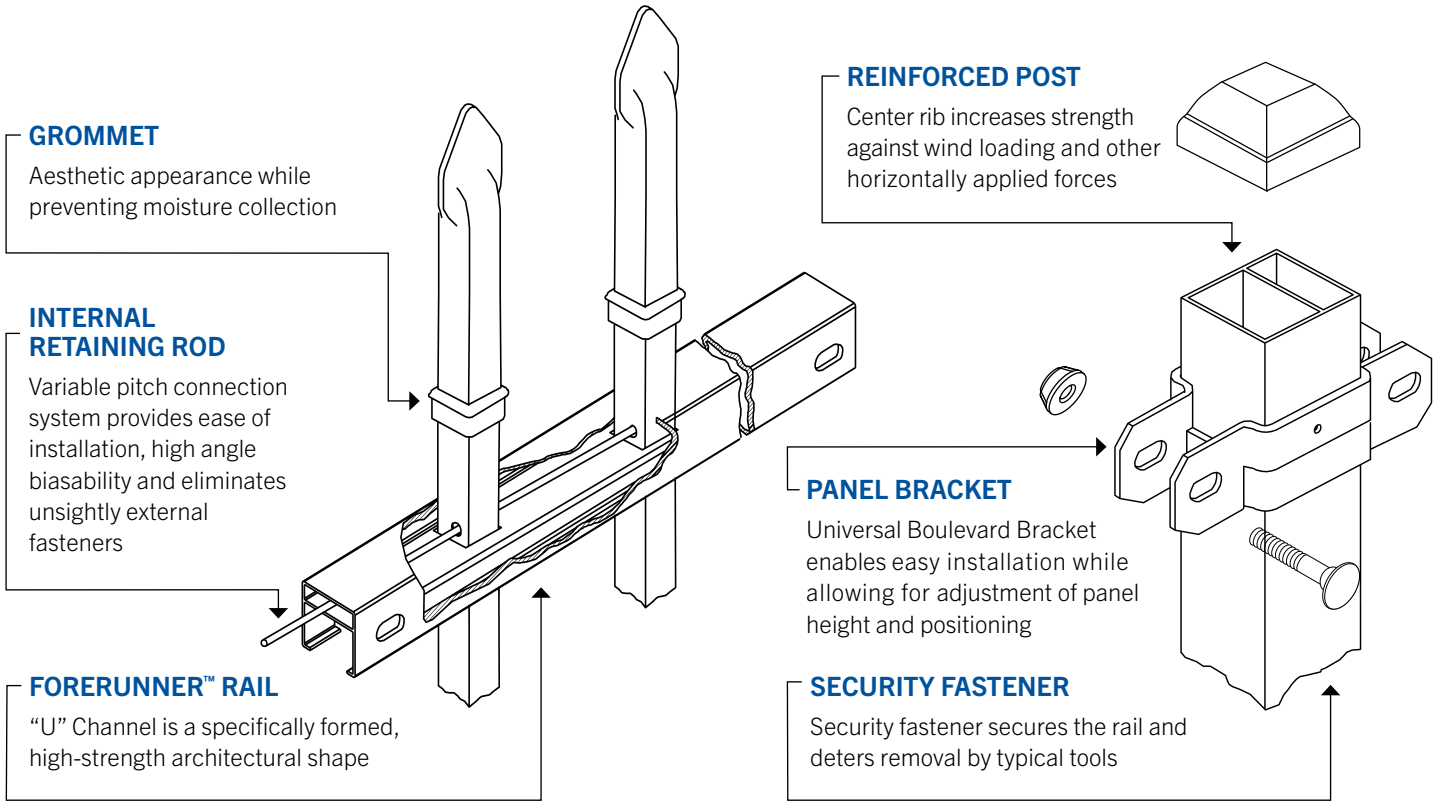


FULLY RAKEABLE PANELS



STAIR-STEPPING PANELS





GROMMET
Aesthetic appearance while preventing moisture collection

INTERNAL RETAINING ROD
Variable pitch connection system provides ease of installation, high angle biasability and eliminates unsightly external fasteners

FORERUNNER™ RAIL
"U" Channel is a specifically formed, high-strength architectural shape

REINFORCED POST
Center rib increases strength against wind loading and other horizontally applied forces

PANEL BRACKET
Universal Boulevard Bracket enables easy installation while allowing for adjustment of panel height and positioning

SECURITY FASTENER
Security fastener secures the rail and deters removal by typical tools

ECHELON II®

Industrial Ornamental Aluminum Fence









Echelon II's superior strength and durability is a result of combining top-quality design components with a maintenance-free, architectural grade finish. This revolutionary fence system is comprised of aluminum posts, panels, and mounting brackets that are easily installed along any terrain.

PRIMARY APPLICATIONS

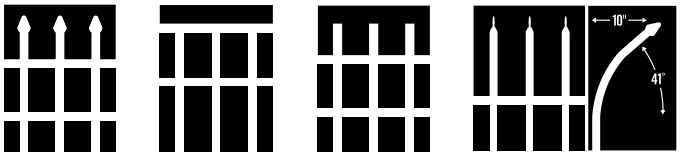
- Water Treatment & Storage
- Public Housing Authorities
- State Facilities
- Stadiums & Event Centers
- Schools & Universities
- Municipal Facilities
- Airports
- Parks & Recreation
- Hospitals

PICKETS	RAILS	POSTS	HEIGHTS
1" SQ. x .062"	1.75" x 1.75" x (.070" SIDE & TOP WALL) FORERUNNER™ RAILS	2.5" SQ. x .080" 3" SQ. x .120"	4', 5', 6', 7', 8', 9', 10' *Custom heights also available*



Echelon II gate options vary from swing gates for pedestrian or vehicle access to sliding gates for high-functioning points of entry. Each of these gate systems is individually constructed to provide project specific performance.

STYLES



CLASSIC™ MAJESTIC™ GENESIS™ INVINCIBLE™

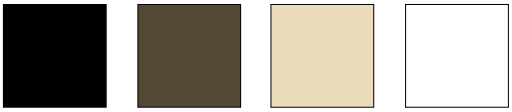
ADORNMENTS



QUAD FLARE TRIAD ROYALTY BALL CAP RING *(internally secured)*

COLORS

Refer to color sample for actual color

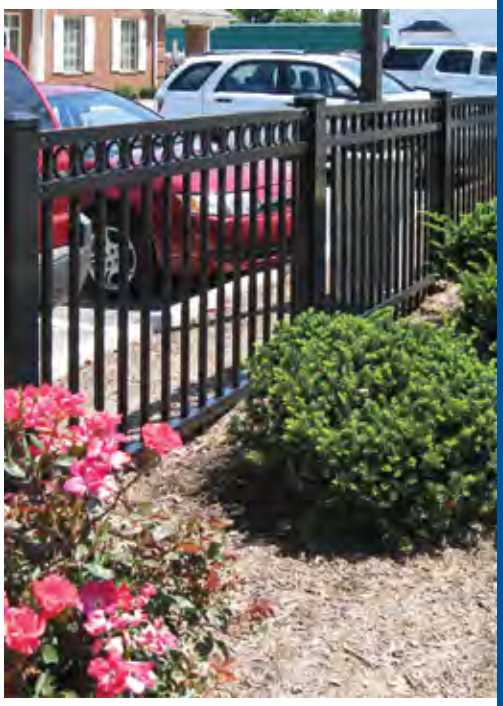


BLACK BRONZE SAND WHITE

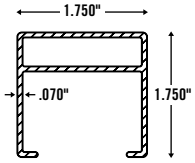
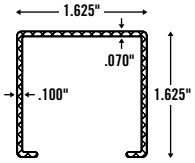
Custom colors also available



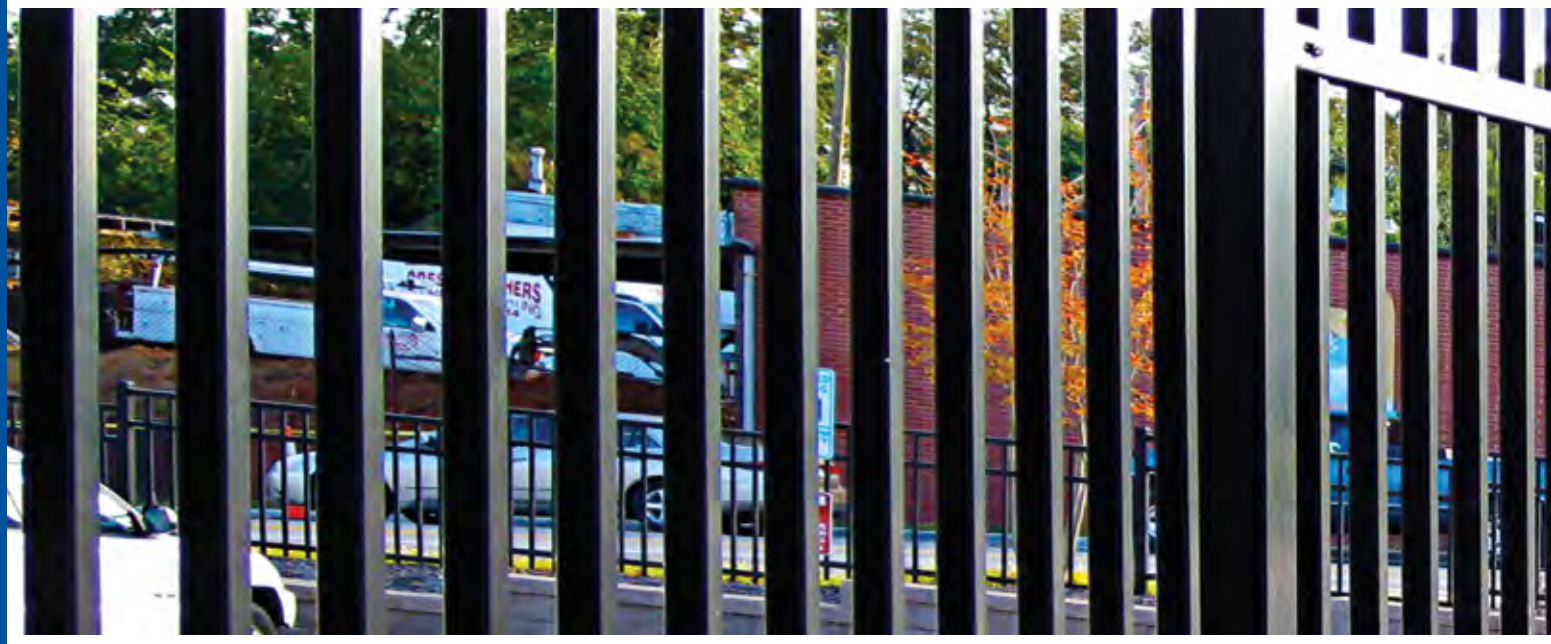




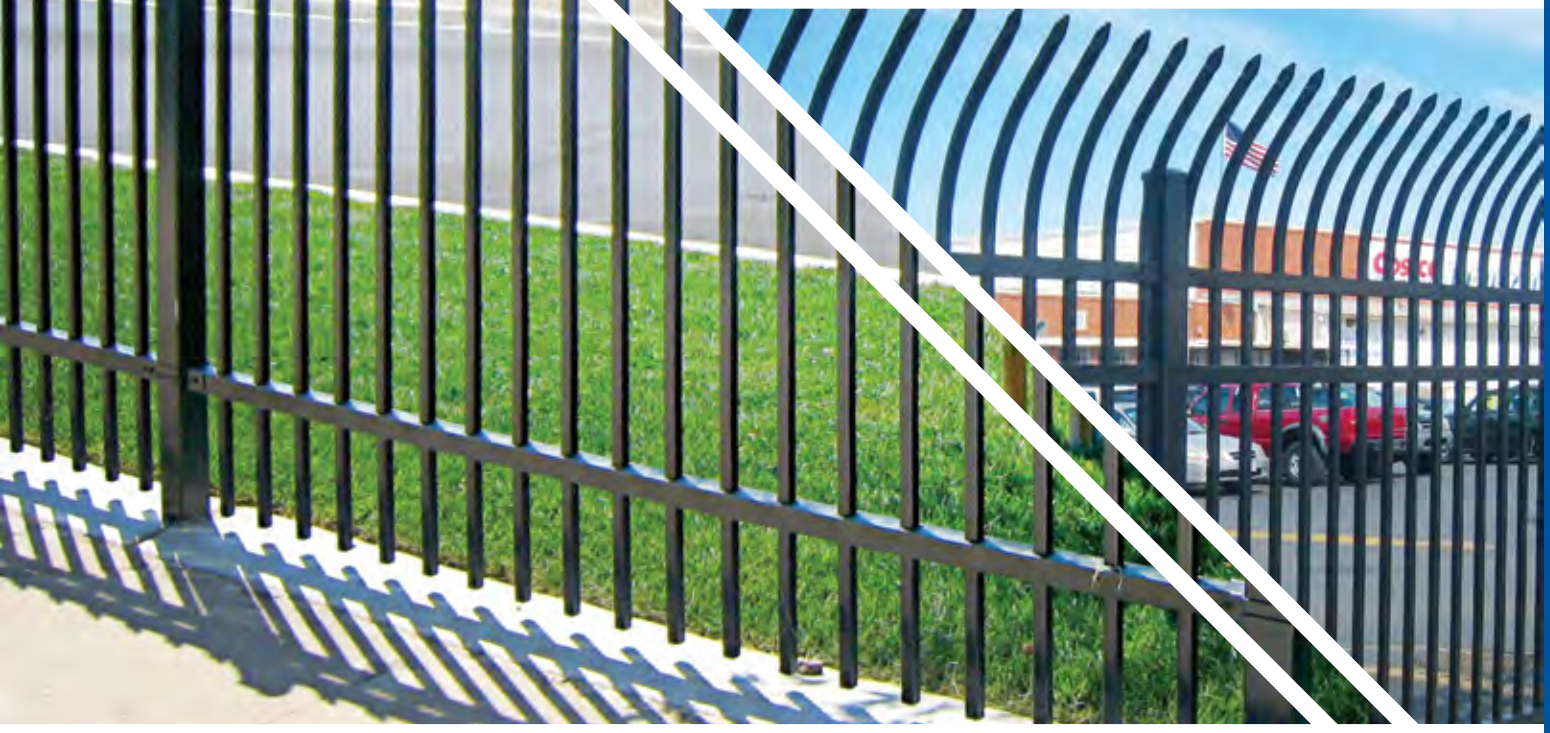
ECHELON II ALUMINUM RAIL STRENGTH COMPARISON

STRUCTURAL PARAMETERS		FORERUNNER™ ECHELON II	SQUARE RAIL INDUSTRIAL
Architectural Profile of rail shape. Vertical Design Loads are per rail. *(For capacity of fence panel, multiply by number of rails)*			
T_{eff} = Effective Wall Thickness *(inches)*		.070	.100 / .070
S_v = Section Modulus *(inches vertical)*		.125	.135
S_h = Section Modulus *(inches horizontal)*		.260	.260
Vertical Load Data **PV_f = Ultimate Vertical**	6' span	243#	262#
	8' span	182#	182#
Horizontal Load Data **PH_f = Ultimate Horizontal**	6' span	505#	499#
	8' span	379#	373#
Vertical Load Data* **PV_d = Vertical Design Load @ 66° F_y**	6' span	145#	145#
	8' span	109#	109#
Horizontal Load Data* **PH_d = Horizontal Design Load @ 66° F_y**	6' span	303#	299#
	8' span	227#	224#

** Recommended load value for safe structural design / allowable strength = .66° F*



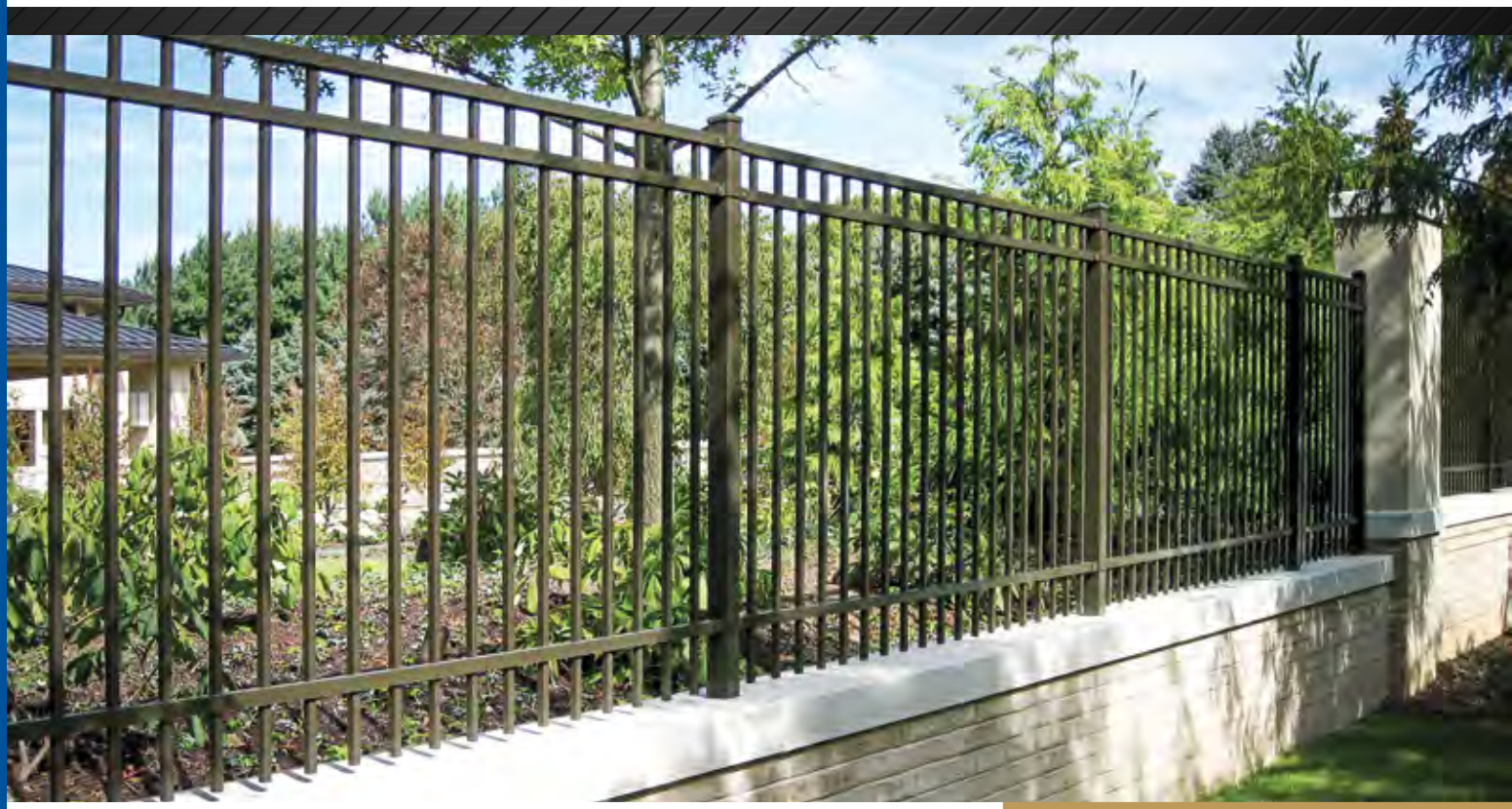






ECHELON PLUS®

Ornamental Aluminum Fence









Echelon Plus has taken the quality and performance of aluminum ornamental fencing to a higher level. The strength characteristics of the reinforced rail and posts, coupled with a superior powder coat finish, make Echelon Plus the most durable .75" ornamental picket product on the market.

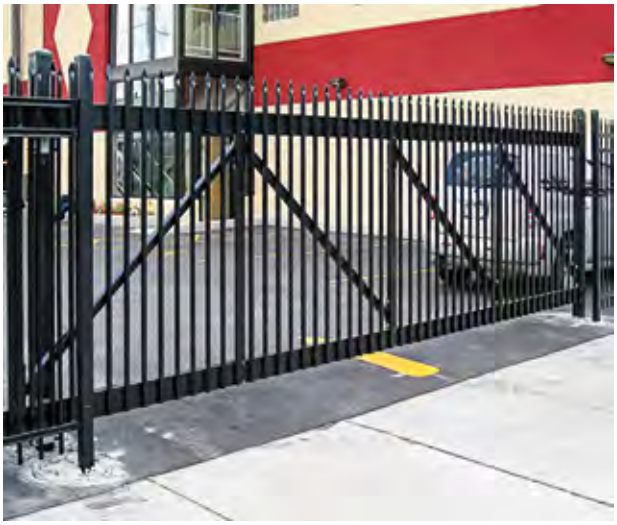
PRIMARY APPLICATIONS

- Municipal Facilities
- Childcare Facilities
- Coastal Environments
- Parks & Recreation
- Schools

The sleek design and superior quality of Echelon Plus is International Building Code (IBC) compliant.

- Exceeds all IBC 2018 Handrail & Guards load requirements
- Standard 8 ft. panels yield project savings
- Redesigned rail for increased strength and maximum load capacity

PICKETS	RAILS	POSTS	HEIGHTS
.75" SQ. x .045"	1.4375" x 1.25" x (.110" SIDE / .090" TOP) FORERUNNER® RAILS	2.5" SQ. x .060"	3', 3½', 4', 4½', 5', 6' *Custom heights also available*



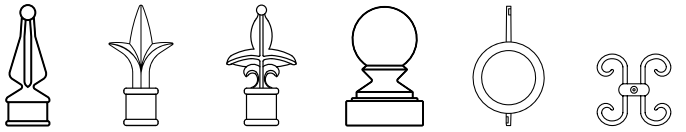
Echelon Plus gate options vary from swing gates for pedestrian or vehicle access to sliding gates for high-functioning points of entry. Each of these gate systems is individually constructed to provide project-specific performance.

STYLES



CLASSIC™ MAJESTIC™ GENESIS™ CONQUEROR™ WARRIOR™

ADORNMENTS



QUAD FLARE | TRIAD | ROYALTY | BALL CAP | RING *(internally secured)* | BUTTERFLY SCROLL

COLORS

Refer to color sample for actual color



BLACK BRONZE WHITE

Custom colors also available









IMPASSE II®

High Security Steel Palisade Fence

Developed by the US Department of Homeland Security, the SAFETY Act established a system of risk and litigation management for claims arising out of, relating to, or resulting from an act of terrorism.

Impasse II fence systems are protected to endure the elements and are maintenance-free.

Impasse II is backed by over 30 years of excellence in the fencing industry.

Ameristar is committed to providing products that meet the Buy American Act.

Ameristar products have the opportunity to earn LEED points.

DESIGN INTEGRATION

The Impasse II framework is a raceway for wiring, conduits, and/or security cabling required around the perimeter of a project. This integrated design eliminates the need for costly trenching and boring, becoming a value-added solution for perimeter security upgrades.

When installing these security elements use Impasse II as a platform:

- Communication & Video Cables
- Intrusion Detection / Fiber Optic Cables
- Access Control Wiring
- Conduits
- Anti-Ram Cabling (Stalwart)

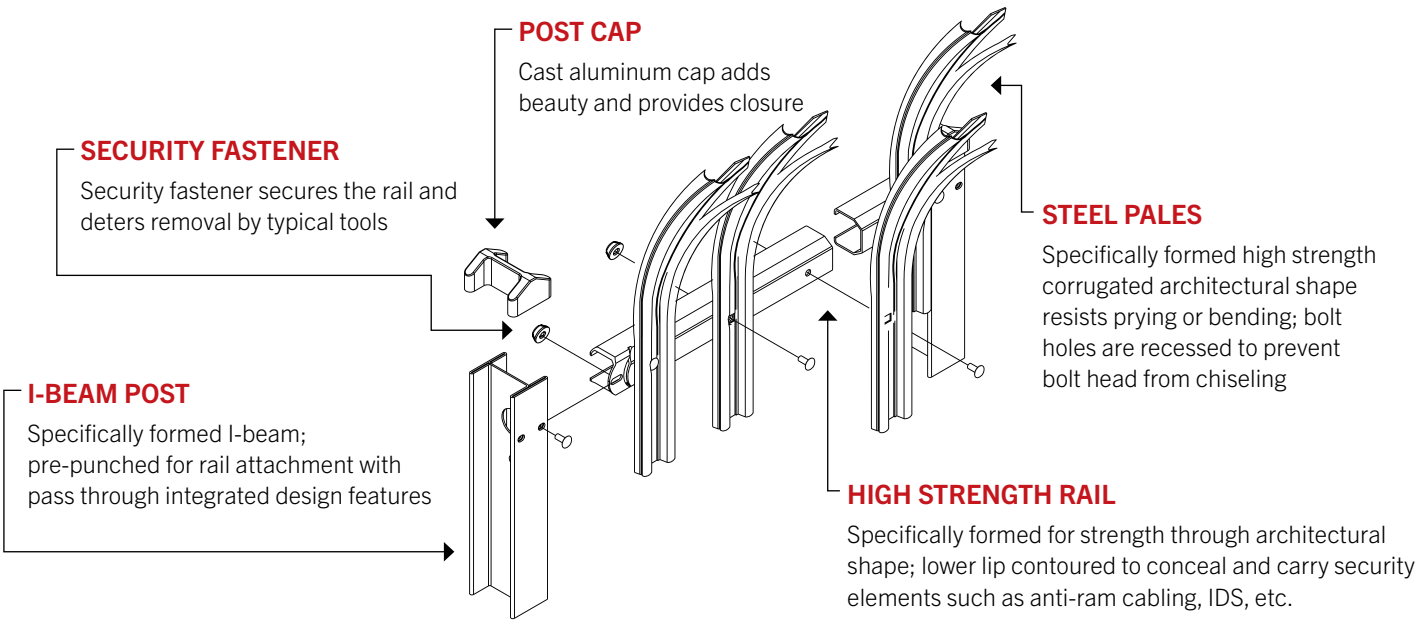


(Inside of rail shown above / view from protected side)

FABRICATION & DESIGN

- High-tensile Pre-Galvanized Steel
- Roll formed profiles yield significant system strength
- Design enables fence panels to follow terrain





IMPASSE II®

High Security Steel Palisade Fence









Maintaining a secure perimeter is your first line of defense against potential threats. Impasse II fence systems serve as a visual deterrent backed with heavy steel components that give a higher level of protection compared to the traditional chain link or architectural mesh fence alternatives.

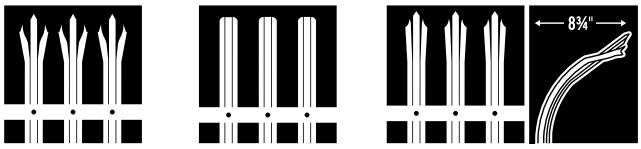
PRIMARY APPLICATIONS

- Military Sites
- Government Facilities
- Petroleum & Chemical Facilities
- Power Plants & Substations
- Airports
- Data Centers
- Ports of Entry
- Water Treatment & Storage

PALES	RAILS	I-BEAM POSTS	HEIGHTS
2.75" W x 14 GA.	2" x 2" x 11 GA.	3" x 2.75" x 12 GA. 4" x 2.75" x 11 GA.	6', 7', 8', 9', 10'

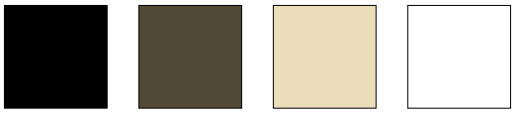


STYLES



COLORS

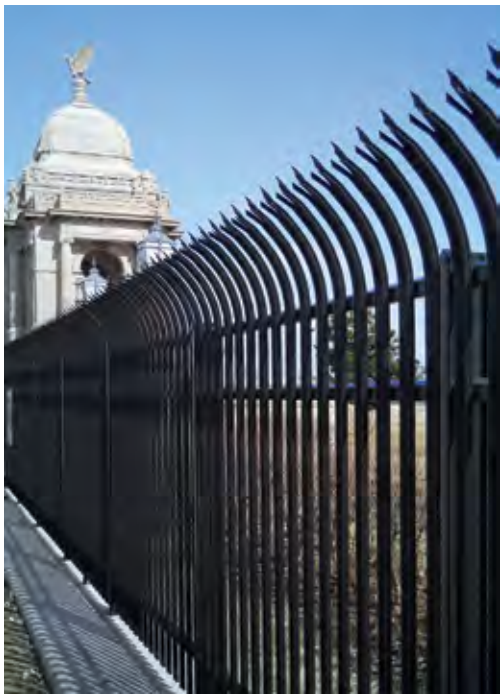
Refer to color sample for actual color



Impasse II gate options vary from swing gates for pedestrian or vehicle access to sliding gates for high-functioning points of entry. Each of these gate systems is individually constructed to provide project specific performance.

ANTI-SCALE OPTION

The Impasse II Anti-Scale fence system has decreased pale spacing, which deters climbing and delays those trying to cut or pry through the fence.









STALWART® PRODUCTS

Anti-Ram Vehicle Barriers

STALWART OPTIMA®
Fiber Rope Anti-Ram Barrier

STALWART®
Post & Rail Anti-Ram Crash Barrier

STALWART IS®
Anti-Ram Barrier + Security Fence

STALWART II®
Anti-Ram Barrier + Ornamental Fence

STALWART PLUS®
Anti-Ram Barrier + Architectural Mesh

Stalwart systems are protected to endure the elements and are maintenance-free.

PROTECTED BY PERMACOAT

Ameristar's fence framework for Stalwart is backed by over 30 years of excellence in the fencing industry.

10 YEAR WARRANTY

Ameristar is committed to providing products that meet the Buy American Act.

MEETS BUY AMERICAN ACT

Ameristar products have the opportunity to earn LEED points.

DESIGN INTEGRATION

The Stalwart framework is a raceway for wiring, conduits, and/or security cabling required around the perimeter of a project. This integrated design eliminates the need for costly trenching and boring, becoming a value-added solution for perimeter security upgrades.

Use the Stalwart framework as a platform for these security elements:

- Communication & Video Cables
- Intrusion Detection / Fiber Optic Cables
- Access Control Wiring
- Conduits
- Anti-Ram Cabling (Stalwart)



(Inside of rail shown above / view from protected side)







CRASH RATINGS

Stalwart offers multiple anti-ram ratings. Each installation can be designed with the most appropriate stand-off distance from the assets.

M50 **M40** **M30**

PU60 **PU50** **PU30**

K12 **K8** **K4**

SAFETY ACT CERTIFIED

Developed by the US Department of Homeland Security, the SAFETY Act established a system of risk and litigation management for claims arising out of, relating to, or resulting from an act of terrorism.







STALWART OPTIMA®

Fiber Rope Anti-Ram Crash Barrier

Stalwart Optima Fiber Rope System redefines and sets the standard in vehicle crash protection for the 21st century. The inherently flexible and innovative design allows for multiple changes of direction with run lengths from 16' to 1,500' linear runs. A shallow footer design and simplified installation round out the innovations making Stalwart Optima the most cost-effective, economical, crash tested barrier system on the market today.

RAILS | 11" x 2.75" POSTS | 8" Diameter / 15" Set Depth

Minimum runs of 16' and greater

STALWART SYSTEMS PRIMARY APPLICATIONS

- Government Facilities
- State Facilities
- Military Sites
- Petroleum & Chemical Facilities
- Stadiums & Event Centers
- Schools & Universities

STALWART®

Post & Rail Anti-Ram Crash Barrier

The Stalwart post and rail anti-ram barrier is the most economical passive perimeter barrier on the market. The Stalwart standalone design, when installed adjacent to an existing perimeter fence, transforms the perimeter into a secure anti-crash perimeter system.

RAILS | 2" x 2" x 11 GA. I-BEAM POSTS | 3" x 2.75" x 12 GA.

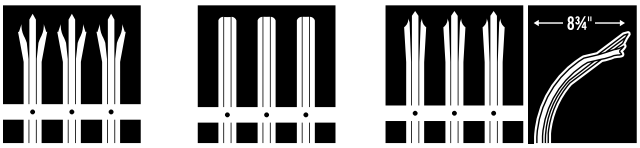


STALWART IS®

Anti-Ram Barrier + Security Fence

PALES | **2.75" x 14 GA.** I-BEAM POSTS | **3" x 2.75" x 12 GA.**
RAILS | **2" x 2" x 11 GA.**

STYLE OPTIONS



TRIDENT™ STRONGHOLD™ GAUNTLET™



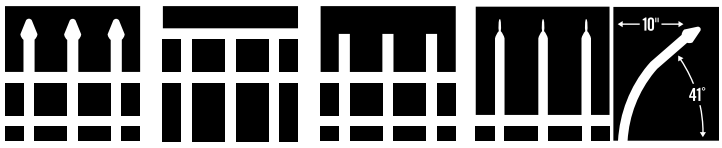
Stalwart IS unites the strongest security fence available with the most widely used anti-ram perimeter barrier. The appearance of Stalwart IS is a great visual deterrent that delivers strength and fortitude for keeping any assailant from easily breaching the perimeter.

STALWART II®

Anti-Ram Barrier + Ornamental Fence

RAILS | **2" x 2" x 11 GA.** I-BEAM POSTS | **3" x 2.75" x 12 GA.**

STYLE OPTIONS



CLASSIC™ MAJESTIC™ GENESIS™ INVINCIBLE™



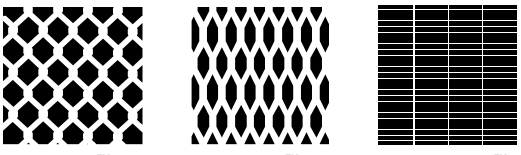
Stalwart II integrates the design features of a traditional ornamental iron fence with the resilience of the Stalwart anti-ram barrier. The ornamental picket design blends into its surroundings, not drawing attention to itself, but still maintaining the requirements of an anti-ram barrier.

STALWART PLUS®

Anti-Ram Barrier + Architectural Mesh

RAILS | **2" x 2" x 11 GA.** I-BEAM POSTS | **3" x 2.75" x 12 GA.**

STYLE OPTIONS



UPLINK™
Chain Link

X-SPAN™
Expanded Metal

WIREWORKS™
Welded Wire



Stalwart Plus combines the design components of an anti-ram barrier with the industrial appearance of architectural mesh. Diverse mesh options are available, providing varied levels of security with anti-cut and anti-climb properties.



WIREWORKS® PRODUCTS

Welded Wire Fence

WIREWORKS PLUS®
Commercial Welded Wire Steel Fence

WIREWORKS ANTI-CLIMB®
High Security Welded Wire Mesh Fence

GRIDLOCK®
Rapid Deploy Fence Barrier

Our polyester powder coated steel guarantees a maintenance-free and environmentally friendly fence.

PROTECTED BY PERMACOAT

WireWorks welded wire steel fence is backed by over 30 years of excellence in the fencing industry.

10 YEAR WARRANTY

COLORS

Refer to color sample for actual color

BLACK | BRONZE | TUBE BROWN | GREEN | SAND | WHITE

DESIGN INTEGRATION

The WireWorks Anti-Climb framework is a raceway for wiring, conduits, and/or security cabling required around the perimeter of a project. This integrated design eliminates the need for costly trenching and boring, becoming a value-added solution for perimeter security upgrades.

When installing these security elements use WireWorks Anti-Climb as a platform:

- Communication & Video Cables
- Intrusion Detection / Fiber Optic Cables
- Access Control Wiring
- Conduits
- Anti-Ram Cabling (Stalwart)



(Inside of rail shown above / view from protected side)

FABRICATION & DESIGN

WireWorks is Ameristar's line of welded wire fence, perfect for projects that require full visibility. This fence system provides unobstructed visibility, aesthetics and security while delivering a value-added fencing solution.





WIREWORKS PLUS®

Commercial Welded Wire Steel Fence

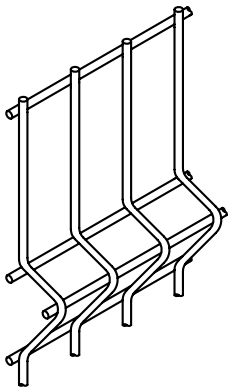


WIRE PANELS	V-FOLDS	POSTS	HEIGHTS
2" x 6" MESH / 6 GA. WIRE	2, 2, 3, 4 (4', 5', 6', 8' HEIGHTS RESPECTIVELY)	2" SQ. x 16 GA. 2.5" SQ. x 16 GA.	4', 5', 6', 8'

WireWorks Plus is the new standard in welded wire fencing

Each WireWorks Plus panel has been designed with a series of architectural "V" folds, vital to the overall reinforcement and strength of the welded wire fence system, providing:

- Unobstructed visibility
- Aesthetics
- Security

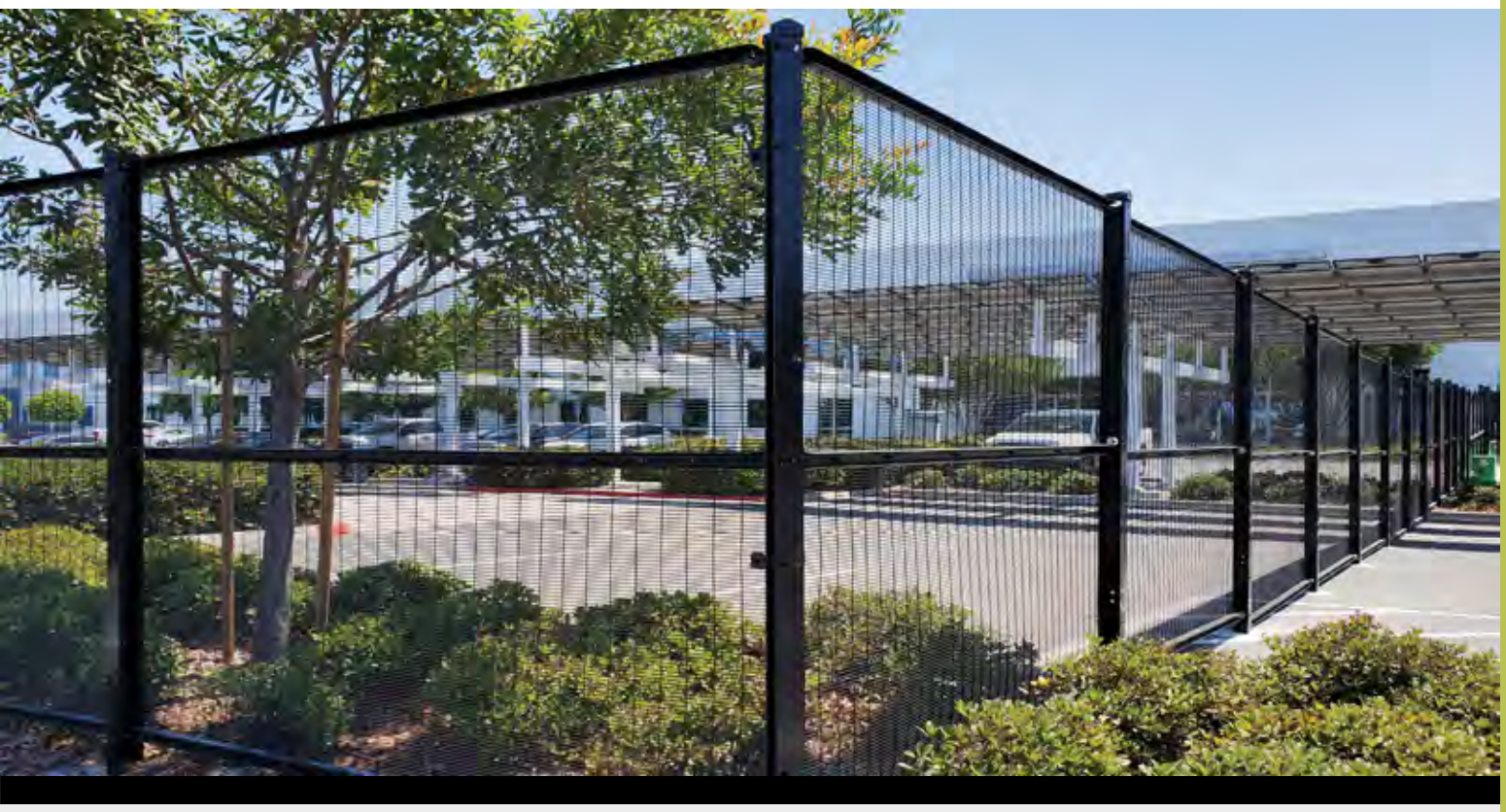


PRIMARY APPLICATIONS

- Commercial Developments
- Parking Facilities
- Self Storage
- Parks & Recreation
- Schools & Universities
- Apartments (Multi-Family)
- Amusement Parks
- Healthcare Facilities

WIREWORKS ANTI-CLIMB®

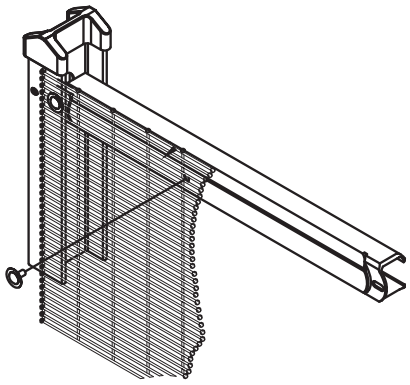
High Security Welded Wire Mesh Fence



WIRE PANELS	RAILS	I-BEAM POSTS	HEIGHTS
3" x .5" x 10.5 GA. (8') 3" x .5" x 8 GA. (10')	2" SQ. x 11 GA. IMPASSE II	3" x 2.75" x 12 GA. (8') 4" x 2.75" x 12 GA. (10')	8' & 10'

WireWorks Anti-Climb is a unique perimeter security system that maintains visibility while also delaying and deterring an attack. The tightly fabricated welded wire mesh is designed to provide additional protection from intruders on multiple fronts:

- The wire mesh's tight spacing makes handholds and footholds virtually impossible.
- Minimal spacing between each welded wire strand makes it difficult to cut yet still provides increased visibility.
- This fence solution is groundable and meets IEEE standards.



PRIMARY APPLICATIONS

- Petroleum & Chemical Facilities
- Power Plants & Substations
- Manufacturing Plants
- Military Sites
- Government Facilities
- Airports
- Railway

GRIDLOCK®

Rapid Deploy Fence Barrier



WIRE PANELS	PLATED POSTS	COLOR
8' x 8'	2-7/8" x PC20	BLACK

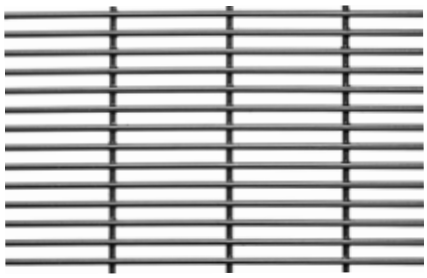
One of a kind industrial strength security system

Designed for rapid installation using a single tool, provide complete safety and perimeter security to your site within a few hours. GridLock® can be installed on either ground or concrete and can be easily removed and reused at a later date.

- Effective Crowd Control
- Self-nesting panels & posts for simple storage
- Quickly enclose assets indoors or out

PRIMARY APPLICATIONS

- Municipal & Local Government
- K-12 & Higher Education
- Data Centers
- Military and Government
- Critical Infrastructure



WIREWORKS® 10.5ga

29% OPACITY

.5" x 3" x 10.5ga std. option

Welded wire steel mesh combines anti-climb and anti-cut resistance with modest visual screening to deliver an increased security barrier solution.

TALON BRACKETS

Patented design for quick mounting of panel to post connection

- Rapid deployment with a single tool
- Infinite direction change opportunities
- One-sided installation with tamper-resistant design

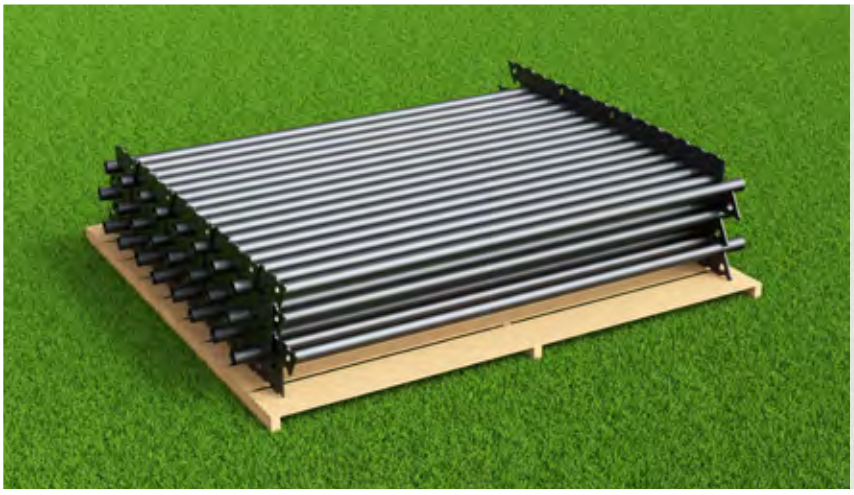




Plated post with multi-use ground anchor



Plated post with baseplate extension



STORAGE SOLUTIONS

When not in use, GridLock® can be stored away for future deployments. A 9' x 9' pallet can store up to 80 posts or 35 panels, which is approximately 640 or 280 linear feet of fence, respectively.



MATRIX® PRODUCTS

High Security Perimeter Enclosure Grid

MATRIX®
Mesh Infill System

MATRIX HARDENED®
Infill + Pale System

MATRIX ALPHA®
Curtain Wall System

Matrix products are protected to endure the elements and are maintenance-free.

PROTECTED BY PERMACOAT

Matrix products are backed by over 30 years of excellence in the fencing industry.

10 YEAR WARRANTY

Ameristar is committed to providing products that meet the Buy American Act.

MEETS BUY AMERICAN ACT

DESIGN INTEGRATION

Serving as a raceway for wires and cabling, the Matrix framework creates a smart perimeter platform. The design eliminates the need for costly trenching and boring, saving money without compromising security.

Available on Matrix and Matrix Hardened

The framework houses:

- Communication & video cables
- Intrusion detection/fiber optic cables
- Anti-ram cabling
- Access control wiring
- Conduits



(Inside of rail shown above / view from protected side)



PRIMARY APPLICATIONS

- Power Utilities
- Petrochemicals
- Industrial Storages
- Waters and Wastewaters
- Data Storages
- Sally Ports
- Critical Infrastructures

This innovative fence solution expands to accommodate your level of required security. Multiple mesh options allow you to select the degree of delay and site visibility. Engineered for critical infrastructure, this system unites strength with versatility to protect any asset.

ENGINEERED SOLUTIONS

Designed as a layered solution, Matrix systems exceed expectations and meet strict security standards.

CONFORMS TO IEEE GROUNDING STANDARDS

MEETS ASTM F2781 FORCED ENTRY STANDARD

MEETS ASCE 7-10 EXPOSURE C WIND LOAD

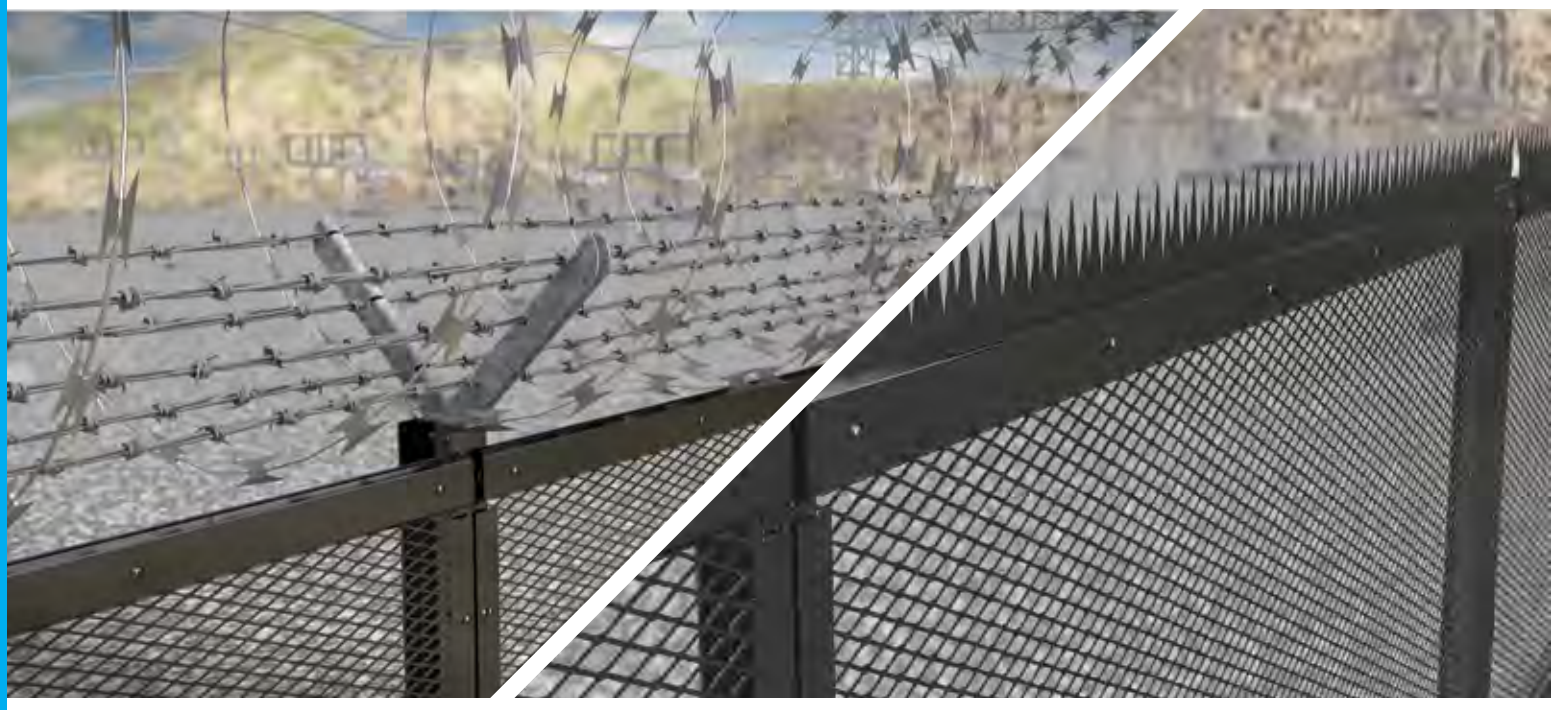
EXPANDABLE TO MEET ASTM F2656 CRASH BARRIER STANDARD

SYSTEM ENHANCEMENTS

Matrix product options to improve deterrence and increase delay.

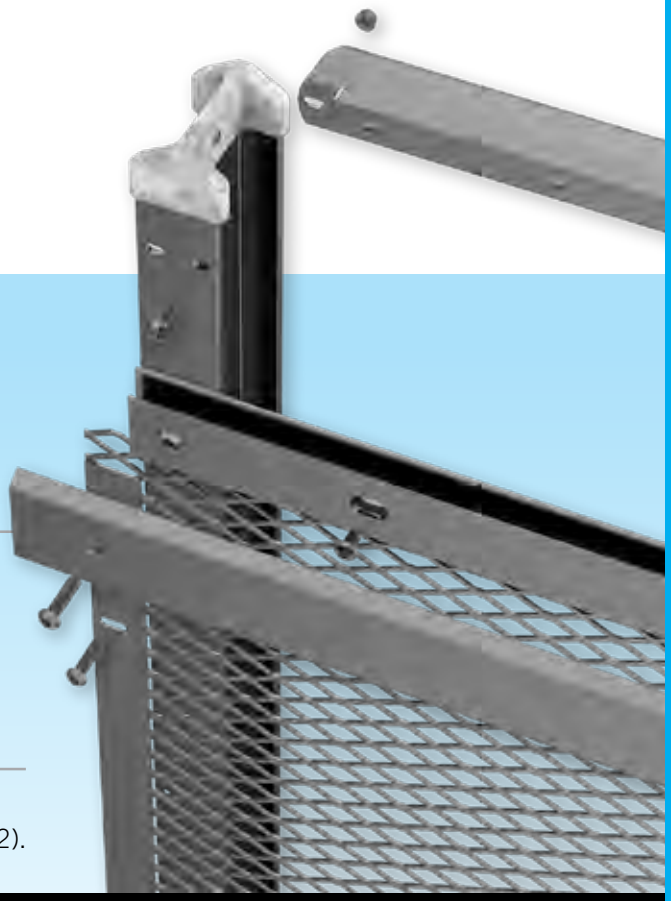


- **ANIMAL MITIGATION SHIELD**
- **BARBED WIRE ARMS**
- **TECHNOLOGY POSTS**
- **SPIKE DETERRENT STRIPS**
- **ANTI BURROW** (not shown)
- **BALLISTIC PANELS** (UL 752 - Level 8)



MATRIX®

Mesh Infill System



With an expandable design, Matrix is built to accommodate multiple mesh infill options. Each infill possesses unique characteristics, allowing you to determine the level of visibility, delay and deterrence for your site.

COLORS

Refer to color sample for actual color

BLACK

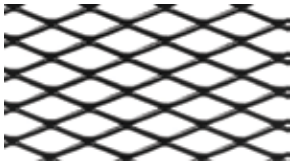
GRAY

BALLISTIC PANEL OPTIONS

Matrix Systems can be upgraded to include Ballistic Shields for an added layer of security (meets Level 8 protection as defined by UL 752).

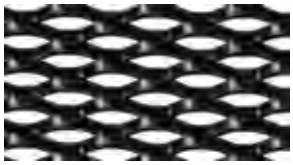
RAILS	INFILL CHANNEL	DIRECT BURY/PLATED POSTS	HEIGHTS
2" x 11 GA. C-SHAPED	3.5" x .75" ALUMINUM	I-BEAM/TANDEM I-BEAM POSTS 4" x 2.75" x 11 GA. 8" SQ. x .25 WALL	8'-8", 10'-8", 12'-9", 15'-7", 20'-10"





X-Span® 37% OPACITY

.75" x #9F std. option



X-Span® Modified 75% OPACITY

.5" x #13R (.188 strand) std. option



X-Screen® 94% OPACITY

1.5" x #14 std. option

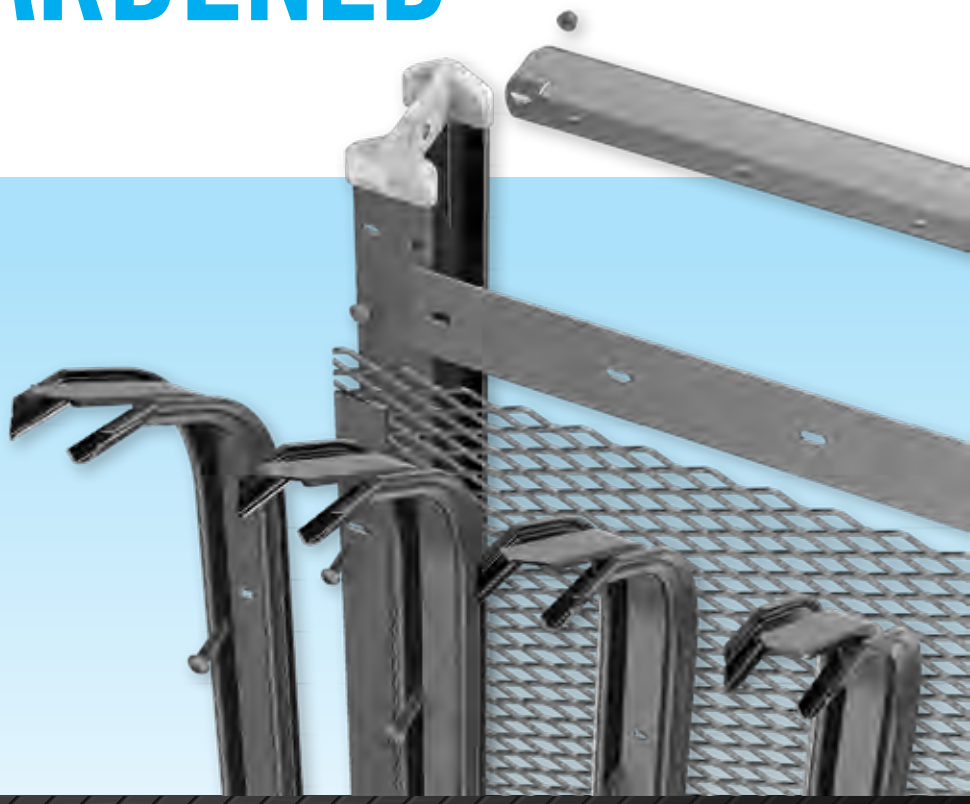


WireWorks® 8 GA. 36% OPACITY **6 GA.** 43% OPACITY

.5" x 3" x 8 GA. std. option
.5" x 3" x 6 GA. std. option

MATRIX HARDENED®

Infill + Pale System



Matrix Hardened combines X-Span® mesh infill grid and Impasse pales to create a heavy-duty security system with increased delay times. Choose from Trident™, Stronghold™ or Gauntlet™.

COLORS

Refer to color sample for actual color

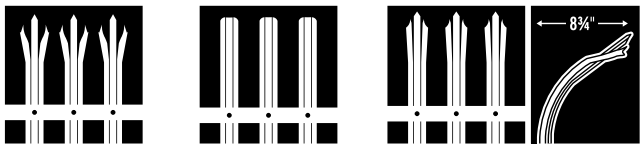
BLACK

GRAY

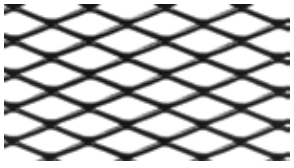
RAILS	PALES	DIRECT BURY/PLATED POSTS	HEIGHTS
2" x 11 GA. C-SHAPED	2.75" x 14 GA.	I-BEAM/TANDEM I-BEAM POSTS 4" x 2.75" x 11 GA. 8" SQ. x .25 WALL	9'-9", 11'-9", 13'-10", 16'-10"



STYLE OPTIONS



TRIDENT™ STRONGHOLD™ GAUNTLET™



X-Span®

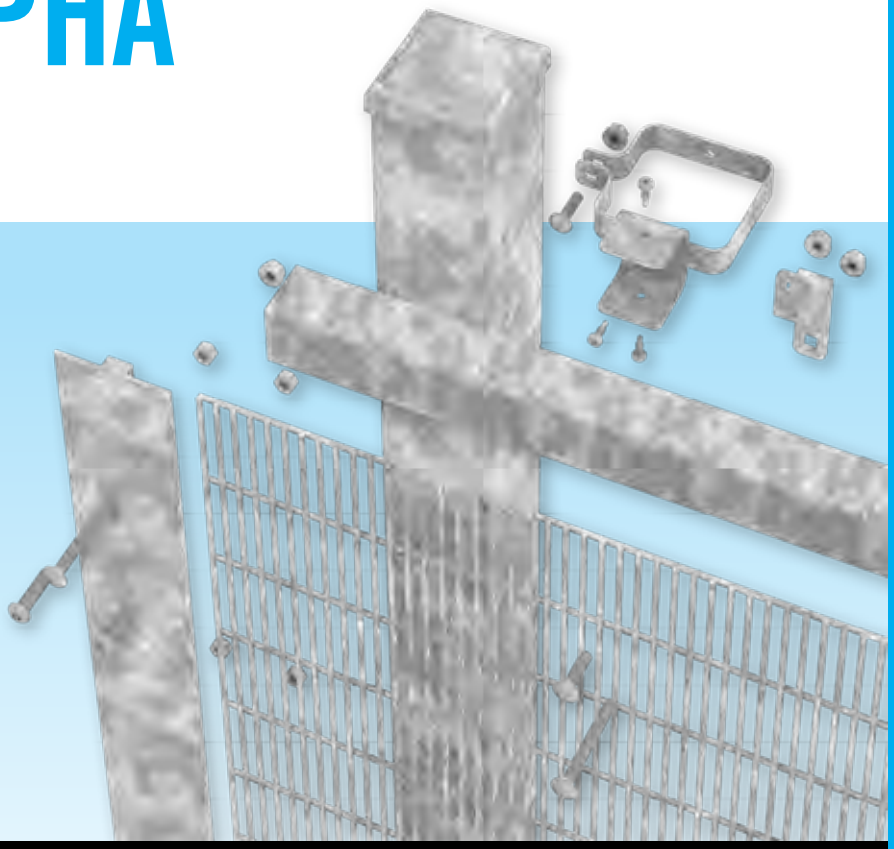
.75" x #9F std. option

PALE SPACING OPTIONS

STANDARD SPACING:	3.25"	62% OPACITY
ANTI-SCALE SPACING:	1.5"	81% OPACITY

MATRIX ALPHA®

Curtain Wall System



Galvanized to protect from the elements, the Matrix Alpha fence system is a baseline for perimeter security. Alpha's curtain wall architecture allows for variable post spacing, yielding reduced installation times.

FINISHES

Refer to color sample for actual color

BLACK | GRAY | GALVANIZED

RAILS

2" x 16 GA.

INFILL COVER

3.5" x .50" ALUMINUM

DIRECT BURY/PLATED POSTS

4" SQ. x 11 GA.
3" x 6" x 14 GA. & .1875" WALL
6" SQ. x .1875" WALL

HEIGHTS

7', 8', 9', 10', 11', 12', 13', 14', 15'

Custom height options available. Standard height options available in ½' increments.

RAIL TO INFILL BRACKET

1" x .125"

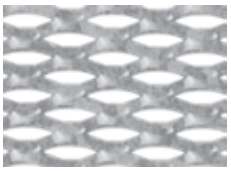




X-Span® 37% OPACITY

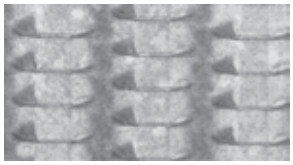
.75" x #9F std. option





X-Span® Ultra 43% OPACITY **Modified** 75% OPACITY

.5" x #13R Ultra & Modified (.188 strand)



X-Screen® 94% OPACITY

1.5" x #14 std. option



WireWorks® 8 GA. 37% OPACITY **6 GA.** 43% OPACITY

.5" x 3" x 8 GA. std. option
.5" x 3" x 6 GA. std. option



GATES

Strength, durability and proven functionality

EXODUS EGRESS
All-in-One Pedestrian Gate Systems

TRANSPORT TRAVERSE
Engineered Cantilever Gate Systems

TRANSPORT
Engineered Cantilever Gates

PASSPORT
Steel V-Track Roll Gate Design

STYLES

- Classic
- Majestic
- Genesis
- Invincible
- Trident
- Stronghold
- Gauntlet

COLORS

Refer to color sample for actual color

BLACK | BRONZE | SAND | WHITE

Custom colors also available

EXODUS

Exodus Egress Gates come pre-installed with a specific hardware set. There are various hardware set options available; see product catalog for details. These hardware options include a gate closer, exit device and pull or trim handle set. Exodus Double gates include removable mullion posts and are only available in the flange mounting option.

Hardware set options available to meet California building code.



TRANSPORT TRANSVERSE

TransPort is a revolutionary cantilever gate system made up of three components: frame, facade and hardware.

The component design decreases the risk of damage during transit and does not require a team of installers or machinery to install the gate system. The cantilever gate can easily be installed with a standard three-man crew in about two hours.



TRANSPORT

TransPort is a revolutionary cantilever gate system made up of three components: frame, facade and hardware.

The component design decreases the risk of damage during transit and does not require a team of installers or machinery to install the gate system. The cantilever gate can easily be installed with a standard three-man crew in about two hours.



PASSPORT

Passport is an innovative roll gate system with a robust fabricated design. Its rigid framework enables the gate system to glide effortlessly across its on-grade track, and its V-Track design provides the least amount of space required for a slide gate system.

The reversible design of the PassPort roll gate insures a flawless installation by allowing the gate to be installed on either side of the gate opening.



EXODUS® EGRESS

All-in-One Pedestrian Gate System









The Exodus Egress all-in-one gate system includes pre-installed hardware and is available in both Single and Double gate models. The non-removable pins and power transfer components produce a secure gate more capable of restricting vandalism and forced entry.

Designed for full functionality out-of-the-box, the Exodus Egress gate combines frame, gate and hardware into a complete system that is plug and play ready.

EXODUS + AUTOMATIC PEDESTRIAN GATE OPENER

Our newest Exodus configuration raises the standard for egress gates. Specially engineered and integrated with a swing pedestrian gate opener to meet accessibility compliance laws (ADA) and multiple ANSI standards for power operated gates and doors.

MEETS IBC CODE

INSTALLS IN MINUTES

SHIPPED COMPLETELY ASSEMBLED

MULTIPLE DESIGN OPTIONS

Exodus Egress Gates come pre-installed with a specific hardware set. There are various hardware set options available; see product catalog for details. These hardware options include a gate closer, exit device and pull or trim handle set. Exodus Double gates include removable mullion posts and are only available in the flange mounting option.

Hardware set options available to meet California building code.



FEATURES

- Pre-installed panic hardware
- 18 hardware set options
- Pre-hung gate assembly
- 3 mounting options
- Left- or right-hand swing
- Removable threshold
- Multiple infill options
- 2 gate operator options

MOUNTING

Single Mounting Options

- Flange
- Plated
- Direct Bury

Double Mounting Options

- Flange

INTEGRATIONS

- Montage II
- Aegis II
- Impasse II
- Matrix
- Matrix Hardened
- Matrix Alpha

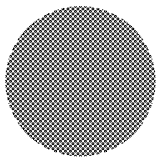
COLORS

Refer to color sample for actual color

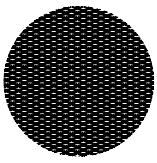
BLACK BRONZE SAND GREY

INFILLS

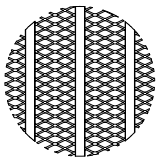
Various infills and hardware available. Some options not shown.



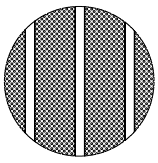
PERFORATED METAL



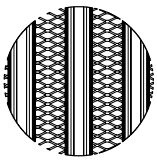
X-SPAN MODIFIED



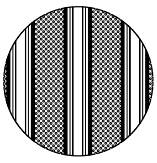
1" PICKET WITH EXPANDED METAL



1" PICKET WITH PERFORATED METAL



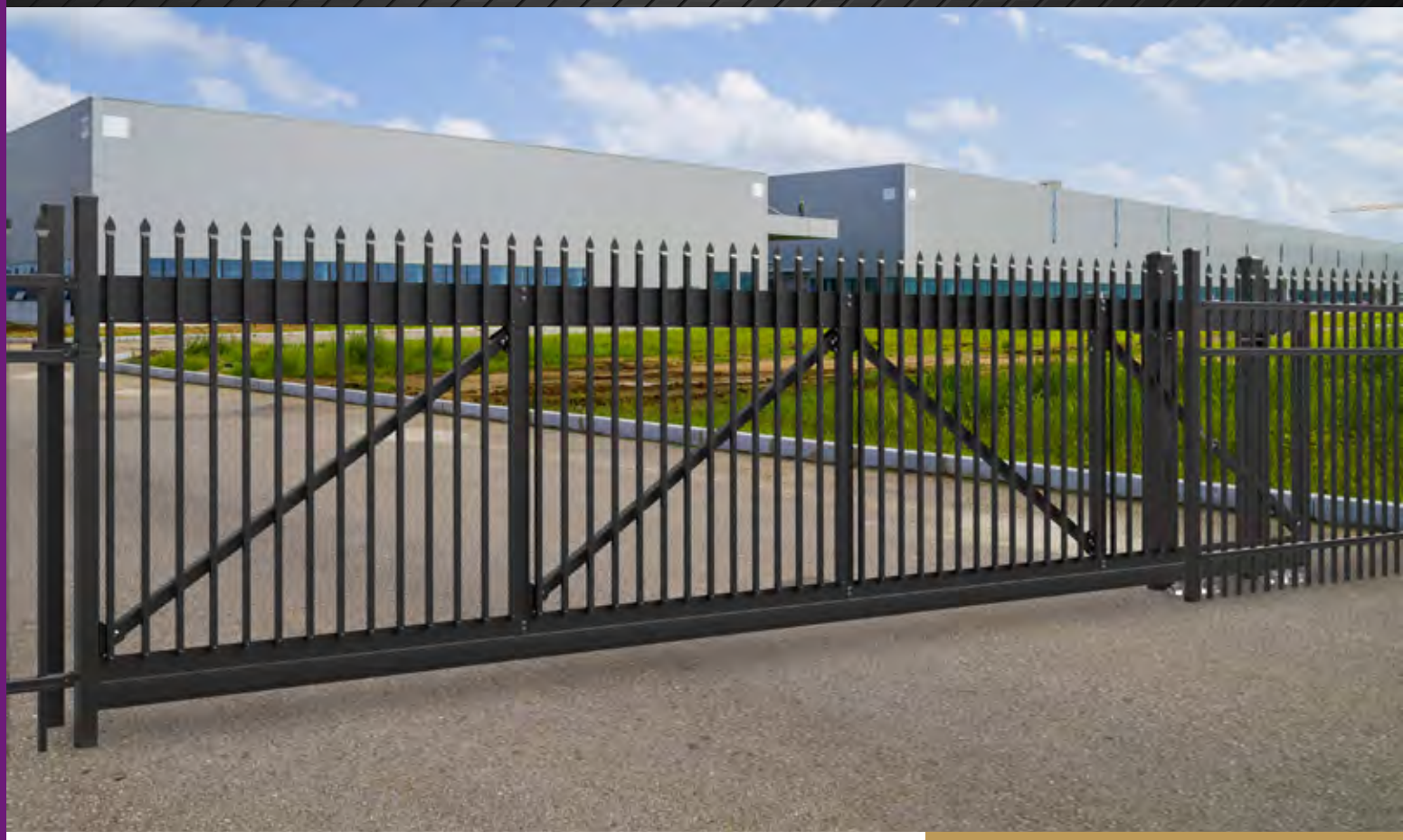
IMPASSE PALE WITH EXPANDED METAL
Anti-Scale available



IMPASSE PALE WITH PERFORATED METAL
Anti-Scale available

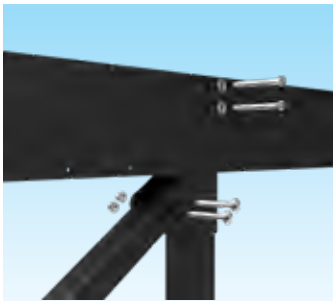
TRANSPORT® TRAVERSE

Engineered Cantilever Gate Systems









TransPort Traverse is an engineering marvel that challenges the status quo of typical cantilever designs. Its unique bottom track with carriage support rollers perfectly balances the entire gate structure over a single axis for smooth, effortless transition.

PRIMARY APPLICATIONS

- K-12 Education
- Higher Education
- Stadiums & Arenas
- Municipal Facilities
- Data Centers
- Power Utility
- Retail Outlets
- Apartments
- Assisted Living

- Increased frame architecture for improved durability and high functionality
- Decreased framework counterbalance so big gates fit in smaller spaces
- Larger gate options

KNOCKDOWN GATE SYSTEM

ASSEMBLED ON-SITE

EASE OF TRANSPORT

FABRICATION & DESIGN

Most engineered cantilever gate systems are fully welded, but TransPort Traverse is a knockdown gate system and is assembled on-site. This innovative design is less likely to be damaged during transit and takes up less space, maximizing the amount of material that can be shipped on a single truck.



UPRIGHTS	**2.5" x 16 GA. PRE-GALV STEEL**
DIAGONAL SUPPORTS	**2" x 16 GA. PRE-GALV STEEL**
BOTTOM TRACK	**3.75" x 6.5" ALUMINUM PROFILE**
TOP TRACK	**3" x 5.5" ALUMINUM PROFILE**
HEIGHT	**4'–10'**
OPENINGS	**6'–30'**
TRACK SPLICE	**> 18' OPENINGS**

COLORS

Refer to color sample for actual color



BLACK **BRONZE** **SAND** **WHITE**

Custom colors also available

TRANSPORT TRAVERSE II®

1" Ornamental Picket Design
6'–30' Gate Openings

Matches: Montage II, Echelon II, Aegis II

STYLES



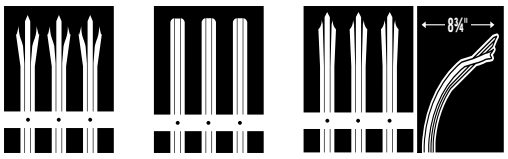
CLASSIC™ **MAJESTIC™** **GENESIS™** **INVINCIBLE™**

TRANSPORT TRAVERSE IS®

2.75" Security Pale Design
6'–24' Gate Openings

Matches: Impasse II, Impasse II AntiScale

STYLES



TRIDENT™ **STRONGHOLD™** **GAUNTLET™**

NOTE: Styles, colors and adornments are based upon fence system. Some options not shown.

TRANSPORT®

Engineered Cantilever Gates

2" SQ. x .25" wall uprights & diagonal braces

5" x 2" Fast-Trak









TRANSPORT II
Matches: Montage II, Echelon II & Aegis II

TRANSPORT IS
Matches: Impasse II

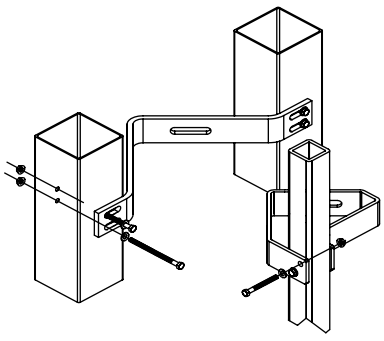
TRANSPORT ESTATE
Matches: Aluminum Estate Entry Gates

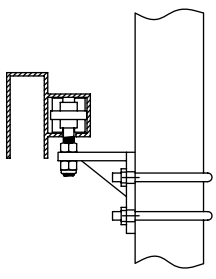
TRANSPORT LINK
Matches: Chain link fence design

TRANSPORT GATE HARDWARE
Unlike other engineered cantilever gates, Transport gates greater than 24' openings come equipped with 4 internal trollies that distribute the weight of the gate as it is opened and closed.

PRIMARY APPLICATIONS

- K-12 Education
- Higher Education
- Stadiums & Arenas
- Municipal Facilities
- Data Centers
- Power Utility
- Retail Outlets
- Apartments
- Assisted Living



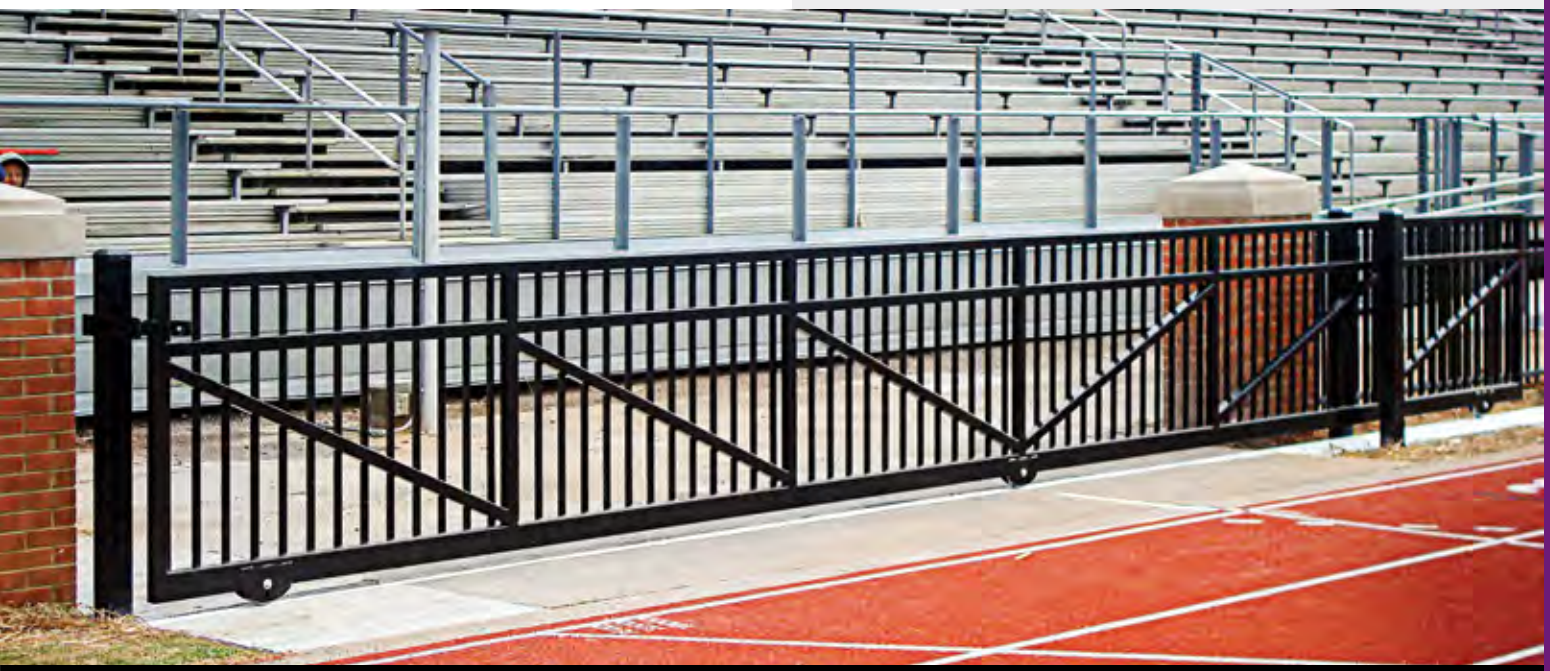


PASSPORT®

Steel V-Track Roll Gates

2" SQ. x 12 GA. uprights & diagonal braces

2" x 4" x 11 GA. bottom rail
(notched & plated for v-track wheels)









PRIMARY APPLICATIONS

- Water Treatment & Storage
- Municipal Facilities
- Government Facilities
- Airports
- Manufacturing Plants
- Petro & Chemical Facilities
- Power Plants & Substations
- Schools & Universities
- Stadiums & Event Centers

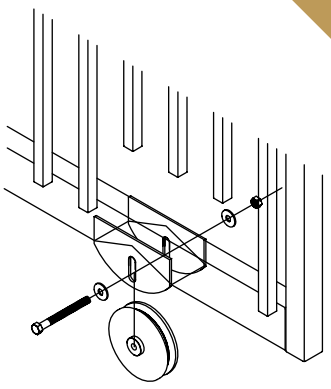
PASSPORT COMMERCIAL
Matches: Montage Plus, Montage Commercial & Aegis Plus

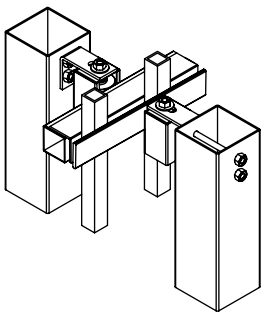
PASSPORT II
Matches: Montage II & Aegis II

PASSPORT IS
Matches: Impasse II

PASSPORT GATE HARDWARE

The PassPort roll gate design has been matched with equally superior hardware. The v-track rollers are designed to support more than the recommended load, and provide an effortless balance that glides smoothly across its gate opening.







BOLLARDS & BARRIERS

Perimeter Security Products

BOLLARDS

Fixed, Removable and Retractable (automated or manual)

BARRIERS

Vehicle Wedges, Beams, Drop Arm, and Manual Gate

Refer to Bollards & Barriers Guide for more in-depth information

AMERISTAR® SECURITY PRODUCTS

CERTIFIED SAFETY ACT

MADE IN USA

BOLLARDS

Ameristar's line of fixed, retractable and removable security bollards are available in a variety of styles and crash ratings to fit your project's needs.



FIXED BOLLARDS

BULWARK

- M30/P1 *single bollard*
- M30/P2 *three bollard array*
- Eng. M50/P1 *single bollard*

DS22

- K12/L3 *three bollard array*

DS25

- K4/L3 *three bollard array*

GLADIATOR

- M50/P1 *five bollard array*

SP1000

- M40/P2 *equivalent*
- PAS68 *tested - three bollard array*

SMB

- K4/L3 *single bollard*

RETRACTABLE BOLLARDS

SP100

- PU30/P2 *equivalent*
- PAS68 tested at 7700 lbs *- single bollard*

TITAN

- K12/L3 *three bollard array*

DEFENDER

- K4/L2 *three bollard array*

SP1000

- M50/P1 *single bollard*

BARRIERS

Ameristar's line of crash-tested barriers offers exceptional security and access control to defend your facility against vehicular threats.

- Engineered Solutions Available
- Custom HPU enclosures available (i.e. color, climate controlled, ballistic, etc.)
- HPU with weather resistant enclosures
- Access Control Integration
- Cold Weather Kits





ACTIVE BARRIERS

PATRIOT - Rising Beam

- M50/P1

SENTINEL - Vehicle Wedge

- K12/L3

M530 - Drop Arm

- M30/P1

CITYSCAPE - Manual Gate

- M40/P2 *equivalent*





Why Choose Ameristar?

KNOWLEDGE AND EXPERIENCE

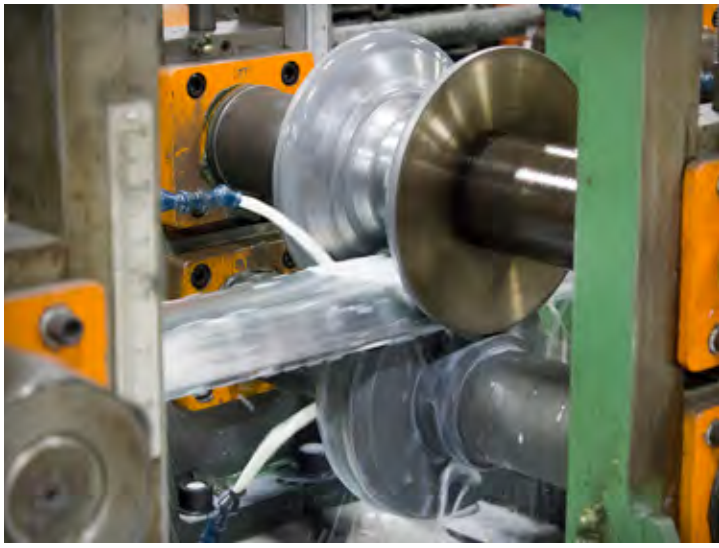
For over 40 years we've delivered aesthetically pleasing, high-quality and innovative fencing products with superior design strength and easy installation.

PROVEN CAPABILITIES

Our integrated in-house processes, extensive raw materials and finished goods inventory translate into quality, on-time delivery.

INDUSTRY LEADERSHIP

We continually raise the bar in manufacturing customer-focused solutions. Our high standards produce premium products that go beyond merely meeting minimum industry standards.







FENCE PRODUCTS

AMERISTARPERIMETER.COM | 800-321-8724

Experience a safer and more open world

#9727-2023

AMERISTAR®

ASSA ABLOY

Armstrong

Our sustainability targets

Planning for 2030

We have established targets and target dates for each of our nine sustainability goals. These targets reflect our current aspirations under each of our goals and will help us monitor, measure and report progress towards our goal ambitions.

Healthy and Circular Products

GOAL	TARGET	TARGET DATE
Sustainably sourced products	100% of our products free of chemicals of concern.	2030
	100% of our products have verified transparency.	2030
	100% of our material sourcing activities evaluated for social, ethical and environmental performance.	2030
Circular products	50% of our products recycled, reused or repurposed at end of use.	2030
Reduced carbon & water footprint	50% reduction achieved in the carbon footprint of our products, compared to a 2019 baseline.	2030
	20% reduction in the water intensity of our products, compared to a 2019 baseline.	2030

Healthy Planet

GOAL	TARGET	TARGET DATE
Reduced carbon footprint	30% reduction in absolute Scope 1 and 2 greenhouse gas (GHG) emissions from a 2019 baseline, in accordance with the Science Based Targets initiative (SBTi), allowing us to meet a well below 2°C scenario.	2030
	100% of our electricity needs sourced directly or indirectly from renewable energy.	2030
Circular systems	50% reduction in absolute waste from our operations, from a 2019 baseline.	2030
Optimized water	100% of our water management practices include measures designed to minimize usage and environmental discharge.	2030

Thriving People & Communities

GOAL	TARGET	TARGET DATE
Community engagement	Locations formally engaged in local community outreach.	Ongoing
	Employees offered opportunities to actively engage in their communities.	Ongoing
	Increased community engagement scores year over year.	Ongoing
Diverse & inclusive workforce	Employees receive training or engagement on diversity and inclusion topics on a regular basis.	Ongoing
	Locations have a representative diverse workforce.	Ongoing
	Employees have a meaningful and safe opportunity to share their views on topics that matter to them.	2030
Safe & healthy employees	Employees offered tools and resources to improve their financial, physical and mental health and well-being.	Ongoing
	Employees offered learning and development opportunities annually.	
	Improved workplace safety scores year over year, while we strive to have zero workplace injuries.	Ongoing

	Employees offered at least a fair wage, to be defined as competitive total rewards based on position and location.	Ongoing

Also in ESG Governance

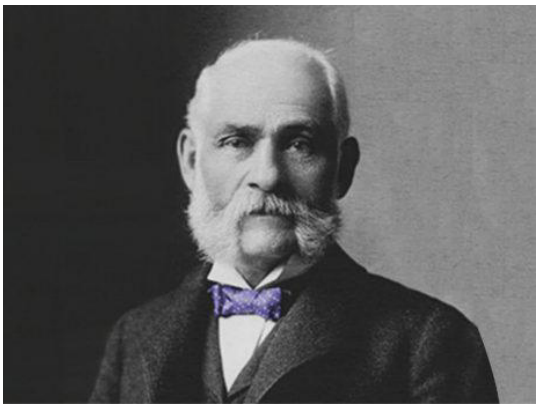


ESG reporting



How we manage sustainability

Featured news & stories



Armstrong: a timeline

Learn More >

Belden Brick Company

SUSTAINABILITY

Sustainable buildings are designed to use available resources efficiently and in a responsible manner, balancing environmental, societal and economic impacts to meet the design intents of today while considering future effects. Sustainable buildings and sites are designed to be energy efficient, water efficient and resource efficient. They should be resilient to withstand the effects of nature with minimal damage. Belden brick and pavers are intended to various uses. These include sustainable designs.

GREEN BUILDING RATINGS SYSTEMS AND STANDARDS

Belden brick can contribute to the sustainability of projects designed with standards such as like LEED® (from the U.S. Green Building Council) and ASHRAE 189.1 (Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings).

The Belden Brick Company offers information on its products and use of its products that can help in achieving sustainable building design. From our Environmental Policy, Industry-wide Environmental Product Declaration, and LEED certification letters, a designer is equipped with the information necessary to verify conformity with the various Green Building Rating Systems and Standards.

The Belden Brick Company uses clay and shale raw material to produce our brick products. This accounts for over 98% of the body content by weight. This raw material is mined in Sugarcreek, Ohio, within 10 miles of our plant locations.

NEED A LEED CREDIT INFORMATION FORM?

This website uses cookies to analyze traffic, assist with navigation, and improve your experience. You can learn more about our cookies in our Privacy Policy.

×

Resources for

SUSTAINABILITY

- Brick Safety Data Sheet (SDS)
- Industrywide Environmental Product Declaration (EPD)

330-456-0031
700 Tuscarawas Street W
Canton, OH 44702

Contact Us

© 2022 The Belden Brick Company | Privacy Policy

BELDEN BRICK BULLETIN

Our monthly newsletter features thought leadership, trends and product updates, project briefs, and industry news!

Subscribe Today

THE BRICK INDUSTRY ASSOCIATION
12007 Sunrise Valley Drive, Suite 430
Reston, Virginia 20191
www.gobrick.com | 703-620-0010

ENVIRONMENTAL PRODUCT DECLARATION

U.S.–Canada Industrywide Clay Brick



Certified Environmental Product Declaration
www.nsf.org

Date of Issue: Oct. 7, 2020
Valid Until: Oct. 7, 2025
Declaration No.: EPD10447

PARTICIPATING BRICK PRODUCERS

The following brick producers participated in the data collection process that informed the development of the LCIs presented in this report.

Acme Brick Company
3024 Acme Brick Plaza
Fort Worth, TX 76109
brick.com

Belden Brick Company
700 W. Tuscarawas St.
Canton, OH 44701
beldenbrick.com

Bowerston Shale Company
515 Main St.
Bowerston, OH 44695
bowerstonshale.com

Brampton Brick, Inc.
1256 E. County Road 950 N.
Farmersburg, IN 47850
bramptonbrick.com

Endicott Clay Products Co.
57120 707th Road
Endicott, NE 68350
endicott.com

General Shale, Inc.
3015 Bristol Highway
Johnson City, TN 37601
generalshale.com

Glen-Gery Corporation
1166 Spring St.
Wyomissing, PA 19610
glengery.com

Hebron Brick Company
3280 Veterans Blvd. S.
Suite 320
Fargo, ND 58104
hebronbrick.com

Lee Brick & Tile Company
3704 Hawkins Ave.
Sanford, NC 27330
leebrick.com

Meridian Brick LLC
6455 Shiloh Road, Suite D
Alpharetta, GA 30005
meridianbrick.com

Meridian Brick Canada Ltd.
5155 Dundas St. W.
Burlington, ON L7R 3Y2
Canada
meridianbrick.com

Pine Hall Brick, Inc.
2701 Shorefair Drive
Winston Salem, NC 27105
pinehallbrick.com

Statesville Brick Company
391 Brick Yard Road
Statesville, NC 28677
statesvillebrick.com

1. Demonstration of verification

This document is a Type III industry-average Environmental Product Declaration (EPD) describing clay brick produced in the United States (U.S.) and Canada. A list of clay brick production companies that participated in the development of this EPD is included on the cover (previous) page.

This EPD is certified by NSF to conform to the Product Category Rule (PCR) referenced below, which is based on ISO 21930 (ISO 2007) as well as to the requirements of ISO 14025 (ISO 2006c). NSF also verifies that the life cycle assessment (LCA) upon which it is based conforms to the requirements of ISO 14044 (ISO 2006b).

Since EPDs developed under this PCR only cover the cradle-to-gate impacts of clay brick, clay brick pavers and structural clay tiles using a declared unit, the results cannot be used to compare between products.

Table 1. Information on EPD holder, reference standards and program operator

Declaration holder	Brick Industry Association 12007 Sunrise Valley Drive, Suite 430 Reston, VA 20191 USA www.gobrick.com
Declaration number	EPD10447
Declared product	Clay brick
Type of EPD	Cradle-to-gate
Declared unit	1 m^3
Core PCR	ISO 21930:2007, Sustainability in building construction — Environmental declaration of building products
Category PCR	ASTM Product Category Rule for Clay Brick, Clay Brick Pavers and Structural Clay Tile
PCR review	PCR review was conducted by: • Christoph Koffler, Ph.D., chairperson, thinkstep, Inc. • John P. Sanders, Ph.D., PE, The National Brick Research Center • Christine A. Subasic, PE, consulting architectural engineer For further information, please contact cert@astm.org
Period of validity	Five (5) years from date of issue

Independent verification of the declaration and data, according to ISO 21930:2007 and ISO 14025:2006, has been carried out by an external verifier.

Third-party verifier	Terrie Boguski, Harmony Environmental 913-780-3328 tboguski@harmonyenviro.com
Program operator	NSF Certification, LLC 789 N. Dixboro Road Ann Arbor, MI 48105 USA www.nsf.org
Date of issue	10/7/2020

2. Description of the product

Clay brick products are primarily composed of clays, shales and small amounts of additives to achieve a desired profile of properties (e.g., strength, color). The product under study is clay brick produced in the U.S. and Canada, meeting one or more of the specifications described in Table 2:

Table 2. Specifications of clay brick products under study

Facing Brick	ASTM C216 Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)
	CSA A82 Fired masonry brick made from clay or shale
Hollow Brick	ASTM C652 Standard Specification for Hollow Brick (Hollow Masonry Units Made from Clay or Shale)
	CSA A82 Fired masonry brick made from clay or shale
Thin Veneer Brick	ASTM C1088 Standard Specification for Thin Veneer Brick Units Made from Clay or Shale
Building Brick	ASTM C62 Standard Specification for Building Brick (Solid Masonry Units Made from Clay or Shale)
	CSA A82 Fired masonry brick made from clay or shale
Chemical-Resistant Brick	ASTM C279 Specification for Chemical-Resistant Masonry Units
Firebox Brick	ASTM C1261 Specification for Firebox Brick for Residential Fireplaces
Glazed Brick (Single Fired)	ASTM C1405 Specification for Glazed Brick (Single Fired, Brick Units)
Glazed Brick (Double Fired)	ASTM C126 Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units
Industrial Chimney Lining Brick	ASTM C980 Standard Specification for Industrial Chimney Lining Brick
Industrial Floor Brick	ASTM C410 Specification for Industrial Floor Brick
Sewer Brick	ASTM C32 Specification for Sewer and Manhole Brick (Made From Clay or Shale)
Pedestrian and Light Traffic Paving Brick	ASTM C902 Standard Specification for Pedestrian and Light Traffic Paving Brick
Heavy Vehicular Paving Brick	ASTM C1272 Specification for Heavy Vehicular Paving Brick

Table 3 describes typical product composition, and packaging is described in Table 4.

Table 3. Material composition of clay brick produced in the U.S. and Canada

Material[1]	Mass in final product (kg/m³)	Share in the final product[2]
Clay and Shale	2,010	94.9%
Secondary material (ash, grog, others)	78.7	3.71%
Pigments	19.1	0.901%
Additives	10.6	0.499%
Average clay brick density	2,120	Not Applicable

1. No hazardous substances are used in the production of clay brick.
2. While all clay brick products contain the ingredients listed above, the average clay brick production data computed for this EPD represents the production-weighted average use of all materials by all participating plants. The data should not be interpreted to mean that the ratios presented in this table are the formulation for all clay brick products.

Table 4. Packaging used for clay brick produced in the U.S. and Canada

Material	Amount per declared unit	Unit
Strap (plastic and steel)	35.4	m/m³
Dividers (paper and wood)	0.00499	m³/m³
Wooden pallet	0.0278	Unit/m³
Other packaging	0.905	kg/m³

Clay brick are produced in a wide variety of sizes. The clay brick represented by the data used in this study are described by the dimensions shown in Figures 1 and 2.

Figure 1. Modular brick sizes (nominal dimensions)

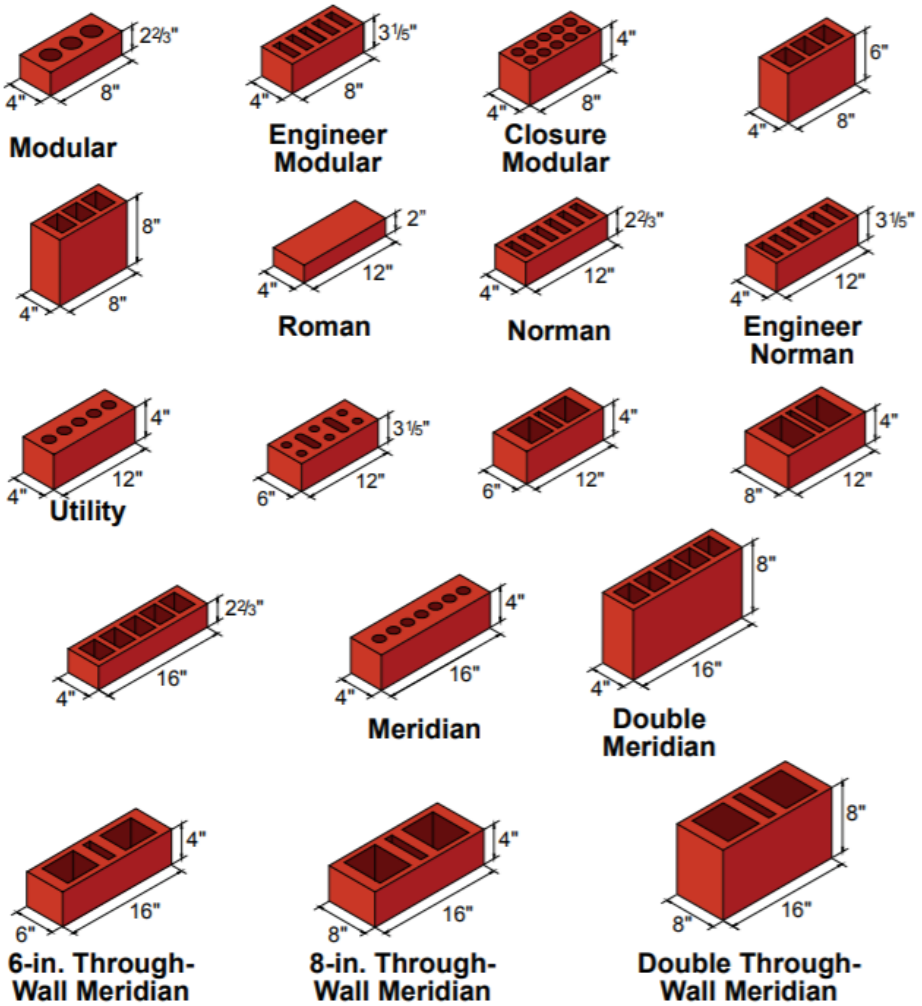
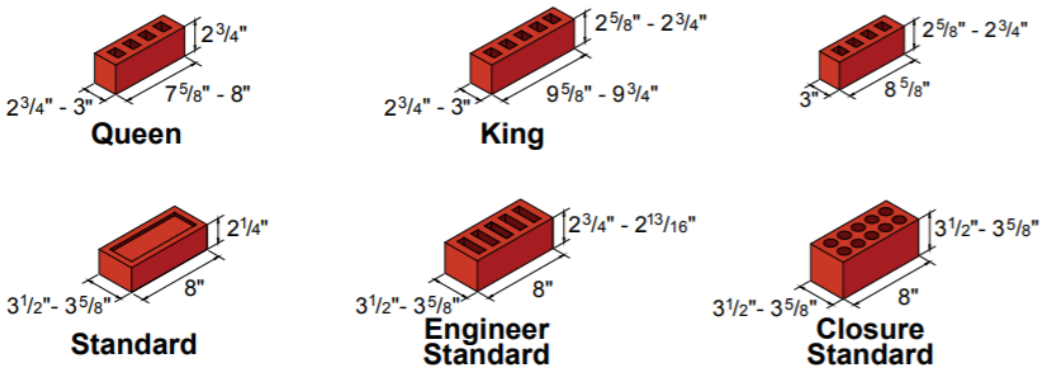


Figure 2. Non-modular brick sizes (specified dimensions)



3. Declared unit

The declared unit for this study is the production of one cubic meter (1 m^3) of clay brick awaiting delivery to a customer. The brick are either packaged in banded cubic formations or on wooden pallets and are stored typically in open air.

4. System boundary

4.1 Life cycle stages

This EPD describes clay brick production from cradle to gate, as depicted in Figures 3 and 4. This includes all modules (A1–A3) of the product stage as defined by the PCR. Specifically, product stage modules capture the following aspects of the life cycle:

- Extraction and processing of raw materials and packaging used to produce the clay brick
- Transportation[1] of raw materials and packaging from source to the clay brick production site
- Consumption of energy and water required to produce the clay brick
- Emissions and wastes generated from producing the clay brick
- Transportation of wastes from the clay brick production site to end of life
- End of life of wastes generated during clay brick production

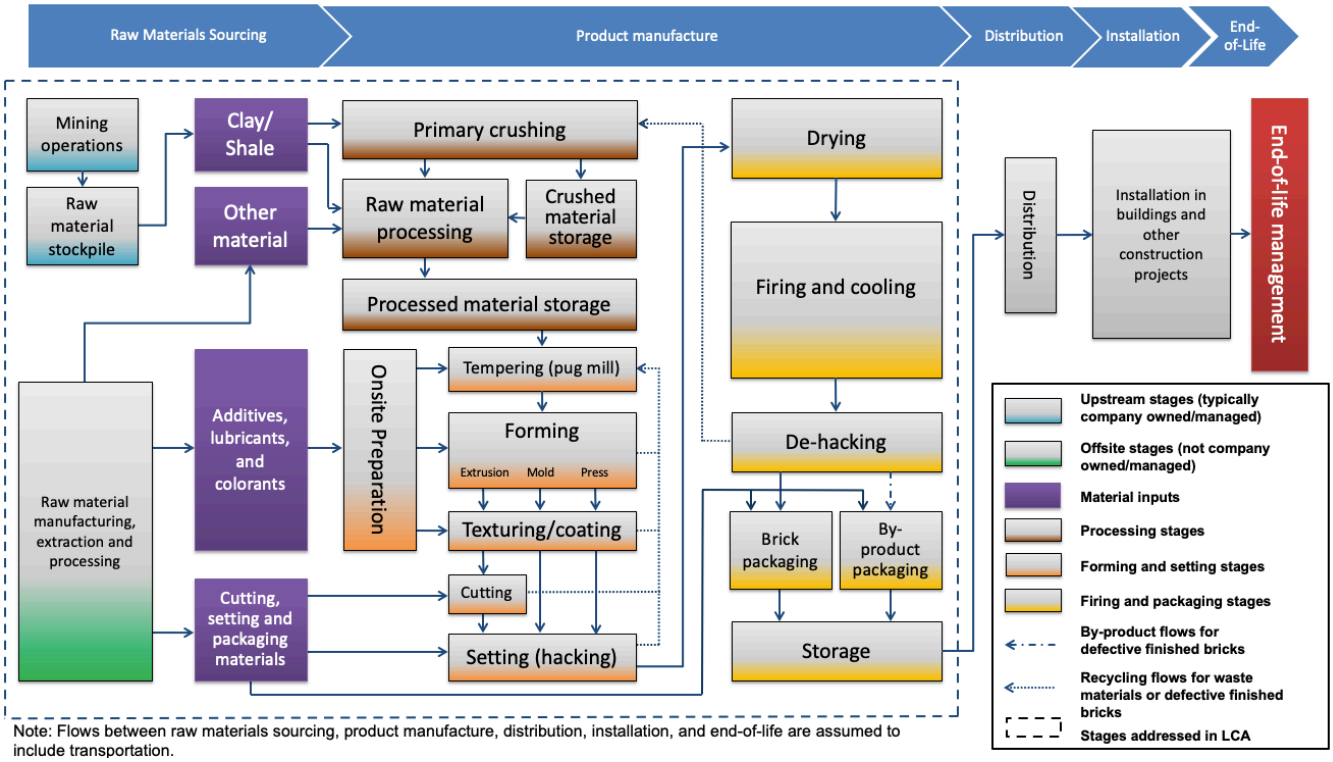
1. Empty backhaul is included as provided in the Ecoinvent datasets used in the analysis.

The Construction, Use and End-of-Life stages are excluded from the scope of the PCR and therefore from this EPD.

Figure 3. Life cycle stages considered in the EPD, as prescribed in the reference PCR. Only A1, A2 and A3 are taken into account in a cradle-to-gate perspective.

Product stage			Construction process stage		Use stage							End-of-life stage			
Raw material supply	Transport	Manufacturing	Transport	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4

Figure 4. Typical production process for clay brick in the U.S. and Canada



Note: Flows between raw materials sourcing, product manufacture, distribution, installation, and end-of-life are assumed to include transportation.

4.2 Temporal and geographic boundaries

The clay brick production impacts estimated by the LCA represent production in the U.S. and in Canada in 2018. Data are still representative for the clay brick industry in 2020 as no major changes in manufacturing processes have occurred in the past years. Data and assumptions reflect equipment, processes and market conditions for this year. Background processes, such as quarry operations and electricity generation, are characterized by data that represent processes specific to the U.S. and Canada where information is available. In cases where this information is not available, the best available alternative information is used. Additional details describing the background data are provided in the report *Life cycle assessment of clay brick produced in the U.S. and Canada* developed for the Brick Industry Association (BIA). For further information on the report, please contact BIA via brickinfo@bia.org.

4.3 Exclusion and cut-off criteria

As per the PCR, the following items are not considered within the System Boundaries.

- Production, manufacture and construction of manufacturing capital goods and infrastructure
- Production and manufacture of production equipment, delivery vehicles and laboratory equipment
- Personnel-related activities (travel, furniture and office supplies)
- Energy and water use related to company management and sales activities that may be located either within the factory site or at another location

As described in the PCR, if a flow is less than 1% of the cumulative mass of the system model, then it may be excluded, provided that its environmental relevance is minor. All product components and production processes are included when the necessary information is readily available or a reasonable estimate can be made. The processes listed in Table 5 are excluded from the study due to lack of reliable data and expected low contribution to impact.

Table 5. Flows excluded from the LCA and their contribution to total mass input

Flow	Contribution to total input, by mass
Secondary pigments	0.040%
Grog	0.116%
Furnace bottom ash	0.387%
Other secondary materials	0.357%
Total	**0.900%**
CUT-OFF RULE	**<1%**

4.4 Allocation approach

Allocation of inventory flows and subsequently environmental impact is relevant when assets are shared between product systems. For co-products, no credit is considered, and no allocation is applied due to the negligible amounts of co-products produced. Including co-products would not alter the results of the study.

5. Representation of the U.S. and Canada clay brick production

The life cycle impact assessment (LCIA) results presented by this EPD are calculated using an industry average LCI of U.S. and Canada clay brick production. The LCI is assembled with data shared by 13 brick producers through a survey of 2018 operations.

The study represents 31% of 2018 U.S. brick production and 48% of 2018 Canadian brick production. Overall, the study captures 32% of 2018 brick production across the U.S. and Canada.

The average electricity mixes for the U.S. and Canada are used to calculate impacts of electricity generation. The production share taking place in each country is applied to split the average electricity consumption value between the two mixes.

5.1 Production technology

Clay brick can be produced using different technologies. The clay brick described by this EPD are produced under the profile of production technologies shown in Table 6.

Table 6. Clay brick production technologies applied in the making of the product described by this EPD

Production technology	Percent of clay brick produced per production technology
Stiff mud	83%
Soft mud	5%
Stiff and soft mud	13%

About 90% of brick in the U.S. and 100% in Canada are produced by the stiff-mud process (BIA 2006, Meridian 2020), thus making this EPD representative of the technologies used in these countries.

5.2 Limitations

This EPD represents average environmental performance of clay brick production in the U.S. and Canada. It considers only plants located in the U.S. and Canada, although some participating producers may operate elsewhere in the world.

The information provided in this EPD may not adequately represent brick production systems that differ greatly from those captured by the data used in the underlying LCA. Additionally, EPDs from different programs (using a different PCR) may not be comparable.

Life cycle impact assessment results present potential and not actual environmental impacts. They are relative expressions that are not intended to predict the final impact or risk on the natural media or whether standards or safety margins are exceeded. Additionally, these categories do not cover all the environmental impacts associated with human activities. Impacts such as noise, odors, electromagnetic fields and others are not included in the present assessment.

5.3 Additional information regarding LCA methodology

Additional information regarding databases and impact methodologies used for conducting the LCA for this EPD can be found in the 2020 report *Life cycle assessment of clay brick produced in the U.S. and Canada*, developed for the Brick Industry Association.

6. Life cycle assessment results

Computation of the cradle-to-gate impacts of producing clay bricks have been carried out with Simapro (v. 9.0.0.49 developed by PRé Consultants, www.pre.nl), using as database Ecoinvent 3.4 allocation, cut-off by classification databases (http://www.ecoinvent.org/home). The impact categories are calculated using characterization factors specified in version 2.1 of U.S. EPA TRACI (EPA 2012). The results are presented in Table 7.

Table 7. Life-cycle results for clay brick production

Metric	Cradle-to-gate total, per cubic meter of brick	Unit
Environmental impact		
Global Warming Potential	503	kg CO_2 eq
Acidification Potential	1.52	kg SO_2 eq
Eutrophication Potential	0.888	kg N eq
Smog Potential	15.6	kg O_3 eq
Ozone Depletion Potential	0.0000629	kg CFC-11 eq
Total primary energy consumption		
Nonrenewable Fossil	8,210	MJ
Nonrenewable Nuclear	516	MJ
Renewable (Solar, Wind, Hydroelectric and Geothermal)	38.3	MJ
Renewable (Biomass)	140	MJ
Material resources consumption		
Nonrenewable Material Resources	2,280	kg
Renewable Material Resources	0.00298	kg
Net Fresh Water (Inputs Minus Outputs)	2,810	L
Total waste generation		
Non-Hazardous Waste Generated	2.56	kg
Hazardous Waste Generated	0.00674	kg

7. Additional environmental information

No additional environmental information is provided.

8. References

1. ASTM (2014) Product Category Rules for Preparing an Environmental Product Declaration for Clay Brick, Clay Brick Pavers and Structural Clay Tile. July 2016. https://www.astm.org/CERTIFICATION/EpdAndPCRs.html
2. ISO (2006a) Environmental management – life cycle assessment – principles and framework. ISO 14040:2006. Geneva, Switzerland
3. ISO (2006b) Environmental management – life cycle assessment – requirements and guidelines. ISO 14044:2006. Geneva, Switzerland
4. ISO (2006c) Environmental labels and declarations – Type III environmental declarations – Principles and procedures ISO/TR 14025:2006. Geneva, Switzerland
5. ISO (2007) Sustainability in building construction – Environmental declaration of building products. ISO 21930:2007. Geneva, Switzerland
6. Meridian Brick Canada Ltd (Meridian) (2020) Discussions between BIA and Meridian. September 2020

BILCO

The BILCO Company has served the building industry since 1926. During these years it has built a reputation among architects, engineers, specifiers, and the construction trades for dependability and for products that are unequaled in design and workmanship. BILCO, a wholly owned subsidiary of AmesburyTruth which is a division of Tyman PLC, has been a pioneer in the development of specialty access products for commercial and residential construction markets.

BILCO Today

The BILCO Company continues to be the industry leader in the design and manufacture of specialty access products. In order to better serve its customers, BILCO has added manufacturing facilities and strategic distribution throughout the world, along with establishing an extensive international network of factory-trained representatives. These representatives, combined with BILCO's highly skilled and dedicated personnel, ensure a level of customer service that is unequaled in the industry. As the leader in design innovation, many of BILCO's products incorporate features for which numerous U.S. and international patents have been issued. Years of engineering experience, coupled with manufacturing facilities utilizing the most modern equipment available, allows BILCO to design and fabricate access products for virtually every application.

Your Assurance of Quality

The BILCO Company is committed to producing access products that are unequaled in quality, design and workmanship. BILCO products are fabricated to consistently high quality standards to ensure complete customer satisfaction. As part of its commitment, BILCO has implemented a LEAN manufacturing quality and continuous improvement system that has achieved ISO 9001 certification.

Environmental Policy

The BILCO Company is committed to the protection of the environment and the health and safety of its employees, customers and neighbors worldwide. We will strive to continually improve our use of natural resources and minimize our impact on the environment.To support this goal, we will:

- Use natural resources, including raw materials, energy, and water, as efficiently as possible
- Continually improve the environmental performance of our products and processes
- Minimize or eliminate the generation of waste
- Comply with environmental regulations
- Source materials responsibly from environmentally conscience vendors and suppliers

Our ongoing efforts to accomplish these goals include:

- Utilization of recycled materials in the fabrication of our products
- Use of natural and energy efficient lighting in our manufacturing facilities
- Recycling programs for cardboard, office paper, plastic, metal, and obsolete computer equipment
- Recycling and replacement of wooden pallets with reusable metal skids
- Use of low VOC paint in our products
- Replacement of welding equipment with more energy efficient machines
- Use of alternate transportation for the delivery of raw materials
- Raising awareness, encouraging participation, and providing education to our employees in environmental matters and health, and safety regulations.

Requested Page Was Not Found

Dear Valued Customer,

We are currently experiencing website difficulties that are preventing access to some of the pages on our website. We are working diligently to correct the problem and ask that you please contact our customer service department directly for additional product information.

Commercial Access Products:
Email: commercial@bilco.com
Phone: 1-800-366-6530

Residential Access Products:
Email: residential@bilco.com
Phone: 1-800-854-9724

Thank you for your patience and understanding and for your interest in BILCO products.

The BILCO Company

/

- Safety & Security Products
- Download Center
- Return Policy
- My Account
- Warranty Registration
- Shopping Cart
- Site Map

Copyright 2022 The BILCO Company All Rights Reserved

Requested Page Was Not Found

Dear Valued Customer,

We are currently experiencing website difficulties that are preventing access to some of the pages on our website. We are working diligently to correct the problem and ask that you please contact our customer service department directly for additional product information.

Commercial Access Products:
Email: commercial@bilco.com
Phone: 1-800-366-6530

Residential Access Products:
Email: residential@bilco.com
Phone: 1-800-854-9724

Thank you for your patience and understanding and for your interest in BILCO products.

The BILCO Company

/

Carboline Company

MANAGEMENT SYSTEM CERTIFICATE

Certificate no.:
CERT-03778-2003-AQ-HOU-ANAB

Initial certification date:
29 November, 2001

Valid:
14 April, 2022 – 13 April, 2025

This is to certify that the management system of

Carboline Global Inc.

2150 Schuetz Road, St. Louis, MO, 63146-3504, USA

and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Quality Management System standard:
ISO 9001:2015

This certificate is valid for the following scope:
Formulation and production of protective coatings for metallic and concrete substrates.

Place and date:
Katy, TX, 04 April, 2022

For the issuing office:
DNV - Business Assurance
1400 Ravello Drive, Katy, TX, 77449-5164, USA

Sherif Mekkawy
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV Business Assurance USA Inc., 1400 Ravello Drive, Katy, TX, 77449, USA - TEL: +1 281-396-1000. www.dnv.com

Certificate no.: CERT-03778-2003-AQ-HOU-ANAB
Place and date: Katy, TX, 04 April, 2022

Appendix to Certificate

Carboline Global Inc.

Locations included in the certification are as follows:

Site Name	Site Address	Site Scope
Carboline Global Inc.	2150 Schuetz Road, St. Louis, MO, 63146-3504, USA	Sales, Internal Audit, Corrective Action, Management Review, Purchasing (Suppliers Approval), Human Resources, Marketing
Carboline Global Inc.	350 Hanley Industrial Court, St. Louis, MO, 63144, USA	Design, Calibration, R&D Lab, Tech Services
Carboline Global Inc.	900 Opelousas, Lake Charles, LA, 70601, USA	Quality, Production, Purchasing, Receiving / shipping, Warehouse, Calibration, Maintenance, Human Resources, QC Lab
Carboline Global Inc.	2425 Fruge Street, Lake Charles, LA, 70601, USA	Tinting, Receiving / Shipping / Warehouse
Carboline Global Inc.	614 Elizabeth Street, Green Bay, WI, 54302, USA	Quality, Production, Purchasing, Receiving/Shipping, Warehouse, Calibration, Maintenance, Human Resources, QC Lab
Carboline Global Inc.	2122 Angie Street, Green Bay, WI, 54302, USA	QC Lab, Tinting, Receiving / Shipping / Warehouse
Carboline Global Inc.	95 Airpark Vista Boulevard, Dayton, NV, 89403, USA	Quality, Production, Purchasing, Receiving/Shipping, Warehouse, Calibration, Maintenance, QC Lab

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV Business Assurance USA Inc., 1400 Ravello Drive, Katy, TX, 77449, USA - TEL: +1 281-396-1000. www.dnv.com

Carlisle Sustainability Report


CARLISLE
2021 Corporate
Sustainability Report


Significant 2021 Milestones
on Our Sustainability Journey
$2.5B
in LEED qualified products manufactured and sold in 2021
52% of our total sales
151M
megawatt hours of energy saved on products sold
Enough to power 3.2M homes in the U.S. for a year
31M
metric tons of CO_2 emissions avoided based on products sold
Equivalent to taking 7M cars off the road annually
240K
trees planted to date through our partnership with American Forests
0.85
OSHA Incident Rate due to our Path to Zero initiative
Compared to 3.7 industry average (U.S. Bureau of Labor Statistics)
54%
of Board of Directors identifying as gender, racially or ethnically diverse
Compared to <40% for U.S. companies (ISS Corporate Solutions, 2021)

Corporate Sustainability Report Contents

Introduction

About This Report 3
To Our Stakeholders 4
Our Mission 5
Our 2030 Objectives 5

About Carlisle

Company Profile 6
Delivering on Building Efficiency 8
Industry Engagement 10

Environmental Sustainability

Energy Efficient Solutions 13
Product Sustainability Guide 19
Reducing Our Emissions 20
Reducing Landfill Waste 22
Additional Recycling Efforts 24

Social Impact

Leadership Development 27
Diversity and Inclusion 28
Employee Benefits 30
Culture & Engagement 32
Employee Safety 34
Carlisle in the Community 36
Faces of Carlisle 40

Corporate Governance

Board of Directors 43
Board Leadership Structure 44

Appendix

Disclosures 46
SASB Index 47
GRI Index 48
Verification Statement 50
Corporate Information 52

This is Carlisle Companies Incorporated's third annual Corporate Sustainability Report (CSR), covering all our operations for the period of January 1, 2021, through December 31, 2021. Carlisle is committed to collecting and presenting reliable information regarding our sustainability performance.

Forward-Looking Statements

This report contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, including statements regarding the potential or expected impacts of the global COVID-19 pandemic. Forward-looking statements generally use words such as "expect," "foresee," "anticipate," "believe," "project," "should," "estimate," "will," "plans," "intends," "forecast," and similar expressions, reflect our expectations concerning the future. Such statements are made based on known events and circumstances at the time of publication and, as such, are subject in the future to unforeseen risks and uncertainties. It is possible that our future performance may differ materially from current expectations expressed in these forward-looking statements, due to a variety of factors such as: risks from the global COVID-19 pandemic,including, for example, expectations regarding the impact of the COVID-19 pandemic on our businesses, including on customer demand, supply chains and distribution systems, production, our ability to maintain appropriate labor levels, our ability to ship products to our customers, our future results or our full-year financial outlook, increasing price and product/service competition by foreign and domestic competitors, including new entrants; technological developments and changes; the ability to continue to introduce competitive new products and services on a timely, cost-effective basis; our mix of products/services; increases in raw material costs that cannot be recovered in product pricing; domestic and foreign governmental and public policy changes including environmental and industry regulations; threats associated with and efforts to combat terrorism; protection and validity of patent and other intellectual property rights; the identification of strategic acquisition targets and our successful completion of any transaction and integration of our strategic acquisitions; our successful completion of strategic dispositions; the cyclical nature of our businesses; the impact of information technology, cybersecurity or data security breaches at our businesses or third parties; and the outcome of pending and future litigation and governmental proceedings and the other factors discussed in the reports we file with or furnish to the Securities and Exchange Commission from time to time. In addition, such statements could be affected by general industry and market conditions and growth rates, the condition of the financial and credit markets, and general domestic and international economic conditions, including inflation and interest rate and currency exchange rate fluctuations. Further, any conflict in the international arena, including the Russian invasion of Ukraine, may adversely affect general market conditions and our future performance. Any forward-looking statement speaks only as of the date on which that statement is made, and we undertake no duty to update any forward-looking statement to reflect events or circumstances, including unanticipated events, after the date on which that statement is made, unless otherwise required by law. New factors emerge from time to time and it is not possible for management to predict all of those factors, nor can it assess the impact of each of those factors on the business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statement.

To Our Stakeholders

"As an organization we are committed to being a responsible environmental stakeholder by delivering products that improve the energy efficiency of buildings, while reducing emissions from our manufacturing facilities and reducing the volume of construction materials in landfills."



I am proud to report that in 2021 we reached significant milestones on our sustainability journey. In the face of the COVID-19 pandemic, significant challenges in our supply chain, a rapidly changing demand environment, and meaningful inflation, Carlisle's businesses adapted to deliver strong financial and environmental social governance (ESG) results, all while focused on delivering The Carlisle Experience to our customers.

The resilience of Carlisle's team over the past few years has been truly remarkable. This resilience is driven by Carlisle's entrepreneurial, continuous improvement, and decentralized culture and is fundamental to the performance of our teams around the world. How our teams approach sustainability is no different. It is part of our culture, similar to the Carlisle Operating System (COS) launched in 2009, and Vision 2025, which was launched in 2018.

2021 was a pivotal year along our sustainability journey. For the first time, we performed energy audits at our facilities. These audits will serve as the basis for setting actionable and achievable energy and greenhouse gas (GHG) reduction goals in 2022.

Over a few short years our sustainability efforts have resulted in Carlisle being recognized as an ESG leader within the building products space. Our primary areas of action include:

Developing Energy Efficient Products

We develop and produce products to reduce the 30% of GHG emissions from the operation of buildings and help lower operating costs for our customers.

Lowering the GHG Emissions of Our Operations

From increasing the number of renewable energy sources for our facilities and optimizing the energy consumption of our manufacturing equipment, to certifying our facilities to ISO 14001 and ISO 50001 standards, we apply our continuous improvement mindset to lower the environmental impact of our manufacturing operations.

Reducing Material Waste Going into Landfills

Carlisle has always focused on reducing production scrap and recycling back into the production stream. Through COS we continue to increase these efforts and reduce materials entering landfills.

Carlisle's employees are engaged and focused on assessing energy usage, developing innovative energy efficient products, and finding ways to make our operations greener, all with the goal of creating a better future for all of us.

Carlisle is embracing our century-long legacy of responsible stewardship. As an organization we are committed to being a responsible environmental stakeholder by delivering products that improve the energy efficiency of buildings, while reducing emissions from our manufacturing facilities and reducing the volume of construction materials in landfills.

Thank you for taking the time to read about our 2021 accomplishments and we look forward to updating you on our progress in the future.

Sincerely,



D. Christian Koch
Chair, President, and Chief Executive Officer

Our Mission

Carlisle's mission is to help deliver a more sustainable future by supplying innovative and energy efficient products while reducing our operational greenhouse gas emissions and the amount of construction materials in landfills.

Our 2030 Sustainability Objectives

	2019	2020	2021	**2030 Target**	Progress
Facilities with LED lighting	17	20	26	**82**	32%
Electric vehicle fleet %	Not tracked		10%	**100%**	10%
ISO 14001 qualified facilities	9	19	30	**82**	37%
ISO 50001 qualified facilities	0	2	3	**35**	6%

About Carlisle

Carlisle Companies Incorporated is a leading supplier of innovative Building Envelope products and energy efficient solutions for customers creating sustainable buildings of the future. Through our family of leading brands, Carlisle delivers innovative, labor-reducing, and environmentally responsible products and solutions to customers through the Carlisle Experience.

Driven by our strategic plan, Vision 2025, Carlisle is committed to generating superior shareholder returns and maintaining a balanced capital deployment approach, including investments in our businesses, strategic acquisitions, share repurchases and continued dividend increases. Carlisle is also a leading provider of products to the Aerospace, Medical Technologies, and General Industrial markets through our Interconnect Technologies (CIT) and Fluid Technologies (CFT) business segments.

Carlisle Construction Materials and **Carlisle Weatherproofing Technologies** deliver innovative, easy to install, and energy efficient solutions for the building products industry through the Carlisle Experience.

Carlisle Interconnect Technologies designs and manufacturers high performance wire and cable for commercial aerospace, military and defense electronics, medical device, test and measurement, and industrial markets.

Carlisle Fluid Technologies is dedicated to providing customers with industry leading and sustainable solutions for the supply, control, application, and curing of a wide range of paints, powders, sealants, foams, and other applied materials.

11,000+
employees

Our Vision 2025 Goals

$8B
in sales

20%
operating income

$15
earnings per share

$3B
capital deployed

Our 2021 Progress

$4.8B
in sales

11.8%
operating income

$7.26
earnings per share

$2.4B
capital deployed 2018–21



Delivering on Building Efficiency

Carlisle is committed to investing in products and solutions that reduce greenhouse gas emissions and landfill waste. To that end, we took significant actions across our businesses and facilities in 2021.



Henry Blueskin air barrier products at the JW Marriott Minneapolis Mall of America

Acquiring Henry Company

Our drive to increase the content of energy-efficient products in our portfolio resulted in our purchase of Henry Company, the largest acquisition in Carlisle's history. Henry's solutions are trusted every day to protect and enhance the building envelope systems of today's most demanding commercial and residential structures. From keeping moisture out of buildings to reducing energy consumption and keeping waste out of landfills, Henry's solutions protect and enhance the environments in which we live, work, and play.



Construction of our ninth polyiso insulation facility in Sikeston, MO

Building an Innovative Polyiso Facility

Carlisle broke ground on our ninth polyiso manufacturing facility in Sikeston, MO. The new facility is being constructed in accordance with the latest advancements in LEED building standards and green building principles. With its central location, the facility will both reduce the carbon footprint of Carlisle's supply chain and improve lead times for customers.

At the facility, Carlisle will manufacture energy efficient polyiso insulation, which reduces cooling and heating costs for buildings and, in turn, reduce a building's carbon footprint. Construction began in the summer of 2021, with the first phase of the facility expected to be operational by the second quarter of 2023.



Test run of our soon-to-be launched 16' TPO line in Carlisle, PA

Developing the First 16' TPO Line

Carlisle is constructing the commercial roofing industry's first 16-foot-wide Thermoplastic polyolefin (TPO) membrane manufacturing line. Contractors using CCM's new TPO membranes can expect significant labor savings and improved installation quality, as there will be fewer rolls to handle, more than 25% fewer seams to weld, and less packaging waste. The line is expected to be operational in the third quarter of 2022.



Installation of solar panels at our Waltershausen, Germany plant will begin in 2022

Installing Solar at Our Facilities

Carlisle is installing photovoltaic solar panels on a new plant roof in Waltershausen, Germany in 2022. The photovoltaic system is expected to generate approximately 30% of the site's electricity and reduce greenhouse gas emissions by nearly 250 metric tons per year. Carlisle will continue to invest in renewable energy sources as part of our energy conservation measures.

Industry Engagement

Carlisle is grateful to have been recognized for our continuing sustainability related efforts.



Carlisle was included as one of America's Most Responsible Companies for 2022 by *Newsweek*, which recognizes top performing companies making a difference through their environmental initiatives, social impact, and corporate governance.



Carlisle achieved both LEED Silver Certification and the Living Business Challenge designation, the world's most rigorous standard for buildings, with our work on the revitalized Pikes Peak Summit Complex, the most sustainable high altitude structure in the U.S.

We engage with top ESG rating agencies to provide clear and useful data for greater transparency and to help improve ESG practices around disclosure of data and performance.

SUSTAINALYTICS
a Morningstar company
RATED

Sustainalytics ESG Risk Ratings measure a company's exposure to material industry-specific ESG risks and how well a company is managing those risks on an annual basis. As of July 2021, Carlisle Companies Incorporated received an ESG Risk Rating of 21.0 from Sustainalytics and was assessed to be at medium risk of experiencing material financial impacts from ESG factors.*

MSCI
ESG RATINGS
A
CCC | B | BB | BBB | A | AA | AAA

MSCI ESG Research provides in-depth research, ratings and analysis of the ESG related business practices of thousands of companies worldwide on an annual basis. As of 2021, Carlisle received an MSCI ESG Rating of A.**

VERIFIED
by SCS GLOBAL SERVICES
CARBON FOOTPRINT

A third-party verified carbon footprint guarantees that an organization's measured greenhouse gas emission calculations are thorough and accurate. Carlisle has received a third-party verified carbon footprint for our Scope 1 & 2 Greenhouse Gas Emissions from SCS Global Services.

*Copyright ©2022 Sustainalytics. All rights reserved. This report contains information developed by Sustainalytics. Such information and data are proprietary of Sustainalytics and/or its third-party suppliers (Third Party Data) and are provided for informational purposes only. They do not constitute an endorsement of any product or project, nor an investment advice and are not warranted to be complete, timely, accurate, or suitable for a particular purpose. Their use is subject to conditions available at https://www.sustainalytics.com/legal-disclaimers.

**The use by Carlisle Companies Incorporated. of any MSCI ESG Research LLC or its affiliates ("MSCI") Data, and the use of MSCI logos, trademarks, service marks or index names herein, do not constitute a sponsorship, endorsement, recommendation, or promotion of Carlisle by MSCI. MSCI services and data are the property of MSCI or its information providers, and are provided 'as-is' and without warranty. MSCI names and logos are trademarks or service marks of MSCI.

Carlisle is proud to serve on the board or as a participating member of the following trade organizations and associations:

- United States Green Building Council (USGBC)
- American Institute of Architects (AIA)
- Sustainable Roofing & Waterproofing Alliance (SRWA)
- EPDM Roofing Association (ERA)
- Metal Roofing Association (MRA)
- Metal Construction Association
- Roof Coating Manufacturing Association (RCMA)
- Single Ply Roofing Industry (SPRI)
- Cool Roof Rating Council (CRRC)
- Business Council for Sustainable Energy
- Spray Polyurethane Foam Alliance (SPFA)
- International Institute of Building Enclosure Consultants (IIBEC)
- EPS Industry Alliance (EPSIA)
- Polyisocyanurate Insulation Manufacturers Association (PIMA)
- Airline Passenger Experience Association (APEX)
- National Business Aviation Association (NBAA)
- Independent Aircraft Modifier Alliance (IAMA)
- Aircraft Electronics Association
- ARINC Industry Activities
- Vertical Flight Society
- Duurzaam Gebouwd

USGBC
MEMBER

Carlisle is a Platinum member of the United States Green Building Council (USGBC), an organization committed to transforming how our buildings are designed, constructed and operated through the Leadership in Energy and Environmental Design (LEED) program. LEED is the world's most widely used green building system, with more than 100,000 buildings participating today.

Sustainable Roofing & Waterproofing Alliance

Carlisle is a founding member of the Sustainable Roofing and Waterproofing Alliance (SRWA). Established in 2007, the Alliance is a sustainable construction initiative to improve the dialogue and information sharing between roof designers and manufacturers. SRWA has expanded to become an international group of professionals representing the highest standards in the roofing and waterproofing industry, including architects, roof consultants, building envelope consultants, building owners and a select group of product manufacturers.

Environmental Sustainability

Roof garden on Pontsteiger Hotel in Amsterdam, The Netherlands

Our Energy Efficient Solutions

Carlisle manufactures a wide range of energy efficient solutions for the building products industry. Carlisle's roofing and insulation solutions advance energy savings in both commercial and residential buildings and are key to helping achieve net zero in building operations.

We provide high-performance, single-ply roofing solutions that include TPO, PVC, EPDM, metal, and roof garden systems to satisfy a wide variety of applications.

Roofing Membranes

Ethylene Propylene Diene Monomer (EPDM) roofing membranes were developed by Carlisle over 50 years ago and remain among the most durable and versatile roofing membranes available. Independent analyses concluded EPDM has the lowest global warming potential of any major roofing material, offsetting its carbon footprint in as few as 15 years.

Thermoplastic polyolefin (TPO) membranes are highly reflective and heat and UV resistant. Made with 10% pre-consumer recycled content, TPO light-colored roof membranes can save as much as 63 tons of CO_2 per 10,000 square feet over the life of the roof.

Polyvinyl Chloride (PVC) roofing membrane is fully recyclable and made in a variety of colors to help reduce the heat island effect. Less than 50% of PVC feedstock is sourced from fossil fuels.



TPO roofing membrane at the Showplace in High Point, NC

Since 2004, we have sold enough TPO to cover the land area of New York City, significantly helping to mitigate the impacts of the urban heat island effect.

Our Energy Efficient Solutions

"Carlisle's three pillars of environmental sustainability—energy efficient products and solutions, the reduction of greenhouse gas emissions in our manufacturing process, and the reduction of waste going to landfills—are central to our efforts to achieve our sustainability goals."

Dave Smith
Vice President, Sustainability



Metal Roofing

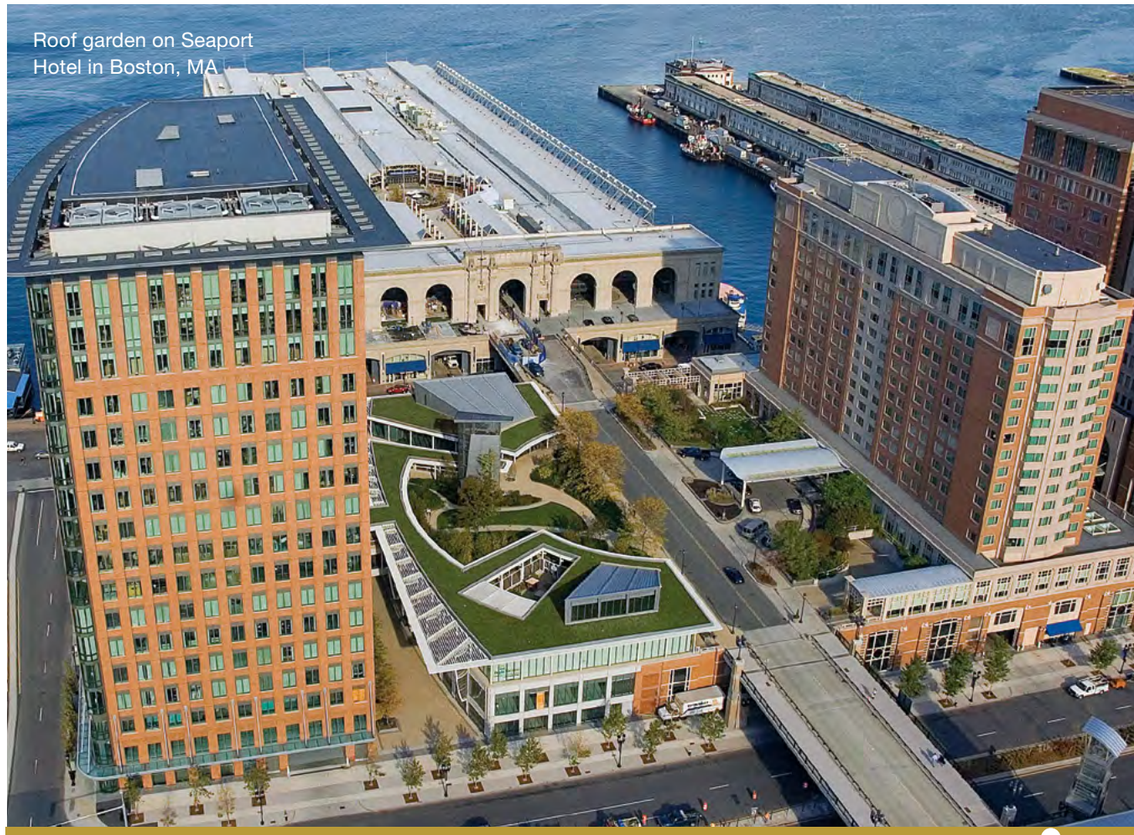
Metal roofing is 100% recyclable and highly inert. With a service life measured in decades, metal is an ideal platform for mounting solar photovoltaic systems in both residential and commercial roofing systems.



Architectural metal roofing at the Floridian National Golf Club in Palm City, FL

Roof Garden Assemblies

Carlisle offers a diverse line of traditional and modular roof garden systems, as well as a wide variety of vegetation options to fit each project's individual requirements and design aesthetics. Vegetated roof gardens provide benefits including extended roof lifecycles, enhanced amenity spaces, air and water purification, wildlife habitat, reduced urban heat island effect, and improved storm water management. In fact, 55-80% of all stormwater that falls on a roof garden annually is retained and not released into drains as runoff.



Roof garden on Seaport Hotel in Boston, MA

Since 2012, Carlisle's roof garden systems have retained as much as 3 million gallons of water during peak rainfall periods, reducing stress on municipal facilities and preventing flooding while providing beautiful and functional outdoor spaces for buildings.

Our Energy Efficient Solutions

Polyiso Roofing & Wall Insulation

Polyiso's low thermal conductivity limits a building's operational energy consumption and associated environmental impacts, such as carbon emissions. With a CO_2 avoidance ratio of 34, polyiso insulation saves 34 times the amount of energy used in production. Put another way, the CO_2 embodied in our polyiso is recouped within thirteen months of a building's initial operation.



Since 2004, our installed base of Polyiso insulation has helped building owners save approximately 250 million megawatt hours of energy through reduced heating and cooling demand, enough energy to power all 13.1 million households in California for two years.

Expanded Polystyrene Insulation (EPS)

Carlisle offers continuous EPS insulation for all facets of residential and commercial buildings, including below grade, floors, walls, attics, and roofing. EPS building insulation is an ideal choice for sustainable building design, capable of returning up to 55 times the amount of energy required to produce it. EPS is also manufactured without dyes, formaldehyde, or ozone-depleting Hydrofluorocarbons (HFCs), and does not sustain mold growth. As a soil stabilizer, one truckload of Geofoam can replace as much as 12 truckloads of soil to minimize traffic, fuel usage, and pollutants.



EPS insulation and TPO membrane roofing solution

Spray Foam Insulation

Spray polyurethane foam (SPF) is a spray-in-place insulation made of rigid, closed-cell SPF foam. SPF reduces energy usage of a building up to 40% compared to traditional insulation materials. Carlisle's next-generation HFO (hydrofluroolefin) spray-applied polyurethane foam greatly reduces the global warming potential and ozone depletion potential while delivering the same energy performance as traditional spray foam products.



Over the last three years, Carlisle has helped to prevent approximately 239,000 metric tons of downstream GHGs with the application of HFO SPF instead of HFC (hydrofluorocarbon) SPF foam—equivalent to taking more than 54,000 cars off the road in a year.

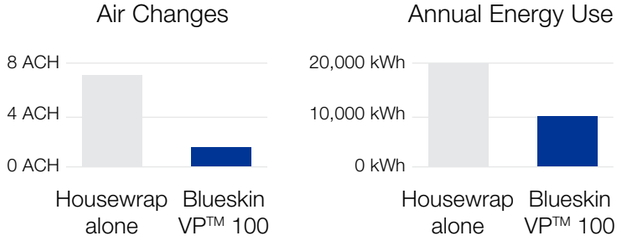
Our Energy Efficient Solutions

Air and Water Barriers

Carlisle's next generation air and water barrier technologies provide the best defense against the damaging effects of water and moisture. Our air and water barriers offer significant benefits over traditional house wrap offerings and provide as much as 30% additional savings on heating and cooling energy consumption.



Example of a Carlisle vapor barrier solution



Tests confirm significantly lower air changes per hour with Carlisle's Blueskin VP™ 100, resulting in higher energy efficiency.

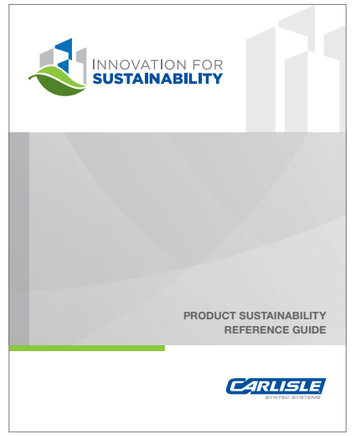


Our recently opened Research & Innovation Center in Carlisle, PA was constructed to drive product development and position Carlisle as a sustainability leader within the building products industry.

Product Sustainability Reference Guide

Carlisle's focus has always been on continuous improvement—to innovate, solve problems, improve performance, reduce labor, and improve sustainability. Carlisle is committed to driving sustainable and efficient processes in the design and manufacture of our products.

In support of this commitment, in 2021 we launched our first-ever product sustainability reference guide to help our customers choose the right products to fit their application. Through this guide, we demonstrate the sustainable attributes of our products with the goal of promoting sustainable and green building practices.



Green Building Certifications

In the construction industry, there are several programs pushing for greener buildings, including LEED, Green Globes, and the Living Building Challenge. All three of these programs seek to reduce the carbon footprint of buildings, with each taking a unique approach to accomplishing this goal.

LEED wants to make buildings better for the environment, community and those who use the building.

Green Globes wants to make buildings more environmentally efficient based on commonly valued environmental outcomes.

Living Building Challenge promotes buildings that have a positive environmental impact on the planet.

The key below showcases the various ways in which Carlisle products contribute to meeting the green qualifications for LEED, Green Globes, and Living Building Challenge.

LEED V4 & V4.1 Sustainable Sites

LEED V4 & V4.1 Water Efficiency

LEED V4 & V4.1 Energy and Atmosphere

LEED V4 & V4.1 Materials and Resources

LEED V4 & V4.1 Indoor Environmental Quality

Green Globes

LBC Materials and Health and Happiness Petals

Reducing Our GHGs

Our energy savings commitment extends to our own manufacturing facilities, and in 2020 we began the process of acquiring baseline data for energy, GHGs, waste, and water consumption for our global footprint. The baseline data were used to conduct comprehensive energy audits to better understand our energy saving opportunities, and establish both near- and long-term energy reduction goals.

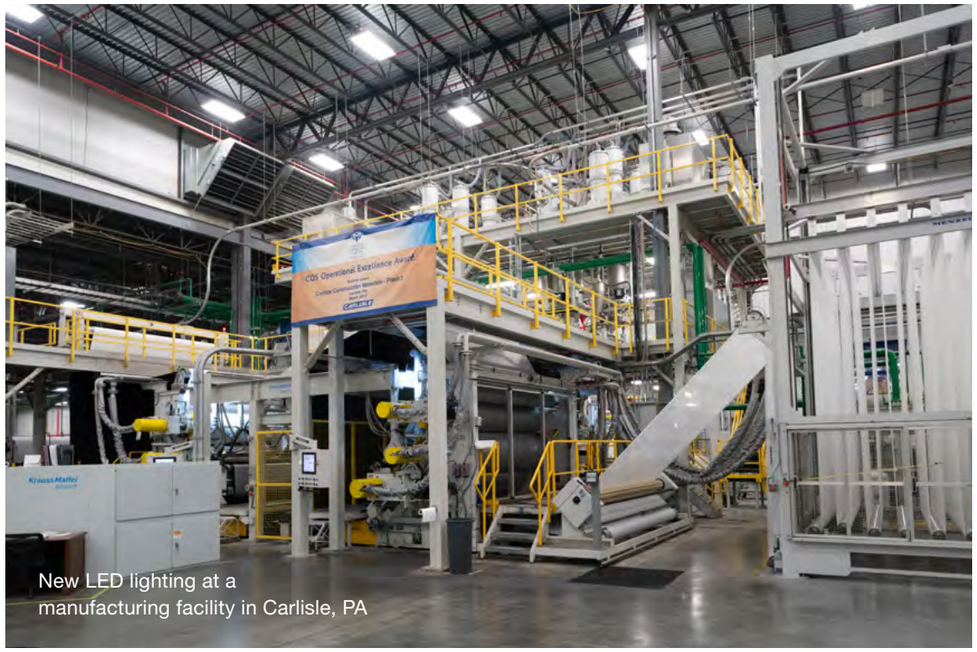
A series of energy conservation measures such as LED lighting, HVAC optimization, and conversion to electric forklifts, have been developed and are being deployed over the next few years. These measures and the implementation of ISO 14001 and ISO 50001 standards will help us achieve our future GHG reduction goals.

6.5%

reduction in net Scope 1 & 2 GHGs since 2019

Converting to LED Lighting

Carlisle is converting our manufacturing facilities to LED lighting. To date, 26 facilities covering approximately 32% of our total footprint have been converted to LED lighting and motion sensors. **This has resulted in savings of more than 8 million kilowatt-hours annually, reducing greenhouse gas emissions by 3,300 metric tons.**



New LED lighting at a manufacturing facility in Carlisle, PA

Transitioning to Electric Vehicles

We are transitioning our sales fleet of 500 vehicles and our forklift fleet of approximately 600 to electric versions, thereby reducing the emissions of our fleet operations.

To date, Carlisle has deployed over 70 electric forklifts and 40 electric vehicles with additional deliveries expected throughout 2022.



EVs and charging stations at our CCM campus in Carlisle, PA

Deploying an Environmental Management System

Carlisle is committed to certifying all of our manufacturing sites to the ISO 14001 standard by the end of 2025. Currently, 19 (23%) of our plants are ISO 14001 certified. In 2021, we continued to make progress by qualifying an additional 11 sites to the ISO 14001 standard.

Enhancing Our Energy Management Processes

ISO 50001 certification at our facilities demonstrates Carlisle's commitment to ongoing improvement in energy management. To date, 3 of our facilities are certified to the ISO 50001 standard, with 4 additional planned to be qualified during 2022. Through ISO 50001 we will continue to refine and elevate our energy efficiency initiatives to promote best energy practices and improve overall energy performance.

Reducing Our Waste in Landfills

The EPA estimates that an approximate 600 million tons of construction and demolition debris are generated in the U.S. each year. With the scale and future growth potential of buildings and associated waste, there is great opportunity to manage these resources efficiently at scale.

Carlisle's legacy of recycling and continuous improvement began over one hundred years ago with the introduction of scrap rubber into our production stream. Today millions of pounds of scrap material feed our production process and provide as much as 96% post-consumer or production material to a wide array of products. Since 1999, Carlisle has recycled over 620,000 tons of scrap into our products, with 63,000 tons recycled in 2021.

Scrap returned to our production stream

63K tons in 2021

620K tons since 1999

At Carlisle, we continue to find innovative ways to recycle materials back into our products. We are committed to scaling recycling initiatives across our businesses while eliminating waste within our operations.

Used Tires

As one of the largest tire recyclers in the U.S., Carlisle's Ultimate RB business has recycled over 33 million tires since 2012 into a variety of premium rubber products.

Last year, Ultimate RB recycled nearly 27,000 tons of tires back into products containing as much as 85% post-consumer content.



Ultimate RB's rolled rubber flooring made from recycled tires

Expanded Polystyrene (EPS)

Carlisle is a leading manufacturer of expanded polystyrene (EPS) building insulation. Sold under our Insulfoam brand, Carlisle's EPS contains no HCFCs or formaldehyde, has the highest R-value per dollar compared to other insulation products, is weather and mold resistant, and 100% recyclable. Our EPS production plants regrind internal and external scrap back into our products and densify the material for reuse. **In 2021, we reground or densified over 4,000 tons of EPS.**



Single-Ply Roofing Membrane

Through process innovations such as devulcanization, we continue to increase the use of recycled material in our production streams. **Approximately 258,000 tons of single-ply material have been recycled and kept out of landfills since 1999.**

Office Recycling

Carlisle continues to find innovative ways to reduce landfill use by repurposing office and factory paper and cardboard. In 2021, Carlisle partnered with our facer paper supplier to implement an office paper and cardboard recycling program. **We recycled 459 tons of wastepaper in 2021, which was converted into over 16 million square feet of facer paper used in the manufacturing of our polyiso insulation boards.**



Our Additional Recycling Efforts

Water Recycling

While Carlisle is a not a significant consumer of water in our operations, we recognize the need to ensure water is handled correctly. In our Nogales, Mexico facility, we have implemented ISO 14001 with an increased focus on water management. The facility uses deionization technology to remove dissolved solids from spent water to allow for the most efficient use of chemicals, energy and water. Through this technology, wastewater is reused and recycled. **In 2021, nearly 50%, or approximately 700,000 gallons of water used at our Nogales facility was recycled and reused in our process.**



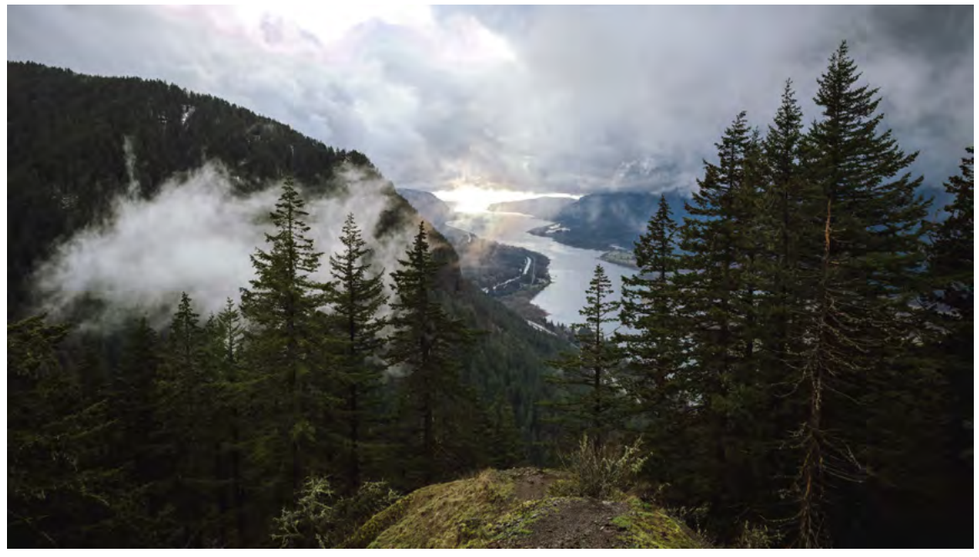
Supply Chain Engagement

Carlisle is always looking to make our supply chain more efficient and circular. **In 2021, Carlisle's Architectural Metals sourced over 18,000 tons of recycled steel** from one of its key suppliers that utilizes Electric Arc Furnace (EAF) technology for 100% of its steel production. EAF steelmaking technology generates a mere fraction of the carbon emissions produced, and energy intensity required, by traditional blast furnace steelmaking technology.

One Tote, One Tree

For more than a decade, Carlisle TyrFil has partnered with American Forests in the One Tote, One Tree program, which funds the supply, planting, and nurturing of seedlings to expand, rejuvenate, and protect forest lands across the U.S. The program is part of Carlisle TyrFil's ongoing assistance effort, along with its OEM and dealer network, which allocates one seedling toward the reforestation program for every 'tote' of TyrFil flat-proofing product purchased.

Carlisle Tyrfil has planted over 240,000 trees through our partnership with American Forests. Our 2021 donation will help plant new longleaf pine saplings in the southern U.S.





Social Impact

Our Next Generation of Leaders



"We seek entrepreneurial team members with a wide variety of backgrounds committed to a culture of inclusion, continuous improvement, innovation, and results."

Lori Snyder
Vice President, Human Resources

Developing Our Future Success

In 2021, we deployed the Carlisle Leadership System, a holistic approach to talent management that incorporates mutually reinforcing processes and tools for the selection and development of talent. Within the system, we have four enterprise-wide leadership development programs:

Our flagship leadership program, the **Carlisle Leadership Summit**, is intended to prepare our top employees for senior leadership roles. Employees selected for the Leadership Summit meet on an annual basis with the CEO and Carlisle's Executive Team to review company strategy, build relationships, share best practices and develop skills as leaders across our businesses.

The **Carlisle Leadership Program** is a program for Senior Manager or Director level employees who are leading teams and demonstrating future potential for senior leadership roles.

This program develops business and leadership skills in both applied and classroom environments.

The **Carlisle Leadership Foundations** is for skilled functional or technical individual contributors who have recently advanced or are expected to advance to their first leadership roles. This program helps these employees to define their own leadership skills to enable their future success.

The **Carlisle Management Development Program** was established in cooperation with several universities as a one-year, post-MBA rotational program designed to give an expedited experience for participants in our business segments across multiple functional areas. Participants gain an understanding of who we are at Carlisle and the functional areas where they may have opportunities in the future.



A Diverse and Inclusive Workplace

In 2021, we took steps to increase diversity within our workforce and further enhance collaboration and inclusion in our work environment.

Carlisle has established D&I Councils at two of our business units with plans to expand in the future. The Councils work to support company-wide efforts on diversity and inclusion. Council members from different parts of our organization identify potential initiatives that further enhance our culture and present them to the Executive Team for approval.

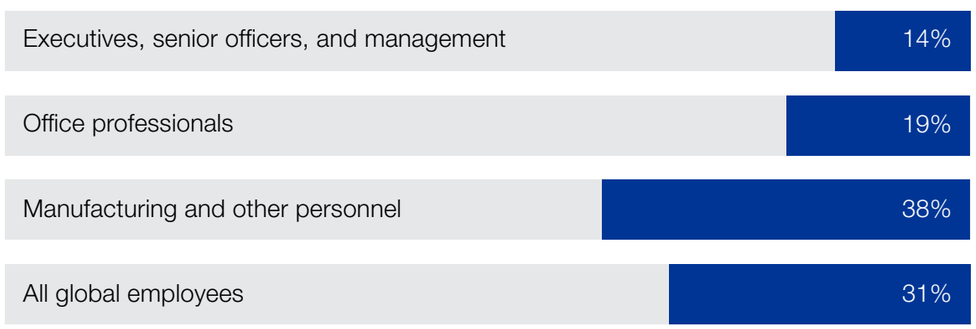
We also established new recruiting processes for Director+ roles to increase diversity in our candidate pools and limit unconscious bias. These processes will be cascaded further down in the organization in 2022. We set targets to achieve >30% gender diversity and >20% racial diversity for Director+ roles by 2025 in our two largest business units, CCM and CIT. While we had mixed success in 2021, we continue to work towards our long-term leadership diversity goal.

Our 2025 Goals

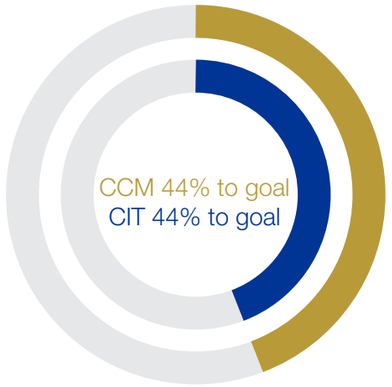
30%
gender diversity in directors and above

20%
racial diversity in directors and above

Current Representation from People of Color (POC)



Our Progress with Female Leaders



Our Progress with POC Leaders*



*Figures reflect Carlisle's U.S. based workforce

Carlisle achieved pay equity across race and ethnicity in 2021, building upon our achievement of gender pay equity in 2020 and further demonstrating our commitment to fair and equitable wages across our entire workforce.

In 2018, Carlisle joined the CEO Action for Diversity & Inclusion™ pledge, committing to supporting a more inclusive workplace for employees, communities, and society at large.

CEO ACT!ON FOR DIVERSITY & INCLUSION



Our Comprehensive Employee Benefits

Carlisle's health, welfare, and retirement savings benefit programs are designed with our employees' financial and physical wellness in mind.

We recognize the burden that COVID-19 has placed on our employees and their families. In light of this, Carlisle approved additional paid time off to schedule COVID-19 vaccinations and recover from any short-term side effects of the vaccine. We updated our Sick and Family Leave Policies as the pandemic evolved to ensure our employees maintained their health and safety. As a result, Carlisle has maintained low infection rates throughout the pandemic.

Carlisle also held employee health care costs flat from 2020 and into 2022, absorbing approximately $1,600 for individuals and $4,800 for families over the three-year period ending December 31, 2022. Carlisle will continue to offer the same superior, comprehensive benefits package without any changes to our plans in 2022. We also offer new voluntary benefits that provide supplemental financial support if an employee incurs a serious injury, hospitalization, or critical illness.



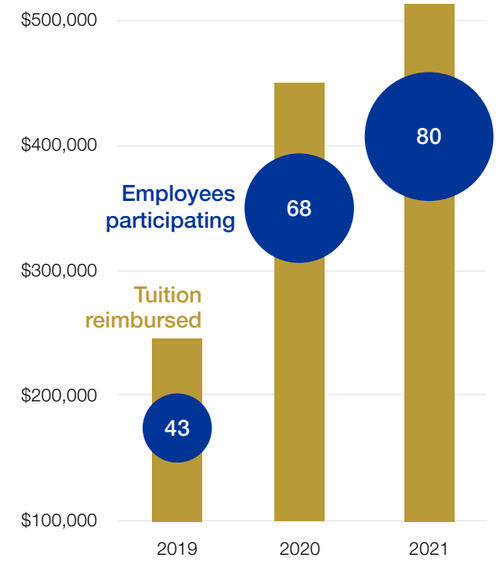
Carlisle employees at a breast cancer fundraiser in St Augustine, FL

Investments in Education

Carlisle is committed to supporting the continuing education of our employees, our employees' children, and in our communities. Over the past several years, we have significantly increased the investment in education programs.

While many employees receive reimbursement individually, Carlisle also has several company- and divisional-wide programs. These include the Furber Marshall Scholarship Program for children of employees completing high school and entering college in the fall of the same calendar year. **Since 2004, we have provided 37 students with 4-year renewable awards for undergraduate study.**

In 2020, CCM partnered with Lebanon Valley College in Carlisle, PA to launch an onsite MBA program to promote continued business education for middle management and aspiring leaders. **The first cohort of 20 employees completed the first year of the program in 2021 and is expected to graduate in May 2023.**



Employee Stock Option Grant

Carlisle recognizes the role our employees play in our success, and we have a history of issuing stock option grants to align individual performance with long-term Carlisle success and ensure all employees have the opportunity to participate in that success.

Most recently in May 2018, a one-time stock option grant or equity equivalent of 100 shares to all employees opened at $106.85 per share, ultimately vesting in May 2021 at $191.65. This represents nearly 80% appreciation in value.



Culture & Engagement

At Carlisle, we strive to reach our fullest potential together.

Employee Resource Groups

In recent years, Carlisle established Employee Resource Groups (ERGs) centered on a common purpose, providing a forum for individuals to collaborate and learn from one another. While ERGs supporting Veterans and leadership have been active for several years, one recent addition is Women Of Carlisle.

Women of Carlisle, a grassroots effort, is a group dedicated to supporting the advancement of women. The group provides an open environment where participants can connect and build greater confidence and capacity for growth.

As Kristin St. Marie, COS Global Training Manager and the group's founder explained, "Women of Carlisle was founded in 2020 with a focus on connecting women to women across all of Carlisle and providing knowledge around gender differences in the workplace. Throughout the past two years, the group has grown from the initial 4 women to over 200 across all of our businesses. It's exciting to see this growth and share our stories!"



Employee Appreciation Events

Throughout the year, our businesses hold employee appreciation events. While some events are to celebrate achievements, others are just for fun. We actively seek to build a sense of community and camaraderie within our workforce.







Safety First, Always

"The Carlisle Operating System (COS) provides the standards of our Continuous Improvement approach through framework standards, guidebooks, learning experiences, and materials. The robust and detailed application of COS ensures value creation and our commitment to ourselves and stakeholders."

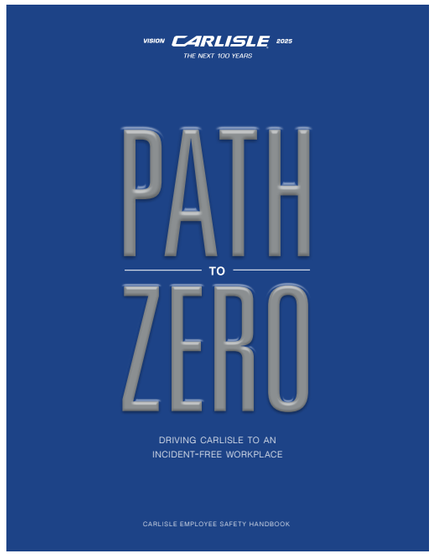
Doug Taylor
Vice President, Carlisle Operating System



Path to Zero

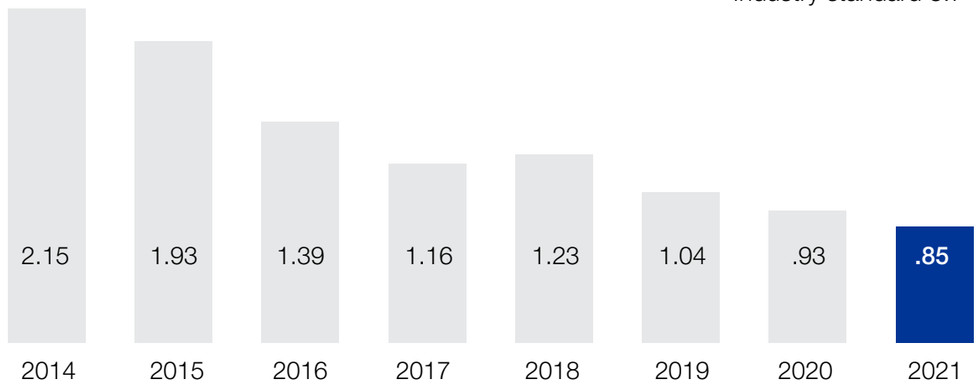
As in every continuous improvement culture, we know there is always room for growth. That is why our strategic plan, Vision 2025, leverages the Carlisle Operating System for safety, operating efficiencies, and financial results. It is also why we launched our 'Path to Zero' initiative at the end of 2020. Path to Zero is the core of our safety management system and represents Carlisle's commitment to creating the safest possible work environment as we drive to a zero-incident rate.

Throughout 2021 our teams continued to support each other and focus on safety, as evidenced by our industry leading .85% OSHA Incident Rate, which has declined nearly 9% year-over-year and more than 60% since 2014. Carlisle continues to lead in safety performance and has greatly outperformed the industry since we started tracking this metric.



Path to Zero continues to drive our industry-leading safety record

OSHA Incident Rate
Work-related injuries per 100 full-time workers over a year



*NAICS Plastics and Rubber Products Manufacturing FY 2019 reporting

Safety, Quality, Delivery, Cost (SQDC)

In 2021, more employees trained in our robust Problem Solving and Policy Deployment courses than ever before, despite the virtual nature of these trainings for much of the time. As a result of these trainings, our teams were equipped with the tools to face the complex operational challenges of 2021, especially disruptions to our supply chain. Our teams remained focused on Safety, Quality, Delivery and Cost—in short, focused on delivering the Carlisle Experience to our customers.



CIT's COS team meeting at the SQDC board in St. Augustine, FL

Carlisle in the Community

Carlisle's employees take great pride in identifying and working toward solutions that benefit the communities in which we operate. Carlisle is engaged in more than one hundred community organizations, charities and philanthropic initiatives across the globe. Carlisle is committed to four areas of community engagement: Civility, Veterans, Education, and Mental Health Services.

Carlisle is a supporter of Phoenix Children's Hospital, which has provided hope, healing, and the best healthcare for children since 1983. With a medical staff of nearly 1,000 specialists, Phoenix Children's is one of the largest pediatric healthcare systems in the country and the most comprehensive children's care facility in Arizona. Carlisle recently made a significant multi-year investment in Phoenix Children's Hospital with the hope of addressing the serious and ongoing crisis of pediatric and mental health and wellness in our communities.

PHOENIX CHILDREN'S

U.S. News & World Report has ranked **Phoenix Children's among the nation's "Best Children's Hospitals" for the twelfth consecutive year. The health system also earned recognition as the top children's hospital in Arizona for the second consecutive year.**



Carlisle's commitment to civility and Veterans is realized through partnerships with organizations such as UMOM New Day Centers, which provides housing, education, job placement and health and wellness support to citizens in need in Phoenix. Carlisle is extremely pleased to extend our partnership with UMOM in supporting transitional living and permanent supportive housing for Veterans and their families, ensuring them three thousand nights of shelter over the next fifteen months.

umom NEW DAY CENTERS

600 families sheltered in 2021	2,724 onsite health clinics visits
251,452 beds provided	500,000+ nutritious meals served

Carlisle supports Headstrong, which provides cost-free, barrier-free, and stigma-free mental health treatment for our military community. Headstrong has developed an effective, individually tailored and comprehensive treatment program for post-traumatic stress disorder and related military trauma.

HEADSTRONG

1,453 clients served in 2021	54 new clinical providers added
92% reported improvement in their lives	92% reported learning new skills in therapy

Carlisle in the Community

Employee Outreach

Carlisle employees engage with organizations in our communities around the globe, including blood drives, neighborhood clean ups, clothing and food drives, holiday toy drives, building and donating furniture to Veterans, back to school shopping for children in need, domestic violence shelter cleanings, and career days with inner city youth. One such example involved Carlisle's COS team participating in a volunteer event at the Sojourner Center, a safe haven from domestic violence for women and their children in Arizona since 1977. The COS team noticed a lack of quality light in the Center's warehouse and learned the lights had been failing for several years. After the event, the team worked with internal stakeholders at Carlisle to provide Sojourner Center with a new energy efficient LED lighting system.



Material Donations

Consistent with Carlisle's ESG commitment to our communities, we work with partners to identify and supply material for projects that have a significant impact on our communities. Below are some of the projects Carlisle supported in 2021.

We donated materials for the roof of the Ronald McDonald House Charities in Charleston, SC. The products included FleeceBACK TPO with Flexible FAST Adhesive over SecurShield Polyiso Insulation on the 5,400 square foot building. The new roof from Carlisle will help the Ronald McDonald House provide parents with a place of refuge for years to come.


Newly installed roofing materials at the Ronald McDonald House in Charleston, SC

In Kansas City, MO Carlisle donated roofing materials for the community center in a Veterans Community Project, which builds tiny homes for Veterans experiencing homelessness. The products included a fully adhered 60-mil TPO system with coverboard, nine rolls of TPO, and all supporting items.

Additionally, we donated three rolls of PVC membrane to Operation Enduring Warrior in Huntington, WV to build their first training and event facility for disabled military and law enforcement.

Carlisle Arizona Women's Golf Classic

Carlisle is the proud title sponsor of the Carlisle Arizona Women's Golf Classic, held each March at Longbow Golf Club in Mesa, AZ. The Classic is a key event on the Epson Tour, the official qualifying tour of the LPGA. Entering its 42nd season, the Tour's mission is to prepare the world's best young women professional golfers for a successful career on the LPGA Tour.

Carlisle supports athletes who are not only committed to excellence and winning, but who embody Carlisle's culture of integrity, continuous improvement, and perseverance. We are committed to creating a workplace where diverse perspectives and experiences are welcomed and respected, values which are deeply ingrained in the culture of the Epson Tour, the LPGA, and its players.



The Many Faces of Carlisle





















Corporate Governance



Our Board of Directors

Currently, 22% of Carlisle's Board of Directors is female, and 54% identify as gender, racially, or ethnically diverse.



Robin J. Adams

Former Vice Chairman, Chief Financial Officer, and Chief Administrative Officer
Borg Warner Inc.



Robert G. Bohn

Former Chairman, President, and Chief Executive Officer
Oshkosh Corporation



Jonathan R. Collins*

Vice President, eCommerce
Global Components
Arrow Electronics Inc.



James D. Frias

Former Chief Financial Officer, Treasurer, and Executive Vice President
Nucor Corporation



Maia A. Hansen

Chief Operating Officer,
Athersys, Inc.



D. Christian Koch

Chair, President, and Chief Executive Officer
Carlisle Companies Incorporated



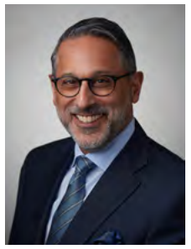
Gregg A. Ostrander

Former Chairman, President, and Chief Executive Officer
Michael Foods, Inc.



Corrine D. Ricard

Senior Vice President
The Mosaic Company
President
Mosaic Fertilizantes



Jesse G. Singh**

Chief Executive Officer
The AZEK Company

*Named one of 2021's Most Influential Black Corporate Directors by *Savoy Magazine*

**Named one of EY's National Entrepreneurs of the Year

Board Leadership Structure

Currently, the Company has a Chair of the Board, President, and Chief Executive Officer, and a lead independent director. In addition, the Compensation Committee conducts an annual performance review of the Chair, President, and CEO, and based upon this review, makes compensation recommendations (including base salary and annual incentive and equity compensation) for approval by the independent members of the Board. The Board has three standing committees: the Audit Committee; the Compensation Committee; and the Corporate Governance and Nominating Committee. Each committee of the Board functions pursuant to a written charter adopted by the Board.

Audit Committee

The Audit Committee has the sole authority to appoint and terminate the engagement of the Company's independent registered public accounting firm. The functions of the Audit Committee also include reviewing arrangements for and results of the independent registered public accounting firm's examination of the Company's books and records, the Company's internal accounting control procedures, the activities and recommendations of the Company's internal auditors, and the Company's accounting policies, control systems, and compliance activities, and monitoring the funding and investment performance of the Company's defined benefit pension plan.

Compensation Committee

The Compensation Committee administers the Company's bonus and long-term, stock-based incentive programs, and decides upon annual salary adjustments for various employees of the Company, including the Company's executive officers.

Corporate Governance and Nominating Committee

The Corporate Governance and Nominating Committee develops and maintains the Company's Statement of Corporate Governance Guidelines and Principles, leads the search for individuals qualified to become members of the Board, and recommends individuals for nomination by the Board to be presented for stockholder approval at the Company's annual meetings. The committee also reviews the Board's compensation and committee structure and recommends to the Board, for its approval, directors to serve as members of each committee, discusses succession planning, and recommends a new chief executive officer if a vacancy occurs.

Under the Company's Statement of Corporate Governance Guidelines and Principles, the Corporate Governance and Nominating Committee is committed to including for consideration qualified candidates with diverse backgrounds, including diversity of gender and race. The Corporate Governance and Nominating Committee has consistently included diversity as a desired qualification when conducting searches for director nominees, and the composition of the Board reflects its emphasis on diversity.

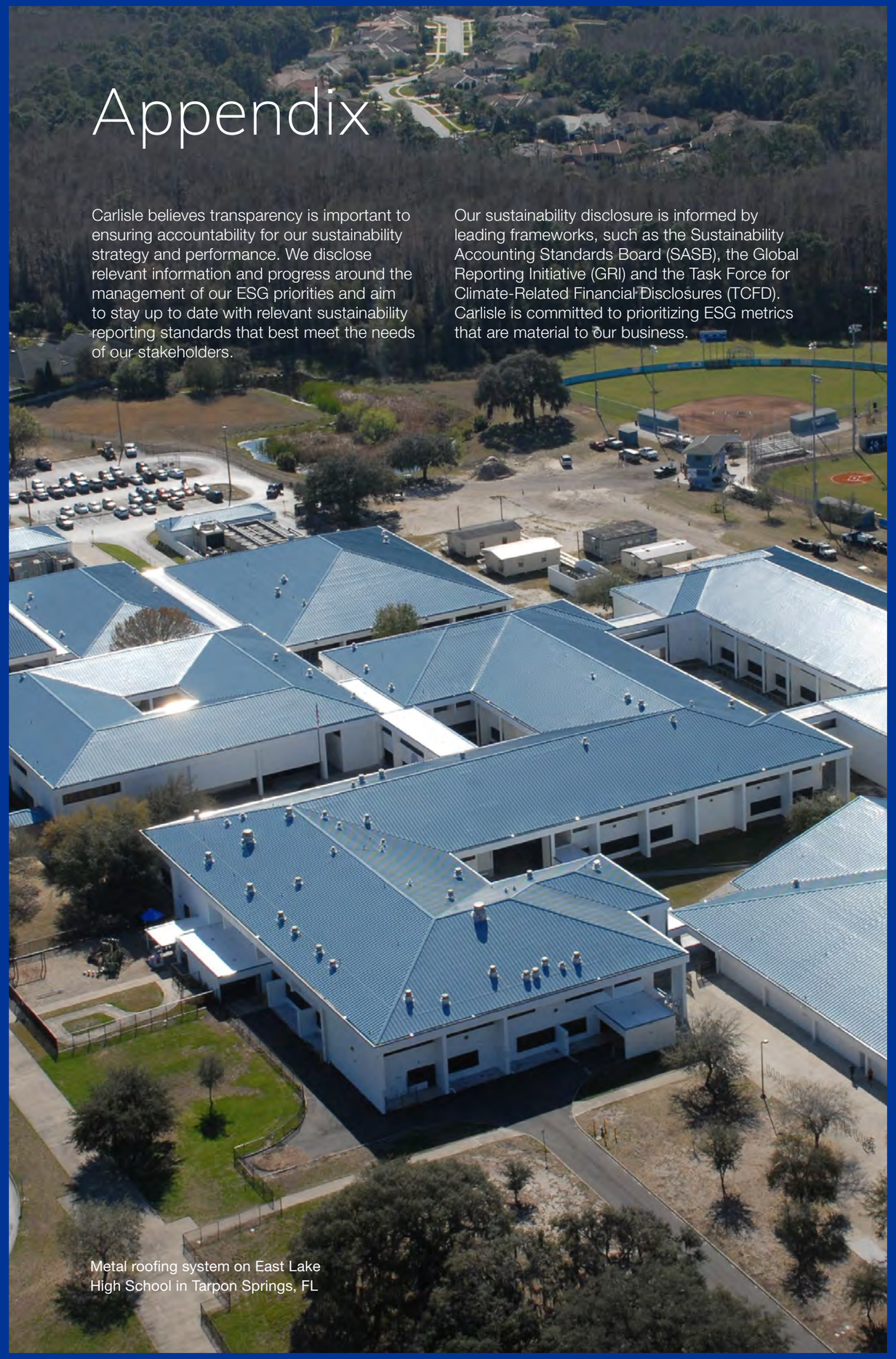
Our Board brings a diverse set of skills to senior management:

- Corporate Governance
- Manufacturing
- Mergers & Acquisitions
- International Business Issues
- Audit Committee Financial Expertise
- CFO of Multinational Business
- CEO of Multinational Business
- Company-Specific Industry
- Notable Multi-Industry
- Diverse Gender, Race or Ethnicity

Appendix

Carlisle believes transparency is important to ensuring accountability for our sustainability strategy and performance. We disclose relevant information and progress around the management of our ESG priorities and aim to stay up to date with relevant sustainability reporting standards that best meet the needs of our stakeholders.

Our sustainability disclosure is informed by leading frameworks, such as the Sustainability Accounting Standards Board (SASB), the Global Reporting Initiative (GRI) and the Task Force for Climate-Related Financial Disclosures (TCFD). Carlisle is committed to prioritizing ESG metrics that are material to our business.



Metal roofing system on East Lake High School in Tarpon Springs, FL

Climate Related Disclosures

Climate Governance

Sustainability and climate change risk oversight is a formal responsibility of our Chair, President, and Chief Executive Officer. The Chair, President, and Chief Executive Officer reviews and approves the strategic direction for Carlisle's sustainability approach. Carlisle's sustainability approach is guided to execution through the Vice President of Sustainability and the ESG Steering Committee. The Vice President of Sustainability, reporting to the Chair, President, and Chief Executive Officer, leads the ESG Steering Committee. The ESG Steering Committee is composed of key executives in the areas of human resources, Carlisle Operating System (COS), legal, and accounting departments. The ESG Steering Committee develops strategy, provides oversight, and monitors accountability in our ESG and climate related initiatives through the deployment of the Carlisle Environmental Sustainability Policy. On a periodic basis, Carlisle's Board of Directors reviews the status of the Company's ESG initiatives. The Vice President of Sustainability and members of the ESG Steering Committee work with senior leadership within Carlisle's business units to deploy and accelerate Carlisle's sustainability strategy.

Transition Risks

Climate-related policy and legal legislations: Changes in environmental and climate change laws or regulations, including laws relating to GHG emissions, could increase environmental compliance expenditures. Changes in climate related concerns, or in the regulation of such concerns, including GHG emissions, could subject Carlisle to additional costs and restrictions, including increased energy and raw material costs and other compliance requirements which could negatively impact Carlisle's reputation, business, capital expenditures, results of operations, and financial position.

Increased cost of raw materials: Carlisle utilizes petroleum-based products, steel and other commodities in its manufacturing processes. Raw materials, including inbound freight, accounted for approximately 78% of Carlisle's cost of goods sold in 2021. Significant increases in the costs of these materials may not be recovered through selling price increases and significant disruption to Carlisle's supply chains or significant shortages of materials could adversely affect Carlisle's business, financial condition, results of operations and cash flows. Changes in climate-related concerns, or in the regulation of such concerns, could further subject Carlisle to increases in cost of goods sold from raw materials.

Opportunities

Increased demand for low emissions goods and services: In the United States, residential and commercial buildings contribute nearly 30% of the total greenhouse gas emissions. The 1.5°C scenario calls for a 50% reduction in greenhouse gas emissions by 2030. To meet this target, building codes and regulations will require enhanced energy-efficiency standards. For example, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) publishes the ASHRAE 90.1 standard, which outlines the minimum requirements for energy efficient designs, has been adopted by forty two US States and has increased thermal insulation requirements over time. As ASHRAE 90.1 and similar standards continue to gain adoption and improve efficiency requirements, demand will increase for Carlisle's thermal insulation and energy conserving systems leading to increased revenues.

Resource substitutes leading to resilience: Carlisle's legacy of recycling and continuous improvement began over 100 years ago with the introduction of scrap rubber into the inner-tube production line. Today, millions of pounds of scrap material feed Carlisle's production processes and provide as much as 96% post-consumer or production material to a wide variety of products. Carlisle will continue this legacy by growing end-of-life programs. Recycled end-of-life materials can be used to supplement raw material purchases of carbon intensive products.

SASB Index*

Accounting Metric	Response
Greenhouse Gas Emissions	
Gross global Scope 1 emissions	75,288 metric tons $CO_{2,eq}$
% of Scope 1 emissions covered by emissions limiting regulations	0%
Air Quality	
Nitrous oxides (NOx) emissions	36 metric tons
Sulfur oxides (SOx) emissions	4 metric tons
Particulate matter (PM) emissions	42 metric tons
Dioxins/furans emissions	< 1 metric ton
Volatile organic compounds (VOC) emissions	1,220 metric tons
Polycyclic aromatic hydrocarbons (PAH) emissions	< 1 metric ton
Heavy Metal Emissions	< 1 metric ton
Energy Management	
Total Energy Consumed	2,259,328 gigajoules
Percentage of energy from grid electricity	45%
Percentage of energy from alternative energy	0%
Percentage of energy from renewable energy	0%
Water Management	
Total fresh water withdrawn	1,054 10^3 cubic meters
Percentage withdrawn in regions with high/extremely high baseline water stress	2.0%
Percentage consumption in regions with high/extremely high baseline water stress	1.4%
Waste Management	
Total waste generated	61,442 metric tons
Percentage of waste recycled or waste-to-energy	42%
Total hazardous waste generated	1,472 metric tons
Hazardous waste as a percentage of total waste	2.4%
Workplace Health & Safety	
Total Recordable Incident Rate (TRIR)	0.85
Near Miss Frequency Rate (NMFR)	1.56
Product Innovation	
% of products that qualify for credits in sustainable building design	52%
Pricing Integrity And Transparency	
Total amount of monetary losses as a result of legal proceedings associated with cartel activities, price fixing, and antitrust activities	$0

*Carlisle's complete SASB Index can be found at esgdatacenter.carlisle.com

GRI Index*

Indicator	GRI #	2019	2020	**2021**
Greenhouse Gas Emissions				
Total direct and indirect market-based GHG emissions	305-1 305-2	228,327	213,882	**213,450 MT CO_2e**
Total direct and indirect location-based GHG emissions	305-1 305-2	200,136	191,807	**182,606 MT CO_2e**
Direct (Scope 1) GHG emissions	305-2	78,126	78,981	**75,288 MT CO_2e**
Indirect (Scope 2) location-based GHG emissions	305-2	122,009	112,826	**107,318 MT CO_2e**
Indirect (Scope 2) market-based GHG emissions	305-2	150,201	134,901	**138,162 MT CO_2e**
GHG intensity, direct (Scope 1) per $M revenue**	305-4	15.2	17.8	**15.7**
GHG intensity indirect (Scope 2 location-based) per $M revenue**	305-4	26.2	27.4	**22.3**
GHG intensity indirect (Scope 2 market-based) per $M revenue**	305-4	32.5	33.0	**28.7**
Energy				
Energy consumption	302-1	631,325	607,073	**627,591 MWh**
Natural gas	302-1	301,156	295,862	**310,282 MWh**
Mobile fuels	302-1	26,063	25,643	**26,912 MWh**
Electricity	302-1	298,164	279,326	**283,718 MWh**
Purchased steam	302-1	5,942	6,241	**5,784 MWh**
Energy intensity per $M revenue**	302-3	126	137	**130**
Air Emissions				
Volatile organic compounds (VOCs)	305-7	1,049	1,001	**1,220 MT**
Nitrous oxides (NOx)	305-7	52	50	**36 MT**
Sulfur oxides (SOx)	305-7	1	1	**4 MT**
Environmental Compliance				
Significant fines for noncompliance with environmental laws or regulations	307-1	0	0	**0**
Water				
Water withdrawal	303-3	1,119,830	1,160,546	**1,054,316 m^3**
Water withdrawal intensity per $M revenue**	303-3	246	286	**219**
Water consumed	303-3	–	–	**159,947 m^3**
Water discharged	303-3	–	–	**894,373 m^3**

*Carlisle's complete GRI Index can be found at esgdatacenter.carlisle.com
**Historical information related to intensity for 2019-20 reflects Carlisle business prior to acquisition of Henry Company

Indicator	GRI #	2019	2020	2021
Waste Management				
Hazardous waste generated	306-3	2,238	1,494	**1,472 MT**
Hazardous waste recycled or waste-to-energy	306-4	–	–	**807 MT**
Nonhazardous waste generated	306-3	–	–	**59,970 MT**
Nonhazardous recycled or waste-to-energy	306-4	–	–	**25,248 MT**
Landfill diversion rate	–	–	–	**42.4%**
Employees Indicator				
Total employees	102-8	–	12,435	**11,249**
Permanent employees	102-8	–	11,988	**10,981**
Temporary employees	102-8	–	447	**268**
New Hires & Departures				
New hires – total	401-1	–	2,285	**2,133**
New hires – % female	401-1	–	32%	**33%**
Departures – total	401-1	–	3,506	**3,407**
Departures – % female	401-1	–	36%	**37%**
Employee Diversity				
% female employees	405-1	–	32%	**31%**
% ethnic diverse employees (US)	405-1	–	–	**17%**
% racial diverse employees (US)	405-1	–	–	**15%**
Board Diversity				
Female board members	405-1	–	20%	**22%**
Board members identifying as gender, racially or ethnically diverse	405-1	–	50%	**54%**
Safety				
Total recordable incident rate	403-9	–	0.93	**0.85 injuries per 100 full-time employees**
Total recordable injuries	403-9	–	130	

Data Verification Statement

The SCS Greenhouse Gas Footprint Verification Program has conducted a verification of GHG emissions based upon the following Scope, Objectives, and Criteria:

Verification Scope

Carlisle Companies Incorporated

16430 North Scottsdale Road
Scottsdale, AZ, 85254, United States

Reporting Period: January 1, 2021 – December 31, 2021

Geographic Boundary: Worldwide Operations including 3 Subsidiaries: Carlisle Construction Materials, Carlisle Interconnect Technologies, Carlisle Fluid Technologies. As of Dec 31, 2020 - 93 manufacturing operations (per 10k) & ~70 additional offices

VERIFIED by SCS GLOBAL SERVICES ™ CARBON FOOTPRINT

Facilities, physical infrastructure, activities, technologies, and processes:
Carlisle Construction Materials: high-performance single-ply roofing solutions that include EPDM, TPO, PVC and roof garden systems full line of poly-iso and expanded polystyrene insulation as well as a host of steep slope underlayment, duct sealants, adhesives and hardware.

Carlisle Interconnect Technologies: designers and manufacturers of high-performance wire and cable, including optical fiber. product portfolio to include specialty and filtered connectors, contacts, cable assemblies, complex harnesses, racks, trays and installation kits.

Carlisle Fluid Technologies: Paints coatings, powders, mastics, and bonding materials

Technologies present: Manufacturing (Extruders, Molders, Boilers, Regenerative Thermal Oxidizers, etc.)

GHG Sources, Sinks, and/or Reservoirs:
Scope 1 - Natural Gas, Mobile Fuels (Gasoline, Propane, Jet Fuel), Thermal Oxidizers (CO2 from Pentane Destruction), HFC (Process & HVAC Systems)
Scope 2 – Electricity, Purchased Steam

Boundary Method: Operational Control

GHG Gases: CO_2, CH_4, N_2O, HFCs

Level of Assurance: Limited

Materiality: +/-5% quantitative, qualitative based upon requirements specified within verification criteria

Verification Objectives

- Evaluate the organization's GHG inventory for material discrepancies based upon the specified level of assurance
- Evaluate the organization's GHG inventory is in conformance with the specified verification criteria

SCSglobal SERVICES

Verification Criteria

- World Resources Institute/World Business Council for Sustainable Development's "The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)" dated March 2004
- World Resources Institute/World Business Council for Sustainable Development's "Scope 2 Guidance Document: An Amendment to the GHG Protocol Corporate Standard" dated 2015
- The Investor CDP Information Request
- ISO 14064-3: 2019 Specification with guidance for the validation and verification of GHG assertions

Verification Opinion

This Verification Statement documents that SCS Global Services has conducted verification activities in conformance with ISO 14064-3: 2019, Specification with guidance for the validation and verification of greenhouse gas assertions. Based upon the reporting scope, criteria, objectives, and agreed upon level of assurance, SCS has issued the following verification opinion:

☒ Positive Verification (Limited Assurance) – No evidence was found that the GHG assertion was not prepared in all material respects with the reporting criteria

Verification Qualifications

– None

Verified Emissions

Emissions Summary – Tonnes CO_2e					
Scope	CO_2	CH_4	N_2O	HFCs	Total (tCO_2e)
Scope 1	65,115.29	37.30	42.79	10,092.62	75,288.00
Scope 2 - Location	106,762.54	185.35	369.67	—	107,317.56
Scope 2 - Market	137,697.63	60.35	404.19	—	138,162.17

Lead Verifier

Tavio Benetti DATE: 04-01-2022

Tavio Benetti, *Program Manager, GHG Footprint Verification Program*
Environmental Certification Services
SCS Global Services, 2000 Powell Street, Suite 600,
Emeryville, CA 94608 USA

Independent Reviewer

DATE: 04-19-2022.

Nicole Muñoz, *Vice President - ECS*
Environmental Certification Services
SCS Global Services, 2000 Powell Street, Suite 600,
Emeryville, CA 94608 USA

SCSglobal SERVICES

Corporate Information

Corporate Headquarters

Carlisle Companies Incorporated
16430 N Scottsdale Road, Suite 400
Scottsdale, AZ 85254
480 781 5000
carlisle.com

ESG Resources

Carlisle has published the following materials relevant to our ESG initiatives, which serve as additional background on our ESG related policies, strategies, and communications. Please visit carlisle.com/sustainability for more details.

2021 Annual Report - Form 10K
Code of Business Conduct and Ethics
Environmental Sustainability Policy
Conflict Minerals Policy
Conflict Minerals Report
Carlisle Operating System
Statement of Corporate Governance Guidelines and Principles

Stock Listing

The Company's ticker symbol on the New York Stock Exchange is CSL.

Shareholder Services

Computershare Investor Services
2 N LaSalle Drive
Chicago, IL 60602
800 897 9071
computershare.com/us

Investor Relations

Jim Giannakouros, CFA
Vice President of Investor Relations
480 781 5135
jgiannakouros@carlisle.com



Carlisle Companies Incorporated
16430 North Scottsdale Road Suite 400 Scottsdale, AZ 85254
480 781 5000 carlisle.com

Ceco Building Systems (1)



VITH CECO, YOUR SUSTAINABLE DESIGN STRATEGIES ARE VIRT

ccording to the U.S. Green Building Council (USGBC), LEED buildings save energy, water, resources, ge
: Ceco, we support and help you achieve your sustainable building objectives. Our metal building proc
ethods can help you:

Maximize your building's environmental performance by reducing waste and conserving natural res
Optimize your building's performance by improving it's economical impact—and potentially increase

Earn valuable certification with **LEED and Energy Star (https://www.cecobuildings.com/wp-content LEED-Compliant-Cool-Roofs_032518.pdf).**

EACH YOUR SUSTAINABLE BUILDING GOALS

ecyclability, Durability & Low Costs

eco roof and wall panel systems, structural members and other steel products are virtually 100% recy cycled material.

etal roof and wall panels help reduce waste due to their unmatched durability and resistance to fire, v

etal building systems are also known for low maintenance and operating costs so, Ceco can optimize roughout its life cycle.

nergy Efficiency

e-engineered metal buildings utilize a number of insulation options, lower energy costs and environm pical of most metal buildings provides added flexibility in both the amount and type of insulation you oviding superior thermal performance and reducing energy consumption, and qualify as continuous i

eco also provides options in **ENERGY STAR and LEED compliant cool roofs (https://www.cecobuilding ntent/uploads/2018/07/Ceco_Energy-Star-and-LEED-Compliant-Cool-Roofs_032518.pdf)** including stead of transferring it to the building.

egional Delivery

s part of the Cornerstone Building Brands family, Ceco belongs to an extensive network of manufactu ever travel more than 500 miles. Not only does this network create a more economical product with re nvironmental impact of fuel emissions during delivery.

ECO'S LEED CREDIT GUIDE

ne chart below provides a more detailed look at how Ceco Building Systems can help you earn specifi

LEED®-Ceco Building Systems Credit Guide

Name	Description	Number of Points[2]	
SS Credit 5.1	Site Development: Protect or Restore Habitat	1	Being shop-fabricated, allow field assembly us
SS Credit 7.1	Heat Island Effect:Non-roof	Up to 2 (1 plus 1 Exemplary Performance point[4])	By deploying parking c products, 1 point is ear and an exemplary perf for 100% of spaces cov
SS Credit 7.2	Heat Island Effect:Roof	1	Our Snow White, Ivory colors meet the low-slo colors meet the steep s
EA Credit 1	Optimize Energy Performance	Up to 10	By utilizing Ceco cool r panels in your energy r loads and downsize H most points possible.
MR Credit 4	Recycled Content: 10% and 20%	Up to 2	Depending on the natu building systems will c recycled steel by weigh consumer.) On a typica about 40% of our contr
EQ Credit 8.2	Daylight and Views: Daylight 75% of spaces	1	Ceco's insulated light - excellent diffusers whe

otes:

This table assumes LEED-NC v3.0 unless otherwise noted.

LEED requirements are based on all materials constructed under the project contract, of which the metal building is onl ce all materials are considered. Credit values shown on this table reflect those available, not necessarily those that are

The use of cool roof colors may actually not be allowed in the energy code used for your project. In colder climates, dark rformance. Consult your design professional for local requirements.

The claiming of Exemplary Performance points may be limited.

Using the US Steel Recycling Institute industry averages for October 2012.

For more information about LEED and the USGBC's requirements for LEED Certification, please visit their site **here (http**



(https://www.cecobuildings.com/wp-content/uploads/2018/03/EnergyStarLogo-wTE

READY TO START?

Find out how Ceco can help build your projects.

Ceco Building Systems (2)



At Ceco, we are dedicated to providing sustainable construction products and practices. Our goal is to work hand in hand with our customers in helping them not only become ecologically benevolent as well as accomplish Green Building accreditation; which leads to a more cost-effective overall solution. Ceco's durable and energy-efficient solutions are designed for unparalleled performance that can stand the test of time.Get familiar with how Ceco can help you in fusing vitality effective items into your plans and face those requesting construction laws.

The Advantage of a Metal Building for your Green Project

With regards to maintainability and vitality productivity, meeting construction laws might be an overwhelming and requesting task; with a strict spending plan, practicing environmental safety could be a brilliant choice for your structure Project. Metal is by far the best product if you have chosen to focus on Building Green. Metal structures don't just look extraordinary and in vogue, yet they require less support and material than conventional structures, bringing about a more savvy arrangement, expanded strength and the items are recyclable. What better option for you than a Metal Building Solution?

CertainTeed EPDs

SUSTAINABLE. TRANSPARENT.

What is an Environmental Product Declaration?

An Environmental Product Declaration, or EPD, is a rigorous third part examination of a product or product family's environmental impact. Evaluations are based on a Life Cycle Assessment (LCA) that is performed using established Product Category Rules (PCRs).

WHAT'S IN AN EPD?

- Detailed breakdown of material content
- Production process and life cycle stage diagrams
- Health and safety information of producing and using the products
- Diagram of relative primary energy usage by life cycle stage

What is the HPD Collaborative and a Health Product Declaration?

The HPD Collaborative is a collaboration of organizations, corporations, and companies intent on changing the impact that manufacturing and construction have on our environment and health. The HPD is an open standard, through which manufacturers report what makes up their product and any hazards that consumers need to be made aware. This is another step towards sharing our claims, and showing consumers and end-users that CertainTeed Insulation is taking the necessary steps to improve the environment and overall health. CertainTeed Insulation was the 1st in the industry to provide HPDs to our customers as a vehicle for transparency.

Recycled Content is also a key area of transparency that CertainTeed provides. For Recycled Content Certificates, visit the product detail pages.

k below to view/download EPDs & HPDs:

Get Help

ENVIRONMENTAL PRODUCT DECLARATIONS:

Sustainable Insulation EPD

CertainTeed Blowing Wool EPD

Blanket Insulation EPD

Duct Wrap Insulation EPD

HEALTH PRODUCT DECLARATIONS:

Sustainable Insulation HPD

Blowing Wool HPD

CertainTeed leads the industry in transparency with EPDs and HPDs



Get Help

CertainTeed leads the industry in transparency with EPDs and HPDs

At CertainTeed we believe our customers should have the right information to strengthen their decisions when it comes to building materials. That's why we were the first in the industry to launch Environmental Product Declarations (EPDs) and Health Product Declarations (HPDs).

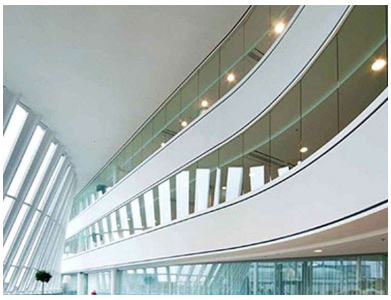
Get Help

CertainTeed Manufacturing Process

MANUFACTURING SUSTAINABILITY PROCESS

ECO-INNOVATION

CertainTeed takes pride in providing the best products to meet today's market needs, but we are also looking ahead to offer our customers innovations for tomorrow. As part of our pledge to product stewardship, our design teams use lifecycle thinking to improve the sustainability of a product.



GYPSUM – ENVIRONMENTAL TRANSPARENCY

CertainTeed gypsum participates in the UL



CEILINGS – REDUCED CARBON FOOTPRINT

CertainTeed's L'Anse, Michigan ceilings



FENCE, DECKING AND RAILING – RESPONSIBLE MANUFACTURING

CertainTeed vinyl fence, decking and railing

Get Help

environment ECV program for multi-attribute sustainability claims for all manufacturing plants and gypsum board products.

plant obtains its electricity from a nearby biomass-fueled power plant for all operations. Waste heat from the biomass plant is utilized in the manufacturing process.

products are manufactured using 100 percent hydropower. The plant's recycling program has diverted more than one million pounds of waste from landfills.



INSULATION – SUSTAINABLE THINKING

CertainTeed's Sustainable Insulation® features recycled and



ROOFING – ENERGY EFFICIENCY

Blending ecological technology and innovative



VINYL SIDING – CLOSING THE LOOP

CertainTeed has developed a take-back program for

Get Help

renewable content, including a plant-based binder that has no formaldehyde, harsh acrylic dyes, or unnecessary fire-retardant chemicals added.

performance, CoolStar® granule technology and Landmark Solaris® GOLD roofing products reflect solar energy and radiant heat far better than standard materials.

end-of-life and job-site scrap vinyl siding to eliminate landfill waste. Some of the resulting material is reused in the manufacture of CertainTeed siding products.



Get Help

LEED FOR HOMES

LEED for Homes is a standard for the design and construction of high performance “green” homes. A green home uses less energy, water, and natural resources; creates less waste; and is healthier and more comfortable for the occupants.



LEED FOR COMMERCIAL

LEED certification is recognized nationwide as proof that a building is designed to be environmentally responsible and a healthy place to live and work.

Get Help

NAHB GREEN STANDARDS

NAHB collaborated with the International Code Council (ICC) to develop an ANSI standard for green building practices. Known as the National Green Building Standard (NGBS), it certifies homes as green buildings.



Get Help

Cetco Building Materials Group

Corporate Responsibility & Sustainability 2021



MINERALS TECHNOLOGIES®

PEOPLE HONESTY CUSTOMER FOCUS ACCOUNTABILITY EXCELLENCE

About MTI: Who We Are

Minerals Technologies (NYSE: MTX)

A technology-driven specialty minerals company

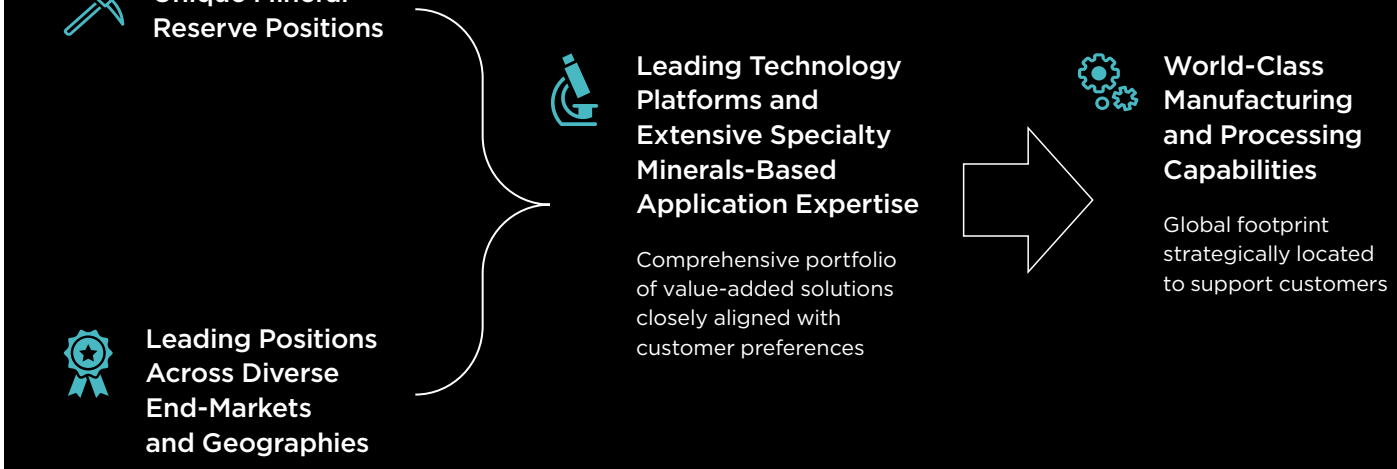
MTX	4,000	$1.9B	34	12
NYSE	Employees	in Sales	Countries	R&D Centers

We are a leading global resource- and technology-based company that develops, produces and markets a broad range of specialty mineral, mineral-based and synthetic mineral products and provides supporting systems and services.

As a leader in minerals-based application technology with world-class manufacturing capabilities, we are focused on delivering a comprehensive portfolio of value-added solutions to a diverse customer base across all sectors. We make it our priority to provide customers with differentiated products, along with best-in-class customer service and technical expertise. Our company's success is driven by our people-focused culture, Operational Excellence foundation, safety-first approach and commitment to living our core values in everything we do.

We continuously invest in further embedding sustainability throughout our operations, motivated in large part by the commitment and engagement of our global employee base. We recognize that being a responsible business and corporate citizen is critical to our ongoing success. For us, it is a constant journey where we continue to improve, adapt and strive to achieve ambitious objectives.

MTI's Differentiated Value Proposition



Vertically Integrated From Mine-to-Market

Providing Improved Value & Performance For Customers

Attractive Financial Profile

Strong margins, cash flow and balance sheet

Multiple Growth Levers

Geographic expansion and penetration, new product development and M&A

Sustainability & Corporate Social Responsibility Principles

Deeply ingrained in all business areas

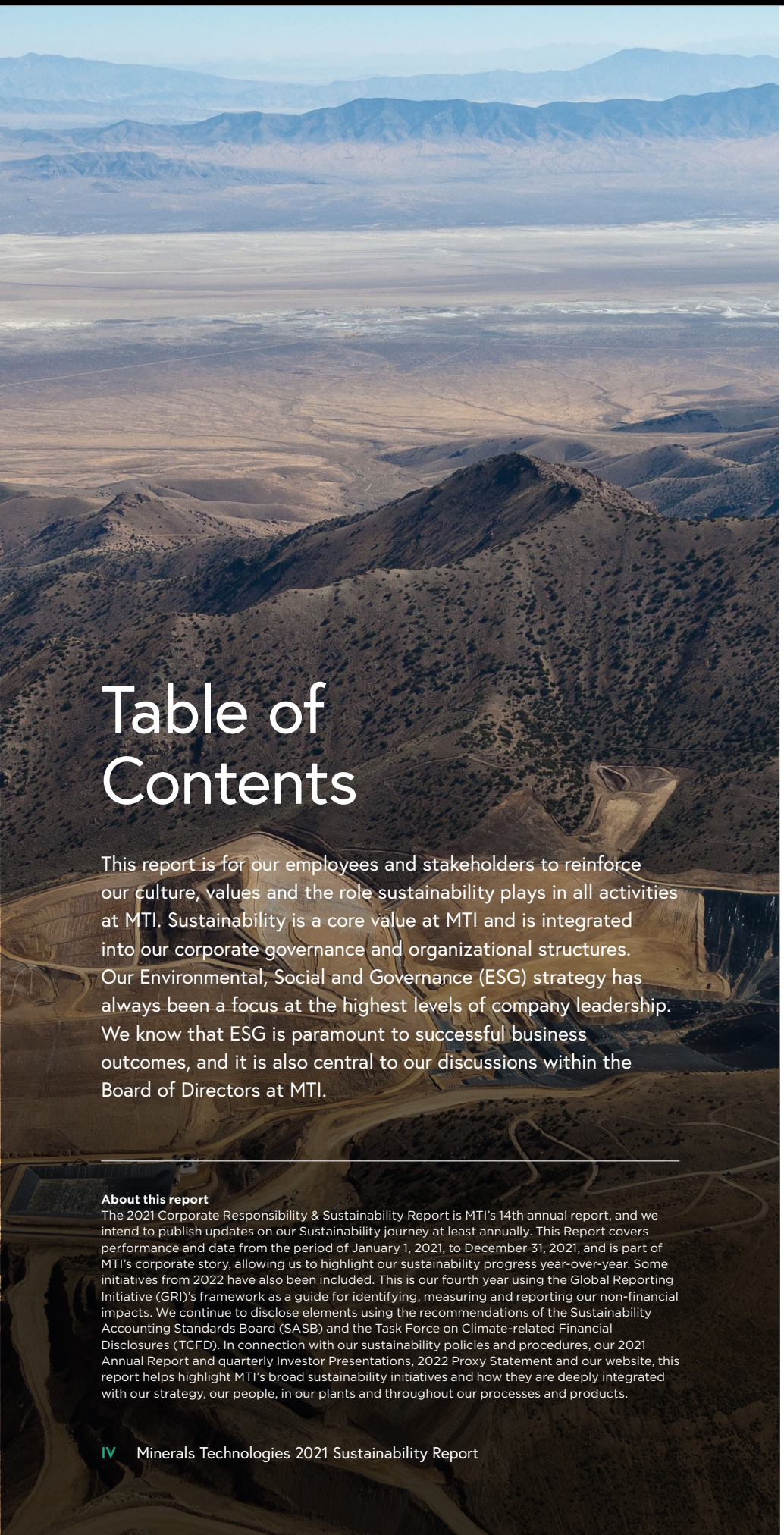


Table of Contents

This report is for our employees and stakeholders to reinforce our culture, values and the role sustainability plays in all activities at MTI. Sustainability is a core value at MTI and is integrated into our corporate governance and organizational structures. Our Environmental, Social and Governance (ESG) strategy has always been a focus at the highest levels of company leadership. We know that ESG is paramount to successful business outcomes, and it is also central to our discussions within the Board of Directors at MTI.

About this report
The 2021 Corporate Responsibility & Sustainability Report is MTI's 14th annual report, and we intend to publish updates on our Sustainability journey at least annually. This Report covers performance and data from the period of January 1, 2021, to December 31, 2021, and is part of MTI's corporate story, allowing us to highlight our sustainability progress year-over-year. Some initiatives from 2022 have also been included. This is our fourth year using the Global Reporting Initiative (GRI)'s framework as a guide for identifying, measuring and reporting our non-financial impacts. We continue to disclose elements using the recommendations of the Sustainability Accounting Standards Board (SASB) and the Task Force on Climate-related Financial Disclosures (TCFD). In connection with our sustainability policies and procedures, our 2021 Annual Report and quarterly Investor Presentations, 2022 Proxy Statement and our website, this report helps highlight MTI's broad sustainability initiatives and how they are deeply integrated with our strategy, our people, in our plants and throughout our processes and products.

1
Message From Our Chairman and CEO

5
Sustainable Growth

13
Resetting Targets to Reduce Our Emissions and Discharges

15
Sustainability Governance

25
Safety

36
Environmental

50
Social

65
New Product Development, Product Safety, Supply Chain

76
Appendix

83
GRI, SASB, TCFD Indexes

Our Values

People-Focused Culture: Our Employees Are at the Core of Everything We Do

Our people are the most important part of MTI. We are a dynamic global team of 4,000 employees, and our core values — people, excellence, honesty, customer focus and accountability — guide our actions.

People

We place the health and safety of people ahead of all else. We cultivate respect for individuals and for a diversity of cultures, beliefs and perspectives.

Excellence

We constantly seek new, innovative technologies and efficient business processes to remain a market leader. We drive success by focusing on continuous improvement in all facets of the business—processes, systems, products, services and people.

Customer Focus

We foster relationships with our customers based on trust and mutual benefit. We strive to enhance value to customers through improved product quality, customer service and innovation.

Honesty

We value honest, open and ongoing communications with our employees, customers, shareholders, suppliers and the communities in which we do business. We uphold the spirit and intent of the law and conduct our affairs ethically.

Accountability

We deliver profitable growth and higher returns for our shareholders. We manage our operations, our capital and our business opportunities in a sustainable manner. We serve as good stewards of natural resources, and we employ sound environmental practices to protect the communities in which we operate.

A Message From Our Chairman and CEO



DOUGLAS T. DIETRICH

At MTI, sustainability has always been embedded in our core values. It's ingrained in our business strategy and is the foundation of how we operate as a company, enabling us to better serve our customers and communities, as well as better protect our planet and employees. With each year, we continue to elevate our efforts to support our commitment to all facets of sustainability: workplace safety, environmental stewardship, governance, as well as diversity and inclusion.

In 2021, our dedication to sustainability was evidenced by MTI surpassing the majority of our environmental sustainability goals, well in advance of our 2025 target date. Our ability to exceed these goals early is the direct result of our strong culture of Operational Excellence, with its emphasis on continuous improvement, as well as the groundswell of employee engagement we've created around our sustainability initiatives at every level of the organization.

Because of our success in exceeding these goals, and because we always aim to do better, I am pleased to say we've set the bar for our environmental targets even higher for 2025. This reaffirms the confidence we have in our people-focused culture, which is centered on Operational Excellence, and the importance we place on having a disciplined but ambitious approach to continuous improvement—never complacent and always striving. In this 14th Annual Sustainability Report, we'll highlight how this culture has enabled us to execute on our growth strategy, meet our environmental goals, and is the foundation to achieving even higher levels of sustainability performance going forward.

Sustainability as Business Strategy

Sustainability is deeply integrated into our business strategy and philosophy. It's a holistic framework for managing the interdependencies of—and our obligations to—the sustainable use of the company's resources and the resources provided to us and to our customers. This framework enables us to drive long-term health for our company and our stakeholders.

More specifically, sustainability involves employee safety at our plant sites—our number one priority. It means upholding the highest standards of ethical compliance in our corporate affairs. It's about building relationships within the communities in which we operate, so that they flourish and grow alongside us.

It means ensuring we continue developing innovative products for our customers that offer environmental benefits. Sustainability is also about being resilient and being able to adapt to changing conditions in turbulent times—and, over the past few years, our company has clearly demonstrated nimbleness and flexibility, as we've swiftly pivoted to shifting circumstances and evolving situations, remaining focused on achieving our goals.

Sustainability Accomplishments, Goals and Challenges

Environment

As we moved through COVID, supply chain disruptions and geopolitical challenges, we've maintained our focus on meeting and surpassing our sustainability goals. We've exceeded our objectives by engaging every employee in ways to reduce our carbon footprint, to improve our energy efficiency at our facilities and to continue to source green electricity where possible. This resulted in a net reduction of Scope 1 and Scope 2 GHG emissions of 21% percent since 2018.

Some emission-reduction projects to highlight include:

- Converting the primary energy sources of our sites from coal power to natural gas.
- Increasing the percentage of renewable energy powering our facilities, as well as exploring opportunities to source more.
- Identifying actions to save one billion gallons of processed water at our facilities through water management and recovery projects, including the use of recycled water.
- Increasing the beneficial reuse of manufacturing waste byproducts in our businesses.

Because of these ongoing projects and our ability to surpass our sustainability goals, we've reset our Scope 1 and Scope 2 emissions reduction percentage targets for 2025 from 20% to 25% and 15% to 40%, respectively. In addition, we are continuing to explore what actions to take to achieve greater reductions in our environmental footprint, studying the impact that our operations have across the entire value chain through monitoring and determining the impact of Scope 3 emissions. In this report, you will see that we have introduced emission efficiency targets to maintain our focus on reductions, as well as account for production increases that come with company growth.

> "MTI's Operational Excellence (OE) journey, rooted in the active engagement of our dedicated employees, began almost fifteen years ago when we put in place a comprehensive and highly structured business system of lean principles closely integrated with safe and reliable work practices."
>
> **- DOUGLAS T. DIETRICH**

Safety

The health and safety of our employees is our highest priority. Accordingly, we maintain that a 100% injury-free workplace at MTI is achievable, and we provide employees with the tools, training and resources they need to operate safely. During the height of the pandemic, we implemented multiple new safety practices, and, in 2021, we adapted those practices to be more responsive and suited to the conditions of the changing nature of the pandemic. For our new employees, we provided increased attention and engagement through an intensive focus on non-routine task reviews, job observations, unsafe act identification and Gemba walks throughout our facilities. Ultimately, we firmly believe that every accident is preventable, and we deploy all our energies, ingenuity and efforts to ensuring all our MTI team members, experienced and new, return home healthy and well every day.

Innovation

New product innovation is an integral part of our growth strategy. Over the past several years, we improved the pace of product development, significantly reducing the time from product ideation to commercialization. Five years ago, it took an average of four years to bring a product to market. In 2021, that average was under two years. This improvement has also led to increased impact from these new products. This year, sales generated from new products has increased more than 60% over last year.

In addition, nearly 65% of our new products support customer sustainability goals and almost 35% of them directly benefited our own sustainability objectives, such as creating products that are less energy intensive, produce less waste, use less water and offset environmental impacts. Some examples of these new products include: bleaching earth that is more efficient in the production of edible oils and bio-diesel fuels, low-emission greensand bond blends for the foundry industry, FLUORO-SORB® products to remove PFAS chemicals from ground water and drinking water, as well as environmentally friendly cat litter packaging.

Diversity and Inclusion

At MTI, people are at the center of everything we do, and respect for who they are and for their voices is paramount. We believe that a diverse workforce and an inclusive culture is instrumental in helping us drive long-term value at MTI. True ingenuity comes from open dialogue where every employee feels empowered to express themselves and bring their most authentic selves to work.

Ensuring that our work environment is welcoming and celebrates differences is essential to our business's competitiveness and to our ability to thrive and attract top talent. We learn, grow and become enriched, both personally and professionally, from having a workplace of diverse colleagues, and I remain as committed as ever to ensuring that a culture of inclusion and belonging is fostered at MTI at all levels.

As a global organization, in 2021, we've made significant achievements in advancing our sustainability efforts on all fronts. Without a doubt, there's still work to be done, but I invite you to read this full report to appreciate the impact of our activities, to better understand our sustainability philosophy and to see how that philosophy is truly ingrained in everything we do at MTI.

Sincerely,



Douglas T. Dietrich
Chairman and CEO

A Message From BOD Chair of the Corporate Governance and Nominating Committee



ALISON A. DEANS

MTI's corporate leadership has always made the company's Environmental, Social and Governance (ESG) an essential part of MTI's strategy and a polestar of MTI's success. ESG is crucial to achieving business outcomes, and it is also central to our discussions within the Board of Directors at MTI.

Through quarterly meetings and regular updates, the Board evaluates MTI's environmental footprint, climate trends, sustainable solutions, employee safety and well-being, human rights, policies and practices and compliance, as well as diversity and inclusion. This informs the Board's oversight and guidance with regard to how management and the company evaluate and integrate corporate responsibility and sustainability into MTI's business strategy, decision-making and stakeholder communication.

Since publishing its first Corporate Responsibility and Sustainability Report 13 years ago, MTI has made significant strides across a broad range of sustainability initiatives. We are encouraged by this progress and the many important contributions MTI continues to make to support its employees, customers and communities. MTI's ability to beat its environmental targets well ahead of schedule in 2025, as well as reset those 2025 targets to more challenging levels, is a testament to the company's resolve, its ambition to always do better and its unflagging energy and commitment to its culture of continuous improvement. We look forward to updating our stakeholders at least annually on our sustainability progress.

MTI's foundation is strong, which we will continue to build upon for years to come. Through regular meetings with our Chairman and CEO Douglas Dietrich, other members of the Leadership Council and the Company's Sustainability Lead Team, the Board will continue to support MTI in advancing its ESG strategy.

Sincerely,



Alison A. Deans



Sustainable Growth

Strong financial performance is key to the sustainable growth of our business and our future success. Our sustainability imperative helps create growth opportunities, and our growth opportunities support our sustainability goals and focus.

Responsibly Growing MTI

Our Business Segments

- Performance Materials
- Specialty Minerals
- Refractories



Performance Materials

$976M

Sales

$126M*

Operating Income

*Excludes special items

40 global locations (mining, manufacturing and R&D)

Fully integrated with clay reserves strategically located

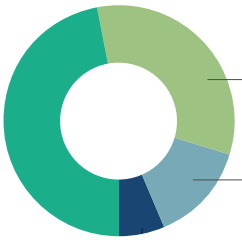
Leading supplier and producer of high-quality bentonite

Competitive positions with a diverse customer base in consumer, industrial and environmental markets

Proven track record transforming minerals and polymers into customized technologies that improve productivity and performance for customers

Strong commitment to safety, sustainable mining and land reclamation

We are in the process of converting several facilities from coal to natural gas fueled processes and evaluating additional opportunities to source green electricity from wind turbines and solar panels.



Household, Personal Care & Specialty (HPC) $461M | **47%**

Metalcasting $319M | **33%**

Environmental Products $136M | **14%**

Building Materials $60M | **6%**

#1 Leadership Positions

- Bentonite and Premium Sodium Bentonite Globally
- Greensand Bond Products for Global Foundry Market
- U.S. Bulk Clumping & Private Label Cat Litter Globally
- Quality-Assured Waterproof Concrete Structures



Expanded in core markets and geographies

- Penetration of Metalcasting technology in Asia (Asia Metalcasting sales +21%)
- Growth in consumer-oriented products (HPC & Specialty Products sales +21%)

Continued to innovate and commercialize value-add products

- Commercialized 44 new products in 2021

Acquired and integrated Normerica

- Strengthened and expanded MTI's pet care business with complementary operations and customer base

Specialty Minerals

$579M
Sales

$74M*
Operating Income

*Excludes special items

World's largest Precipitated Calcium Carbonate (PCC) producer with most technologically advanced portfolio

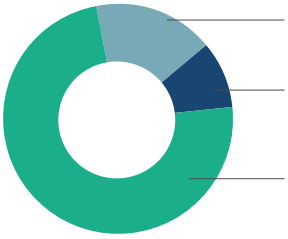
Best-in-class R&D and technical service teams with expertise in inorganic chemistry, crystallography and fine particle technology to develop highly specialized products

55 PCC satellite plants globally with strong growth in Asia

Vertically integrated with high-quality mineral reserves at three Ground Calcium Carbonate (GCC) facilities, three Specialty PCC (SPCC) facilities and one talc operation

Leading positions in a wide range of markets—consumer, plastics, paints, automotive and construction—driven by value-added mineral solutions portfolio

We are focused on water use reduction projects, as this business unit consumes the majority of our water. We have identified projects that will increase recycling and reduce our water usage by ~900 million gallons over the next three years.



#1 Leadership Positions

- Global PCC for Paper and Packaging Markets
- North America Automotive and Construction
- Sealant Markets



Continued penetration of PCC technology in Asia

- Asia PCC sales +22%
- Signed 2 new PCC satellite contracts

Developed new technologies in adjacent packaging market

- Signed 1 new packaging satellite contract in Asia

Refractories

$303M
Sales

$49M
Operating Income

Complementary portfolio of engineered monolithic refractory materials, laser measurement equipment and metallurgical wire products used in iron, steel and industrial markets

Our products support safe and productive operating conditions at lowest cost per ton of steel

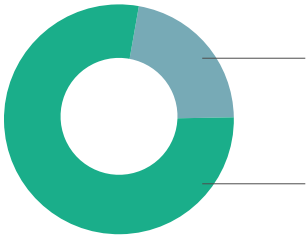
100+ years of steel industry experience

17 production plants and 4 R&D centers globally

Steel mill service employees embedded at customer sites to provide highest-quality application expertise

Market leader in laser profile measurement technology for refractory lining and steel industries

We are committed to optimizing energy consumption and minimizing our applied refractory to our customer's steelmaking and holding vessels. Our R&D efforts focus on maximizing the use of recycled raw materials that will decrease the overall carbon footprint of mined MgO and Alumina.



#1 Leadership Positions

- North America Monolithic Refractories
- North America and Europe Solid Core Calcium Wire
- Refractory Laser Measurement Systems Globally



Record performance

- Achieved record Operating Income and Operating Margin

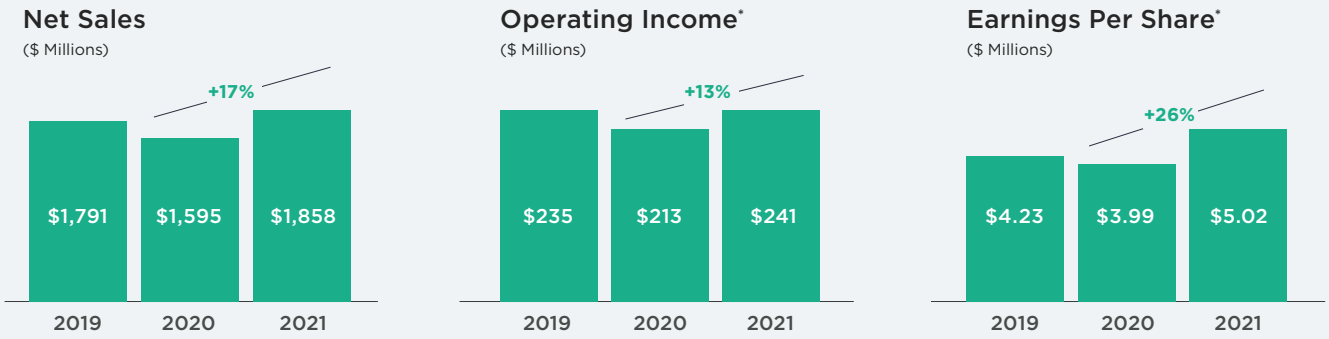
Winning new business

- Differentiated product portfolio, advanced application technology and high level steel mill service

Secured new refractory and wire contracts

- Worth $100M in sales over 5 years

Financial Strength for Balanced Capital Deployment



*Excludes special items

We know that sustainability in the broadest sense is key to achieving long-term growth and financial success. Our stakeholders around the world expect us to deliver on our financial commitments by generating and distributing economic value in a sustainable way.

Our differentiated mine-to-market approach creates value for a wide variety of stakeholders, including our shareholders, investors, employees, suppliers and local communities. We combine our leading technology platforms, extensive application expertise and world-class processing capabilities to transform unique mineral reserves into a comprehensive portfolio of value-added solutions for our customers. This approach has resulted in leading positions across a diverse set of end markets and geographies.

Our strategy is to grow revenue and earnings:

- Organically through geographic expansion and new product development
- Inorganically through acquisitions of minerals-based companies: In 2021, we acquired Normerica and SPCC assets, and, in early 2022, we acquired Concept Pet

Financially Positioned to Deploy Capital With a Balanced Approach

Our growth initiatives are supported by a strong and flexible balance sheet, which provides the ability to generate attractive, sustainable returns for shareholders.

We maintain a disciplined approach to capital allocation while also contributing to long-term strategic investments for our business. This approach allows us to maintain our reputation as a leader in our markets, well positioned to respond to the evolving needs of our customers.

In 2021, We Maintained Strong Cash Flow and Balance Sheet

$146M Free cash flow

2.1x Net leverage ratio

And We Deployed Capital to High-Value Opportunities

$194M Acquisitions (Normerica and SPCC assets)

$86M Capital spend (invested in high-return projects and improving the performance and sustainability of our facilities)

$82M Returned to shareholders (through share repurchases and dividends)

Sustainable and Clean Technology Products

We continue to accelerate the development of products with a sustainability benefit. In 2021, about 60% of our total company revenue was derived from products and services that enhance both MTI's and our customer's sustainability objectives. Below is a summary of how we categorize our sustainability-advantaged product pipeline and revenue:

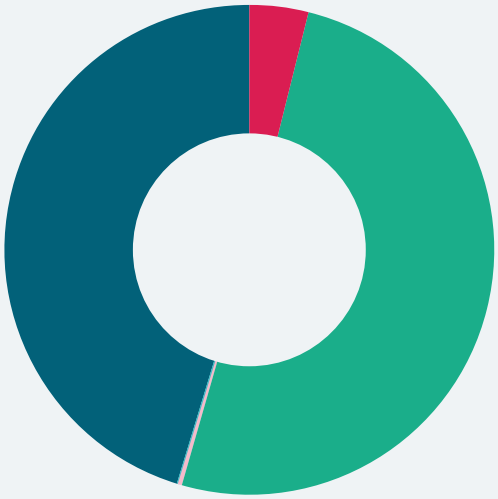
1. **Energy Efficiency:** We have several businesses where our products improve our customers' operations by making them more sustainable and productive while creating less waste/scrap. For example, our Additrol® greensand bonds significantly reduce our customer's metalcasting scrap and emissions and decrease the need for rework. Our Refractory products enhance the productivity of our steel making customers by increasing their safety, operational time and efficiency.

2. **Pollution Prevention:** MTI has a broad product pipeline designed to sequester CO_2 from paper mill exhaust stacks, to prevent pollution from spreading in the environment, to remove contaminants from water and soil and to improve the quality of water for safe discharge.

    a. Our Precipitated Calcium Carbonate (PCC) process extracts and captures CO_2 from our host paper mills and converts it to the geologically stable PCC mineral.

Revenue From Sustainable Products

in Millions USD



~$1.3B **Total Sustainable Product Revenue** out of the MTI total revenue of $1.9B

- Alternative Energy
- Pollution Prevention
- Energy Efficiency
- Sustainable Agricultural
- Green Building

b. Our PCC technology, including our ENVIROFIL® PCC, NewYield® and FulFil® solutions, also allows paper manufactures to achieve their quality and sustainability goals while reducing the requirement for wood fiber in the products by 7% or more, thus reducing the number of trees that must be harvested.

c. Our Environmental Products business is a leading provider of geosynthetic clay liners to prevent pollution, ensuring municipal and mining wastes are contained and groundwater sources are clean. Our portfolio of geosynthetic liners can reduce the thickness of a typical compacted clay liner in a municipal landfill from three feet to only a few inches, achieving a tighter and longer-lasting seal to significantly enhance groundwater protection.

d. Our FLUOR-SORB® adsorbent sorbents capture and remove Perfluorinated Alkylated substances (PFAS), including Perfluorooctane Sulfonic Acid (PFOS) contaminants from soil and water.

e. Our water-treatment technologies remove oil and grease, toxic metals and other contaminants from water generated by industrial manufacturers and oil and gas producers. Our technologies enabled over 1.7 billion gallons of water to be safely discharged into regulatory compliant natural sources or municipal water treatment plants.

f. Our high-quality bentonite clays are used for long-term storage of nuclear waste in underground repositories.

g. We also sell bentonite and talc formulations that are used to manufacture ceramic pollution control equipment in automobile and heavy truck engines.

3. **Green Building:** Our Building Materials business offers several product groups designed to protect the health of occupants by improving the performance of the building envelope. We manufacture and sell a line of spray-applied vapor barriers that safeguard indoor air quality from vapor intrusion by soil and groundwater contaminants. We also sell a series of products designed for green roofs that combine the performance of proven waterproofing systems with modern green-roof technology to decrease the heat island effect, manage rainwater and enable plants to convert CO_2 to oxygen. Our products are routinely submitted for calculations to qualify construction projects for Leadership in Energy and Environmental Design (LEED) certification.

4. **Sustainable Agricultural Revenue:** MTI mines leonardite and produces a line of agricultural crop yield improvement formulations. Our humic acid and nutrient formulations are used by our customers for application to agricultural crops to enhance plant health and improve yields.

5. **Alternative Energy Revenue:** In our drilling products business, we manufacture and sell a complete line of bentonite and additive grouting solutions for the geothermal heat loop installation industry. Our grouts are mixed with sand or graphite at the job site to enhance geothermal heat loop systems for household and commercial building heating and cooling.

2025 Environmental Targets: Strengthening Our Goals

MTI's environmental targets demonstrate our commitment to transparency, to promoting innovative opportunities to improve performance, to enhancing our ability to manage risks and to providing insight into our management of those areas that matter most to our stakeholders and business. Our goals also serve as a guide for our businesses and locations to embed sustainability into their day-to-day operations and measure their progress. We established our initial targets in 2018 and have publicly reported our progress in the following years. This year, we are pleased to announce that we are targeting even lower absolute emissions and water usage/discharge goals, as well as announcing initial 2025 targets for the intensity metrics per ton of production of Scope 1 Direct Emissions, Scope 2 Indirect Emissions, Airborne Pollutants, Water Used, Water Discharged and Landfill Waste.

Reduction Percentage

	REDUCTION FROM 2018 TO 2021 (%)	PREVIOUS 2025 REDUCTION TARGET (%)	NEW 2025 REDUCTION TARGET (%)
Scope 1 Direct Greenhouse Gas Emissions	16.6%	20%	25%
Scope 2 Indirect Greenhouse Gas Emissions	31.9%	15%	40%
Airborne Pollutants	21.4%	50%	55%
Water Used	14.2%	11%	20%
Water Discharged	17.4%	11%	20%
Landfill Waste	13.4%	20%	20%

Targets established from 2018 baseline

Environmental, Social and Governance (ESG) Highlights

Advancing Projects to Help MTI Exceed Environmental Targets

We continue to switch to natural gas processes as the energy source for drying bentonite clay and calcium carbonate at several of our largest facilities. This has helped to significantly reduce Scope 1 Direct GHG emissions and airborne pollutants in 2021. We continue to implement projects to convert additional dryers to natural gas while also improving fuel-usage efficiency at our sites.

Our PCC business continued developing and implementing a treatment process for agricultural and beneficial reuse applications equating to about 53,000 tons of PCC byproducts, ~60% of our total byproduct production.

In 2021, we extracted about 1.2 million tons of waste CO_2 from our PCC customers' exhaust stacks, as well as our own, and sequestered those emissions in useful consumer products, reducing harmful release to the atmosphere.

Our PCC plants consume and discharge a significant portion of our total water at MTI. At several of our sites, we have executed innovative closed-loop systems to recover and reuse water in production. As a result, MTI reused and recycled about 50% of our total water use, or 3.2 billion gallons, with our host paper mills in 2021.

2021 was the first full year of our sourcing ~50% of the electricity at our Colony, Wyo., facilities with green wind energy. This project reduced MTI's Scope 2 Indirect GHG emissions by about 5% overall. In addition, our European Pet Care business is carbon-neutral and has installed over 1,300 solar panels at its facilities. We are evaluating additional opportunities across our global operations to achieve goal of sourcing 50% of electricity in our operations from renewable sources by 2025.



Named to Newsweek's 2022 ranking of America's Most Responsible Companies

Sustainable Product Development

64% of Products in Pipeline Designed to Support Customer Sustainability Goals

Employee Safety and Engagement

0.74 **Recordable Injury Rate**
Safety Performance

90% **of Facilities Injury-Free**

321K+ **Safety Engagement Activities Completed**
20% increase over 2020

8,600 **Kaizen Events Conducted**
Highly focused problem-solving workshops to improve product and service processes

65,000 **Employee Suggestions**
Specific ideas implemented to remove waste and risk from processes and operations

100% **Employees Completed**
comprehensive diversity and inclusion training module



Sustainability Governance at MTI

Board Oversight of Risk, ESG and Sustainability

The MTI Board of Directors has primary responsibility for risk oversight, including understanding critical risks in the Company's business and strategy, evaluating the Company's risk-management processes, as well as seeing that such risk management processes are functioning adequately. It is management's responsibility to manage risk and bring to the Board's attention the most material risks to the Company. The Company's management has several layers of risk oversight, including the Company's Strategic Risk Management Committee and Operating Risk Management Committee. Management communicates routinely with the Board, Board Committees and individual directors on the significant risks identified and how they are being managed, including through formal reports by the Strategic Risk Management Committee to the Board that are given at least annually. Risks are reviewed regularly by the entire Board at each Board meeting. The risk oversight focus areas reviewed by the Board include: risks related to the Company's capital structure; mergers and acquisitions; capital projects; cybersecurity; environmental, health and safety risks; and geopolitical and associated market risks.

The Corporate Governance and Nominating Committee is directly responsible for reviewing and evaluating MTI's human rights, code of conduct, and ethics policies, programs and practices and all emerging social, environmental and governance issues which could impact the long-term sustainability of our business. This includes: environmental performance and 2025 targets; diversity and inclusion; talent and leadership development; safety, ethics and compliance; as well as human rights. The Corporate Governance and Nominating Committee, along with the Chairman of the Board and CEO, formally review and approve each publication of MTI's Corporate Responsibility and Sustainability Report on an annual basis.

The Board also implements its risk oversight function through Committees, which provide reports regarding their activities to the Board at each meeting.

Audit Committee

- Regularly reviews the Company's major financial risk exposures, including hedging, swaps and derivatives and the steps management has taken to monitor and control such exposures.
- Assists in identifying, evaluating and implementing risk management controls and methodologies to address identified risks.
- Regularly reviews risks relating to pension-plan investments.
- Regularly reviews risks relating to cybersecurity.

Corporate Governance and Nominating Committee

- Regularly reviews the risks associated with the Company's governance practices, Board composition and refreshment (including independence of directors) and committee leadership.
- Assists in identifying, evaluating and implementing risk management controls and methodologies to address identified risks.
- Provides oversight and guidance on the Company's programs, policies and practices relating to social and environmental issues.

Compensation Committee

- Considers risks related to the attraction and retention of personnel.
- Considers risks relating to the design of compensation programs and arrangements applicable to both employees and executive officers, including the Company's annual incentive and long-term incentive programs.
- Concludes that the Company's compensation policies and procedures are not reasonably likely to have a material adverse effect on the Company.



In addition, the entire Board follows a formal schedule of meetings to review environmental; health and safety; cybersecurity; and social matters, which are reviewed at each board meeting. Overall corporate responsibility and sustainability matters and progress, including social topics, are periodically reviewed with the Committee, as well as the full Board, at board meetings. Additional information about our Board's structure, composition and oversight can be found in MTI's 2022 Proxy Statement.

Leadership Commitment to ESG and Sustainability

Our **Leadership Council (LC),** under the direction of Chairman and CEO Douglas Dietrich, oversees our businesses, functional areas and culture-based lead teams—all of which integrate sustainable processes and practices into their strategies, as well as identify and manage risks. The entire LC, which is composed of our senior business unit and resource unit executives, is actively engaged in the management of MTI's broad sustainability practices. Mr. Dietrich champions sustainability at an organizational level, and each business-unit leader helps drive sustainability practices and initiatives as part of the unit's overall business strategy.

Sustainability Lead Team

The Sustainability Lead Team comprises senior leaders across the organization with functional expertise, including within the areas of Environmental, Health, and Safety; Legal and Compliance; Investor Relations; Finance; Corporate Communications; Human Resources; Global Supply Chain; Research and Development; Manufacturing; and Commercial. The Lead Team reports directly to our Chairman and CEO, has full-team meetings at least once a month. Sub-teams meet more frequently and provide regular progress updates to the LC, the Corporate Governance and Nominating Committee, as well as the full Board. The Lead Team seeks to ensure a comprehensive approach to developing and progressing our companywide ESG and sustainability strategies and initiatives, driving alignment across the organization to address emerging ESG risks and opportunities. In addition, other focus areas include: managing progress toward achieving our 2025 environmental targets; providing guidance and support across the company for implementing new projects, policies and practices; and improving our disclosures to better align with external reporting trends.

MTI has seven culture-based Lead Teams. These cross-functional Lead Teams, comprising employees from across geographies and subject areas, report directly to our Chief Executive Officer and are sponsored and led by a senior executive appointed to provide guidance and expertise. Each of these Lead Teams develops goals, standards and systems; tracks metrics; and shares best practices to ensure that we are making tangible progress in these key areas.

Lead Teams Report to CEO

Chief Executive Officer

Environmental, Health and Safety
Continuously improve health and safety programs, training and compliance. Develop risk-reduction systems and initiatives.

Operational Excellence
Continuous improvement and lead lean practices to enhance our business performance and drive people-focused culture.

Technology and Innovation
Forefront of innovation and accelerate the speed and success rate of new product introductions.

Mining
Develop goals and tactics to ensure the universal use of best practices for mining, exploration and reclamation to minimize impact.

Expense Optimization
Drive cost avoidance and reduction through improvement in processes and implementation of employee suggestions and best practices.

Diversity and Inclusion
Cultivate a diverse and inclusive work environment for all employees.

Sustainability
Advance sustainability strategy, manage environmental progress towards reduction targets, benchmark trends and communicate best practices across company.

In 2021, the Sustainability Lead Team activities included:

- Communicating to management and all employees a framework for implementing best practices for reducing Scope 1, Scope 2 emissions, water used and water discharged.
- Designing a companywide, locally driven employee engagement and awareness initiative to drive a more sustainable culture, enhance data collection processes and encourage site-level leadership on environmental sustainability.
- Planning additional ESG disclosures to better reflect our company's initiatives and continuing to enhance our SASB and TCFD disclosures.
- Aligning more closely with our other Lead Teams on topics related to environmental, social and governance and leveraging these initiatives to deeply integrate developments into our overall sustainability strategy.
- Analyzing long-term climate policy trends and policies and identifying how our company can be best positioned to address them going forward.

Human Rights

MTI is committed to safeguarding the human rights of all employees, as well as those with whom we do business. We updated our Human Rights Policy in 2021 to better reflect this commitment and our expectation for equal opportunity, respectful work environments, prohibition of discrimination, freedom of association, prohibition of forced and child labor, compensation, EHS, security as well as anti-corruption. We follow the United Nations Guiding Principles on Business and Human Rights and the Ten Principles of the United Nations Global Compact. We undertake efforts to build awareness about our human rights policies and procedures and expect our global workforce to act in furtherance of this commitment, as outlined in our Summary of Policies on Business Conduct.

We expect all our suppliers, vendors, business partners and other stakeholders to share our respect for human rights and to conduct their business accordingly. In addition, we require our suppliers to remain in compliance with our Supplier Code of Conduct and all applicable laws and regulations.

United Nations Global Compact

MTI is pleased to announce that we have joined the United Nations Global Compact and supports the Ten Principles of the United Nations Global Compact on human rights, labor, environment and anti-corruption.

Data and Cybersecurity

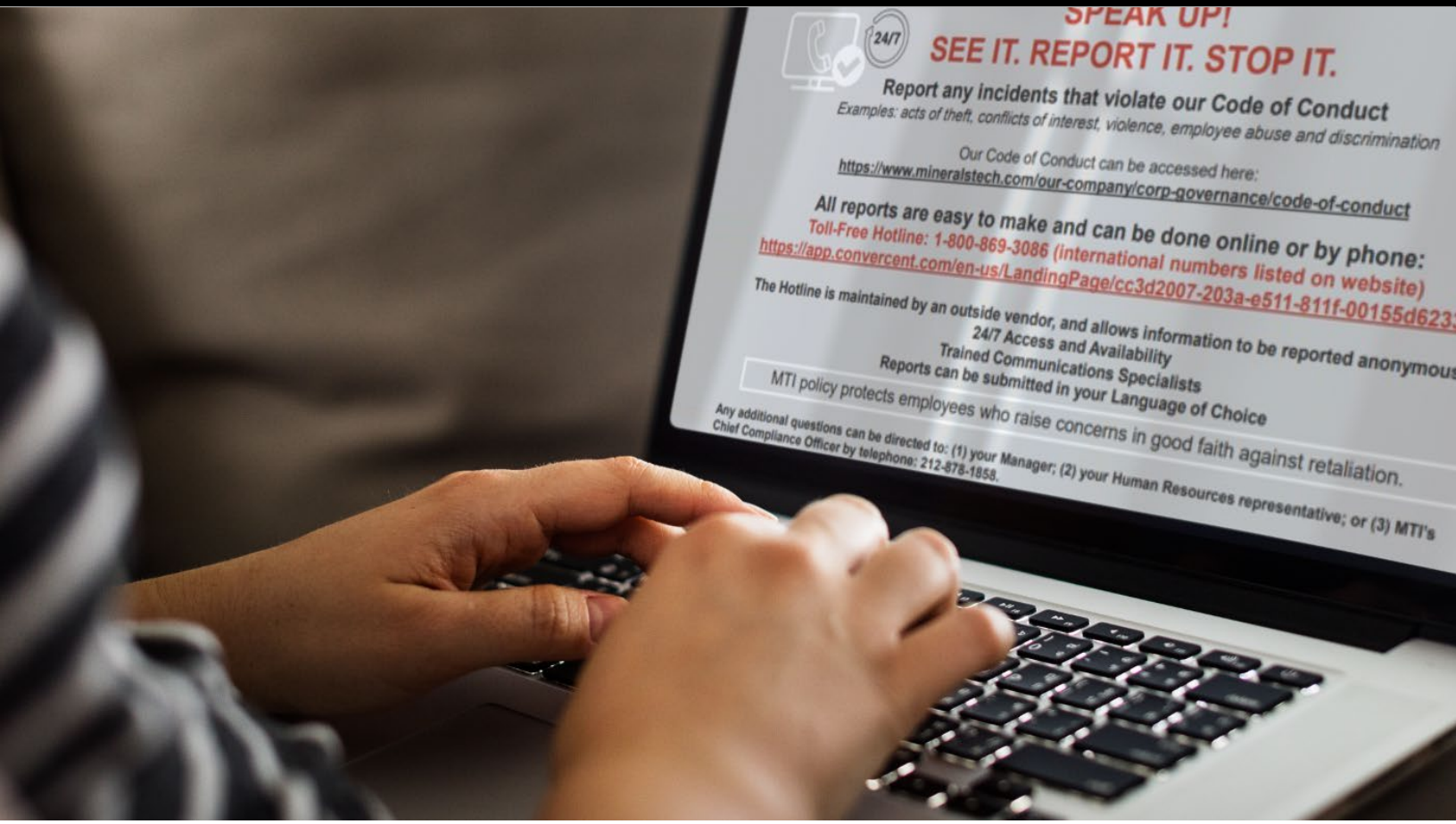
At MTI, it is our responsibility to protect, in accordance with applicable laws, sensitive corporate and client information in addition to the personal information of our employees and all other individuals with whom we work, including customers, partners, suppliers and contractors. MTI has established a holistic cybersecurity programthat is led by the Chief Information Officer who is supported by a dedicated MTI Cybersecurity Team and a Managed Security Services Provider (MSSP). MTI leadership updates the Board of Directors' Audit Committee at least four times a year on data- and cybersecurity as part of regular Board agenda items and more frequently as needed.

MTI's risk-based framework aims to:

1. Proactively identify potential risks to systems, assets, data and capabilities
2. Protect critical infrastructure services by a layered defense-in-depth security architecture
3. Detect and respond to cyber events by taking appropriate actions
4. Recover and restore capabilities according to service-level agreements

MTI provides a mandatory cybersecurity training curriculum to full-time employees, part-time workers and contractors that access our network. MTI conducts required online training each quarter of the year. Additionally, monthly phishing tests are conducted, and employees who fail phishing exercises receive remedial training. Employee's training progress is tracked and reported to senior leadership.

MTI uses NIST CSF and CISV8 to conduct self-assessment of our controls. KPMG, our external auditors, perform cybersecurity assessments, and we have annual external penetration and incident testing, as well as independent reviews conducted by select third parties.



Ethics, Integrity and Grievance Reporting Process

Compliance With Laws, Permits, Regulations and Company Values

It is MTI's policy to conduct our business activities in a lawful and ethical manner. Ethics and integrity start at the top, from the Board of Directors and Senior Management. Our commitment is supported by clear policies and training and is reinforced and monitored by every MTI employee.

MTI's ethics and compliance program is structured and operated to promote integrity and ethical behavior, as well as to prevent criminal conduct and violations of law. Our Summary of Policies on Business Conduct (Code of Conduct) details the expectations and requirements we have for our employees and applies to all areas of our operations.

MTI has an annual requirement for all employees to read and acknowledge the Code of Conduct, and we audit completion. In addition, our Internal Audit Department performs regular audits of the company's controls, including those systems which are designed to prevent unethical and unlawful conduct. During 2021, the company incurred no legal or regulatory fines or settlements associated with bribery, corruption or anti-competitive behavior.

Ethical Standards Training

In addition to the annual requirement to read and acknowledge the MTI Code of Conduct, all employees receive periodic training on various ethics and compliance subjects. Recent training topics have included insider trading, sexual harassment, bullying, diversity and inclusion, as well as conflicts of interest. These periodic trainings occur on a two-year rotation, as our Legal Department assesses the risks and introduces a training schedule most relevant for each year. Ethics and compliance training is also required and included in every employee's onboarding.

We perform ethics and compliance due diligence for all third-party relationships, including agents, distributors and contractors. These third parties are required to attest that they will behave ethically and fully adhere to our business conduct policies.

Grievance Reporting Process Through Dedicated MTI Compliance Hotline

We encourage employees and third parties to report any suspected violations of our policies or local or international law (including those relating to human rights) to senior management or through the Company's confidential Compliance Hotline (1-800-869-3086) or electronically. The MTI Compliance Hotline is proactively communicated to employees via posters at each site, employee onboarding, verbal communication during periodic Internal Audits, as well through our intranet.

An effective reporting system is critical to supporting our efforts to foster a culture of integrity, accountability and ethical decision-making. For that reason, a new and improved ethics and compliance hotline was launched in 2020 to provide confidentiality, and, where permitted by law, anonymity to report any potential illegal, unethical or improper conduct. The hotline is operated by an independent, third-party provider and available 24 hours a day, seven days a week. Reports can be made in any language and employees can speak to a third-party responder in their language of choice. MTI policy protects employees against retaliation who raise concerns in good faith.

Every case reported to the Compliance Hotline is carefully processed and analyzed against a set of basic criteria, which help us decide if corrective action is required to mitigate further risks. In 2021, a total of 22 cases were reported through web-and call-center submissions. Most cases were employment related, with the remainder related to business integrity, health and safety, as well as general inquiries. All cases are fully investigated by our Legal, Human Resources and/or Internal Audit Departments, as appropriate. External legal counsel or Governmental agencies are engaged where required. Each hotline report is documented and remedied through management corrective actions, disciplinary action or MTI policy and procedure updates to address substantiated cases.

Policies and Guidelines

In addition to our Code of Conduct, our corporate governance policies show our commitment to honest, ethical business practices and compliance with applicable law. These documents and policies are the principles and guidelines that we follow to ensure effective corporate governance practices within MTI.

Careers and Employment

- Equal Opportunity
- Diversity and Inclusion Mission Statement

Corporate Responsibility and Sustainability

- Animal Testing Policy (new)
- Anti-Corruption and Anti-Bribery Policy (revised)
- California Transparency in Supply Chain Act
- Charters for Board of Director Committees
  - Audit Committee Charter
  - By-laws of Minerals Technologies Inc.
  - Code of Ethics for Senior Financial Officers
  - Compensation Committee Charter
  - Corporate Governance and Nominating Committee Charter
  - Lead Independent Director Charter
- Compliance Hotline
- Conflict Minerals Policy
- General Terms and Conditions
- Human Rights Policy (revised)
- Minerals Technologies Environmental Health & Safety Policy (revised)
- Minerals Technologies Values
- Summary of Policies on Business Conduct (Code of Conduct)
- Supplier Code of Conduct (revised)
- United Kingdom MTI Tax Policy
- Washington State Department of Agriculture
- Website Privacy Statement

How Sustainability Is Integrated Into Our Strategy and Purpose

MTI has a longstanding commitment to operate ethically and responsibly while creating value for our customers, employees, communities and other stakeholders. We look at sustainability holistically, understanding that addressing the continuum of environmental, social, governance and ethics issues is critical to the success of our business. Sustainability is a vital driver to our long-term growth, and, through continued learning and improvement, we are making progress in addressing the most urgent challenges of today, while capturing opportunities for the future.

Our four focus areas:

ENVIRONMENTAL	SOCIAL	GOVERNANCE	ECONOMIC
Conserving and Protecting	**Caring for Our People and Communities**	**Operating Ethically**	**Responsible Growth**
Minimize Impact Seeking to reduce the environmental impact of our activities through more efficient manufacturing processes and best practice adoption. Our 2025 environmental targets provide a clear path to improve our performance.	**Health and Safety** Nothing is more important than the health and safety of our employees—a 100% injury-free and illness-free workplace is achievable. We continue to enhance our strong safety culture through hazard identification, fatality risk-prevention initiatives and comprehensive training.	**Legal Compliance** Honest, ethical and transparent conduct is vital to our success and reputation. Every employee plays a key role in complying with local and national laws and regulations. We have a comprehensive framework of codes, conducts and principles that all employees are trained in and are expected to demonstrate in all activities.	**Financial Performance** Generating sustained economic benefits for our employees, shareholders, local communities and broader society.
Sustainable Innovation Evolving our new product development processes and pipeline to meet MTI's environmental goals and address customers' most pressing sustainability challenges. We are accelerating the speed with which we bring products to market and increasing the percentage of new products with a sustainability benefit.	**People-Focused Culture** Our engaged global team is our greatest asset and drives our high-performance culture, including our commitment to sustainability. We are fostering a diverse and inclusive culture where differences are welcomed, celebrated and appreciated, and everyone has an equal opportunity to succeed. We provide the resources to empower, engage and develop our employees while attracting new talent to help us achieve long-term success.	**Data Security** Protecting personal information of our employees, customers, partners, suppliers and contractors.	**Investing for Sustainable Growth** Enhancing our competitive positioning by advancing customer-driven innovation in new product development and investing in high-return projects and our core infrastructure, including maintaining and improving the performance, safety and environmental standards at our facilities.
	Community Engagement Supporting local communities through education, fundraising and sponsorship opportunities.		

Stakeholder Engagement

Listening to, engaging and collaborating with all stakeholders group makes us a stronger company and plays a critical role in advancing our sustainability strategy. We regularly interact with our stakeholders to better understand and address their unique perspectives and to share valuable information about our key focus areas and initiatives.

STAKEHOLDERS	METHOD OF ENGAGEMENT	KEY TOPICS OF DISCUSSION
Employees	• Quarterly all-employee CEO-led Town Halls • Direct communications from management (emails, CEO updates, podcasts and team meetings) • Frequent news updates on corporate intranet • Companywide engagement surveys • Management plant visits • Regular safety meetings • Annual performance reviews • Extensive safety and Operational Excellence (OE) training and development • Employee-led webinars on Environmental, Health and Safety (EHS) and OE • Robust suggestion system to capture employee ideas • Safety and OE recognition letters • Bravo Chips to recognize noteworthy behavior • Annual Operational Excellence Achievement Awards • Code of Conduct and Compliance Hotline	• Health and safety and COVID-19 response plan • Company performance and strategy updates • Innovation and new product development • Investments in operations • Culture-based lead teams • Compensation and benefits • Talent management and career development • Recruiting process • High-performance culture and core values • Training and performance feedback • Corporate social responsibility and 2025 environmental targets • Diversity and inclusion • Rewards and recognition • Best practice sharing • Company policies and protocols • Establishing self-directed work teams and high-performance systems
Customers	• Regular meetings with customers • Customer-satisfaction surveys • Industry tradeshows • Social media • Targeted newsletters • Technical brochures • Voice of Customer processes • R&D portfolio with customer engagement at key stages and technology roadmaps • “House of Quality” process ensures customer requirements are driven in four areas through product development	• Product quality, service, costs and performance • Market trends and innovative new products • Environmental benefits of products and sustainability • Key customer performance metrics • EcoVadis or similar surveys • Incorporating Voice of Customer for new product ideas • “House of Quality” metrics

STAKEHOLDERS	METHOD OF ENGAGEMENT	KEY TOPICS OF DISCUSSION
Investors and Analysts	• Quarterly earnings calls • Press releases and SEC filings • Regular one-on-one or group meetings; management met with approximately 70% of shareholders in 2021 based on actively traded shares outstanding • Management presentations at financial and industry conferences • Annual Meeting • Outreach on governance and sustainability topics, including our top 60 shareholders who held approximately 90% of our shares in 2021 • Annual Report and Sustainability Report • Company website	• Financial and operating performance • Outlook and market conditions • Mergers and acquisitions • Value proposition • Environmental, health, safety and social performance • Capital allocation • Corporate governance • Board succession, composition and diversity • Diversity and inclusion • Disclosure and transparency • COVID-19 response
Communities	• Volunteer activities and donations • Local employment and supplier opportunities • Career fairs and plant tours • Local government and associations participation • Family and community days • Collaborations with emergency response teams, police and fire departments for emergency preparedness training	• Jobs and local business opportunities • Environmental impact and protection • Community involvement and charitable giving • Plant operations • Safety and emergency/disaster planning • Local sourcing of supplies and raw materials
Suppliers	• Supplier Code of Conduct and Conflict Minerals Policy • Product safety and regulatory discussions • Performance assessments • Quality audits • Supplier qualification, documentation and selection • Identifying smaller and local suppliers	• Performance criteria and expectations • Supplier safety and environmental performance and plans for improvement • Sustainability • Lowest total cost discussions • Cybersecurity
Regulatory Agencies/ Elected Officials	• Meetings and engagement on legislative and regulatory issues • Discussions regarding evolving legislation and impact on new products • Compliance with permits	• Policies that impact business, including environment, permitting, mining and reclamation, incentives and regulatory framework • Regulatory developments • Job market and skilled workforce

Safety

We Place the Health and Safety of Our People Above All Else — A 100% Injury-Free Workplace Is Achievable at MTI

MTI's Buddy System in action—new employee (orange hardhat) being trained by experienced employee (white hardhat)

Our Philosophy

We are a people-focused company. Our number-one priority is the health and safety of our employees, contractors, visitors, customers and members of the communities in which we operate. Our "safety first" culture has been built through dedication, continuous improvement and active employee engagement. We strive to continuously improve our world-class safety program at MTI.

Key aspects of our principles to drive an injury-free workplace:

- Nothing comes before safety: Our top priority is for all employees and contractors to return home in the same condition they arrived at work.
- We require all employees, contractors, visitors and sites to strictly follow our Environmental, Health and Safety (EHS) Policy.
- Management is responsible for providing employees with the tools, training and resources to operate safely. All employees receive a rigorous onboarding safety training and continuous safety training commensurate with their level of exposure.
- It is every employee's responsibility to correct unsafe procedures, practices and conditions wherever they exist. Each employee is empowered and encouraged to exercise "Stop Work Authority" to prevent an incident.
- We promote accountability and responsibility for ourselves and our colleagues.
- We engage and educate employees to measure and use safety-leading indicators.
- We demand a strong focus on anticipating, recognizing and removing hazards, as well as integrating layers of protection into our work systems and processes.
- We maintain an active safety mindset at work and at home and foster a culture where we learn from events and near misses.
- Audits are an important part of assessing safety performance and areas for improvement and are required at every location.

Targets: We believe zero injuries across all our operations is an achievable target. Toward this end, we have set interim goals for full-time MTI employees, part-time workers, as well as contractors under our oversight to achieve World Class Safety performance globally: at or below 1.00 for Total Recordable Incident Rate (TRIR) and at or below 0.10 for Lost Workday Injury Rate (LWIR), as defined by the U.S. Occupational Safety and Health Administration (OSHA). Through our continuous improvement activities, training, risk assessments and tracking of leading indicators, we continue to focus on our journey to zero injuries.



Each employee is empowered and encouraged to exercise "Stop Work Authority" to prevent an incident.

GOAL

<= 1.0	Total Recordable Incident Rate
<=0.10	Lost Workday Injury Rate

Our Safety Foundation

Management oversight and involvement of all employees

Our MTI Environmental, Health and Safety Management System program is aligned to the ISO 14001 Environmental Management System and OHSAS 18001/ISO 45001 Occupational Health and Safety Management System. More than 10.8% of our individual facilities are certified to ISO 14001:2015 and more than 9.1% to OHSAS 18001/ISO 45001.

Key elements are:



"Our foundation is simple— safety/people first, every injury is avoidable, zero injuries are achievable."

– Douglas T. Dietrich, Chairman and CEO

- All members of our Board of Directors and Leadership Council (LC), as well as each of our Business Unit leaders, receive comprehensive health and safety briefings at least monthly. These briefings review detailed health and safety performance and related metrics, including: injury/illness rates, lost workday rates, types of injury, environmental releases, EHS engagement, Fatality Mitigation program progress and global online seminar status. In addition, all MTI employees receive weekly EHS metrics and injury/illness reports for global and business-specific performance via email and company intranet postings.
- Leaders at all levels in the organization are actively engaged in setting safety-performance expectations and holding themselves and the rest of their organization/location accountable.
- The MTI Environmental, Health and Safety Lead Team (EHSLT), which includes senior safety leaders from each business unit, reports directly to the Chief Executive Officer and includes all BU and regional EHS directors. The Team develops and reviews global environmental, health and safety goals, policies and standards, as well as promotes our EHS management systems to assist all Business Units, Resource Units, sites and employees. Our EHSLT further develops annual safety goals and objectives, which are communicated directly to all employees. Our operating procedures and standards are tailored for our mining and processing facilities.
- Our Business Units develop and implement cascading goals aligned with MTI's global EHS Goals. They monitor progress across each location and report the latest metrics through the EHSLT and the LC. Business Units further collaborate through global EHS meetings to facilitate benchmarking and exchange key learnings and trends for EHS programs. Each MTI site is required to conform with our EHS policies and procedures, and compliance is ensured via self-review, MTI corporate auditing, customer audits and governmental regulatory and other third-party audits.
- MTI and our EHSLT stay current with developing environmental, safety and health regulations by maintaining memberships in key industry groups like

the Industrial Minerals Association of North America and Europe (IMA-NA and IMA-Europe) and their bentonite, carbonate, and talc subcommittees. We also participate in the European Union Bentonite Association and Sorptive Minerals Institute. Key groups in MTI also participate in alliance meetings with the Occupational Safety and Health Administration (OSHA) on emerging standards like heat stress in the workplace and with the Mine Safety and Health Administration (MSHA) on powered haulage safety. The company closely follows the European Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) to protect human health and the environment.

- Our EHSLT reviews and distributes Safety Alerts to all employees by email and company postings when an injury occurs, so that learnings are widely communicated. The alerts describe the injury, illnesses or near misses and provide causal factors, root causes and corrective actions, which allow us to quickly convey learnings from incidents and near misses to all locations and, when appropriate, take specific actions to mitigate similar potential risks in their operations.
- In MTI, Business Unit and employee/contractor townhall meetings, our CEO, Business Unit Leaders and Team Leaders review safety performance, key safety initiatives and actions individuals can take to enhance their personal and colleagues' safety.
- We solicit and engage employee feedback through site-safety committees, routine global employee EHS meetings and webinars, EHS Kaizens and FMEA (Failure Mode and Effects Analysis) events, Risk-Reduction evaluations, suggestion systems, job observations, hazard hunts and townhalls, as well as open-door-policy interactions.
- Through Risk-Reduction and FMEA techniques, health and safety hazards are proactively identified and mitigated. Reporting near misses, unsafe acts and unsafe conditions by all employees is also a mechanism to identify and address issues before they cause injuries. Comprehensive assessment campaigns by multi-disciplined teams also support PDCA (Plan, Do, Check, Act) and help identify new safety improvement opportunities.
- Our OE culture is inextricably linked to safety. We have experienced significant improvements in plant working conditions through deeply integrating our OE and Lean practices with safety. Our sites identify and address the risks present at our locations using our Risk-Reduction and Operational Excellence processes, including 5S, Visual Management and Standard Work. The worldwide implementation of Lean principles improves communication and engagement and reduces waste and inefficiencies in our workplace that could result in incidents.

Our Approach to Safety

Our approach to safety is embedded in our culture of continuous improvement, is reinforced by our management systems and is a key aspect in driving employee engagement.



Key Focus Areas in 2021

Implementing and evolving stringent COVID-19 protocols to keep employees safe and healthy. We also adapted many of our practices to operate in a socially distanced, remote environment, such as implementing virtual Gembas and using virtual tools to identify potential risks. Gembas are the action of going to observe and review the actual process location, understanding the work, asking questions and learning from those who do the work on how to improve

Improving training programs for newer employees, including using specially colored hard hats and implementing a "buddy system" to mentor new employees

Expanding safety leadership principles and engagement indicators to empower and protect all employees

Enhancing safety and environmental facility audits

Integrating the Normerica and SPCC asset acquisition into the MTI safety culture

Sustaining progress in our comprehensive fatality risk-reduction program



Continuing Focus on Fatality Risk-Reduction Programs

Since 2018, we have made considerable progress with our fatality risk-reduction programs, which have been a key driver in achieving world-class safety performance. These comprehensive programs align EHS efforts across MTI's operations and actively engage employees to reduce the most severe injuries. This includes continuous assessment of the inherently high-risk situations at our locations, investment in time, resources and money to improve the safety of these activities, development and management of mitigation plans, as well as leadership oversight in status reviews.

Increase New Employee Safety via Competency and Buddy System

As new employee (0–3 years of service) injuries have been statistically higher in the past few years, we have spent considerable efforts on training and coaching to improve new employee awareness and work skills. Our New Employee Competency Program and Buddy System have been implemented successfully in the last two years in several of our business units and are expanding company wide. Both programs consist of required onboarding training and also assign a mentor/trainer to coach the new employee on their specific job-related tasks and ensure the employee understands the risks and hazards associated with the tasks in order to implement the proper precautions.

Within the Competency Program, the Job Instruction Training (JIT) and Job Breakdown Sheets (JBS) are the primary methods utilized to ensure proficiency in the training. Before employees can work unsupervised on a task, they must have their competencies evaluated and confirmed by an Instructor/Trainer.



Key Programs to Reduce Fatality Risk:

1. Mobile Equipment/Pedestrian Separation: We have programs to reduce the risk associated with pedestrians interacting with mobile equipment both inside and outside of our buildings.
2. Lockout, Tagout, Tryout (LOTOTO): We are continuously working on plant improvements and upgrading system designs to strengthen the safe isolation of energy sources.
3. Falls From Heights: We are nearly 100% complete on assessed improvements with a focus on applying hierarchy of controls and implementing industry best practices.
4. Confined Space Entry: We are 100% complete, with over 3,197 permit-required confined spaces identified.
5. Rail Car/Pedestrian Separation: 100% of the sites have been assessed with 34% of the sites requiring action items. Fifty-six percent of those action items have been completed. We are continuing to increase engineering controls to improve the effectiveness of the separation and reduce the risk.



In the Buddy System, a buddy partners with a new employee during his/her first year of employment with the company. Although primarily responsible for offering advice and guidance regarding the day-to-day aspects of working safely and adhering to MTI standards, Buddies may also offer encouragement and knowledge resources, as they help introduce the new employee to MTI's culture. By design, Buddies should be good communicators, be safety role models and be motivated to ensure a safe work site.

Comprehensive Health and Safety Training For All Employees and Contractors

Training is an essential part of improving our safety performance, and every employee is required to complete comprehensive safety training each year. Each site designates certain safety-critical topics for in-person training as part of its training program. Historical incident trends, lessons learned or regulatory changes can all prompt safety-critical topic training. Every year, the training is enhanced to exceed current situational requirements. Each site designates specific training criteria to reduce risk and enhance the abilities of the employees to identify and correct hazards. This includes specific required training and expectations for contractors. New Employee onboarding is particularly important toward helping new employees gain awareness and alignment with MTI EHS values.

All training is conducted in local languages. This training is made available both in classroom settings, as well as in online-based formats. MTI conducts monthly EHS webinars given by key personnel to cover critical safety-related topics. In 2021, MTI conducted more than 90,000 hours of safety training for both employees and contractors.

Reducing Finger and Hand Injuries

Finger and hand injuries have been our most common type of injury for the past few years. Accordingly, many of our training modules and awareness activities have focused on identifying the causes and implementing a series of corrective actions to reduce these injuries. 2021 activities include: EHS webinars on Hazard Recognition and Controls, Hand and Finger Safety Best Practices, Non-Routine Task Review, as well as Gembas. Additionally, we have implemented a glove policy for all work with tools, machinery or equipment and conducted online training on Hand Safety and Power Tool Safety.

2021 Safety Performance Highlights

2021 Health and Safety Highlights

- 90% of locations injury free
- Paper PCC passed 1M hours without injury
- Engagement metrics improved 20% (Near Misses / NRTR / Gemba / Coaching)
  - Virtual Gembas

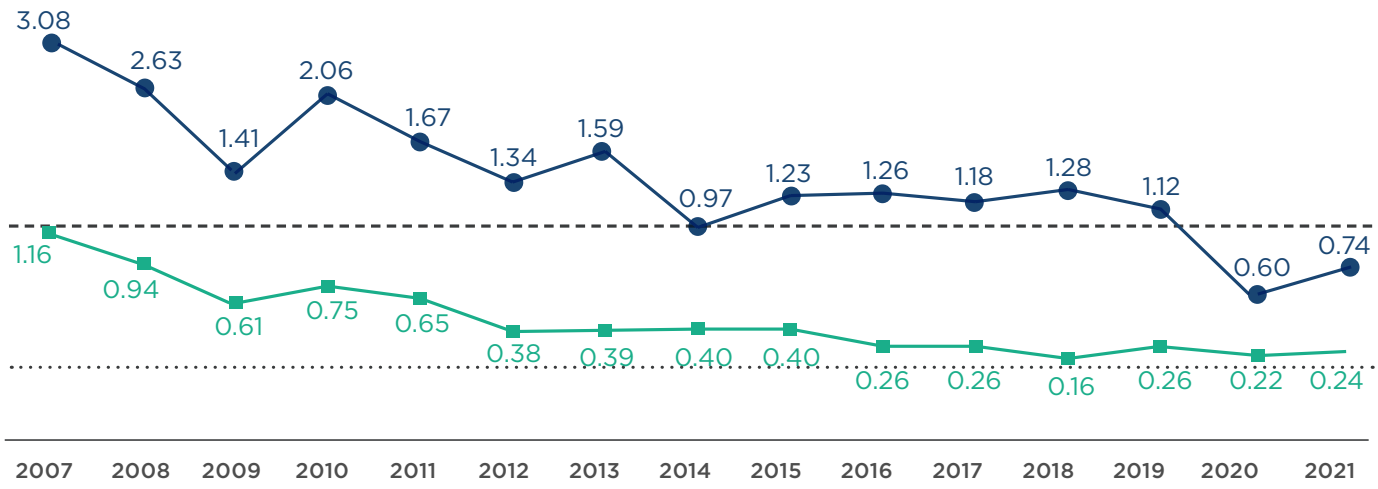
2021 Focus Areas

- Advanced fatality-prevention initiatives
- Hand and finger injury prevention
- Successful integration of Normerica—proven processes for integrating acquired companies

0 Employee and Contractor Fatalities in 2021

Safety Performance

Injuries/100 Employees + Part-Time Workers + Contract Workers*



*MTI combines employees, part-time workers and MTI directed contractors in our TRIR and LWIR reporting.

Our Paper PCC Groups Achieved One Million Hours Injury Free

Our Paper PCC Business Unit reached 1 million hours without an OSHA Recordable milestone on January 30, 2022 and, as of the end of April 2022, our Paper PCC was at approximately 1.1 million hours injury free. This remarkable performance by PCC is due to every employee's ongoing involvement in safety initiatives, practicing mindfulness and safety awareness and constantly being on the lookout for hazards.

Injury Performance by Region in 2021

MTI	Recordable Injury Rate	Lost Workday Injury Rate
Total Americas	1.07	0.28
Total Asia	0.10	0.00
Total Europe	0.69	0.40
Total MTI	0.74	0.24

Independent Contractor Safety Requirements

Independent Contractors are required to follow all MTI EHS procedures, policies and regulations when working on MTI sites. MTI has strict requirements for contractors to comply with our safety policies and assess our contractors to ensure they implement the requirements and train all their employees before they are allowed to do any work at an MTI site. Training includes specific site safety rules and protocols pertaining to equipment precautions and Personal Protective Equipment (PPE). MTI requires all contractors to participate in all Non-Routine Task Reviews (NRTRs) and Risk Reviews for joint projects. Safety metrics for contractors are tracked in our data management system, including observations, incidents and near misses. All contractor incidents undergo root-cause analysis, just as if they were MTI employee incidents.

Independent Contractor Safety Metrics 2019-2021

	Recordable Injury	EHS Near Miss Reports
2019	2	123
2020	5	171
2021	2	79

Our Leading Indicators To Assess Employee Safety Engagement

A critical platform we use to assess and manage the strength of our employee engagement safety performance is through a set of leading indicators focused on every employee at MTI. Employee Environmental Health and Safety engagement is measured by specific activities that relate to hazard identification, near misses and job observations. We look at how tasks are performed, conduct NRTRs and periodic Gembas. These leading-indicator activities give us a baseline for how our employees and contractors are interacting within the Environmental Health and Safety program. More importantly, these indicators provide us a window into how this engagement is impacting the safety performance of MTI.

321,000+ Safety Engagement Activities occurred in 2021

or an average of 998 daily, including:

- **91,000** Gembas
- **43,000** near misses/unsafe acts reported, resulting in a significant increase in hazard identification
- **50,000** job observations reported, with 15,832 improvements made
- **74,000** non-routine task risk-reductions completed
- **31,000** toolbox discussions

Audits and Self-Assessments

Through our EHSLT and site-specific personnel, we deploy an internal safety auditing program for adherence to local, state and federal safety standards and regulations at least once a year at every location. In addition, each manufacturing facility is externally audited at least once a year. These assessments take a "fresh eyes" approach by engaging experts from outside of the business unit and MTI to help observe and report any improvement opportunities.

Each site is also responsible for conducting self-assessments as part of our Plan Do Check Act (PDCA) program. These assessments help recognize non-conformances and gaps between our policies and our actions. Our goal is to identify and correct issues before they become problems that could impact the health and safety of our employees. After identification of an issue, a root-cause assessment is completed and corrective actions are developed and implemented.

Emergency Preparedness and Response Drills

MTI is committed to protecting the safety of its employees and the viability of its operations in case of any emergency event that may happen. All MTI facilities are required to have an Emergency Response Plan (ERP) in place to facilitate and organize employee actions in the event of workplace emergencies. All MTI facilities ERPs follow uniform MTI safety strategies and additional local regulatory requirements. MTI realizes that a well-developed ERP and proper employee training will result in the minimization of employee injuries during emergencies.

Individual site ERPs are reviewed each year by our EHS teams and are under supervision of our Corporate Crisis team to prepare for events that can cause deaths or significant injuries to employees, customers or the public, shut down business, disrupt operations, cause physical or environmental damage, or threaten the facility's public image. Examples events that can be "emergencies," include: fire, explosion, hazardous materials incident (spill or release), flood or flash flood, hurricane, tornado, winter storm, earthquake, communications failure, radiological accident, civil disturbance or bomb threat, utility outage and many more. The purpose of having ERPs and teams ready is to protect the health and safety of employees and the surrounding community, the environment, customers and company assets.

The crucial elements of ERPs are, among others:

- Means of reporting emergencies internally and externally
- Evacuation procedures and emergency escape route assignments
- Building and site maps that indicate designated evacuation routes
- Assembly points
- Fire extinguishers and utility controls

2021 SAFETY RECOGNITION



In conjunction with #WorldSafetyDay2022, CETCO ENERGY SERVICES works diligently in creating a positive safety and health culture. CETCO received the Safety award for injury-free operations in 2021.



Our Yanzhou plant has demonstrated its commitment to continuous improvement by earning an "AA" award in 2021 for employee engagement. This achievement underscores MTI's philosophy of ever-better performance, which has resulted in an improvement on the plant's level A award in 2019. Granted by the local government, the award criteria measures companies' employment rates, compliance to EHS policies, fair wages and benefits, work safety policies, and occupational health and human rights practices. This affirms the value we place on our operations and the esteem we hold for the dedication of our employees.

- Procedures to be followed by employees who remain to operate critical plant operations before they evacuate
- Procedures to account for all employees after an emergency evacuation has been completed
- Rescue and medical duties (e.g., First Aid and CPR)
- Emergency call lists of all persons on-site and off-site who would be involved in responding to an emergency
- Resource lists, such as regulatory agencies and spill-response contractors
- Procedures for requesting an evacuation of the neighboring community
- Procedures for dealing with requests from the news media

To ensure that the ERPs are effective, anyone who works at or visits the facility requires training. Employees receive detailed training on the ERP during orientation, onboarding and at least annually thereafter. Contractors and visitors receive an overview of the ERP (with emphasis on emergency reporting and evacuation routes) as part of their pre-entry safety briefing.

The adequacy of the ERP is also assessed at least annually through emergency response drills. A detailed assessment of the drill is completed and documented along with recommendations for improvement and an implementation schedule for their completion. Examples of emergency response drills are simulations of usage of AED (Automated External Defibrillator), dry runs for evacuation or fire drills that have been conducted at many MTI locations.

In case of an emergency event, the first aid response team plays a crucial role because it may save somebody's life. Therefore, all MTI locations are prepared to provide immediate first aid treatment to an employee or visitor in the event of an injury or illness. Each MTI facility has relationships with external emergency responders to provide emergency medical treatment to injured or ill employees.

Each MTI location has at least one MTI employee on each work shift trained in first aid and CPR. For large locations (greater than 25 employees), at least one employee in each department must be present on each shift. Each MTI location makes First Aid and CPR training available to all interested employees.



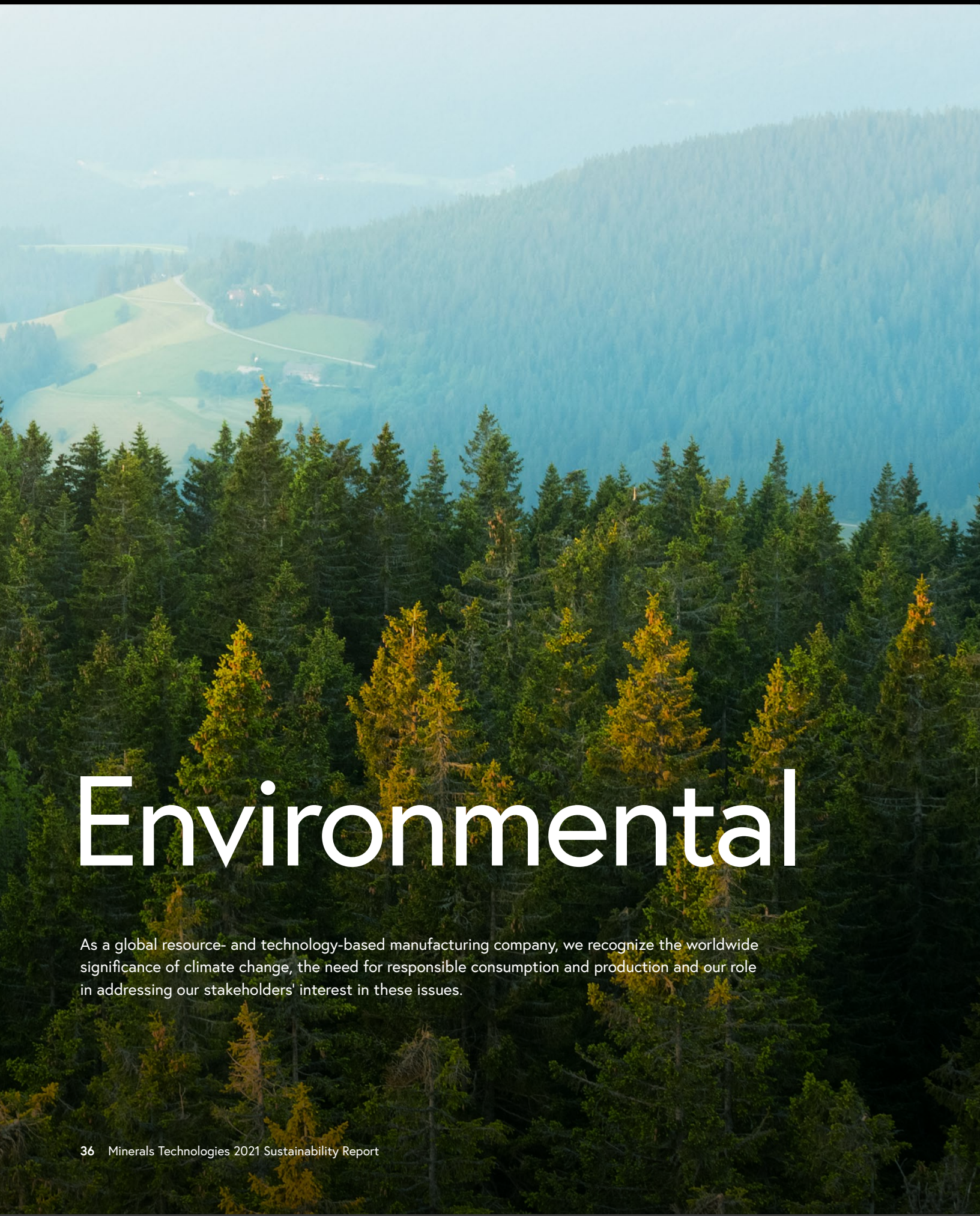
2021 SAFETY RECOGNITION

All Energy Service Malaysia locations Puchong, Kemaman and Labuan attended a celebration to accept the "OSH GOLD CLASS II AWARDS" during the 39th Malaysian Society for Occupational Safety & Health (MSOSH) Awards 2021.

MSOSH Occupational Safety and Health Awards (MSOSH Award) is an annual award presented to organizations in Malaysia with proven outstanding Occupational Safety and Health (OSH) performance. The MSOSH OSH Awards are intended to give due recognition to all member organizations and companies which have achieved commendable Occupational Safety and Health performance and/or have shown remarkable improvement in Occupational Safety and Health processes through sound Safety and Health Management system.

Our Colony West Mill received a safety award from the State of Wyoming Department of Workforce Services for its good safety performance in 2021.

SHARP Recognition Several of our sites in the United States have earned Safety and Health Achievement Recognition Program (SHARP) designations in the states where they operate. SHARP awards are given by OSHA and represent the highest level of safety standards and engagement.



Environmental

As a global resource- and technology-based manufacturing company, we recognize the worldwide significance of climate change, the need for responsible consumption and production and our role in addressing our stakeholders' interest in these issues.

Environmental Journey at MTI

In this year's report, we continue to disclose specific accomplishments to lower our environmental footprint in key areas and detail future actions to ensure we meet or exceed our 2025 targets.

We have a responsibility to ensure compliance with all environmental regulations in the locations where we operate, which includes reducing the impact of our operations on people, communities and the planet. Throughout our history, we have been working to lower our environmental footprint and are proud of the progress we have made. We continue to implement innovative, cost-effective solutions to reduce our environmental impact while remaining competitive within our industries. This is a continuous improvement journey, and we will continue to drive our performance further and faster. We are advancing our efforts through forward-thinking initiatives, additional developmental tools, as well as environmental targets that provide the framework for tangible progress.

In order to improve our internal environmental performance, we manage our manufacturing facilities around the world according to a global set of management principles.

Progress in 2021

We are pleased to report that we are resetting our 2025 targets to reduce our Scope 1, Scope 2 and airborne pollutant emissions, as well as water used and water discharged absolute volumes more aggressively. We are also announcing official 2025 targets for our intensity metrics per ton of production. In most cases, our new intensity reduction percentages are greater than our absolute reduction percentages. This is testimony to our growing process efficiency as we not only reduce our absolute emissions and discharges, but also increase our production volume with significantly less emissions per ton. As we economically and sustainably grow our business by deepening and extending our geographic presence, as well as engaging in new product development and acquisitions, our commitment to improving process efficiency will be key to continuing to reduce our emissions.

Over the past three years, we strengthened the sustainability mindset of our employees, while enhancing the reporting and verification of fuel, emissions, water and waste metrics. We also improved our internal data management system and increased the number of topics we disclose, steps undertaken to drive transparency and provide more ways to measure progress.





Key Management Aspects Include:

- Oversight, review and guidance on performance by our Board of Directors, LC, Sustainability Lead Teams, Business Units, as well as members of our Environmental Team
- Management engagement with key shareholders on sustainability, which includes: ongoing and evolving dialogues with local communities, interactions with our suppliers and customers, as well as collaborations with governmental officials and regulators that oversee our operations to enhance our sustainability practices
- Continuous improvement and ensuring our Operational Excellence principles are integrated into all activities that impact the environment
- Adhering to our global Environmental Health and Safety (EHS) Policy
  - Applying our global EHS Management System to all operations, which contains environmental standards and procedures and is modeled after ISO14001 and OHSAS 18001/ISO45001
  - More than 10.8% of our sites are certified to ISO 14001:2015 Environmental Management Systems, and we have our first site certified to ISO50001:2018 Energy Management Systems
  - Complying with all applicable laws and regulations and working closely with regulatory bodies as they develop new regulations
  - Working to minimize environmental impact, emissions and wastes. Increasing energy efficiency, promoting the responsible use of water, as well as reducing waste to landfills. Working with internal and external R&D/Engineering to embrace new technologies, such as renewable energy, water-saving solutions, as well as more efficient equipment
- Educating and empowering all employees to engage in activities to achieve 2025 reduction targets
- Conducting regular training and awareness programs for appropriate personnel
- Auditing all of our sites at least once every two years
- Sharing of best practices with all employees to empower them to implement site-specific solutions
- Reporting environmental performance internally each month
- Implementation of emissions and waste reduction plans developed at each site to achieve our overall environmental goals

In 2021, we focused on reductions in the following categories from our 2018 baseline:

- Scope 1 Direct greenhouse gas emissions CO_2
- Scope 2 Indirect greenhouse gas emissions CO_2 (from purchased electricity)
- Airborne pollutants
- Water used
- Wastewater discharge
- Landfill waste

Increased disclosure content in this section include:

- Hazardous waste generation by business unit and commitment to reduce our volume of hazardous waste generated in our plants
- Disclosure on the closed loop water recycle/reuse our PCC satellites share with our host paper mill customers, the amount of water we recycle, as well as where we source and discharge water and discharge
- Total energy consumed, including total direct and indirect energy
- Actions to manage and reduce our small settling ponds
- Percent of electricity consumed purchased from the electrical grid, as well as the fuel sources to generate that electricity

Looking Forward

Our near-term goals are continuing to implement projects to achieve our new, more aggressive 2025 emission and discharge reduction targets. In 2021, we started the integration of our Normerica and SPCC acquisitions to implement our environmental principles and standards. In 2022, we acquired Concept Pet and started integration process.

Over the next two years, we will undertake a comprehensive process to define more ambitious targets to further reduce our environmental footprint out to 2035. In addition, we have continued to enhance our climate-related risks and opportunities by reporting our findings using the Task Force on Climate-Related Financial Disclosures (TCFD) framework. Scope 3- MTI is developing Scope 3 upstream and downstream emission data and timeline for reporting.

Environmental Performance and Significant Progress Toward Achieving and Exceeding 2025 Targets

	2018 BASELINE	2019	2020	2021	PREVIOUS 2025 TARGET	NEW 2025 TARGET	PREVIOUS TARGET REDUCTION (%)	NEW TARGET REDUCTION (%)
Scope 1 Direct GHG CO_2[1] (tons)	441,881	390,782	348,770	368,434	353,000	331,000	20%	25%
Scope 1 Direct GHG CO_2 Intensity[1] (lbs CO_2/ton produced)	97	84	82	70	_	65	_	33%
Airborne Pollutants[2] (1,000 tons)	6.87	4.96	5.27	5.40	3.44	3.09	50%	55%
Airborne Pollutants Intensity[2] (lb pollutants/ ton produced)	1.5	1.1	1.2	1.0	_	0.68	_	55%
Scope 2 Indirect GHG CO_2[1] (tons)	154,573	158,578	120,850	105,320	131,000	93,000	15%	40%
Scope 2 Indirect GHG CO_2 Intensity[1] (lbs CO_2/ton produced)	34	34	28	20	_	20	_	40%
Process Water Used[3] (Billion gals)	7.41	7.60	6.31	6.36	6.6	5.9	11%	20%
Process Water Used (gals/ ton produced)	838	819	744	604	_	587	_	30%
Process Water Discharged[3] (Billion gals)	4.13	4.14	3.26	3.41	3.7	3.3	11%	20%
Process Water Discharged[3] (gals/ton produced)	465	446	383	324	_	312	_	33%
Landfill Waste Disposed (ton)	208,946	213,360	175,954	181,012	166,000	166,000	20%	20%
Landfill Waste Disposed (lb waste/ton produced)	46	46	41	35	_	32	_	30%

Notes:

1. MTI utilizes the GHG Protocol methodology and utilized USA 2020 Egrid data, 2021 UK DEFRA, and 2019 International Energy Agency database estimates for the Scope 2 emission factors for the countries in which we operate.
2. Emissions of Particulate matter (PM), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur hexafluoride (SF6), and Nitrogen trifluoride (NF3) are not material for MTI.
3. Process water used is our total water used and includes our cooling tower water.

Emissions

Scope 1, Scope 2 Greenhouse Gas Emissions (GHG) & Airborne Pollutants

As MTI recognizes the health and environmental issues associated with CO_2 emissions and related air pollutants, we are diligently working to reduce our emissions.

We are making noteworthy progress, as we identify our highest-emitting activities, implement corresponding energy efficiency programs and energy management systems (EnMS), as well as engage employees across our company to adopt a more energy-efficient mindset.

MTI has delivered a very strong Scope 1 Direct Emission reduction of approximately 17% and an Airborne Pollutants reduction of approximately 21% from 2018 through 2021. This was primarily driven by several of our large manufacturing and processing sites implementing changes that maximize the use of lower carbon fuels, a process involving reducing coal usage and increasing natural gas usage.

Greater Reduction Targets

Scope 1 Direct Emissions 2025 goal	**25% absolute reduction 33% intensity reduction**
Airborne Pollutants 2025 goal	**55% absolute and intensity reduction**

Key 2021 Emissions Reductions Achievements:

- Our Colony West, Wyo plant, one of our largest manufacturing facilities, has eliminated coal usage and switched entirely to natural gas for drying bentonite clay. This conversion significantly reduced both Scope 1 and airborne pollutants at this facility and led to reduced maintenance and operational costs. We are in the process of applying this learning across our global operations.
- Our Colony East, Wyo; Lovell, Wyo; and Sandy Ridge, Ala, facilities maximized natural gas usage and reduced coal usage in 2021, significantly reducing our Scope 1 and airborne pollutant emissions. We have a clear path for further reductions at these plants, as we implement plans to upgrade our clay-drying equipment.
- We have started purchasing electric forklifts across MTI global operations, with a goal of 50% implementation across all our operations over the next 10 years. Currently, about 15% of our forklifts are electric.
- We have started sourcing and utilizing hybrids in our company car fleet, with our first eight leases. We plan to continue to increase the number of these fuel-saving vehicles and consider including all electric vehicles in future years.

Plan to Achieve Target

Leveraging best practices from implemented projects, MTI aims to convert additional dryers and calciners to natural gas processes while improving fuel usage efficiency across our global operations. Our planned timeline to reduce Scope 1 and airborne pollutants is:

- 2023: Convert burners from coal fired to natural gas at our Colony, Wyo; Lovell, Wyo; and Sandy Ridge, Ala, locations for an approximate 20,000 ton/year CO_2 reduction.
- 2025: Explore feasibility of converting our Gascoyne, N.D. operation to electric drying since natural gas is not currently available in the area.
- 2030: Convert our Dongming, China, and Adams, Mass., facilities to natural gas when sufficient natural gas is available in these regions. We are working to accelerate this timeline by collaborating with the regional authorities.
- We are also evaluating additional methods to reduce Scope 1 Direct emissions and airborne pollutants by converting from fossil fuel fired to electricity-driven equipment. For example, we are investigating

- switching from diesel generators of electricity in our mines to sourcing electricity from the grid. Operational changes such as these will increase our overall electricity usage while significantly reducing our total CO_2 emissions.

Our Supply Chain and Logistics team are working to improve the fuel efficiency of our internal and external trucking fleet by installing skirts and fins on our tailers and using more fuel-efficient tires.

Scope 3- MTI is developing Scope 3 upstream and downstream emission data and timeline for reporting.

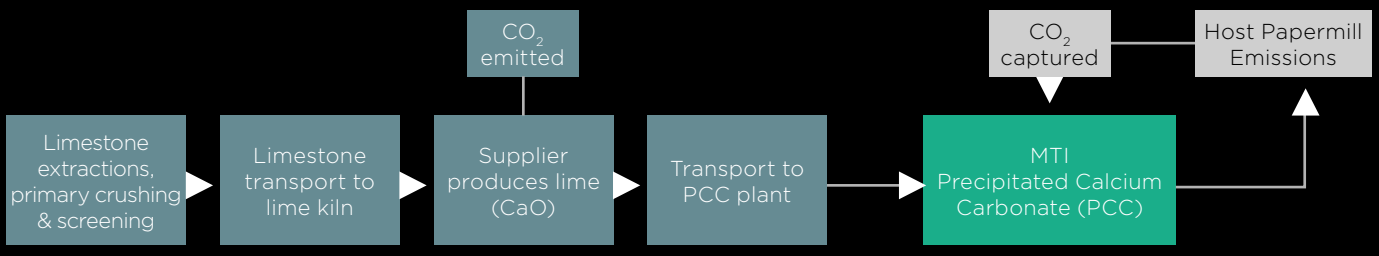
MTI Enables Carbon Capture and Emissions Reductions for Our Customers

In 2021, we extracted and captured **1.2 million tons of CO_2** from our Precipitated Calcium Carbonate (PCC) customers' exhaust stacks—as well as from some stacks of our own—and permanently sequestered those emissions **into 2.7 million tons of MTI high-quality PCC minerals** for use in our customers' specialty applications. We pioneered this waste gas utilization concept and have been improving the process to enhancing our carbon capture and sequestration. We sell this recovered CO_2 as a component in high-quality PCC to our customers to enhance their paper and packaging products, while reducing the release of CO_2 into the atmosphere. This unique approach to making PCC starts with the co-location of our satellite facility and the customer's production site, which removes the need to dry or ship the PCC slurry product, thus avoiding energy-intensive transportation. The 1.2 million tons of CO_2 captured, sequestered and used in customer products has not been included in our Scope 1 emissions. We plan to include this carbon capture and sequestration when we begin reporting Scope 3 calculations in the future.

Scope 2 Indirect CO_2 Emissions from Purchased Electricity

MTI is committed to the efficient use of energy throughout our operations, with a focus on reducing energy use, as well as expanding our use of renewable energy. In 2021, MTI significantly reduced our Scope 2 indirect carbon emissions through a broad range of energy-savings activities.

MTI PCC Production Process Carbon Footprint



MTI's Lime Supplier Production Process

$CaCO_3 \rightarrow CaO + CO_2$
Calcium Carbonate → Lime + Carbon Dioxide

MTI PCC Production Process

$CaO + H_2O \rightarrow Ca(OH)_2$
Lime + Water → Calcium Hydroxide

$Ca(OH)_2 + CO_2 \rightarrow CaCO_3 + H_2O$
Calcium Hydroxide + Carbon Dioxide → Calcium Carbonate

Greater Reduction Targets

Scope 2 Indirect Emissions 2025 goal

40% absolute reduction, up significantly from the previous **15%** absolute target reduction and **40%** intensity reduction.

Our success in reducing our Scope 2 carbon emissions by approximately 32% since 2018 is primarily due to:

- Implementing LED lighting
- Upgrading electrical equipment
- Installing onsite solar panels
- Directly purchasing wind turbine electricity
- Buying lower-carbon intensity electricity from the electrical power grids in several key countries.

A key achievement is starting in late 2020, with full benefit in 2021 and for the next 15 years is we are direct sourcing by contract 50% of the electricity supplied to our Colony, Wyoming, facilities from a Black Hills Energy wind turbine facility.

Plan to Achieve Targets

- We are encouraging our facilities and Supply Chain to source additional green electricity by either purchasing more electricity made from renewable sources or exploring the installation of wind or solar generation facilities on or near our facilities.
- MTI is continuing to develop near-term plans for converting all lighting to LEDs to reduce overall electricity demand over the next five years. Currently, approximately 30% of our global sites are 100% LED-lighting equipped, while the other 70% are implementing plans to upgrade to LED lighting over the next 5 years.
- We will upgrade agitators, air compressors, pumps and motors as part of the planned replacement cycle that will reduce future electricity demand.
- Where applicable globally, we will leverage the carbon-neutral playbook at our facilities in the Netherlands and Austria. These sites are audited by the Climate Neutral Group to calculate their CO_2 emissions, which are partially offset with on-site solar panels in the Netherlands.

Sources of Electricity

In 2021, we sourced 58.2% of our electricity from provider grids, 39.6% from our PCC satellite's host paper mill, 1.8% via direct purchase of wind turbine electricity from Black Hills Energy, and 0.4% from on-site solar panels in our Moerdijk, Netherlands, facility. Historical sourcing of electricity trends and details are shown in the appendix, page 78.

Focusing on Renewable Energy

About 33% of our electricity purchased from the grid was generated from renewable sources using estimates from the USA 2020 Egrid, 2021 UK DEFRA, as well the 2019 International Energy Agency databases. Including nuclear power as a carbon-dioxide, emission-free electricity supply, MTI received about 49% of our electricity from electricity generators that produce essentially none or extremely low quantities of CO_2.

MTI's goal is to increase our direct sourcing of renewable energy to 15% of total electricity usage by 2030. To help us achieve this goal and our Scope 2 Indirect Emissions goals, we are exploring a variety of renewable energy mechanisms and tools. MTI's Supply Chain and our facility managers are investigating additional direct green electricity sourcing opportunities. We are currently examining purchase agreement opportunities from electricity generators and determining the potential of installing wind turbine and solar panels at several of our facilities.

2021 Electricity Sources (%)

RENEWABLE	
Wind	13.7
Hydro	12.3
Solar	3.5
Biomass	3.0
Geothermal	0.6

NON-RENEWABLE	
Natural Gas	35.7
Coal	14.4
Nuclear	16.1
Oil	0.2

Total Energy Use

In order to reduce our total energy usage, MTI is investing in energy efficient equipment and implementing procedures that increase efficiency and conserve energy. From 2018 through 2021, we have reduced our total energy use by 3.1% with direct energy reduction of 2.5% and indirect energy reduction of 3.9%. This total energy reduction, even as our production volumes have significantly increased, is a testimony to our energy conversion and reduction efforts. We have increased our disclosure and enhanced our reporting of Total Energy Consumption, Direct and Indirect Energy for MTI and our subsidiary business units as shown in the appendix, page 78.

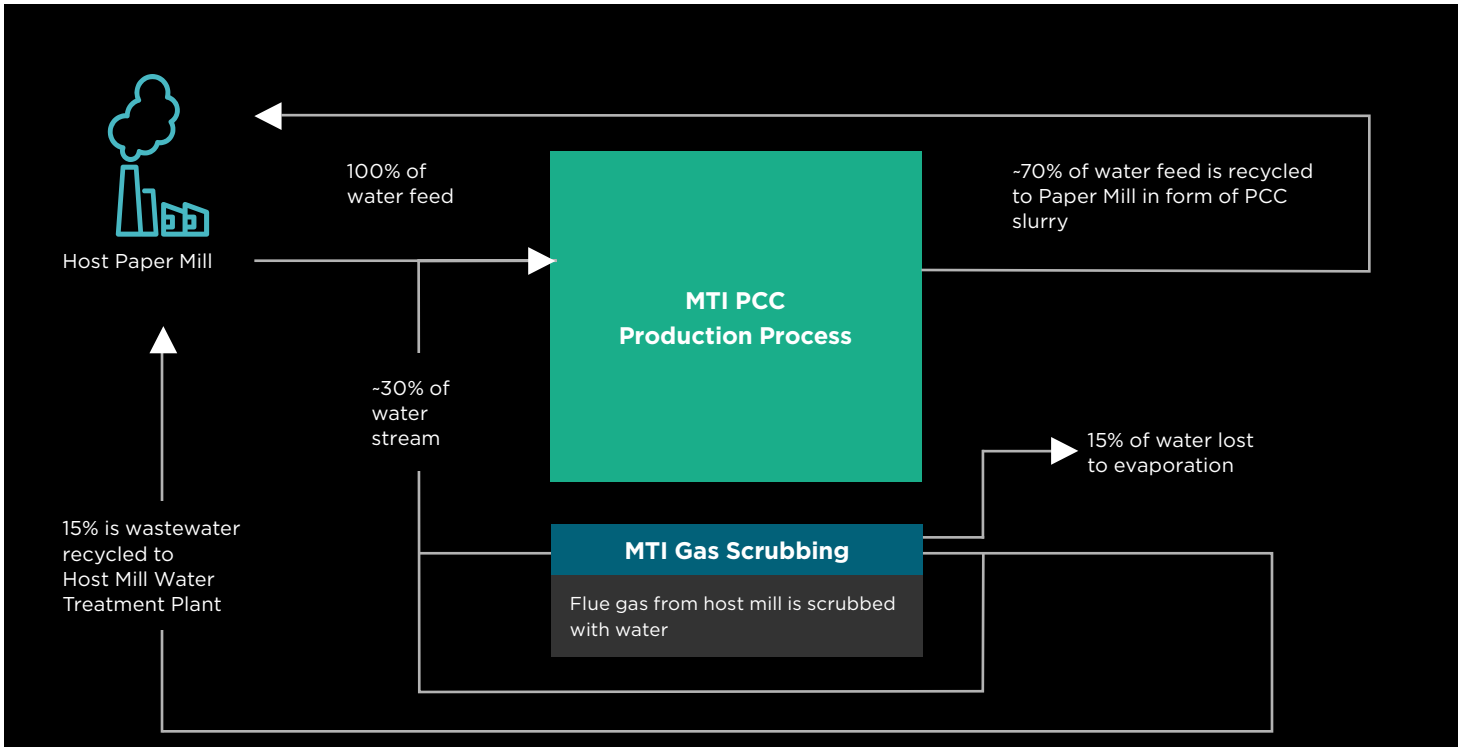
Water Use

Water is fundamental and essential to life.

At MTI, we are focused not only on using water judiciously but also on discharging wastewater in a safe and responsible manner. Several of our products require water for processing and manufacturing, and we recognize our responsibility to use this natural resource efficiently and in cooperation with local communities. Accordingly, our guiding principle is to measure, monitor, conserve, recycle and discharge water responsibly, while ensuring we comply with all relevant permits, regulations and policies.

In our Specialty Minerals facilities (Paper PCC and Performance Minerals), which make up more than 98% of our overall water usage, it has been our longstanding practice to conserve, recycle and reuse as much water as possible while providing an economic benefit to the local community. In areas with ample water supplies, we use water in our purification processes to produce specific grades of Specialty Precipitated Calcium Carbonate (SPCC) products.

Our Paper PCC satellites are typically located at customers' paper mills, enabling us to receive and reuse water from their facilities. The host paper mill requires significantly more water—typically 10 times more than our satellite plants. Around 70% of our water usage is recycled to the host mill in the form of our PCC product slurry, and 15% is recycled to the host paper mill water treatment system. This means that our PCC satellites use 85% of recycled and reused water (see graphic below).



Since 2018, we have reduced our water usage by about 1.1 billion gallons and our water discharged by about 0.8 billion gallons

In a few sites where water availability is limited, the local communities have established separate discharge criteria for excess water. The host paper mill and our satellite plants are important to the community's well-being and economic sustainability, and we recognize the human right to water as we work with the community to ensure conservation of water. As a result, we track not only the volume of water used and discharged, but we also closely track specific water quality criteria to ensure we are compliant with our local discharge permits. Process water used is MTI's total water used and includes our cooling tower water.

New Water Reduction Targets and Accomplishments

1. **Greater Process Water Used Reduction 2025 goal:** 20% absolute and 30% intensity reduction and increased significantly from the prior goal of 11% reduction.

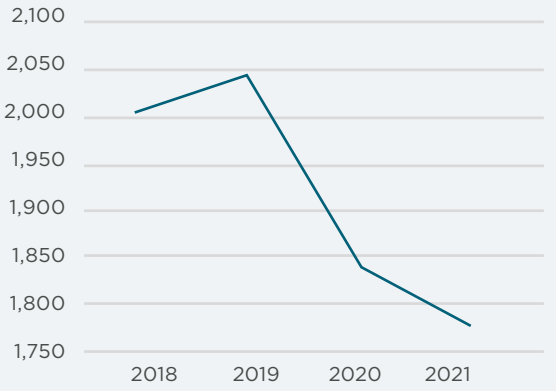
   In 2021, MTI's water use was approximately 6.4 billion gallons and 14% percent lower than our 2018 baseline. On an intensity basis, our water reduction efforts have resulted in an approximate 25% decrease in water used per MTI ton produced. Our success in reducing water consumed is due to continued implementation of closed-loop water reduction reuse projects at our Chillicothe, Ohio; Cloquet, Minn.; and Yanzhou, China, facilities, the best practices of which we implement across our PCC satellite plants globally. Our production volume growth in Asia increased consumption of water by >25% in this region; however, our newer plants were more water efficient and implemented closed-loop recycle streams upon startup.

2. **Greater Process Water Discharged Reduction 2025 goal:** 20% absolute and 33% intensity reduction and increased significantly from the prior 11% reduction target.

Key 2021 Achievements

In 2021, our Paper PCC satellite plants, which consume the highest quantity of water, continued implementation of global best practices and contributed to our water conservation, recycling and reduction programs. The continuous improvement over the past four years in our Paper PCC satellite plants is shown in the graph below.

PAPER PCC, PROCESS WATER USED INTENSITY
Gals Water/Ton Produced



In 2021, MTI's water discharged was approximately 3.41 billion gallons and approximately 18% percent lower than our 2018 baseline. On an intensity basis, our water reduction efforts have resulted in a 29% decrease in water discharged per ton produced. Our success in reducing water discharged is primarily due to the implementation of reuse/recycling projects and the continued use of projects already in place. We are applying these best practices to our more than 50 satellite plants globally.

Plan To Achieve Targets

Our PCC Plants are focused on two projects: Scrubber Water Blowdown Reclaim and Material Recovery System, respectively. These projects can be applied to approximately 40 PCC satellites, with a potential to save 900 million gallons of water/year. For 2022, we have nine plants in scope for implementing the water blowdown reclaim project, which will yield a savings of around 300 million gallons/year of water. Our material recovery project at Chillicothe is expected to yield 230 million gallons of water conservation/year, in addition to savings of approximately 1600 MW electricity in 2023 due to less pumping of water.

Focus on Water Source and Discharge Location

The appendixes on page 81 gives subsidiary water used, discharge metrics by water source, as well as discharge location and operating region.

Using the World Resource Institute Aqueduct Tool, MTI has completed a water-risk assessment of all facilities in 2020, evaluating water withdrawals, consumption, quality and site-specific regulatory risks. We have also expanded our reporting to disclose our sources of water used and discharged. We are creating a comprehensive water-risk management strategy on a region- and site-specific basis to further advance our strategy.

Our Waste and Spills

Improving process safety and mitigating waste in the form of spills, releases and landfill waste is closely linked to the optimization of processes and continuous improvement in our production. We are committed to reducing waste generation, including hazardous waste.

Landfill Wastes

We strive to understand our waste generation, fully characterize its components, focus on reduction and recycling internally and then determine the best beneficial reuse or disposal method. When we need to dispose in landfills, MTI places our landfill wastes in both on-site regulatory permitted and inspected landfills and third party commercial non-hazardous landfills. All of our landfill material is non-toxic.

About 80% of our landfill material in 2021 was composed of our minerals, mineral by-products, and auxiliary minerals derived from our processes as we produce our superior quality products. The majority of these mineral based wastes are disposed in MTI internal landfills. We continually seek out beneficial reuse applications for these mineral by-products and auxiliary minerals. A primary example of this is the auxiliary minerals (“grit”) separated from the lime at all our PCC plants. The undesired grit is produced during the process as a quality step to remove particles not appropriate for direct use in the PCC product as part of the paper-making process. Twenty years ago, almost all the PCC grit was disposed in landfills. As part of our continuous improvement, MTI implemented projects to both reduce the quantity of grit produced and to find beneficial reuse applications as an alternative to landfill disposal. To minimize the amount of grit formed in our process, MTI has developed and installed proprietary treatment processes in about half of our satellite plants that enables a portion of the grit material to be reused as a valuable addition to our PCC products. For the remaining grit material, MTI strives to utilize the lime-like solids in beneficial reuse applications, such as agricultural soil conditioning or construction products (bricks and concrete), and we typically see over 60% of total available grit directed into beneficial reuse applications.

Landfill Waste 2025 goal: 20% reduction. In 2021, MTI’s Landfill Waste was approximately 181,012 tons, which is 13% below our 2018 baseline. Our success in reducing waste is primarily due to finding or developing beneficial reuse applications. Paper PCC found agricultural and beneficial reuse applications for about 53,000 tons of grit, 10% more than 2020 and 61% of our PCC grit production. Several Performance Materials plants found new beneficial reuse applications for our waste, including use of our bleaching earth waste into brick manufacturing.

Plan To Achieve Target

We plan to reach our landfill waste target by increasing the beneficial reuse of our waste stream. Waste minimization and recycling efforts are in progress at many of our locations and will continue to be a key focus area going forward.

The appendix on page 82 provides Landfill Waste metrics by business segment.

MTI Environmental Release Data

39	7	30	5	43	8
2021 Total Releases	2021 Reportable Releases	2020 Total Releases	2020 Reportable Releases	2019 Total Releases	2019 Reportable Releases

Hazardous Waste

MTI is committed to reduce our hazardous waste generation and is developing plans and timelines, including substituting non-hazardous chemicals in our processes and laboratories and minimizing the volume of waste generated during equipment maintenance.

In our 2020 Sustainability Report, we utilized the United States Resource Conservation and Recovery Act (RCRA) definition.

For 2021, MTI is changing our definition of hazardous waste to a waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment as defined by the policies and regulations that oversee each of our manufacturing site locations. We have adopted this definition to comply with the local reporting requirements that govern our sites. Using this new definition, MTI generated and properly disposed of 224 tons of hazardous waste in 2021, which is about 0.002% of our 2021 finished product production volume. MTI hazardous waste includes 33% waste oil or waste oil byproducts that are incinerated for fuel value, 30% solvents and dyes, and 15% coal ash residue and we have reduction opportunities in each area.

Settling Ponds for Mineral Tailings

MTI operates and maintains small settling ponds at only our Aberdeen, Miss.; Adams, Mass.; Barretts, Mont.; and Saint Genevieve, Mo., facilities associated with the storage of mineral impurities removed during processing of our purified bentonite, calcium carbonate and talc products. The removal of the auxiliary minerals is a necessary step to provide customers with the highest purity grade mineral products.

We maintain the settling and tailings ponds according to regulatory permits, and all are monitored by MTI and the appropriate regulatory agencies.

Our largest settling ponds are located in our Barretts facility, where our tailings consist of the naturally occurring auxiliary minerals present in our talc ore. A rigorous inspection schedule has been implemented, which includes: daily MTI personnel inspection via Mine Safety and Health Administration (MSHA), workplace examination rules, as well as annual compliance inspection via the Montana Department of Environmental Quality (MDEQ). There are currently two small settling ponds in operation with an average berm height of less than one meter and a surface area of about three acres (10,000 square meters). MTI does not sequentially increase the height of the settling ponds with the tailings and, instead, typically dredges the tailings and disposes of them in compliance with local regulations. None of the water from the settling pond is discharged offsite, as all the water is recycled back to the manufacturing plant in a closed-loop water reuse process. The settling/tailings pond-closure plan is included in the site's overall Reclamation and Closure plan as part of our MDEQ Operating Permit. Typical post-closure monitoring is 10 years.

Environmental Releases

In 2021, MTI had 39 total releases and seven reportable releases; both were an increase over 2020 and lower than 2019. Our reportable releases are defined by local regulations governing our manufacturing sites.

MTI's goal is to have zero compliance violations, and we operate with a "zero-release" mindset. However, when incidents do happen, we have procedures designed to ensure consistent and prompt reporting of all situations that might have significant impact. On environmental release issues, we require sites to internally report these events to leadership. This is reflective of our continuous efforts to improve our processes and prevent future releases. All release events that may have the potential to impact the environment (also referred to as "near misses") are analyzed using root-cause processes, and key learnings are shared throughout our company. When a release occurs at a facility, a root-cause analysis investigation is conducted, with a target completion within one week of the event to ensure that the information and circumstances are quickly captured. Further, the facility documents the investigation and develops corrective actions based on the root cause(s) identified. The facilities employ several root-cause analysis techniques, including: Fishbone diagrams, 5 Whys, as well as Cause Mapping Improvement efforts to target spill prevention, enhance compliance tracking measures and bring more rigor to identifying the release activities. We report all environmental releases regardless of agency reportability status. Teams are empowered through training and communication to complete mitigation steps and address any noted gaps expeditiously, including implementation of preventive measures to eliminate recurrences.

Strong Commitment to Mining Sustainably

MTI's global mining operations span Australia, China, Mexico, Turkey and United States, and we recognize our responsibility to operate in an environmentally respectful manner.

We mine Bentonite, Hectorite, Leonardite and Bleaching Earth minerals in our Performance Materials business and Calcium Carbonate, Dolomite and Talc in Performance Minerals. Our approach to mining and land reclamation is guided by our OE principles and continuous improvement culture, as well as strict adherence to applicable regulations—we are always looking for ways to continuously improve above and beyond what is required from a compliance perspective. MTI does not mine in high conservation-value areas (HCVAs).

In 2018, we created a Mining Lead Team comprised of individuals in senior-level mining positions to develop best practices to ensure we are achieving the highest standards in mining, exploration, reclamation, biodiversity and reporting processes across our operations. In 2020, with the guidance of the Mining Lead Team, we are taking a more focused approach to our overall mining activities from exploration through closure as we strive to further minimize our impact on local communities and ensure we are strong stewards of the land we operate.

Limited MTI environmental data is not included in this report as detailed below:

MTI is unable to determine the greenhouse gas emissions impact of the electrical use at our Paper PCC satellite facilities, which are located on or adjacent to the host paper mills that receive the PCC product from our satellite facilities. Typically, the host paper mills supply electricity to the MTI satellite plants. Almost all of the paper mills generate this electricity from onsite cogeneration systems that use a variety of fuels, including biomass waste from the paper plant operations. The fuel usage (and the related emissions of greenhouse gases) changes each year, depending on the availability of the fuels and the operations at the mill. Due to this, it is difficult for MTI to estimate the indirect greenhouse gas impact from the use of electricity at our Paper PCC operations. The KWh's used by each satellite facility are recorded and included in the energy data section.

Environmental data is not available for our Refractories Segment Steel Mill Service locations, which are located within customers' steel mills. The steel mill service crews rely upon our customers to provide energy, water and waste management at the application site within the steel mills. These activities are a small fraction of the overall impacts associated with the operations of the steel mill.

We do not include the activities of our office locations in this report. These activities are a small fraction of the total MTI activities.

The report also does not cover the activities of suppliers or contractors who perform work on our behalf, nor the activities of tolling (outsourced) manufacturers.

Industry Leading Mining and Reclamation Practices

Talc Imperial Mine Expansion and Reclamation Planning at Barretts, Montana

The State of Montana strictly regulates mining activity, and, prior to any mining site preparation, MTI is required to obtain a permit from the Montana Department of Environmental Quality (MDEQ). The MDEQ conducts an Environmental Assessment (EA) or Environmental Impact Statement (EIS) as part of their review process. At the conclusion of mining a site, MTI is required to reclaim all mining sites in Montana under the Montana Metals Reclamation Act. MTI has mined talc at the site since the 1950s and from our Treasure and Regal Mines for over 28 years at the 1,425-acre site. In 2020 and 2021, we completed the Imperial Mine expansion from the existing Regal mine location. The expansion involved moving 4.6 million cubic yards of overburden material to enable continued mining operations. MTI worked with the MDEQ to develop a post-mine reclamation plan as part of the permit. The reclamation plan includes developing soil contours that blend with the natural topography of the surrounding area. As part of our reclamation process, MTI will use about 450,000 cubic yards of soil and overburden as cover and fill material. Additional aspects of the reclamation include removal of all mining facilities, installation of talus slopes on upper pit walls to allow biodiversity habit for birds and other animals, sloping and shaping of all slopes into shallow angles to allow placement of topsoil, development of ponds for wildlife water access, and placement of 12–24 inches of topsoil for native grass growth. MTI and MDEQ will jointly monitor the site for the next 5–20 years to ensure site and soil stabilization.

Industry Leading Bentonite Mining Practices

MTI is the world's leading miner and processor of bentonite clay. Based on past mining experience and geologic data of surrounding underground formations, exploration crews continually locate and evaluate bentonite deposits through a test drilling program. When a future mine site is selected for bentonite quality and volume, MTI's environmental specialists conduct vegetation, hydrology, soils and wildlife studies as well as detailed pre-mine surface topography and aerial imagery for planning and designing post-mine topography and surface-water drainage patterns. Our initial studies and development of mining plans enable our reclamation team to start planning with area farmers and ranchers in advance on plans to enhance their lands after mining has been completed. For example, by proactively working with farmers and ranchers, MTI has added new ponds for grazing livestock, drainage patterns have improved and vegetation has grown where little had grown before. The new ponds also help enhance the local wildlife by providing food and drinking water during more arid times.

The information obtained is formulated into a mining and reclamation plan and submitted to the regulatory agency in a mining permit application. After permit issuance and as mining progresses, the bentonite is extracted, and topsoil and subsoil are replaced to create a suitable bed for reclamation grass seeding. Backfilled areas are contoured to match surrounding topography and provide a natural landscape. Our goal is to restore the land back to an even more valuable habitat or as an economic resource for stakeholders. Typically, the mining process from start to replacement of the topsoil takes 3 months, and the full regulatory review from application to completion of reclamation monitoring takes approximately 10 years. In 2020, MTI reclaimed about 700 acres of land at our global mining locations.

MTI devotes a significant amount of time and resources to establishing reclaimed land that benefits a wide range of species of plants and animals, including:

1. Conducting winter aerial surveys of big game mule (deer and pronghorn) and monitoring known raptor nesting locations and developing potential mitigation plans to minimize impacts.
2. We continue our high activity in the study of sage-grouse migratory and mating behavior and habitat. MTI continues to be a leading participant in private-public partnership groups working to preserve Sage Grouse and their habitats. More information on the study is available here.



Social

Our Employees Are at the Core of Everything We Do

Ensuring the safety of our people and enhancing all aspects of our people-focused culture are fundamental to our daily operations around the world.

Social

We are a dynamic global team of approximately 4,000 employees and our core values — people, excellence, honesty, customer focus and accountability — guide our actions.

Our employees are at the heart of our culture and key to our ability to execute on our sustainability agenda. Our commitment to providing the safest possible working conditions and actively engaging all our employees in our safety efforts has been core to our company's values. This safety-first mindset helps us attract and retain top talent from around the world and drives continuous improvement in our operations. We also provide extensive training, professional development opportunities, competitive compensation and benefits to our employees. We continue to reinforce the importance of D&I through all levels of the organization, so that every employee recognizes its value and feels comfortable engaging in and driving an inclusive workplace.

To remain a competitive employer, we acknowledge the importance of our company values, vision and sustainability program to our employees, as we aim to continuously demonstrate our commitments, enhance our performance and support our local communities.

MTI operates globally in many distinct cultural and economic regions, and we are dedicated to strengthening our high-performance culture and fostering a diverse and inclusive workplace environment that operates with integrity, respect and accountability. MTI's Board of Directors, in conjunction with our Chief Executive Officer and our LC, has direct review and oversight responsibility for our safety practices, diversity and inclusion and human rights policies, talent management and succession planning.



Our Philosophy

Strategy

Create a safe workplace where employees can thrive and deliver high performing, sustainable organizational success.

We are committed to attracting, developing and retaining diverse people with the requisite skills to shape a stronger MTI and foster employees' engagement and motivation.



People-Focused Culture Starts With Operational Excellence and the Engagement of All Employees

Our Operational Excellence (OE) journey, rooted in the active engagement of our employees, began 16 years ago when we developed a highly structured business system of lean principles. Since then, OE has become the foundation of how we operate. We've significantly advanced OE principles across our company, building a culture of continuous improvement where each employee is empowered to apply people-focused values and tools to solve challenges, constantly refine our processes, identify and remove risk and waste, as well as deliver value to our customers.

Every day, MTI employees show their engagement and agility by applying their skills in ways that deliver measurable outcomes and create both business and social value.

In 2020 and 2021, due to the COVID-19 pandemic, we saw firsthand the power of our culture as we continued adapting to the many challenges we faced and implemented new tools and processes to operate efficiently, collaborate effectively and deliver value to our customers.



Operational Excellence Achievement Award

The Operational Excellence Achievement Award is presented annually to MTI organizational units that have demonstrated superior application of the principles of OE. Although the Award process is modeled after leading external operational excellence frameworks, it is based on the essential elements of the OE process as practiced at MTI. The Award is not only used for recognition purposes, as it is also a valuable tool for educating applicants on the many important facets of the OE system. A rigorous scoring template is followed for each application, and locations are evaluated based on work culture, continuous improvement, quality and customer service, business results and environmental health and safety. In 2021, we had nine Award recipients out of 38 applications from our manufacturing and resource units. It is a testament to our company-wide focus on OE deployment that we reached these record numbers in a year filled with many challenges presented by the pandemic.

8,600

Kaizen Events

On average, more than 22 highly focused, problem-solving events occurred each day in 2021 across the organization. These problem-solving activities result in thousands of incremental enhancements to our processes, products and operations every year, and they provide a significant competitive advantage for our company.

65,000

Suggestions

On average, each employee within the organization provided MTI with 17 suggestions in 2021. These suggestions help remove waste and risk from our processes and improve how we operate.

11,556

Bravo Chips

Our employees received an approximate value of $845,000, based on MTI's December 31, 2021 stock price in the form of Bravo chips. These chips are a key element of our employment recognition program for accomplishments related to process improvements, customer service and cost reduction.

OPERATIONAL EXCELLENCE is a strategic differentiator for our company, solidifying our high-performance culture by making MTI a more disciplined, agile and sustainable organization. The deep integration of OE goes beyond cost savings and productivity. It provides MTI with a common language and collective mindset to address a problem or challenge anywhere in the world.



Diversity and Inclusion (D&I)

Diversity and Inclusion (D&I) are integrated in our core values and are a key part of our sustainability strategy. We believe that a diverse and inclusive workforce and culture is instrumental in helping us drive long-term value at MTI.

Our commitment to a diverse and inclusive workplace is embodied in all that we do, including: our Diversity Policy and Mission Statement, Equal Opportunity Policy, our Employee Code of Conduct, as well as our Human Rights Policy. We expect all employees to build and sustain a work environment that embraces individuality and collaboration to drive strong results. We are committed to providing a workplace free of discrimination, harassment and retaliation, regardless of race, ethnicity, color, religion, sex, sexual orientation, marital status, age, disability, gender identity, national origin or any other classification.

Our Global Inclusion Council, which is chaired by our Chairman and Chief Executive Officer, was formed in 2019 with the directive to examine how we promote and support diversity in all its forms and to develop a strategy to drive meaningful programs to achieve our objectives. The Council, which comprises a cross section of leaders from across our company's regions and business areas, oversees progress to achieve our strategic imperatives and facilitates focus areas, as well as provides the resources needed to execute initiatives. We have made strong progress with D&I over the past several years, reshaping policies and benefits, training our leaders, as well as engaging our employees in meaningful dialogue to build understanding and a culture of inclusion. We continue to reinforce the importance of D&I through all levels of the organization, so that every employee recognizes its value and feels comfortable engaging in and driving an inclusive workplace.

Key D&I Initiatives

Driving Inclusive Behaviors

In 2021, every employee at MTI completed Unconscious Bias training, and all new employees now receive this training as part of onboarding. As a result of employee feedback, the Global Inclusion Council has selected a training on Inclusive Behaviors in the Workplace that all MTI employees will complete in 2022. This training seeks to help employees understand their own role in creating a respectful work culture and avoiding behaviors that exclude others.

Beginning in 2022, we will require all leaders at MTI to complete training on our recruiting and hiring practices.

Diversity Metrics

	2021	2020	2019
Women in the Total Workforce	17.2%	14.8%	14.6%
Women in Management Positions	17.0%	14.8%	14.8%
Racial/Ethnic Minorities in Workforce (US Only)	14.8%	13.1%	13.7%
Racial/Ethnic Minorities in Management Positions (US Only)	12.3%	12.4%	11.5%

As a way to best reach employees in their native language, we have invested in our onboarding process and now provide curriculum in 14 different languages.

In 2021, we defined "inclusive" as one of our cultural competencies that is used in our performance evaluations and talent management tools. Leaders at MTI are explicitly evaluated on this competency and are expected to foster inclusion within their teams and areas of influence.

Additionally, regional focus groups of 10 or less employees were conducted to hear directly from our employees on what inclusion and belonging in the workplace means to them as individuals.

Celebrating Our Differences

We have discovered that a simple but profound way to celebrate our unique differences is to spotlight the diversity of our employee base, our worldwide locations, as well as the cultural events that create meaning for our employees globally. Employee-led interviews and reflections spotlighted over the past year include: **Recognition for International Women's Day, Veteran's Day, Pride Month, Mardi Gras/Carnival, the Jewish High Holidays, Ramadan and more**. These spotlights continue to drive important discussions around the customs, values and viewpoints that contribute to who we are as individuals and the unique lens with which we see the world.

Advancing Diversity

We are continuously looking for opportunities to diversify both our new hires and who we promote by setting standards for hiring and promotion based on merit rather than quotas. We are happy to report positive progress in the representation of women and racial & ethnic minorities in our workforce.

MTI has several initiatives to recruit from diverse talent. We have evolved our succession planning and recruitment practices to further embed D&I strategies that encompass more than gender. MTI now requires a minimum of two diverse candidates in the talent pool for every role within the Company. Additionally, we utilize our internship program and mentoring program to advance diversity within the company. In 2021, 75% of new hires coming out of our internship program were minorities.

MTI has extended D&I recruiting resources to include a comprehensive list of external partners, including, but not limited to: the Lehigh Valley Chamber Women's Business Council; the Women in Mining Coalition; the Society of Women Engineers; Recruit Military; the Association of Women in Metal Industries; National Women in Construction; the Society for Mining, Metallurgy & Exploration; the National Diversity Council; the National Society of Black Engineers; and the Society of Hispanic Professional Engineers.

In 2021, we began monitoring and auditing diversity metrics by Business Unit and Resource Unit and included a robust discussion on initiatives to advance diversity in each group's annual planning process.

Promoting Equality In Our Compensation and Benefits

MTI is committed to pay equality, and we strive to pay competitively in local markets where we do business and compete for talent. We benchmark our compensation to ensure we are keeping pace with the market to provide competitive pay and benefits. We have a transparent compensation system with objective metrics around recruitment, performance, advancement and compensation. MTI conducted an annual gender pay-equity analysis in 2021, and we are proud to report that pay is equitable, fair and consistent without discrimination on the basis of gender, race or ethnicity throughout our company.

For the last several years, diversity, equity and inclusion efforts have been a key focus area, a crucial part of which is inclusive benefits. MTI began offering a Global Employee Assistance Program in 2020. All employees and dependents within the organization now have a readily available resource to assist with behavioral, mental and social-based needs. The U.S. Wellness program continues to evolve and now offers virtual wellness opportunities to engage employees. Living Well 365 continues to provide a user-friendly and comprehensive platform to engage our employees and dependents throughout the year. These wellness offerings include several behavioral health resources. We are also proud to have enhanced our U.S. Benefit offerings as of January 1, 2022, to include a comprehensive fertility solution to support employees, including benefits that are available to all plan participants regardless of sexual orientation, gender identity or geography. This benefit, combined with our adoption support program, allows all employees access to resources to build their families.

Other locations around the world continue to offer supplemental benefit offerings, such as annual physical checks, stress management resources, lifestyle-change sessions as well as employee/dependent meetings with public health nurses to discuss medical conditions and follow up with improvement programs. We recently enhanced supplemental benefit offerings in Canada for all employees that includes multiple wellness modules, mental health services, multiple types of therapies, weight-loss aides, fertility benefits, online doctors' services and more.

Our People



Americas



Asia



EMEA



Board of Director Diversity

30%

diverse from ethnicity/ gender perspective

Employee Average Age

43

Employee Average Years of Service

10

All employee data is as of December 31, 2021

New Hires and Turnover in 2021

2021 New Hires by Age

	TOTAL
Under 30	294
30–50	348
Over 50	83
Total	725

2021 New Hires by Region

	TOTAL
Asia	85
EMEA	109
Americas	531
Total	725

2021 New Hires by Gender

	TOTAL
Female	115
Male	610

2021 Turnover Rate

	MALE	FEMALE	TOTAL
Voluntary including retirements	9.9%	1.3%	11.2%
Involuntary	2.7%	0.4%	3.1%
Overall	12.6%	1.7%	14.3%

U.S. Minority Information

The percentages below represent employees living and working in the United States choosing to identify as non-Caucasian. Fifteen percent of our U.S. workforce choose to self identify as minority classification in 2021.

POSITION	CAUCASIAN	MINORITY	TOTAL OF U.S. WORKFORCE
Executives	2%	0%	2%
Senior Managers	16%	3%	19%
Tech	6%	0%	6%
All Others	61%	12%	73%
Total	85%	15%	100%

Advancing Our People-Focused Culture Through Training

MTI Academy, launched in August 2021, is our global hub for all training and development. With system functionality and training available in all major languages, employees for the first time ever have a one-stop shop for training. Required training is intuitive and able to be quantified, allowing us to analyze training metrics for the first time. Continuing education is a key component of what allows MTI to be a leader in safety, collaboration and global inclusion. Therefore, individual contributors and managers have carefully selected courses available at the click of a button to accelerate leadership development. Through interactive content covering Lean Manufacturing, Operational Excellence (OE) and more our employees are continuously sharpening their strategic thinking and critical-thinking skills.

Customers utilize MTI Academy as a tool of engagement and education on our products and services. The intuitive and modern interface—that is also accessible by mobile device—serves as an example to our Customers that MTI is technology driven and ever evolving. New employees are welcomed to MTI and exposed to our values and culture starting day one, and this continues through their first year of employment via a 13-hour onboarding curriculum. Real-time progress updates available to employee's direct managers sets a foundation of open communication and transparency for an employee and their manager.

211 different courses have been accessed by 2,725 different employees over 11,670 times over five months since MTI Academy launched (August – December 2021). Courses have ranged in topics such as Diversity and Inclusion, Compensation, Operational Excellence, Data Privacy, Compliance, Cybersecurity, Project Management and Mindfulness, as well as Safety.

We offer extensive education related to the principles of Lean Manufacturing (Lean), which is closely aligned with OE, to prepare our workforce to become highly proficient problem-solvers. Each new employee entering the organization undergoes 25 hours of OE-focused training within their first year of employment.

Safety Training: All employees receive a level of continuous safety training commensurate with their job function and in their local language. In 2021, MTI employees completed over 25,000 courses and approximately 19,000 hours of safety training courses. About 3,300 employees accessed this training in 17 different languages.

MTI Internal Webinars: We offer extensive education related to the principles of EHS, Lean and OE through internal webinars by and for employees. These webinars are recorded and made available for replay anytime. In 2021, MTI hosted 64 webinars, with an average attendance of 400 employees.

Employee Onboarding and Talent Management

We offer our employees a multitude of opportunities to enhance their professional development.

New Employee Onboarding: All new employees receive extensive onboarding training on required safety practices, policies and practices, as well as MTI culture, starting on day one and continuing quarterly through the first year of employment.

Our people are not only our greatest asset but our greatest competitive advantage. Our talent management processes are centered on attracting, building and retaining a highly skilled workforce. MTI continues to invest in current talent and development processes. These efforts identify opportunities to upskill and build competencies through on the job training and development.

Annual Performance Assessment: The goal each year is for 100% of MTI employees to receive a performance evaluation. In 2021, nearly 100% of eligible employees received a performance review from their manager. Annual reviews focus on twenty cultural competencies, which are a direct reflection of our core values. In addition, we offer quarterly and mid-year performance checkups for select employees.

Mentorship Program: The mission of MTI's Mentorship Program is to give employees the opportunity to develop their career, leadership and diversity of skills

needed in order to be successful at MTI. The program focuses on the employees at the entry-management level—or soon to be at this level—to develop the next generation of leaders. These employees are strategically paired with a mentor that has been carefully selected by senior leaders. Progress and results are reviewed on a quarterly basis during our LC Talent Review Sessions. We look to continue to expand this program in the coming years, placing emphasis on mentees and mentors of gender or ethnic diversity. About half of the participants in the 2021 program were comprised of gender or ethnically diverse employees, which we look to expand upon in the future.

Individual Development Plans (IDP): Individual Development Plans (IDPs) and activities are a collaboration between managers and their direct reports—help guide career progression and knowledge learning, resulting in high-potential talent within the organization. This tool serves to drive customized curriculum aligned to leadership competencies.

360-Review Process: Development at MTI is centered around a comprehensive performance review process, which includes 360-degree, multi-dimensional feedback for our senior leaders. This enables MTI leaders to broaden their development while, at the same time, build leadership depth and capabilities. The 360-degree process was inclusive of employees that represent our geographic footprint. About half of our participants are represented from either gender or ethnically diverse groups.

High-Performance Work System (HPWS) and Self-Directed Work Teams (SDWT): MTI is dedicated to implementing the organizational design concepts of High-Performance Work Systems (HPWSs) for its operating facilities. HPWS organizes people with technical systems to achieve high performance and employee participation levels. This structure increases employee effectiveness and engagement and permits sites to operate more safely and effectively, with fewer supervisors and enhanced teamwork. HPWS also provides employees with decision-making authority, business information and the training needed to make sound judgments, giving them opportunities for performance-based rewards that align employee motivation and business needs. Employees can grow and develop through the training and certification provided by the skill-based pay and multi-level line of business structure of HPWS. 2021 HPWS implementations and development were focused at our Lifford, England; Brantford, Ontario; and Asia locations.

Testimonial from Mark Coviello, MTI employee:

"I want to send out a brief email, letting you know that I recently graduated with my bachelor's degree in Operations Management. I wouldn't have been able to do this, if it wasn't for the company's generous educational assistance program. It has been 14 years since I started at MTI, and the driving force behind getting this degree was to better myself, as well as advance within and support the company. I'm thankful to all those who assisted me through the years in this pursuit, and I look forward to contributing my learnings to my work at MTI."

Tuition Reimbursement: Learning and development is fundamental to success. Investing in our people is one of the top ways we acquire, retain and develop top talent. As such, we are proud to offer educational assistance to all U.S. regular, full-time employees that have been employed by MTI for at least six months. We reimburse employees for 100% of their tuition and associated fees upon successful completion of coursework. Over the past five years, we have provided over $525,000 in education assistance to our employees, of whom approximately 40% was gender or ethnically diverse.

Internship Program: Through MTI's College Internship Program, we provide an immersive and hands-on experience to prepare interns to successfully navigate a future career. Our interns gain real-work experience, benefit from our social engagement as well as network with executives and key business leaders. The global program, which extends across multiple areas of the business, stresses sourcing interns from diverse backgrounds. In 2021, 75% of our college hires were women and/or U.S. minorities. Several of the 2021 interns were offered full-time employment with MTI following their graduation.





Total Rewards for Employees

MTI cares about all aspects of well-being, including the social, emotional, physical and financial welfare of our employees and their families. Through our robust Total Rewards package, we offer competitive compensation, comprehensive benefits and other programs to support growth—personal and professionally—for MTI employees. In 2021, we continued to offer enhanced Company benefits to support the health and well-being of our employees during the COVID-19 pandemic, including our Employee Assistance Program (EAP), telehealth, temporary sick leave, family leave and voluntary leave of absence policies and programs. In 2021, MTI recognized the need for enhanced Mental Health and Wellness offerings and reacted by adding mental health and emotional well-being support services into our health and EAP offerings, employees with new and additional benefit offerings. We provided additional well-being resources regularly through our company intranet and are also expanding our virtual care opportunities for our employees. MTI is proud to now be offering fertility benefits to our U.S. and Canada employees. This new benefit—combined with our recently enriched Adoption Assistance Benefit—provides our employees with support throughout the family-building process.

Employee Rewards and Recognition

A key element of our recognition is what we call the Bravo Chip, a custom-designed token. The Bravo Chip is awarded to employees for noteworthy accomplishments across a variety of areas, including, but not limited to, process improvement, customer service, cost reduction as well as safety and environmental excellence. Each Bravo Chip represents an amount of cash based on the equivalent value of MTI shares. Since its inception as an important vehicle for recognizing employees, the number of Bravo Chips granted each year has significantly increased. Recognition of employee efforts in advancing Operational Excellence (OE) has helped to increase the level of engagement in our continuous improvement process. Safety letters are sent from our CEO to recognize sites that operate injury-free, as well as those that achieve the annual OE Achievement Award. We also recognize suggestions that help reduce costs or identify an improved way of working. The suggestions resulting in new best practices for OE, sustainability and safety are disseminated to all employees.

Community Engagement

In many locations, MTI is a major employer, taxpayer and sponsor of community initiatives. Our facilities closely partner with local stakeholders to understand how we, as an organization and as individuals, can apply our time, talent and charitable giving to have a meaningful and lasting impact.

We are deeply committed to making a difference in building strong communities. Our employees bring that commitment to life by participating in our various corporate social responsibility programs that encourage volunteerism in their communities. We support facility-led volunteer activities and donations to local charities, plant and mine visits for community members and educational institutions, local employment opportunities and career fairs. Many activities focus on promoting safety, emergency response planning, as well as building more sustainable communities.

MTI Community Projects: Lending a Helping Hand

- MTI and our Poland facility has provided support to Ukraine and Ukrainian refuges that have relocated to communities near our facilities.
- In October 2021, the PCC Tha Toom team in Thailand helped donate protective gear for handling the COVID-19 pandemic for local government Community Isolation Center.
- In August of 2021, the MTI team in Korea completed a group activity in which they donated food to a local community center to support those in need and who have been impacted by the COVID-19 pandemic. Our team donated $8,400 worth of food to the community center to enhance the welfare of residents and strengthen our relationship with the community. The donations were directed to senior citizens, sick individuals and children.











Jumpstart Book Donations

JumpStart is a national, early education nonprofit organization, working toward the day that every child in America enters kindergarten prepared to succeed. The organization provides language, literacy and social-emotional programming to children in underserved communities. MTI has supported this work through an annual donation over the last several years. In recognition, MTI was provided with 600 copies of the children's book *Amy Wu and the Patchwork Dragon*, written by Kat Khan, a book that reflects the diversity of the world and our company. To give back to the local communities in which we work and live, MTI donated the children's book to 16 elementary schools in the following communities: Bethlehem, Pa.; Easton, Pa., Adams, Mass.; Dillon, Mont.; Gary, Ind.; Houston, Texas; Lafayette, La.; Lovell, Wyo.; Dongming, China.

Earth Day Celebrations

Many of our locations participated in activities to support the environment and involve employees in recognizing the significant role sustainability plays in our lives and at MTI. At several locations, employees planted new trees and installed bird feeders.

- June 2021–PCC Changshu joined local EPB activity on Environmental Day–Cleaning Up Yushan Mountain
- MTI continued its tree-planting efforts throughout the MTI campus in Bethlehem, Pennsylvania, to support our company's sustainability efforts.
- Clean-Up Activities in Gamagori, Japan, Oct 2021
- Environment Day, Tha Toom, Thailand

World Environment Day

Several of our global plants celebrated World Environment Day through a variety of activities. Our global teams recognized and celebrated the importance of protecting the environment, undertaking actions to be good neighbors in our communities. Activities included:

- Inviting families, local officials/police officers, as well as frontline workers to participate in the events
- Discussing MTI's environmental goals and how sustainability is a key part of everything we do at MTI
- Raising awareness about how employees and their families can make our world more sustainable
- Planting tree saplings at facilities; employees also brought home saplings, transplanting them to help grow local forestry



Employees, friends and neighbors participate in their local Run For Your Mother 5k event.



The 16th Annual St. Luke's Run-Walk With The Heroes event took place in May in Easton, Penn.



Melinda Reynolds, HR Manager, stopped by the Harrison, Mont. K-12 School to speak to students about Sustainability Activities.



4-H Mentorship and Corporate Support program meetings are held in Barretts, Mont.

St. Luke's 16th Annual Run-Walk With The Heroes

MTI sponsored and participated in the 16th Annual Run-Walk with the Heroes, benefitting St. Luke's Trauma "Stop the Bleed." "St. Luke's Stop the Bleed Initiative aims to provide free trauma and bleeding prevention education to first responders, including police departments, schools and community organizations, such as PTAs, Boy/Girl Scouts, civic groups and other non-profit organizations." St. Luke's University Health Network is a nonprofit, regional, fully integrated, nationally recognized network providing services at 14 campuses, including in Bethlehem and the Lehigh Valley.

Run For Your Mother

MTI is in the tenth year of supporting the Run for Your Mother event, which typically engages more than 200 participants annually. In 2021, the MTI team raised and donated $1,640.

Our Poland Location helps Szlachetna PACZKA, Christmas 2021

CETCO-Poland participates in a nationwide charity event known as Szlachetna PACZKA, organized by the charity association WIOSNA ("spring" in Polish). The main goal is to provide resources and mental help for families and people in difficult life situations. Our employees organized money, food and household products for local families.

Donations during the Holy Month of Ramadan

Ramadan is characterized by generous donations to humanitarian programs as much as by prayer, solemnity and celebration.

MTI employees around the globe honored the Muslim holy month by supporting Eid celebrations and also by donating money or helping to distribute food to those in need.

Barretts, Mont.: Harrison MT K-12 School – Sustainability Activities Support

MTI supported a Montana school by engaging its junior high students in sustainability discussions, as they began their spring curriculum centered around sustainability. Students were highly engaged and had many questions and comments around mining equipment, farming equipment, water usage, food sources, diversity and utility sourcing.

Barretts, Mont.: Local 4-H Mentorship Program and Corporate Support

MTI actively supports the 4-H in Beaverhead County (Dillon, Mont.) by providing annual financial support during the livestock auction. Employees also volunteer their time, mentoring to the community's youth and serving as judges on the livestock shows.





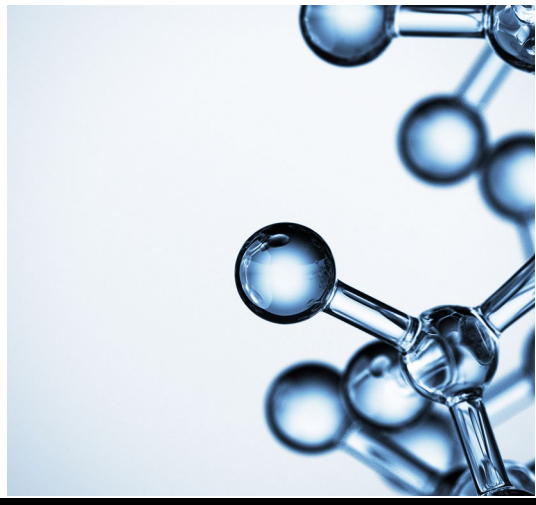




Wiosna organization's Szlachetna PACZKA is a nationwide project in Poland that helps families in need, especially around Christmas. Thanks to volunteers and donors, families receive care packages including food and necessities, as well as toys and gifts for the holiday. Our employees in Poland supported this important cause by donating food and supporting holiday events.





New Product Development

New products commercialized in 2021 diversifies our offerings and expand our in-home and personal care portfolio

Our Product Development Processes and New Products Fortify Growing Market Applications

Overview

New product development is essential to MTI, with the creation and commercialization of new technologies serving as a core part of our growth and sustainability strategy.

We are constantly evaluating opportunities to improve our existing products, technologies and production processes—or creating new ones—to help reduce MTI's and our customers' impact on the environment. Our sustainability goals are aligned with our Lean philosophy of continuous improvement, resulting in the ongoing development of products and technologies in response to customer needs. Additionally, our innovation process provides a mechanism to evaluate how our products support our customers' sustainability goals.

Key Objectives

- **Accelerate the speed of development with a goal to reduce development time by half**
- **Increase number of products commercialized**
- **Enhance the impact of our innovations with a goal to double percent of revenue from new products**
- **Grow portfolio of sustainability-focused products**

Progress Advancing Key New Product Development Objectives in 2021

$730M Potential Revenue
Pipeline Value From Development To Commercialization

Commercialized 63 New Value-Added Products
Continued to Leverage Virtual Tools for Trials

18-Month Timeline
From Idea to Commercialization (50%+ Reduction from 40 Month Timeline In 2016) and Progressing Towards Goal of 10 Month Timeline

12% of Total Sales
From New Products*
Progress Toward Goal of 20% and Higher

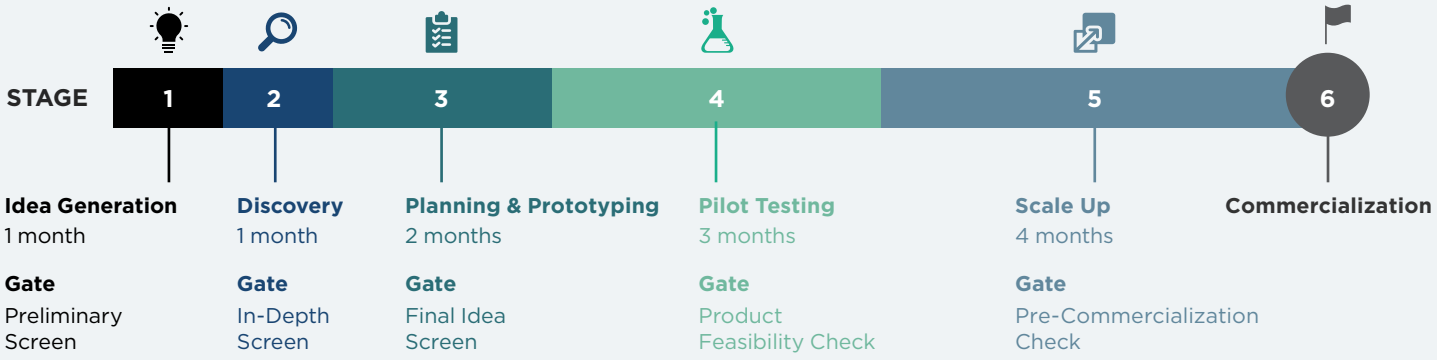
+68% Sales Increase
From New Products* Since 2016

86% of Projects
Developed with Customers

MTI Sustainability Indicator: 34%
New Products that Benefit Sustainability Goals

Customer Sustainability Indicator: 64%
New Products that Support Customer Sustainability Goals

*New products commercialized in the last five years.



We Are Customer Driven

Our new-product development process starts with the customer. Collaborating and listening to the Voice of the Customer (VOC) has always been part of MTI's DNA. It is the foundation of how we innovate closely with our customers, as well as grow our business and deliver consistent value, based on our continuous improvement philosophy, sustainability strategy and culture of innovation.

We use our minerals, surface modification chemistry and formulation expertise to enhance our customers' long-term sustainability by improving their productivity, product quality and overall performance. That translates to external value through market share growth, as well as cost savings and internal value derived from more sustainable packaging materials; lower energy, water and landfill quantities; and reduced carbon emissions.

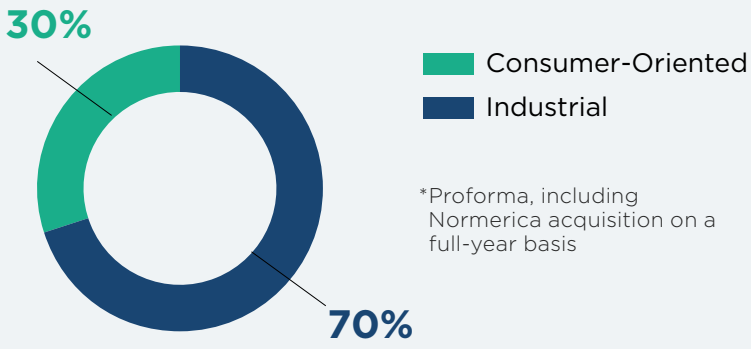
With the sponsorship of our CEO and LC, our VOC Lead Team is responsible for implementing a variety of enterprise-wide, customer-centric standards in our product development process. These standards include strategic account management, value-selling methodologies, as well as targets to ensure our products meet customer needs. We also utilize a dashboard to communicate our metrics visually to better track trends and measure our continuous improvement.

We Use Stage-Gate Process to Drive Our Product Development Effort

Our new product and process development (NPPD) system is overseen by our Technology Lead Team (TLT), one of our culture-based teams that reports to our CEO. The team members are individuals with significant R&D and commercial expertise from across all businesses. The TLT develops the policies, tools, best practices and metrics to ensure we are staying at the forefront with our innovation and technology initiatives. Our NPPD management system is designed to allow every employee to submit suggestions for new products and processes or improvements of old ones. **In 2021, our employees submitted 214 new product and process ideas.**

Our stage-gate NPPD process ensures projects progress in a focused manner that maximizes the benefits while reducing the time to commercialization. Each development stage has a specifically defined plan and critical metrics to track process toward product goals and growth strategies. This approach allows us to quickly surface knowledge and gaps that are addressed through direct interactions and feedback loops with our customers. Additionally, our system provides a mechanism to evaluate how our products support our customers' sustainability goals.

2021 Net Sales by End Market*



*Proforma, including Normerica acquisition on a full-year basis

In total, our consumer-oriented products now comprise 30% of our total sales portfolio, providing the foundation for more balanced, higher margin growth.

Growing Consumer-Oriented Portfolio

Household and Personal Care

- We are the leader in premium bentonite clay-based cat litter products. Our clumping sodium and calcium bentonite clay litters reduce odors, and our aesthetic additives enhance the customer experience. We continue to evolve our portfolio to strengthen our global position and value proposition, including new eco-friendly and more sustainable packaging for our private-label products to meet consumer preferences. Our cat litter products also include fragrance boosters to extend product lifetime, reduce disposal costs and enhance the odor control.
- We manufacture a wide range of functional agglomerated fabric whitening agents, fragrances, surfactants, visual cues and fabric softening agents. Our products are added to powder laundry detergents and unit dose detergents.
- We are a premier formulator of retinol delivery for a broad range of skin care applications, including pharmaceutical and cosmetic topical skin care creams and lotions.

Edible Oil Purification

- Utilizing a unique mineral and process, our bleaching earths are used to purify edible oils and bio-based fuels by removing undesirable chlorophyll, colorants, metals and oxidative compounds, as well as phosphorus. Our advanced Rafinol™ bleaching earth enables our customers to refine and improve the quality and shelf life of edible oils for human consumption and helps enable the production of biodiesel and sustainable jet fuel while supporting our planet's health by reducing the overall carbon footprint.

Bio-Agricultural Applications

- Our bentonite clay-based products are added to animal feed, improving animal health by reducing mycotoxin concentrations.
- Our calcium carbonate-based products are widely used in livestock and poultry foods to enhance the nutritional content.
- We enhance farmer crop yields and soil health with Enersol® and Agro-Lig® natural leonardite-based crop growth formulations and calcium carbonate-based soil amendments.

Food & Pharmaceutical Applications

- Our calcium carbonates function as antacids and digestive aids.
- Our bentonite clays are used in pharmaceuticals and to clarify wine and juices.
- Our talc-based products and organo-bentonites reduce plastic food packaging thickness and weight and increase food freshness.

Water Treatment

- We have strengthened our technology portfolio specializing in treating complex, non-compliant aqueous streams, enabling us to convert them to water that can be safely discharged.
- Commercialized in 2019, our FLUORO-SORB® adsorbent products trap and retain PFOS and PFAS contaminates to reduce exposure to humans and play a key role in providing access to clean drinking water.
- Our advanced Resistex® and Bentomat® environmental barriers contain wastes and leachates in landfills and mining sites to prevent infiltration of toxic chemicals into ground water.

Leading Industrial Positions

Automotive, Agricultural, Industrial, and Infrastructure Castings Made From Iron and Steel

We significantly enhance our customers' processes every step of the way.

- Our foundry customers utilize our specialized Additrol® and Maxicarb® greensand bond formulations. These solutions improve iron and steel casting performance and productivity and reduce the emissions of our customers' foundry sands by 10–25% while enhancing the greensand's recyclability.
- Our leading portfolio of Refractory products improves the productivity of steelmaking operations, reduces energy consumption and provides our customers with the lowest overall cost/ton of steel produced.
- Our talc is a key component in the ceramic catalytic emissions control system in automotive and truck engines.

Residential and Commercial Construction

Our products protect and enhance the safety, functionality and aesthetics of buildings.

- Our calcium carbonate, Specialty PCC and talc—used in roofing, resilient flooring, joint compounds, block, pavers, glass, windows, sealants, plastics, paints and coatings—improve performance and durability and reduce requirements for resins, adhesives and plastics.
- Our Voltex® below-grade waterproofing products prevent water ingress damage.
- Our Liquid Boot® vapor barriers reduce harmful vapors that could enter buildings from the surrounding soil.

Paper and Packaging

Our broad technology portfolio improves the sustainability of the papermaking process.

- Our PCC enables customers to use significantly less pulp and fiber (trees) and energy than traditional fillers and serves as a key solution for filling and coating high-quality printing paper.
- Technologies, such as the FulFill® platform of products, including ENVIROFIL® PCC and NewYield® PCC, improve fiber consumption and enable waste recycling. These are creating more value for customers and driving penetration in high-growth markets.





Enhancing Sustainability Via Packaging Initiatives

Carbon Neutral Pet Care Packaging

MTI continued to lead in the improvement of sustainability for pet care products. Our European pet care business (Sivomatic, headquartered in Moerdijk, Netherlands) launched a carbon-neutral product, SivoCat® EcoCare, which appeared in stores in late 2021. The product was certified carbon neutral by a third-party agency, Climate Neutral, that required detailed audits of the production process, from bentonite mine to disposal of the product after use in the home. In addition, the cardboard box packaging for SivoCat EcoCare was made from 100% recycled material—another example of Sivomatic's sustainability leadership in the European market.

In the United States, sustainability gains were realized by both increasing post-consumer recycled content (PCR) and "light-weighting" a cardboard box package for one of our largest cat litter customers. An MTI team working with a box supplier was able to reduce the box weight by 6.6% and increase PCR content by 8% without reducing strength or changing the appearance of the product on the customer's shelf. These seemingly minor changes resulted in a significant sustainability gain due to the large unit volume of this product sold. On an annual basis, these changes will reduce the total need for corrugate by 90 tons, reduce the use of virgin corrugate by 170 tons and increase the use of PCR by 80 tons. These changes represent a savings of approximately 2,900 trees that will not need to be harvested to support virgin box production.

The 2021 Normerica acquisition will support additional sustainability gains as integration into MTI proceeds. With Normerica, came new suppliers, including one with a proprietary capability to use larger amounts of PCR in box production. As the supplier bases are rationalized, their ability to support sustainability gains will be an important part of the supplier-selection process

Personal Care Packaging Reduces Waste and Increases Recyclability

In the previous two year's reports, we highlighted sustainable packaging investments that demonstrated our commitment to improving the sustainability of how we manufacture our personal care products for customers. Our new packaging equipment started operation in mid-2020 and is enabling our customers to switch from their previous multilayer plastic tubes to solid aluminum squeeze tubes and glass bottles. With this enhanced equipment, we now produce personal care products that can be readily recycled in the well-developed aluminum can and glass bottle recycling process—avoiding the more complicated and more resource-intensive process associated with plastic materials. Working with our customers on redesigning the containers and packaging, we reduced post-consumer packaging waste by 25% with the removal of 2.4 million plastic packaging trays. We also increased our standard pack size for plastic/foil bags of MICROSPONGE® C116A from 250g to 1kg, resulting in a 75% reduction in bag usage.



Our Product Safety

Supplying safe and sustainable products designed to meet the needs of our customers is a main goal of MTI. We strive to ensure that our products are safe and in compliance in regulations, which requires that our products are certified by independent experts and public institutions. We also have a policy of continually evaluating safer formulary components to reduce hazard and risk for both MTI and our customers. Nearly all MTI products include at least one of three minerals—bentonite, carbonates or talc—which are inherently safe for many applications. As with all naturally occurring materials, our minerals contain auxiliary components, which we monitor and measure concentrations, for specific applications.

Many of our products are formulas that use monomers, fatty acids, inorganic additives, polymers and surfactants to interact with the surface of our minerals and create a desired physical and chemical property. We evaluate the safety of these additives and ensure that we are using the safest additive at the lowest effective concentration. In many of our businesses, we disclose specific formula components and concentrations to our customers for joint safety reviews. We regularly update all our Safety Data Sheets and other hazard communications to ensure we meet or exceed all applicable safety regulations and to inform our stakeholders of any potential hazards to enable them to work safely with our products.

All MTI manufacturing facilities have quality management systems that are utilized for measuring, interpreting and reporting data to our customers.

- More than 35% of our manufacturing facilities are certified to ISO 9001:2015 Standards.
- Our carbonate manufacturing facilities that provide ingredients into human food adhere to ISO 22000/ FSSC 22000 Food Safety Management Certification.
- Our bentonite operations that supply minerals into animal feed mycotoxin binders are FAMI-QS certified.

Bentonites

MTI mines bentonite clay in several global locations. Bentonite is commonly referred to as the “mineral of a thousand uses” and is a natural mineral derived from volcanic ash. Based on our extensive experience selectively mining for specific applications and modifying the surface of the mineral to deliver high performance, bentonite clay has major consumer and industrial applications.

MTI’s bentonite-based formulations are regulatory approved for several applications, including:

1. Bentonite is certified as Generally Recognized As Safe (GRAS) per USA FDA 21 CFR184.1155 for direct food use as well as many other USA FDA CDR’s for indirect and packaging use.
2. Several of our bentonite-based products meet the requirements for the Bentonite and Purified Bentonite Monographs listed in the United States Pharmacopeia (USP), the National Formulary (NF) and European Union Pharmacopeia for pharmaceutical active agents and excipients.
3. Meets the requirements for purifying wine and juices including Food Chemical Codex and the International Organization of Vine and Wine (OIV) Code of Oenological Practices.
4. Listed in several sections of Association of American Feed Control Officials for inclusion into animal feed.

5. Several of our facilities are FAMI-QS certified. FAMI-QS is the quality and feed safety management system for the specialty feed ingredients and their mixtures.
6. Approved by the European Food Safety Authority as a binder and mycotoxin reduction agent.
7. Our bleaching earth products meet the requirements of FEDIOL, the European Union vegetable oil and protein meal industry association.
8. Our Bentomat® and Voltex® geosynthetic clay barriers are certified by the Polish National Institute of Public Health to use in contact with drinking water. Our geosynthetic clay liner products are also tested annually for compliance with stringent industry standard specifications, and our testing labs are audited by the Geosynthetic Research Institute to ensure accurate testing data.
9. Several of our building waterproofing, drilling products and our PFAS adsorbents, FLUORO-SORB® adsorbent are NSF/ANSI 60 and 61 Certified to standards for the control of equipment that comes into contact with either potable water or products that support the production of potable water.
10. Several of our products are kosher and halal certified.

Carbonates

MTI mines limestone and dolostone in several locations. These ground calcium carbonates and calcium magnesium carbonates are widely used as an industrial and consumer mineral. Our Specialty Minerals business unit manufactures granular and powder products at several facilities as an ingredient for a wide range of industrial and consumer products.

MTI carbonates are regulation-approved for several applications including:

1. Calcium carbonate is Generally Recognized As Safe (GRAS) per USA FDA 21CFR184.1191 for direct food use as well as many other USA FDA CDR's for indirect and packaging use.
2. Several of our calcium carbonate products meet the requirements for the Monographs listed in the United States Pharmacopeia (USP), the National Formulary (NF) and European Union Pharmacopeia for pharmaceutical active agents and excipients.
3. Several of our facilities and products are certified for the Food Safety System Certification (FSSC) 22000 management system.
4. Several of our calcium carbonate products are kosher and halal certified, gluten free, organic, natural and vegan.
5. Listed in several sections of Association of American Feed Control Officials for inclusion into animal feed, including as a source of calcium, a major nutrient for the animals.
6. Several of our products are NSF-14 certified for plastic piping systems and NSF 60 certified for drinking water treatment.
7. Several of our grades meet the California Proposition 65 and European Union 170i purity standards.

Talc

MTI mines talc at our Barretts, Mont., facility and produces a wide range of natural and purified powdered products. Major commercial applications of our talc include: anti-caking, automotive plastics, blown and cast films, ceramics, coatings, food, pharmaceuticals, paints, rubber, roofing, as well as sealants.





1. GRAS (Generally Recognized as Safe) by FDA 21 CFR 169.179, 169.182.
2. Many of our products are GRAS as an anticaking agent up to 2% in table salt, 21 CFR 182.2437.
3. Several of our grades are generally approved as pigment or colorant in the manufacture of articles which come into contact with food and also generally approved for use in olefin polymers used in the manufacture of articles, which come into contact with food, under 21 CFR 177.1520. 174.5 (d), 175.105, 175.125, 175.300, 175.380, 175.390, 176.170 (b) (2), 176.180 (b) (1), 176.200, 177.1210, 177.1350, 177.1460, 177.2600 (c) (1), 182.70 and 182.90.
4. Generally approved for use in Olefin Polymers which come into contact with food 21 CFR 177.1520.
5. Generally acceptable for use in vanilla powder 21 CFR 169.179 and 169.182.
6. Several of our products meet the requirements for the Monographs listed in the United States Pharmacopeia (USP), the National Formulary (NF) and European Union Pharmacopeia, Japanese Pharmacopeia (JP) and Food Chemical Codex (FCC) for pharmaceutical active agents and excipients.
7. Several of our talc products are kosher and halal certified.
8. Our talc products are continuously tested to ensure that there are no irritating impurities present that can impact the usability of the products.

Conflict Minerals

MTI is committed to responsible sourcing of the materials used in the manufacture of our products. We engage with our suppliers to take steps to ensure that the component parts and products we procure do not contain conflict minerals that finance violence in central Africa. We expect our suppliers that supply parts and products to us containing conflict minerals to certify that such conflict minerals do not directly or indirectly finance or benefit armed groups in the Democratic Republic of the Congo or an adjoining country. We require those suppliers to provide us with information regarding the sourcing of conflict minerals in the components they supply to us.

We also expect our suppliers to undertake reasonable due diligence of their supply chain and to respond to questionnaires and related inquiries when requested by us. MTI must annually comply with a U.S. Securities and Exchange Commission (SEC) rule known as the Conflict Minerals Rule. The Rule requires publicly traded companies such as MTI that use conflict minerals in their products to make public disclosure of the origin of those minerals. We have developed processes and procedures to enable us to comply with the requirements of the SEC's Conflict Minerals Rule. We conducted an evaluation of our product lines sold in 2021 and received reports and certifications from our suppliers that the parts and products supplied to us in 2021 are conflict-free. To learn more, read our SEC disclosure.

Product Recalls

MTI did not have any product recalls in 2021. As part of our corporate responsibility, MTI has formal product recall policies to fulfill our obligation to protect our customers and consumers from suspected defective products.

Advertising, Labeling and Marketing

MTI did not receive any notices of violations in 2021 for non-conformance with regulatory labeling and/or marketing codes. MTI did not incur any legal and regulatory fines, did not have any settlements and did not receive any enforcement actions in 2021 associated with false, deceptive, or unfair marketing, labeling, and advertising of either branded or private label products. MTI manufactures both branded and private label products. We sell our branded products with MTI product names and labels to our customers and consumers to whom we advertise and market. We also make and sell private label products labeled with our customers' product names, for which MTI conducts very minimal advertising and marketing.

Building a Sustainable Supply Chain Through Supplier Collaboration

Our suppliers are our partners, and they play an essential role in MTI's sustainability strategy. In addition to the supply of raw materials and services needed for our operations, formulations and daily functions, our suppliers are a critical source of sustainable innovation. Our joint projects enable MTI to offer our customers significantly improved products and services.

MTI has over 1,400 suppliers globally, with a spend of $680 million dollars. Approximately 300 of these suppliers are considered "strategic suppliers," and, in 2021, we used virtual tools to ensure their compliance with MTI standards and documented the results in our Supplier Quality Management (SQM) program. All our suppliers are expected to comply with MTI's Supplier Code of Conduct, Anti-Corruption and Anti-Bribery Policy, Conflict Minerals Policies, as well as Standard Terms and Conditions. This ensures that all procurement decisions are made with integrity and objectivity, separated from any personal considerations or benefits. All MTI employees are instructed to adhere to the MTI Code of Conduct when dealing with suppliers.

In 2021, MTI did not incur any legal, regulatory fines or settlements associated with violations of bribery, corruption or anti-competitive standards.

To assess the overall performance and adherence to key policies, we regularly audit and evaluate our suppliers using our Supplier Quality Management Process (SQM). Our SQM supplier evaluation forms contain the following elements:

1. Safety – Safety is the number-one priority that must be demonstrated in suppliers' policies and practices. We expect suppliers to promote risk-reduction programs and record metrics. Metrics include reportable incidents, lost-workday incidents, as well as near misses with corrective actions identified to improve safety.
2. Environment – We expect our suppliers to set emissions- and waste-reduction targets to achieve improvements in sustainability similarly to MTI.
3. Supplier Compliance and Ethics – We assess how our suppliers promote integrity and ethical behavior and operate to prevent criminal conduct and violation of laws, including, but not limited to: modern slavery, child labor, human trafficking, conflict minerals and anti-corruption. At a minimum, all our suppliers confirm their support and adherence to ethical behavior practices.
4. Supplier Social Responsibility – We ensure suppliers have comprehensive policies that promote diversity, inclusion and outreach to their communities.
5. Product Quality and Product Safety – Suppliers must notify MTI immediately if any new product safety or registration information becomes available. If non-conformances occur, the supplier must take the required actions to correct the non-conformance through internal controls. In addition, the supplier Certificate of Analysis helps provide consistent control around nominal specification values.
6. Customer Service – We expect our suppliers to produce and deliver materials or goods on the required timeline, with any potential non-compliance communicated in advance. The supplier documentation is timely, accurate and complete in all areas.
7. Quality System – Every supplier must have documented policies and procedures in place to provide quality products. Each supplier must meet at least annually with the MTI location(s) it services to review specifications and perform annual self-audits to verify compliance.
8. Continuous Improvement – Each supplier must proactively recommend improvement opportunities that will enhance quality, reduce costs and address market changes.
9. Commercial – All suppliers are required to have documented disaster-recovery and long-term supply plans that specifically address conducting business with MTI. We verify that our suppliers have implemented measures to thwart cyberattacks and have detailed protocols to maintain business operations if cyberattacks occur.

In selecting suppliers, we look to source as much as possible from local suppliers to benefit the communities where we work and to reduce logistics costs and delivery times. MTI only conducts business with reputable suppliers who are capable of providing the required goods and services. One of our goals is to identify partnerships with diverse suppliers, including small, minority-owned and women-owned businesses that can provide competitive sources of materials and services.

In 2022, we will be developing a more robust Supply Chain Sustainability Strategy. Our five-year strategy will incorporate a Responsible Supply Chain Management System. Improving our metric tracking on key sustainability elements will allow us to enhance our overall Sustainability Strategy, including setting targets to demonstrate our results.

Salient Risks

MTI updated our human rights policy in 2021 and our Supplier Code of Conduct in early 2022 for both our internal operations and our supply chain to protect against potential salient human rights risks. We conducted interviews with stakeholders and examined potential issues that were described by both internal and external stakeholders. Based on the countries where we operate, our business activities and the suppliers with which we engage, we have identified the following six salient human rights risks in our supply chain:

1. Forced labor
2. Child labor
3. Occupational health and safety
4. Harassment and discrimination
5. Working hours
6. Living wages

These supply-chain and operations salient risks are not exclusive to MTI, but are associated with all mining, manufacturing and technology companies and their supply chains. We want to emphasize that MTI is not aware of any specific concerns in our supply chain and operations; however, we understand that some risks are more common in certain geographies. We also understand that this list is not exhaustive, and that MTI must continually examine our supply chain for these and other potential risks. MTI has strategies to identify, prevent and mitigate these salient risks, including: our management systems, internal and external auditing practices at least every two years, supplier selection, evaluation and approval systems, as well as due diligence procedures to uncover and monitor these risks. For any concerns that are raised within our own operations, we take immediate action to investigate reports, using our Human Resources, Internal Audit, and Legal policies and procedures to apply any needed corrective action. Under our Code of Business Conduct and Ethics, MTI does not tolerate retaliation against anyone who makes a report. For risks that occur in our supplier operations, we conduct a dialogue with our suppliers, and, if needed, investigate and identify ways to mitigate the risks. As discussed in detail on page 19 of this report, any person can report a concern on MTI or MTI's suppliers to MTI Compliance Hotline for review.



Appendix

Environmental Performance Appendix

Emissions

	NEW 2025 REDUCTION TARGET (%)	2018	2019	2020	2021	TARGET YEAR 2025	% REDUCTION FROM 2018
Scope 1 Direct GHG CO_2[1] (ton)	**25**	**441,881**	**390,782**	**348,770**	**368,434**	**331,000**	**16.6**
Performance Materials		250,515	228,440	185,846	192,357		
Specialty Minerals		123,773	99,716	99,554	110,973		
Refractories		67,593	62,626	63,370	65,105		
Scope 1 Direct GHG CO_2 Intensity[1] (lbs/ton)	**33**	**97**	**84**	**82**	**70**	**65**	**27.9**
Performance Materials		137	114	100	73		
Specialty Minerals		115	93	98	99		
Refractories		387	383	422	391		
Airborne Pollutants[1] (tons)	**55**	**6,873**	**4,964**	**5,265**	**5,403**	**3,090**	**21.4**
Performance Materials		6,369	4,488	4,726	4,728		
Specialty Minerals		436	417	483	615		
Refractories		69	60	56	60		
Airborne Pollutants Intensity[1] (lbs/ton)	**55**	**1.5**	**1.1**	**1.2**	**1.0**	**0.68**	**31.9**
Performance Materials		3.5	2.2	2.5	1.8		
Specialty Minerals		0.4	0.4	0.5	0.5		
Refractories		0.4	0.4	0.4	0.4		
Airborne Pollutants (tons) by Category[1]	**55**	**6,873**	**4,964**	**5,265**	**5,403**	**3,090**	**21.4**
Carbon Monoxide (CO)		455	471	430	428		
Nitrogen Oxides (NOx)		2,176	2,025	1,830	1,815		
Sulfur Dioxide (SO_2)		4,101	2,324	2,874	3,030		
Volatile Organic Compounds (VOC)		140	144	130	130		
Scope 2 Indirect GHG CO_2[2] (ton)	**40**	**154,573**	**158,578**	**120,850**	**105,320**	**93,000**	**31.9**
Performance Materials		92,801	98,959	72,364	54,696		
Specialty Minerals		48,802	48,571	38,835	40,931		
Refractories		12,173	11,048	9,651	9,693		
Scope 2 Indirect GHG CO_2 Intensity[2] (lbs/ton)	**40**	**34**	**34**	**28**	**20**	**20**	**41.2**
Performance Materials		51	49	39	21		
Specialty Minerals		46	45	38	37		
Refractories		70	68	64	58		

Notes:

1. Total emissions for CO_2 and airborne pollutants are provided for both stationary combustion sources and mobile sources. Many of the Specialty Minerals, Refractories and Performance Materials facilities report emissions of nitrogen oxides (NOx), sulfur dioxide (SO_2), carbon monoxide (CO) and volatile organic hydrocarbons (VOCs) to the local authorities. This data has been used where available. If no plant estimates are available, emissions have been calculated using total fuel usages and the United States Environmental Protection Agency (EPA) most recent emission factors. This data covers 100% of our material air quality emissions. Since there are no significant combustion processes (dryers, kilns, etc.) or fuel usage by mobile equipment at the Paper PCC facilities, these sites are not included in our data.
2. MTI utilizes the GHG Protocol methodology and utilized USA 2020 Egrid data, 2021 UK DEFRA, and 2019 International Energy Agency database estimates for the Scope 2 emission factors.

MTI Sourcing of Electricity

SOURCE OF ELECTRICITY	2019 ELECTRICITY (MWH)	PERCENTAGE (%)	2020 ELECTRICITY (MWH)	PERCENTAGE (%)	2021 ELECTRICITY (MWH)	PERCENTAGE (%)
Total Electricity (MWh)	640,623	100	585,210	100	625,088	100
Sourced from Electrical Grid	391,698	61.1	359,362	61.4	363,839	58.2
MTI PCC Plants Electricity Sourced from Host Paper Mills	246,878	38.5	223,983	38.3	247,524	39.6
Direct Purchase from Black Hills Energy Wind Turbines	-	-	-	-	11,523	1.8
Sourced from Onsite Solar Panels	2,048	0.3	1,865	0.3	2,202	0.4

TOTAL ENERGY USE–Increase energy efficiency

TOTAL ENERGY USAGE (GJ) FOR MTI AND SUBSIDIARIES	2018	2019	2020	2021	% REDUCTION FROM 2018
MTI	**7,483,887**	**7,664,145**	**6,913,921**	**7,263,478**	**2.9**
Performance Materials	3,579,483	3,944,733	3,406,876	3,469,392	
Specialty Minerals	3,418,096	3,300,458	3,112,088	3,363,231	
Refractories	486,308	418,954	394,958	430,854	
TOTAL DIRECT ENERGY USAGE (GJ)	**2018**	**2019**	**2020**	**2021**	**% REDUCTION FROM 2018**
MTI	**5,143,051**	**5,357,902**	**4,807,163**	**5,013,160**	**2.5**
Performance Materials	3,135,365	3,466,880	2,970,812	3,014,234	
Specialty Minerals	1,605,655	1,548,409	1,512,485	1,648,140	
Refractories	402,031	342,613	323,866	350,785	
TOTAL INDIRECT ENERGY USAGE (GJ)	**2018**	**2019**	**2020**	**2021**	**% REDUCTION FROM 2018**
MTI	**2,340,837**	**2,306,243**	**2,106,758**	**2,250,318**	**3.9**
Performance Materials	444,119	477,853	436,063	455,158	
Specialty Minerals	1,812,441	1,752,050	1,599,603	1,715,091	
Refractories	84,277	76,340	71,092	80,069	

WATER

In 2021, our Paper PCC satellite plants obtained most of the water from our host paper mill facilities, whereas our Performance Minerals business depended on Ground Water resources primarily. Overall, about 70% of the water we use is derived from alternative (non-potable) sources, with the majority of the non-potable water coming from our host paper mills' process water.

For our PCC process, we have a recycle loop in which we receive the process water from the paper mill, make our PCC product and recycle and reuse 70% of the water back to the paper mill in the form of our product slurry and 15% to host mill water treatment plant.

Process Water Used Source

2021 Process Water Used from Source, Billion Gallons

SUBSIDIARY BU	SURFACE (LAKES, PONDS, RIVERS, CREEKS)	BORE / WELL WATER	HOST PAPER MILL	MUNICIPAL / CITY WATER	MTI TOTAL BY BU
Minteq				0.01	0.01
PCC	0.41		4.20		4.62
Performance Materials				0.03	0.03
Performance Minerals	0.21	1.46	-	0.03	1.70
MTI Total by Source[1]	**0.63**	**1.46**	**4.20**	**0.07**	**6.36**

1. Process water used is MTI's total water used and includes our cooling tower water.

From a water discharge perspective, our Paper PCC satellite plants primarily recycle water back to the host mill from where we obtained most of our water. Our Specialty Minerals plants primarily discharge back to natural water sources. The primary difference between MTI's water used and discharge is the amount of water that contains our PCC product and is shipped as our PCC product slurry to the host paper mill.

Process Water Discharge Destination

2021 Process Water Discharged To Location, Billion Gallons

SUBSIDIARY BU	SPECIFIED DISCHARGE POINT PER PERMIT	RECYCLE TO HOST MILL	MUNICIPAL/CITY WASTE TREATMENT	MTI TOTAL BY BU
PCC	-	1.75	0.08	1.83
Performance Materials	-	-	0.02	0.02
Performance Minerals	1.56	-	-	1.56
MTI Total by Source	**1.56**	**1.75**	**0.10**	**3.41**

Process Water Used and Discharged by Region

2021 Process Water Used in Region from Source, Billion Gallons

REGIONS	SURFACE (LAKES, PONDS, RIVERS, CREEKS)	BORE/WELL WATER	HOST MILL	MUNICIPAL/CITY WATER	MTI TOTAL
Americas	0.45	1.46	1.95	0.02	4.08
Europe	0.18	-	0.97	0.04	1.19
Asia	-	-	1.28	0.01	1.29
MTI Total	**0.63**	**1.46**	**3.88**	**0.07**	**6.36**

2021 Process Water Discharge in Region to Source, Billion Gallons

REGIONS	HOST MILL	MUNICIPAL/CITY WATER	SURFACE (LAKES, PONDS, RIVERS, CREEKS)	MTI TOTAL
Americas	1.01	0.08	1.44	2.53
Europe	0.39	0.02	0.12	0.52
Asia	0.36	0	-	0.36
MTI Total	**1.75**	**0.10**	**1.56**	**3.41**

	FRESHWATER USED* (BILLION GALLONS)	FRESHWATER USED INTENSITY** (GAL/TON PRODUCED)
Minteq	0.01	73
PCC	0.41	6,995
Performance Materials	0.03	21
Performance Minerals	1.70	2,987
MTI Total	**2.15**	**995**

* Freshwater consists of surface water, bore/well water and municipal/city water
** Intensity is calculated from the sites that use freshwater production

	FRESHWATER USED* (BILLION GALLONS)	FRESHWATER USED INTENSITY** (GAL/TON PRODUCED)
Americas	1.93	2,622
Europe	0.22	350
Asia	0.01	8
MTI Total	**2.15**	**995**

Historical Trend in Process Water Used and Discharged

Absolute & Intensity Process Water Used and Discharged for MTI And Subsidiary Business Units

	NEW 2025 REDUCTION TARGET (%)	2018	2019	2020	2021
Process Water Used (Billion gals)	**20**	**7.41**	**7.60**	**6.31**	**6.36**
Performance Materials		0.04	0.05	0.05	0.03
Specialty Minerals		7.60	7.54	6.26	6.32
Refractories		0.01	0.01	0.01	0.01
Process Water Used (gals/ton produced)	**30**	**838**	**819**	**743**	**604**
Performance Materials		14	15	13	6
Specialty Minerals		1,491	1,520	1,398	1,276
Refractories		32	32	32	29
Process Water Discharged (billion gals)	**20**	**4.13**	**4.14**	**3.26**	**3.41**
Performance Materials		0.01	0.02	0.01	0.02
Specialty Minerals		4.25	4.12	3.25	3.40
Process Water Discharged (gals/ton produced)	**33**	**465**	**446**	**383**	**324**
Performance Materials		3	5	3	3
Specialty Minerals		834	832	725	694

Process Water Used, 2018-2021 by Region, Billion Gallons

REGION	2018	2019	2020	2021
Americas	5.26	5.07	3.90	3.77
Europe	1.36	1.34	1.25	1.30
Asia	1.01	1.19	1.17	1.29
MTI Total	**7.63**	**7.60**	**6.31**	**6.36**

Process Water Discharged, 2018-2021 by Region, Billion Gallons

REGION	2018	2019	2020	2021
Americas	3.17	3.14	2.26	2.47
Europe	0.71	0.66	0.62	0.58
Asia	0.36	0.34	0.38	0.36
MTI Total	**4.24**	**4.14**	**3.26**	**3.41**

Wastes

Landfill Waste

	NEW REDUCTION TARGET (%)	2018	2019	2020	2021	TARGET YEAR 2025	% REDUCTION FROM 2018
Landfill Waste Disposed (ton)	**20**	**208,946**	**213,360**	**175,954**	**181,012**	**167,157**	**-13.5**
Performance Materials		25,864	14,319	9,631	10,329		
Specialty Minerals		177,906	194,416	162,016	165,965		
Refractories		5,176	4,625	4,306	4,718		
Landfill Waste Disposed (lb/ton)	**30**	**46**	**46**	**41**	**35**	**32**	**-23.9**
Performance Materials		14	7	5	4		
Specialty Minerals		70	78	72	67		
Refractories		30	28	29	28		

Hazardous Waste

MTI is committed to reducing hazardous waste and developing actions and timelines

HAZARDOUS WASTE (TONS)	2021
Hazardous Waste (tons)	**224**
Performance Materials	109
Specialty Minerals	90
Refractories	25

Safety Metric Summary

	2018	2019	2020	2021
Total Fatalities	0	0	0	0
Employee+ Part-Time Employee + MTI Directed Contractors Fatalities	0	0	0	0
Independent Contractor Fatalities	0	0	0	0
Percent of MTI Sites Injury Free	84%	87%	90%	90%
Total Recordable Injury Rate (TRIR)	1.28	1.12	0.60	0.74
Lost Workday Injury Rate (LWIR)	0.16	0.26	0.22	0.24
Number of Recordable Injuries	49	43	22	31
Number of Lost Workday Injuries	6	10	8	10

Global Reporting Initiative (GRI) Content Index

We continue to follow the GRI Standards as a guide for identifying, measuring and disclosing our non-financial impacts. Our 2021 Corporate Responsibility and Sustainability Report has been prepared in reference to the GRI Standards.

GRI STANDARD (DISCLOSURE)	DESCRIPTION	LOCATION
Organizational Profile		
102-1	Name of the organization	Minerals Technologies Inc.
102-2	Activities, brands, products, and services	Minerals Technologies Inc. is a resource- and technology based company that develops, produces and markets worldwide a broad range of specialty mineral, mineral based and synthetic mineral products and related systems and services. MTI's products are available globally and not restricted in any form.
102-3	Location of headquarters	622 Third Avenue, 38th Floor New York, NY 10017 USA
102-4	Location of operations	2021 Form 10-K, pp. 21-30
102-5	Ownership and legal form	MTI is a publicly traded corporation (NYSE: MTX).
102-6	Markets served	Corporate Responsibility & Sustainability Report: About MTI; pp. 6-9; 68-69 2021 Annual Report: inside cover; pp. 11-13; 18-19
102-7	Scale of the organization	Corporate Responsibility & Sustainability Report: Inside cover; pp. 6-10; 68-69 2021 Form 10-K pp. F-1 to F-44
102-8	Information on employees and other workers	Social pp. 50-65
102-9	Supply chain	Building a Sustainable Supply Chain, pp. 74-75
102-10	Significant changes to the organization and its supply chain	No significant changes occurred related to our organization or supply chain following our 2021 acquisition of the Normerica pet care business in North America and SPCC assets in United States.
102-11	Precautionary Principle or approach	Throughout our operations and our product development, we are guided by the precautionary principle and carefully monitor and consider the effects on the environment, health and safety.
102-12	External initiatives	Strong Commitment to Mining Sustainably, pp. 48-49; Enhancing Sustainability Via Packaging Initiatives pp. 71; Community Engagement, pp. 63-65

102-13	Membership of associations	MTI employees hold numerous relevant industry and professional memberships including the following significant organizations: Association for Manufacturing Excellence (AME) American Society of Safety Professionals (ASSP) Industrial Minerals Association (IMA) Sorptive Minerals Institute (SMI) American Society of Mechanical Engineers (ASME) American Petroleum Institute (API) American Conference of Governmental Industrial Hygienists (ARCGIS) American Industrial Hygiene Association (AIHA) American Board of Industrial Hygiene (ABIH) Produced Water Society (PWS)
Strategy		
	Statement from senior decision-maker	A Message From Our Chairman and CEO, pp. 1-3
Ethics and Integrity		
102-16	Values, principles, standards, and norms of behavior	As the Corporate Compliance Officer, the General Counsel of MTI has ultimate responsibility for monitoring compliance with MTI's Policies on Business Conduct and all related MTI policies and procedures. MTI's Summary of Policies on Business Conduct provides an overview of key policies for conducting MTI's business legally and ethically and is publicly available in MTI's preferred employee languages: Bahasa Melayu, Chinese, Dutch, English, Finnish, French, German, Gujarati, Hindi, Japanese, Korean, Polish, Portuguese, Spanish, Thai, and Turkish.
102-17	Mechanisms for advice and concerns about ethics	Compliance With Laws, Permits, Regulations and Company Values, pp. 20-21
Governance		
102-18	Governance Structure	Sustainability Governance & Accountability, pp. 15-22; 2020 Proxy Statement, Committees of the Board of Directors, pp. 21
102-19	Delegating authority	Sustainability Governance & Accountability, pp. 15-22; How Sustainability is Integrated in Our Strategy, pp. 16-17; Culture-Based Lead Teams, pp. 24
102-20	Executive-level responsibility for economic, environmental, and social topics	Board Oversight of Risk, ESG and Sustainability, pp. 15-22 Leadership Commitment to ESG and Sustainability, pp. 15-22

102-21	Consulting stakeholders on economic, environmental, and social topics	Stakeholder Engagement, pp. 23-24
102-22	Composition of the highest governance body and its committees	2021 Annual Report; Sustainability Governance & Accountability, pp. 16-18; 2022 Proxy, pp. 14-18
102-23	Chair of the highest governance body	Douglas T. Dietrich is our Chairman and CEO. Robert L. Clark is our Lead Independent Director
102-24	Nominating and selecting the highest governance body	2022 Proxy Statement, pp. 13-27
102-25	Conflicts of interest	MTI Code of Conduct; 2022 Proxy Statement, pp. 28
102-26	Role of highest governance body in setting purpose, values, and strategy	2022 Proxy Statement, pp. 13-28
102-29	Identifying and managing economic, environmental, and social impacts	2022 Proxy Statement, pp. 13
102-31	Review of economic, environmental, and social topics	2022 Proxy Statement, pp. 18-20
102-32	Highest governance body's role in sustainability reporting	2022 Proxy Statement, pp. 18-20; A Message from Our Chairman and CEO, pp. 1-3; A Message From BOD Chair of the Corporate Governance and Nominating Committee, pp. 4; Sustainability Governance at MTI, pp. 15-22
102-33	Communicating critical concerns	Sustainability Governance & Accountability, pp. 15-22; Stakeholder Engagement, pp. 24-25; 2021 Form 10-K, pp. 15-21
102-35	Remuneration policies	2022 Proxy Statement, pp. 40-78
102-36	Process for determining remuneration	2022 Proxy Statement, pp. 40-78
102-37	Stakeholders' involvement in remuneration	2022 Proxy Statement, pp. 12
Stakeholder Engagement		
102-40	List of stakeholder groups	Stakeholder Engagement, pp. 23-24
102-41	Collective bargaining agreements	We respect our employees' right to join, or refrain from joining, any lawful organization, including trade unions and works councils and we are committed to complying with all applicable local and national laws pertaining to freedom of association and collective bargaining; MTI's Human Rights Policy
102-42	Identifying and selecting stakeholders	We identify our stakeholders as those entities that can affect or be affected by our actions, objectives and policies.
102-43	Approach to stakeholder engagement	Stakeholder Engagement, pp. 23-24; Voice of the Customer, pp. 68
102-44	Key topics and concerns raised	Stakeholder Engagement, pp. 23-24
Reporting Practice		
102-45	Entities included in the consolidated financial statements	MTI's Annual Report on Form 10-K for the Fiscal Year Ended December 31, 2021, Exhibit 21.1.

102-46	Defining report content and topic Boundaries	MTI determined that our governance, health and safety programs, progress towards 2025 targets, new product development, supply chain, and our policies and practices in taking care of our employees and stakeholders are pertinent to ensure our company's long term sustainability.
102-48	Restatements of information	There are no significant restatements of information compared to the previous report.
102-49	Changes in reporting	This report represents MTI's work to reference the GRI Standards reporting framework.
102-50	Reporting period	January 1-December 31, 2021
102-51	Date of most recent report	MTI 2021 Sustainability Report published July 27, 2022
102-52	Reporting cycle	Annual
102-53	Contact point for questions regarding the report	Jared Kornblatt, Corporate Communications email at sustainability@mineralstech.com
102-54	Claims of reporting in accordance with the GRI Standards	This report aligns with GRI Standards and has utilized the GRI content index with reference
102-55	GRI content index	This document represents the company's content index.
102-56	External assurance	MTI is not seeking external assurance for this report. MTI has started to investigate external assurance requirements.

ECONOMIC

GRI STANDARD (DISCLOSURE)	DESCRIPTION	LOCATION
Economic Performance		
201-1	Direct economic value generated and distributed	2021 Annual Report, inside cover, pp. 11-13; Sustainable Growth, pp. 5-10; 2021 Form 10-K pp. F-1 to F-44
201-4	Financial assistance received from government	No material governmental financial assistance was received.
Market Presence		
202-1	Ratios of standard entry level wage by gender compared to local minimum wage	All male and female employees are paid at least 100% of the local minimum wages.
Indirect Economic Impacts		
203-1	Infrastructure investments and services supported	Sustainable Growth, pp. 5-12

Anti-Corruption		
103-1	Explanation of the material topic and its Boundary	Compliance with Laws and Regulations, pp. 20-21 with all policies referenced; Supplier Collaboration, pp. 74-75; MTI's 2022 Anti-Corruption and Anti-Bribery Policy
103-2	The management approach and its components	Compliance with Laws and Regulations, pp. 20-21 with all policies referenced; Supplier Collaboration, pp. 74-75; MTI's 2022 Anti-Corruption and Anti-Bribery Policy
103-3	Evaluation of the management approach	Compliance with Laws and Regulations, pp. 20-21 with all policies referenced; Supplier Collaboration, pp. 74-75; MTI's 2022 Anti-Corruption and Anti-Bribery Policy
205-2	Communication and training about anti-corruption policies and procedures	Compliance with Laws and Regulations, pp. 20-21 with all policies referenced; Supplier Collaboration, pp. 74-75; MTI's 2022 Anti-Corruption and Anti-Bribery Policy
205-3	Confirmed incidents of corruption and actions taken	MTI is not aware of any instances of corruption in 2021. Supplier Collaboration statement, pp. 74-75.
Anti-competitive Behavior		
206-1	Legal actions for anticompetitive behavior, anti-trust, and monopoly practices	MTI is not aware of any incidents of anti-competitive behavior, anti-trust or monopolistic practices in 2021.

ENVIRONMENTAL

GRI STANDARD (DISCLOSURE)	DESCRIPTION	LOCATION
Energy		
103-1: Management Approach	Explanation of the material topic and its Boundary	2025 Environmental Targets, pp. 40; Scope 2 Emission Reductions and Electricity, pp. 42-44; Appendix, pp. 77-78
103-2	The management approach and its components	2025 Environmental Targets, pp. 40; Scope 2 Emission Reductions and Electricity, pp. 42-44; Appendix, pp. 77-78
302-1	Energy consumption within the organization	2025 Environmental Targets, pp. 40; Scope 2 Emission Reductions and Electricity, pp. 42-44; Appendix, pp. 77-78
302-3	Energy intensity	2025 Environmental Targets, pp. 40; Scope 2 Emission Reductions and Electricity, pp. 42-44; Appendix, pp. 77-78
302-4	Reduction of energy consumption	2025 Environmental Targets, pp. 40; Scope 2 Emission Reductions and Electricity, pp. 42-44; Appendix, pp. 77-78
Water		
103-1: Management Approach	Explanation of the material topic and its Boundary	Environmental Targets, pp. 40; Water (Used & Discharged), pp. 44-46; Appendix, 78-81; SASB Index

103-2	The management approach and its components	Environmental Targets, pp. 40; Water (Used & Discharged), pp. 44-46; Appendix, 78-81; SASB Index
303-1	Interactions with water as a shared resource	Environmental Targets, pp. 40; Water (Used & Discharged), pp. 44-46; Appendix, 78-81; SASB Index
303-4	Water discharge	Environmental Targets, pp. 40; Water (Used & Discharged), pp. 44-46; Appendix, 78-81; SASB Index
303-5	Water consumption	Environmental Targets, pp. 40; Water (Used & Discharged), pp. 44-46; Appendix, 78-81; SASB Index
Biodiversity		
103-1: Management Approach	Explanation of the material topic and its Boundary	Strong Commitment to Mining Sustainably, pp. 48-49
103-2	The management approach and its components	Strong Commitment to Mining Sustainably, pp. 48-49
304-2	Significant impacts of activities, products, and services on biodiversity	Strong Commitment to Mining Sustainably, pp. 48-49
304-3	Habitats protected or restored	Strong Commitment to Mining Sustainably, pp. 48-49
Emissions		
103-1: Management Approach	Explanation of the material topic and its Boundary	2025 Environmental Targets, pp. 40; Scope 1 and Airborne Pollutants Emission Reductions, pp. 41-44; Appendix, pp. 77-78
103-2	The management approach and its components	2025 Environmental Targets, pp. 40; Scope 1 and Airborne Pollutants Emission Reductions, pp. 41-44; Appendix, pp. 77-78
305-1	Direct (Scope 1) GHG emissions	2025 Environmental Targets, pp. 40; Scope 1 and Airborne Pollutants Emission Reductions, pp. 41-44; Appendix, pp. 77-78
305-2	Energy indirect (Scope 2) GHG emissions	2025 Environmental Targets, pp. 40; Scope 1 and Airborne Pollutants Emission Reductions, pp. 41-44; Appendix, pp. 77-78
305-3	Other indirect (Scope 3) GHG emissions	MTI does not currently report Scope 3 emissions. We are obtaining data and plan to report in future.
305-4	GHG emissions intensity	2025 Environmental Targets, pp. 40; Scope 1 and Airborne Pollutants Emission Reductions, pp. 41-44; Appendix, pp. 77-78
305-5	Reduction of GHG emissions	2025 Environmental Targets, pp. 40; Scope 1 and Airborne Pollutants Emission Reductions, pp. 41-44; Appendix, pp. 77-78
305-6	Emissions of ozone-depleting substances (ODS)	MTI does not believe we use any ozone depleting substances
305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	2025 Environmental Targets, pp. 40; Scope 1 and Airborne Pollutants Emission Reductions, pp. 41-44; Appendix, pp. 77-78

Effluents and Waste		
103-1: Management Approach	Explanation of the material topic and its Boundary	2025 Environmental Targets, pp. 40; Our Waste and Spills, pp. 46-48; Appendix, 82
103-2	The management approach and its components	2025 Environmental Targets, pp. 40; Our Waste and Spills, pp. 46-48; Appendix, 82
306-2	Management of significant waste-related impacts	2025 Environmental Targets, pp. 40; Our Waste and Spills, pp. 46-48; Appendix, 82
306-3	Waste generated	2025 Environmental Targets, pp. 40; Our Waste and Spills, pp. 46-48; Appendix, 82
Environmental Compliance		
103-1: Management Approach	Explanation of the material topic and its Boundary	Environmental, pp. 37-50; MTI Environmental Health and Safety Policy
103-2	The management approach and its components	Environmental, pp. 37-50; MTI Environmental Health and Safety Policy
103-3	Evaluation of the management approach	Environmental, pp. 37-50; MTI Environmental Health and Safety Policy
Supplier Environmental Assessment		
308-1	New suppliers that were screened using environmental criteria	Sustainable Supply Chain, pp. 74-75
308-2	Negative environmental impacts in the supply chain and actions taken	MTI is not aware of any negative environmental impacts in the supply chain.

SOCIAL

Employment		
401-1	New employee hires and employee turnover	Our People, pp. 53-58
Occupational Health and Safety		
103-1: Management Approach	Explanation of the material topic and its Boundary	Safety, pp. 25-35
103-2	The management approach and its components	Safety, pp. 25-35
103-3	Evaluation of the management approach	Safety, pp. 25-35
403-1	Occupational health and safety management system	Safety, pp. 25-35
403-2	Hazard identification, risk assessment, and incident investigation	Safety, pp. 25-35
403-3	Occupational health services	Safety, pp. 25-35
403-4	Worker participation, consultation, and communication on occupational health and safety	Safety, pp. 25-35
403-5	Worker training on occupational health and safety	Safety, pp. 25-35

403-6	Promotion of worker health	Safety, pp. 25-35
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Safety, pp. 25-35
403-8	Workers covered by an occupational health and safety management system	All MTI employees, part time and contractors on site are covered by our health and safety management system
403-9	Work-related injuries	Safety, pp. 25-35
403-10	Work-related ill health	Safety, pp. 25-35
Training and Education		
103-1: Management Approach	Explanation of the material topic and its Boundary	Advancing Our People-Focused Culture Through Training; Onboarding and Talent Management, pp. 59-61; Safety, pp. 25-35
103-2	The management approach and its components	Advancing Our People-Focused Culture Through Training; Onboarding and Talent Management, pp. 59-61; Safety, pp. 25-35
404-2	Programs for upgrading employee skills and transition assistance programs	Advancing Our People-Focused Culture Through Training; Onboarding and Talent Management, pp. 59-61; Safety, pp. 25-35
404-3	Percentage of employees receiving regular performance and career development reviews	Advancing Our People-Focused Culture Through Training; Onboarding and Talent Management, pp. 59-61; Safety, pp. 25-35
Diversity and Equal Opportunity		
103-1	Explanation of the material topic and its Boundary	Diversity and Inclusion, pp. 54-58
103-2	The management approach and its components	Diversity and Inclusion, pp. 54-58
Supplier Social Assessment		
414-1	New suppliers that were screened using social criteria	Supply Chain Sustainability, pp. 74-75
414-2	Negative social impacts in the supply chain and actions taken	MTI is not aware of any significant negative supply chain developments.
Public Policy		
415-1	Political contributions	MTI did not make political contributions
Customer Health and Safety		
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	MTI is not aware of any non-compliance concerning the health and safety impacts of products and services. Product Safety; Conflict Minerals, Product Recalls, pp. 71-74

Sustainability Accounting Standards Board's Resource Transformation – Chemicals Industry Standard

ACCOUNTING METRIC	CODE	DISCLOSURE
Greenhouse Gas Emissions		
Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations	RT-CH-110a.1	368,434 tons of CO_2, none are covered under emissions-limiting regulations.
Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	RT-CH-110a.2	For details, see 2025 Environmental Targets: Strengthening Our Goals and Emissions, pp. 41-43
Air Quality		
Air emissions of the following pollutants: (1) NOX (excluding N2O), (2) SOX, (3) volatile organic compounds (VOCs), and (4) hazardous air pollutants (HAPs)	RT-CH-120a.1	(1) 1,815 tons (2) 3,030 tons (3) 130 tons (4) not reported
Energy Management		
(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable, (4) total self-generated energy	RT-CH-130a.1	(1) 7,263,478 GJ (2) 17% grid electricity (3) 15% renewable (4) 0.1% Self-Generated Renewable Energy
Water Management		
(1) Total water withdrawn, (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	RT-CH-140a.1	(1) 2.15 billion gallons withdrawn from freshwater sources; 1% from High or Extremely High Baseline Water Stress regions. (2) 6.36 billion gallons total water used composed of 2.15 billion gallons freshwater and 4.20 billion gallons of reused/recycled non-potable water from host paper mill; 15% of the total 6.26 billion gallons from High or Extremely High Baseline Water Stress regions.
Number of incidents of non-compliance associated with water quality permits, standards, and regulations	RT-CH-140a.2	Zero incidents
Description of water management risks and discussion of strategies and practices to mitigate those risks	RT-CH-140a.3	For details, see *Water Use*
Hazardous Waste Management		
Amount of hazardous waste generated, percentage recycled	RT-CH-150a.1	224 tons, 11% tons recycled, 33% incinerated for fuel value
Community Relations		
Discussion of engagement processes to manage risks and opportunities associated with community interests	RT-CH-210a.1	For details, see Community Engagement
Workforce Health & Safety		
(1) Total recordable incident rate (TRIR) and (2) fatality rate for (a) direct employees and (b) contract employees	RT-CH-320a.1	(1) 0.74 (2a) 0 (2b) 0
Description of efforts to assess, monitor, and reduce exposure of employees and contract workers to long-term (chronic) health risks	RT-CH-320a.2	For details, see *Our Safety Foundation*

Product Design for Use-phase Efficiency		
Revenue from products designed for use-phase resource efficiency	RT-CH-410a.1	60% of our total company revenue was derived from products and services that enhance both MTI's and our customer's sustainability objectives. For details, see *Sustainable and Clean Technology Products*
Safety & Environmental Stewardship of Chemicals		
(1) Percentage of products that contain Globally Harmonized System of Classification and Labeling of Chemicals (GHS) Category 1 and 2 Health and Environmental Hazardous Substances, (2) percentage of such products that have undergone a hazard assessment	RT-CH-410b.1	Not reported
Discussion of strategy to (1) manage chemicals of concern and (2) develop alternatives with reduced human and/or environmental impact	RT-CH-410b.2	(1) We closely follow the European Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) to protect human health and the environment. (2) MTI is committed to reduce our hazardous waste generation and is developing plans and timelines, including substituting non-hazardous chemicals in our processes and laboratories and minimizing the volume of waste generated during equipment maintenance. Our advanced Resistex® and Bentomat® environmental barriers contain wastes and leachates in landfills and mining sites to prevent infiltration of toxic chemicals into ground water.
Genetically Modified Organisms		
Percentage of products by revenue that contain genetically modified organisms (GMOs)	RT-CH-410c.1	Not applicable, 0% of our products contain GMO's
Management of the Legal & Regulatory Environment		
Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry	RT-CH-530a.1	We engage with key shareholders on sustainability, which includes ongoing and evolving dialogues with local communities, interactions with our suppliers and customers, as well as collaborations with governmental officials and regulators that oversee our operations to enhance our sustainability practices.
Operational Safety, Emergency Preparedness & Response		
Process Safety Incidents Count (PSIC), Process Safety Total Incident Rate (PSTIR), and Process Safety Incident Severity Rate (PSISR)	RT-CH-540a.1	In 2021,39 incidents in the form of environmental releases, with only 7 being reportable occurrences. All of the spills were classified as small and 100% of the spills were contained and captured in our comprehensive spill response
Number of transport incidents	RT-CH-540a.2	Not reported
Activity Metrics		
Production by reportable segment	RT-CH-000.A	Not reported

Task Force on Climate-related Financial Disclosures (TCFD) Index

Mineral Technologies recognizes that climate change represents a risk to our operations and has undertaken a proactive approach to mitigate this risk. We are committed to providing transparency on our climate change risk management, governance, and performance. Our Board of Directors and management team provide oversight and actively manage climate change-related risks. A summary of our response to the TCFD-recommended disclosures is below.

Governance

Board oversight
Mineral Technologies' (MTI) Board of Directors has primary responsibility for oversight of risk and strategy for the company, which includes our sustainability efforts as well as climate-related risks and opportunities.

The Corporate Governance and Nominating Committee is directly responsible for reviewing and evaluating MTI's programs, policies and practices relating to social, environmental and governance issues which could impact the long-term sustainability of our business. This includes strategy and risk, environmental performance and 2025 targets among other topics.

In addition, the entire Board follows a formal, monthly schedule for consideration of environmental, health and safety, and social matters, which are reviewed at each regularly scheduled board meeting. Overall corporate responsibility efforts, including sustainability and climate-related matters and progress, are periodically reviewed with the Committee as well as the full Board at regularly scheduled board meetings.

Management oversight
MTI's Leadership Council (LC) under the direction of our Chair/CEO oversees businesses, functional areas, and culture-based lead teams – all of which integrate sustainable processes and practices into their strategies and identify and manage risks. The entire LC, which is composed of our senior business and resource unit executives, is actively engaged in the management of MTI's broad sustainability practices. Our CEO champions sustainability at an organization level; each business unit leaders helps drive sustainability practices and initiatives as part of their overall business strategy.

In addition, we have a Sustainability Lead Team (Team), comprised of senior leaders across the organization with functional expertise, including within the areas of Environmental, Health, and Safety; Legal and Compliance; Investor Relations; Finance; Corporate Communications; Human Resources; Global Supply Chain; Research and Development; Manufacturing; and Commercial. The Team reports directly to our Chairman and CEO, has full-team meetings at least once a month. Sub-teams meet more frequently and provide regular progress updates to the LC, the Committee, as well as the full Board. The Team seeks to ensure a comprehensive approach to developing and progressing our companywide ESG and sustainability strategies and initiatives, driving alignment across the organization to address emerging ESG risks and opportunities. The Team's other focus areas include managing progress toward achieving our 2025 environmental targets. our 2025 environmental targets.

Strategy

Climate Related Risks and Opportunities

We have identified climate-related risks and opportunities that may affect us over the short-, medium- and longer-term. These include:

1. **Regulatory Risks**
   Current and emerging regulations are relevant and always included in the Company's processes for identifying and assessing climate-related risks because our operational footprint includes many countries with different regulatory requirements, and the consequences for non-compliance could negatively impact our operations, financial performance, and reputation. In particular, we are subject to certain requirements under the Clean Air Act. In addition, certain of the Company's operations involve and have involved the use and release of substances that have been and are classified as toxic or hazardous within the meaning of these laws and regulations. Environmental operating permits are, or may be, required for certain of the Company's operations and such permits are subject to modification, renewal, and revocation. We are also subject to land reclamation requirements relating to our mining operations. In addition to environmental and health and safety laws and regulations, we are subject to a wide variety of other federal, state, local and foreign laws and regulations in the countries where we conduct business. The Company regularly monitors and reviews its operations, procedures and policies for compliance with these laws and regulations.
2. **Reputational Risk**
   Reputation is relevant and always included in MTI's processes for identifying and assessing climate related risks due to the potential negative impact of lost revenue that may arise from customers' dissatisfaction with MTI's failure to substantially meet its goals for emissions reduction and /or a lack of participation in various environmental disclosure platforms. Additionally, we regularly assess how we might be influenced by a changing climate and take seriously the potential for business disruption that could occur under extreme weather and natural disasters, and reputational risk from not proactively addressing climate change issues including the potential negative impact of lost revenue and increased expenses that could arise from damaged infrastructure.
3. **Market opportunities including the opportunity to provide products to support reduction goals of partners**
   Shifts in supply and demand are relevant and always included in the Company's processes for identifying and assessing climate related risks due to the potential impact of decreased revenues that could arise from not capitalizing on new market opportunities, as well as increased revenue from energy-efficiency product demand. We are constantly evaluating opportunities to improve our existing products, technologies and production processes—or creating new ones—to help reduce MTI's and our customers' impact on the environment.

Impact on strategy

Our Board and Management teams consider sustainability as a vital driver to our long-term growth. As a global resource- and technology-based manufacturing company, we recognize the significance of climate change and responsible consumption and production, and our role in addressing our stakeholders' interest in these issues. We have a responsibility to ensure compliance with all environmental regulations in the locations where we operate, which includes reducing the impact of our operations on people, communities, and the planet. We are aware of the risks posed to our business by climate changes (including physical risks) and have been working to reduce environmental impact through more efficient manufacturing process and best practice adoption. Additionally, we are focused on evolving our new product development processes and pipeline to meet our own environmental goals and address customers' most pressing sustainability challenges. We are accelerating the speed with which we bring products to market and we are increasing the percentage of new products with a sustainability benefit.

Climate resilience

We recognize the risks associated with climate change and the potential impacts they may cause on our operations and strategy. Underpinning our business strategy, and climate resilience, sustainability-advantaged products account for the majority of our 2021 revenue. In 2021, about 60% of our total company revenue was derived from products and services that enhance both MTI's and our customer's sustainability objectives. We categorize our sustainable products into the below segments:

4. **Energy Efficiency:**
   We have several businesses where our products improve our customers' operations by making them more sustainable and productive while creating less waste/scrap.
5. **Pollution Prevention:**
   MTI has a broad product pipeline designed to sequester CO2 from paper mill exhaust stacks, to prevent pollution from spreading in the environment, to remove contaminants from water and soil and to improve the quality of water for safe discharge.
6. **Green Building:**
   Our Building Materials business offers several product groups designed to protect the health of occupants by improving the performance of the building envelope.
7. **Sustainable Agricultural:**
   MTI mines leonardite and produces a line of agricultural crop yield improvement formulations. Our humic acid and nutrient formulations are used by our customers for application to agricultural crops to enhance plant health and improve yields.
8. **Alternative Energy:**
   In our drilling products business, we manufacture and sell a complete line of bentonite and additive grouting solutions for the geothermal heat loop installation industry. Our grouts are mixed with sand or graphite at the job site to enhance geothermal heat loop systems for household and commercial building heating and cooling.

We regularly implement climate-related scenario analysis by using modeling software and incorporate qualitative and quantitative aspects in the portfolio analyzation process.

Risk Management

Process to identify climate risk

Minerals Technologies integrates a company-wide, multi-disciplinary risk management process, which includes climate-related risk and opportunities, into our operations and business strategy. The Board has responsibility for risk oversight, including understanding critical risks in the Company's business and strategy, evaluating the Company's risk management processes, and seeing that such risk management processes are functioning adequately. It is management's responsibility to manage risk and bring to the Board's attention the most material risks to the Company. The Company's management has several layers of risk oversight, including through the Company's Strategic Risk Management Committee and Operating Risk Management Committee.

Process for managing climate risks

The MTI Board of Directors has primary responsibility for risk oversight, including understanding critical risks in the Company's business and strategy, evaluating the Company's risk-management processes, as well as seeing that such risk management processes are functioning adequately. Management communicates routinely with the Board, Board Committees and individual directors on the significant risks identified and how they are being managed, including through formal reports by the Strategic Risk Management Committee to the Board that are given at least annually. Risks are reviewed regularly by the entire Board at each Board meeting.

The risk oversight focus areas reviewed by the Board include: risks related to the Company's capital structure; mergers and acquisitions; capital projects; cybersecurity; environmental, health and safety risks; and geopolitical and associated market risks. The Corporate Governance and Nominating Committee is directly responsible for reviewing and evaluating MTI's programs, policies and practices relating to ESG issues which could impact the long-term sustainability of our business, including climate-related strategy and risk. The entire board regularly considers topics such as the potential value creation, vulnerability, and timing of climate and any other risk or opportunity including reputational, financial, strategic, and operational concerns. Strategic Risk Management Committee and Operating Risk Management Committee.

Climate risk integration

As part of MTI's company-wide, multi-disciplinary risk management process, climate-related risks and opportunities are integrated as part of our overall enterprise risk management process. MTI's management and Board routinely communicate about risk identification, management, and integration. Our senior management, Leadership Council, and Sustainability Lead Team collectively collaborates with the Board to address climate-related and other risks. The Board implements its risk oversight function through Committees, which provide reports regarding their activities to the Board at each meeting. These risks include, but are not limited to, climate-related risks. The Audit Committee reviews the Company's major financial risk exposures, and the steps management has taken to monitor and control such exposures. The Corporate Governance and Nominating Committee reviews risks associated with the Company's governance practices, Board composition and refreshment, and committee leadership. The Compensation Committee considers and reviews risks related to the design of compensation programs and arrangements applicable to both employees and executive officers, including the Company's annual and long-term incentive programs. MTI implemented the beforementioned company-wide, multi-disciplinary risk management process as we believe climate-related risk directly influences and impacts the duties or all Committees. For the Audit Committee, climate-related risk could negatively impact the Company's financial performance due to natural disasters influenced by climate change. For the Corporate Governance and Nominating Committee, climate-related risk and its management are accounted as part of governance practices. Additionally, climate-related risks also influence our Board composition and director skills matrix. For the Compensation Committee, climate-related risk directly ties to its duties as personal performance under our incentive compensation plan is tied to achieving specific sustainability-related projects, as well as quantifiable financial targets.

Metrics

a) Metrics used

We track our Scope 1 and 2 carbon emissions to assess climate-related performance.

b) Scope 1 and Scope 2 GHG emissions (2021)

Scope 1 emissions: 368,434 tons of CO_2
Scope 2 emissions: 105,320 tons of CO_2

c) Targets

We have established 2025 environmental reduction targets in six focus areas, including Scope 1 and 2 emissions to continue to reduce our environmental footprint.

- Our target is to reduce Scope 1 emissions 25% by 2025 vs 2018 baseline, up from 20%
- Our target is to reduce Scope 2 emissions 40% by 2025 vs 2018 baseline, up from 15%



www.mineralstech.com

Champion Fiberglass

Champion Fiberglass is pleased to announce that our facility received ISO (International Organization for Standardization) certifications 9001:2015 and 14001:2015 standards (independently certified by AFNOR). Champion Fiberglass is the only conduit-industry business to have received both certifications.

Champion Fiberglass has been ISO 9001 certified for 12 years and was just re-certified for the latest version, ISO 9001:2015. The requirements of ISO 9001:2015 center on quality management systems, and in receiving this certification, our company has shown its ability to "consistently provide products and services that meet customer and applicable statutory and regulatory requirements" according to ISO's rigorous guidelines, as well as showing a demonstrable ability to enhance customer satisfaction through the application of their quality management system.

Our environmental management systems have attained the ISO 14001:2015 certification, the world's premier environmental management principles. This means that our facility's environmental management systems achieve enhancement of environmental performance, fulfillment of compliance obligations, and achievement of environmental objectives.

ISO is an internationally recognized organization with membership in 161 national standards bodies. Their stated purpose is to define world-class standards for products, services, and systems – including environmental management systems. We're pleased to have attained these certifications; going forward, we fully intend to meet and exceed the requirements laid out for maintaining an environmentally sustainable facility and business.

YOUR INDUSTRY:

ELECTRICAL MECHANICAL

If working on an electrical conduit project, select electrical reps. If working on a mechanical piping/bridge drain or strut project, select mechanical reps.

FIND A REP →

SEARCH BLOG

Search term

READY TO START SAVING?

Name *(Required)*

First Name * Last name *

Email *(Required)*

Email address *

Yes, I'd like to receive future emails about Champion Fiberglass

Charlotte Pipe and Foundry

MARKETS

Green Building/LEED

Charlotte Pipe has practiced environmental-friendly principles for years, both in our manufacturing processes and with our products. Our cast iron products are ICC-ES certified as 96% post-consumer recycled content and are 100% recyclable.

Letters

- LEED for Cast Iron [478k pdf]
- LEED Documentation Data Sheet [182k pdf]
- LEED for PVC [84k pdf]
- Charlotte Pipe's Cast Iron ICC-ES Certification [240k pdf]

Agent Offline

- Charlotte Pipe's Cast Iron ICC-ES PMG Listing-1082 [249k pdf]
- Charlotte Pipe's Cast Iron ICC-ES PMG Listing-1083 [235k pdf]

Products

- Cast Iron

Articles/Media

- CorrectionalNews.com: *Pipe Down: Plumbing and Noise Abatement* [61k pdf]
- PM Engineer: *The Key Benefit of Non-Potable Water Piping Systems* [320k pdf]
- Southern PHC: *The Green Side of Charlotte Pipe* [5198k pdf]

Cast Iron

Cast iron pipe and fittings are not only superior when it comes to drain, waste and vent piping systems, they are made from 96% recycled content. Millions of tons of scrap iron has been recycled over the last several decades to produce this durable product. Cast iron has been, and in some cases, is still in use after over a hundred years.

Another environmental benefit of cast iron systems occur during installation. Since no cleaning fluids or solvent cements are needed, the exposure to volatile organic compounds (VOCs) is eliminated. For underground installation, cast iron piping can handle earth load with no deflection. This means there is less digging on the front end and a trench can be as narrow as an installer decides.

Background

- A trend toward **environmentally sustainable building** practices has grown in recent years. The U.S. government requires that federal government projects use green building practices. Many state and local agencies also offer incentives to encourage the construction of green buildings.

Agent Offline

- The Green Building Council administers a certification program called the **Leadership in Energy and Environmental Design green building rating system (LEED)**. There are four LEED certification levels depending on the number of points achieved by the building – from the planning stages, through construction to building completion, and even into the building's useful life. Points are awarded in six different categories, including Materials and Resources.

- In April 2005, *Big Builder* magazine reported that the National Association of Home Builders (NAHB) issued a new set of voluntary guidelines to help builders construct more green buildings.

- In addition to its product offerings, **Charlotte Pipe is a major recycler in the state of North Carolina**. Each year, we save more than 350 million pounds of scrap iron and steel from overcrowded landfills. We also operate our own water treatment facility to recycle and re-use 100% of our process water. Charlotte Pipe received a Charlotte-Mecklenburg Blue Thumb Award in 2000 and a Charlotte-Mecklenburg Environmental Excellence in Industry Award in 2001 and in 2007 for our continued efforts to reduce our demand for city water and for recycling 100 percent of our treated process water.

Support

One of the added benefits of using Charlotte Pipe is the many resources we provide. Our Customer Service and Technical Support associates are available to answer your product, technical and/or installation questions.

Contact Support

Copyright © 2022 Charlotte Pipe and Foundry. All rights reserved.

2109 Randolph Road, Charlotte, NC 28207

CHARLOTTE PIPE AND FOUNDRY COMPANY

Agent Offline

CMC

CMC SUPPORTS THE LEED® INITIATIVE

CMC is committed to sustainability from recycling to production to fabrication of steel products. We are dedicated to being transparent about reporting the environmental impact we have on the Earth.

We support the efforts of the U.S. Green Building Council and are active in the Leadership in Energy and Environmental Design (LEED®) initiative. LEED® is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across a number of metrics.

All of CMC's steel mills utilize state-of-the-art Electric Arc Furnace technology to make steel. This technology uses pre- and post-consumer recycled scrap as the primary raw material for the steelmaking process and averages 98.0% recycled content. With a significantly high percentage of recycled materials, all of CMC's products play a major role in "green construction" and are a positive contributor to the LEED® rating system.

CMC can supply fabricated rebar that can contribute a full credit under LEED® v4 or LEED® v3 (2009), since we have a national fabrication footprint and manufacturer-specific USGBC EPDs.

On October 31, 2016, USGBC officially transitioned to LEED® v4. The sunset date for LEED v3 was June 30, 2022. The below links will direct you to CMC's LEED® data for the current LEED® v4 as well as LEED® v3 for those projects that are qualifying under the legacy rating system. CMC is helping to "LEED®" the way to sustainable steelmaking.

LEED® v4

This analysis was conducted according to the North American Product Category Rule (PCR) created by SCS Global Services for Designated Steel Construction Products (SCS 2015) and reviewed and certified by ASTM as conforming to the requirements of ISO 21930 and ISO 14025.

To meet LEED® v4 requirements, these Environmental Product Declarations (EPDs) have been developed for the following steel products manufactured at CMC steel mills.

CMC Steel Environmental Product Declarations (EPDs)

Product	Mill	City	State	Details
All-thread Bar	CMC Steel South Carolina	Cayce	SC	***Open***
Concrete Reinforcing Steel (Rebar)	CMC Steel Arizona	Mesa	AZ	***Open***
Concrete Reinforcing Steel (Rebar)	CMC Steel California	Rancho Cucamonga	CA	***Open***
Concrete Reinforcing Steel (Rebar)	CMC Steel Florida	Jacksonville	FL	***Open***
Concrete Reinforcing Steel (Rebar)	CMC Steel New Jersey	Sayreville	NJ	***Open***
Concrete Reinforcing Steel (Rebar)	CMC Steel Oklahoma	Durant	OK	***Open***
Concrete Reinforcing Steel (Rebar)	CMC Steel South Carolina	Cayce	SC	***Open***
Concrete Reinforcing Steel (Rebar)	CMC Steel Tennessee	Knoxville	TN	***Open***
Concrete Reinforcing Steel (Rebar)	CMC Steel Texas	Seguin	TX	***Open***
ChromX® Concrete Reinforcing Steel (Rebar)	CMC Steel South Carolina	Cayce	SC	***Open***
Merchant Bar and Light Structural Shapes	CMC Steel Alabama	Birmingham	AL	***Open***

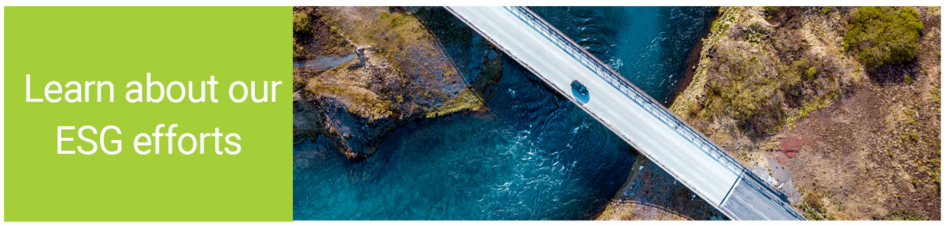
We have made important changes to our Website Privacy and Cookies Policy. By continuing to use our site you are agreeing to the terms of the policy. To understand what this means for you and your data, please click here to access our Website Privacy and Cookies Policy. Dismiss

Shapes				
Wire Rod	**CMC Steel Florida**	**Jacksonville**	**FL**	***Open***

LEED® v3 (2009)

With the geographical dispersion of our recycling, steel making and fabricating facilities, CMC's operations are within 500 miles of almost all possible construction sites in the U.S. For more information, please click on the link below to download the current LEED® v3 letter.

CMC LEED® v3 Information



Established in 1915 | Copyright 2023 CMC. All rights reserved.

We have made important changes to our Website Privacy and Cookies Policy. By continuing to use our site you are agreeing to the terms of the policy. To understand what this means for you and your data, please click here to access our Website Privacy and Cookies Policy. Dismiss

Cookson Company Inc.

INSULATED GARAGE DOORS AND INSULATED ROLL UP DOOR ENERGY EFFICIENCY

LEED V4, SUSTAINABILITY AND GREEN MANUFACTURING

LEED v4 (Leadership in Energy and Environmental Design) is a voluntary, consensus-based national rating system for developing high-performance, sustainable buildings developed by The U.S. Green Building Council (USGBC).

The LEED v4 for New Construction and Major Renovations Rating System guides and distinguishes high-performance commercial and institutional projects. The Rating System consists of six categories, listed with Cookson's contribution toward them as follows:

1. Sustainable Sites. This category is not applicable to the use of Cookson products.
2. Water Efficiency. This category is not applicable to the use of Cookson products.
3. Energy and Atmosphere. This category is not applicable to the use of Cookson products.
4. Materials and Resources

Materials and Resources Credit 4: Recycled Content

Cookson product components contain Post Industrial and Post Consumer recycled content as listed below. Please note that Product Type and Product Size determine final Recycled Content calculation results. Precise Recycled Content information can be provided when dimensioned products are identified, excluding TranZform®, Side Folding Grille Products and Extreme® Tough Rubber Doors. The precise post industrial and preconsumer values are calculated by internal programming systems based on the build sheets for each door.

Cookson Recycled Content 2012, All Products Except TranZform Accordion Products, Side Folding Grille Products and Extreme Tough Rubber Doors

- Prepainted Steel Curtain and Hood Material
  - 7% Post Industrial (Pre-Consumer)
  - 23% Post Consumer
- Structural Steel Bottom Bar Angle
  - 17% Post Industrial (Pre-Consumer)
  - 83% Post Consumer
- Structural Steel Guide Angle
  - 40% Post Industrial (Pre-Consumer)
  - 56% Post Consumer
- General Steel Components in Shafts and Brackets
  - 33% Post Industrial (Pre-Consumer)
  - 0% Post Consumer
- Stainless Steel, #4 Finish only, in Curtain, Hood, Bottom Bar and Guides
  - 67% Post Industrial (Pre-Consumer)
- No recycled content in Aluminum
- No recycled content in Structural Stainless Steel Guides
- No recycled content in Galvanized Grille Rods or Stainless Steel Grille Rods

TranZform® Accordion Products Recycled Content 2012

- Aluminum Extrusions, Vinyl Extrusions
  - 75% Post Industrial (Pre-Consumer)
  - 10% Post Consumer
- Slats, Metal Hinges, Formed Steel Lead Posts and Jamb Attachments
  - 25% Post Industrial (Pre-Consumer)
  - 25% Post Consumer

Side Folding Grille Products Recycled Content 2012

- Aluminum Extrusions
  - 80% Post Industrial (Pre-Consumer)
  - 10% Post Consumer

Extreme® Tough Rubber Doors Recycled Content 2012

- Unpainted Structural Steel Construction
  - 9% Post Industrial (Pre-Consumer)
  - 90% Post Consumer
- Extruded Aluminum Guide

        - 9% Post Industrial (Pre-Consumer)
        - 21% Post Consumer
    - Lintel Brush Seals
        - 0% Post Industrial (Pre-Consumer)
        - 100% Post Consumer

Materials and Resources Credit 5: Regional Materials

Cookson products excluding Side Folding Grilles and Extreme Tough Rubber Doors are manufactured in the following locations:

- Mountaintop, Pennsylvania, 18707 USA
- Goodyear, Arizona, 85338 USA
- Gastonia, North Carolina, 28052 USA

5. Indoor Environmental Quality. This category is not applicable to the use of Cookson products.

   Note that all Cookson finishes are applied by the time the product is shipped. No finishes or paints are applied to products on-site. VOC information is not applicable for LEED EQ 4.1- 4.4 credit.
6. Innovation and Design Process. This category is not applicable to the use of Cookson products.

**LEED is a trademark of The U.S. Green Building Council.*

Comprehensive LEED v4 Guides

by product

Counter Door
View LEED Info (/docs/default-source/leed/cornell/counter-door-leed_k) | View Product (/product/rolling-counter-shutter)

Credit category: 4 **Max Points:** 18
Counter Fire Door
View LEED Info (/docs/default-source/leed/cornell/counter-fire-door-leed_k) | View Product (/product/counter-fire-shutter)

Credit category: 4 **Max Points:** 18
Service Fire Door
View LEED Info (/docs/default-source/leed/cornell/fire-door-leed_k) | View Product (/product/rolling-fire-doors)

Credit category: 4 **Max Points:** 18
Firemiser Insulated Fire Door
View LEED Info (/docs/default-source/leed/cornell/insulated-fire-door-leed_k) | View Product (https://www.cooksondoor.com/product/insulated-fire-door_k)

Credit category: 5 **Max Points:** 38

Service Door
View LEED Info (/docs/default-source/leed/cornell/service-door-leed_k) | View Product (/product/service-doors)

Credit category: 4 **Max Points:** 18
Thermiser Insulated Door
View LEED Info (/docs/default-source/leed/cornell/thermiser-leed_k) | View Product (/product/thermiser-insulated-doors)

Credit category: 5 **Max Points:** 38
Thermiser Max IECC 2012 & ASHRAE 90.1 Compliant Insulated Door
View LEED Info (/docs/default-source/leed/cornell/thermiser-max-leed_k) | View Product (/product/thermiser-max)

Credit category: 5 **Max Points:** 38

(https://www.facebook.com/CooksonDoors/)
(https://www.youtube.com/user/TheCooksonCompanyInc)
(https://www.linkedin.com/company/10937930)

CONTACT US (/contact-us)

(https://www.cooksondoor.com/)
1901 South Litchfield Road
Goodyear, AZ 85338
Phone: 855.719.4040 (tel:+18557194040)

Sitemap (/sitemap)

Dealer Resource Center (/dealers)

Architect Portal (/architectural-resource-homepage)

Find a Dealer (/find-a-dealer)

New Dealer Application (/new-dealer-application)

Privacy Policy (/privacy-policy)

About Us (http://www.cornellcookson.com/about-us)

Career Opportunities (http://www.cornellcookson.com/careers)

Commonly Asked Questions (/faqs)

Patent Marking (/patent-marking)

All rights reserved.
© 2022 CornellCookson, LLC.

Cornell Iron Works

877.640.8825 (tel:+18776408825)

CONTACT US

(https://www.cornelliron.com/contact-us)

LEED V4, SUSTAINABILITY AND GREEN MANUFACTURING

LEED v4 (Leadership in Energy and Environmental Design) is a voluntary, consensus-based national rating system for developing high-performance, sustainable buildings developed by The U.S. Green Building Council (USGBC).

The LEED v4 for New Construction and Major Renovations Rating System guides and distinguishes high-performance commercial and institutional projects. The Rating System consists of six categories, listed with Cornell's contribution toward them as follows:

1. Sustainable Sites. This category is not applicable to the use of Cornell products.
2. Water Efficiency. This category is not applicable to the use of Cornell products.
3. Energy and Atmosphere. This category is not applicable to the use of Cornell products.
4. Materials and Resources

Materials and Resources Credit 4: Recycled Content

Cornell product components contain Post Industrial and Post Consumer recycled content as listed below. Please note that Product Type and Product Size determine final Recycled Content calculation results. Precise Recycled Content information can be provided when dimensioned products are identified, excluding TranZform®, Side Folding Grille Products and Extreme® Performance Rubber Doors. The precise post industrial and preconsumer values are calculated by internal programming systems based on the build sheets for each door.

Cornell Recycled Content, All Products Except TranZform Accordion Products, Side Folding Grille Products and Extreme Performance Rubber Doors, 2012

- Prepainted Steel Curtain and Hood Material
  - 7% Post Industrial (Pre-Consumer)
  - 23% Post Consumer
- Structural Steel Bottom Bar Angle
  - 17% Post Industrial (Pre-Consumer)
  - 83% Post Consumer
- Structural Steel Guide Angle
  - 40% Post Industrial (Pre-Consumer)
  - 56% Post Consumer
- General Steel Components in Shafts and Brackets
  - 33% Post Industrial (Pre-Consumer)
  - 0% Post Consumer
- Stainless Steel, #4 Finish only, in Curtain, Hood, Bottom Bar and Guides
  - 67% Post Industrial (Pre-Consumer)
- No recycled content in Aluminum
- No recycled content in Structural Stainless Steel Guides
- No recycled content in Galvanized Grille Rods or Stainless Steel Grille Rods

TranZform® Accordion Products Recycled Content 2012

- Aluminum Extrusions
  - 0% Post Industrial (Pre-Consumer)
  - 0% Post Consumer
- Vinyl Extrusions
  - 75% Post Industrial (Pre-Consumer)
  - 10% Post Consumer
- Slats, Metal Hinges, Formed Steel Lead Posts and Jamb Attachments
  - 25% Post Industrial (Pre-Consumer)
  - 25% Post Consumer

Side Folding Grille Products Recycled Content 2012

- Aluminum Extrusions
  - 80% Post Industrial (Pre-Consumer)
  - 10% Post Consumer

Materials and Resources Credit 5: Regional Materials

Cornell products excluding Side Folding Grilles and Extreme Performance Rubber Doors are manufactured in Mountaintop, Pennsylvania, 18707 USA

5. Indoor Environmental Quality. This category is not applicable to the use of Cornell products.

   Note that all Cornell finishes are applied by the time the product is shipped. No finishes or paints are applied to products on-site. VOC information is not applicable for LEED EQ 4.1- 4.4 credit.
6. Innovation and Design Process. This category is not applicable to the use of Cornell products.

**LEED v4 is a trademark of The U.S. Green Building Council.*

Comprehensive LEED v4 Guides
by product

Counter Door
View LEED Info (/docs/default-source/leed/cornell/counter-door-leed) | View Product (/product/rolling-counter-shutter)

Credit category: 4 **Max Points:** 18

Counter Fire Door
View LEED Info (/docs/default-source/leed/cornell/counter-fire-door-leed) | View Product (/product/counter-fire-shutter)

Credit category: 4 **Max Points:** 18

Service Fire Door
View LEED Info (/docs/default-source/leed/cornell/service-door-leed) | View Product (/product/rolling-fire-doors)

Credit category: 4 **Max Points:** 18

Firemiser Insulated Fire Door
View LEED Info (/docs/default-source/leed/cornell/insulated-fire-door-leed) | View Product (https://www.cornelliron.com/product/insulated-fire-door)

Credit category: 5 **Max Points:** 38

Service Door
View LEED Info (/docs/default-source/leed/cornell/service-door-leed) | View Product (/product/service-doors)

Credit category: 4 **Max Points:** 18

Thermiser Insulated Door
View LEED Info (/docs/default-source/leed/cornell/thermiser-leed) | View Product (/product/thermiser-insulated-doors)

Credit category: 5 **Max Points:** 38

Thermiser Max IECC 2012 & ASHRAE 90.1 Compliant Insulated Door
View LEED Info (/docs/default-source/leed/cornell/thermiser-max-leed) | View Product (/product/thermiser-max)

Credit category: 5 **Max Points:** 38

(https://www.cornelliron.com/)
24 Elmwood Avenue
Mountain Top, PA 18707
Phone: 877.640.8825 (tel:+18776408825)

Sitemap
(https://www.cornelliron.com/sitemap)

Dealer Resource Center (/dealers)

Architect Portal (/architectural-design-homepage)

Find a Dealer (/find-a-dealer)

New Dealer Application (/new-dealer-application)

About Us (http://www.cornellcookson.com/about-us)

Career Opportunities (http://www.cornellcookson.com/careers)

Privacy Policy (/privacy-policy)

Frequently Asked Questions (/faqs)

Patent Marking (/ca-transparency-act)

All rights reserved.
© 2022 CornellCookson, LLC.

DAL Tile

SUSTAINABILITY

Daltile is proud to be part of the Mohawk Industries **Environmental, Social and Governance Report (ESG)**. At Daltile, innovation has always defined our business, from industry-changing products to processes we continue to refine. Innovation is also the driving force behind our Environmental, Social and Governance strategy, which is focused on creating a better tomorrow for people and the planet. We are excited to share our sustainability progress with you.

2021 SUSTAINABILITY REPORT (HTTPS://CATALOGS.DALTILE.COM/2021-SUSTAINABILITY-REPORT/COVER/)

We believe great design can help create better places to live and work that are both innovative and earth-friendly. We do everything we can to keep our processes as sustainable as possible, which means reusing, recycling and reducing solid materials and water used to manufacture our products.

WHAT IS SUSTAINABILITY AND WHY DOES IT MATTER?

WHAT IS SUSTAINABILITY?

Sustainability is about creating a better tomorrow for people and the planet, without reducing its ability to provide for the future. Responsible businesses should find ways to work with nature, not against it.

By using our website, you agree to our Privacy Policy (/why-daltile/company/about-us/company-information/legal/privacy-policy), and Terms of Use (/why-daltile/company/about-us/company-information/legal/DTC-Terms-of-Service), which include terms on cookies and similar technologies.

Got it!

Chat with us!

We couldn't continue to provide top tier products without taking care of nature first. That's why we put sustainability at the forefront of our business. Our future depends on the work we do today.

At Dal-Tile, our promise to sustainability extends beyond just products and processes: it is how we challenge ourselves to do and be better every day, how we make decisions, how we reinvest in our people and our planet, and how we define what matters as we work to deliver value for generations to come.

IS TILE SUSTAINABLE?

- Tiles have the smallest carbon footprint of any floor surface.
- They're completely free of dangerous chemicals, plastic, and volatile organic compounds (VOCs) present in other floor types.
- While carpet and laminate flooring needs to be replaced every 5-10 years, tiles can last a lifetime — just ask the Romans!
- There's no need to use toxic chemicals to clean tiles. Warm water or neutral pH cleaner will work just as well, avoiding the introduction of destructive chemicals into our homes and environment.
- Tiles reduce energy consumption thanks to their fantastic thermal conductivity. This makes them perfect for retaining heat in the winter and cooling rooms in the summer.

We make natural tiles that use clay as pure as the ground from which they're harvested. But we know that we can do more.

Though some people may wonder why sustainability is important in business, we wouldn't have it any other way.

That's why we've worked hard to develop methods that reduce our footprint. Here are some examples:

REUSABILITY

Reduce. Reuse. Recycle.

These three words have inspired us to reduce waste and improve reusability. Here's what we've been doing.

- Over 99% of our products contain recycled or reclaimed materials.
- Our corporate office has recycled over 341 tons of cardboard and office paper since 2018, averaging 68 tons/year from 2018-2022.
- In our North American tile manufacturing facilities, Dal-Tile recovers & reuses on average over 300 million pounds of recycled and/or reclaimed material per year.
- In our business, millions of material pounds that cannot be used to make products have been sent to state-approved beneficial reuse programs for roadbed base material, brick and cement manufacturing and land reclamation.
- Our GREENWORKS take-back program helps reduce waste in the building industry by offering to take back unused ceramic and porcelain tiles that would otherwise end up in landfills.
- In the past seven years, nine manufacturing facilities have achieved Mohawk's internal zero landfill certification.
- Our discontinued products are donated to churches, schools, healthcare facilities, and charities.

By using our website, you agree to our Privacy Policy (/why-daltile/company/about-us/company-information/legal/privacy-policy) and Terms of Use (/why-daltile/company/about-us/company-information/legal/DTC-Terms-of-Service), which explains our use of cookies and similar technologies.

Got it!

Chat with us!

EFFICIENCY

Sustainability is about more than reducing resource use.

It's just as important to make sure that when you do use resources, you use them in a way that maximizes utility.

Here's how we're doing just that:

- Our Made In The USA (/why-daltile/made-in-the-usa) program ensures a large portion of our products are made right here, minimizing transport emissions. We've also strategically placed our showrooms, distribution centers, and manufacturing plants so that our products and raw materials are always within 500 miles of most project sites. This helps us keep fuel consumption low.
- Our manufacturing plants recover and reuse 84% of all process wastewater generated in our manufacturing plants to make new tile products. 6 of the 11 manufacturing plants are zero discharge facilities by virtue of recovering and reusing 100% of their process wastewater.
- We recover and reuse wastewater generated in the production process, preventing 125 million gallons from entering local municipal water treatment facilities.
- We've improved the way we use electricity and natural gas in our manufacturing, showrooms, and distribution centers. By improving efficiency and conserving energy, we have achieved an 11% reduction in energy consumption from 2018-2021.
- We have invested significantly in the reduction of energy consumption and the associated carbon footprint. From 2018 to present we have reduced our carbon footprint by 39%.

TRANSPARENCY

Why is sustainability important for our environment? Well, it's simple. Without sustainability, our environment deteriorates until it can no longer provide the benefits we rely on.

Without transparency, sustainability might not be sustained. That's why we prioritize honesty and accountability in our business. Here's how:

- Environmental Product Declarations (https://www.environdec.com/home) are the most comprehensive environmental impact assessments on the market, derived from analysis of a product's full life cycle and independently verified. We provide this for each one of our products.
- Since 2018, we've provided product-specific Health Product Declarations (https://www.hpd-collaborative.org/) for many of our collections based on a set of international hazard listings.
- We help communicate the sustainability and performance benefits of ceramic tile through our partnership with the tile council of America by creating content on their "why tile" website. Visit www.whytile.com (https://whytile.com/) for more information.



By using our website, you agree to our Privacy Policy (/why-daltile/company/about-us/company-information/legal/privacy-policy) and Terms of Use (/why-daltile/company/about-us/company-information/legal/DTC-Terms-of-Service), which explains our use of cookies and similar technologies.

Got it!

Chat with us!

WANT TO GET LEED CERTIFIED?

The Leadership in Energy & Environmental Design certification is the world's most widely used green building rating system.

We've helped hundreds of projects achieve this certification and prove their green credentials.

With our simple 5 step process, getting your customized LEED certification letter is quick and easy. To find out more, visit our LEED Center (/trade-professionals/leed).



By using our website, you agree to our Privacy Policy (/why-daltile/company/about-us/company-information/legal/privacy-policy) and Terms of Use (/why-daltile/company/about-us/company-information/legal/DTC-Terms-of-Service), which explains our use of cookies and similar technologies.

Got it!

Chat with us!



LEED CENTER

Our LEED Center offers online tools that help promote a whole-building approach to sustainability and LEED certification.

LEED CENTER (/TRADE-PROFESSIONALS/LEED)

By using our website, you agree to our Privacy Policy (/why-daltile/company/about-us/company-information/legal/privacy-policy) and Terms of Use (/why-daltile/company/about-us/company-information/legal/DTC-Terms-of-Service), which explains our use of cookies and similar technologies.

Got it!

Chat with us!

SUSTAINABLE BUILDING

We strongly support green building processes and energy efficiency for a wide array of residential & commercial projects.

GREEN BUILDING (/WHY-DALTILE/SUSTAINABILITY/GREEN-BUILDING)



By using our website, you agree to our Privacy Policy (/why-daltile/company/about-us/company-information/legal/privacy-policy) and Terms of Use (/why-daltile/company/about-us/company-information/legal/DTC-Terms-of-Service), which explains our use of cookies and similar technologies.

Got it!

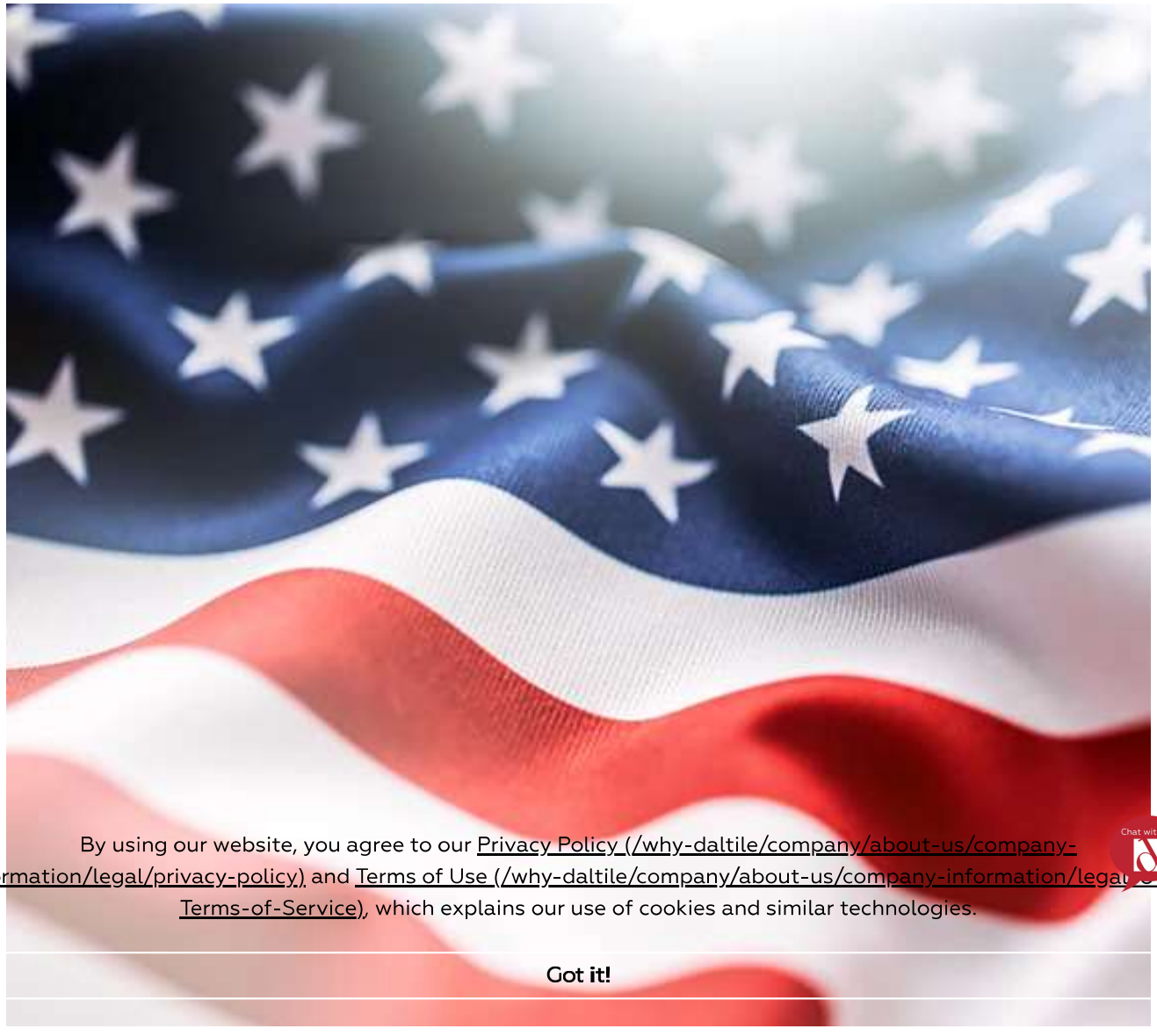
Chat with us!



GREEN MANUFACTURING

Our mission is to continue to create technology that ensures all of our processes are environmentally responsible and energy efficient.

LEARN MORE (/WHY-DALTILE/SUSTAINABILITY/GREEN-MANUFACTURING)



By using our website, you agree to our Privacy Policy (/why-daltile/company/about-us/company-information/legal/privacy-policy) and Terms of Use (/why-daltile/company/about-us/company-information/legal/DSC-Terms-of-Service), which explains our use of cookies and similar technologies.

Got it!

Chat with us!

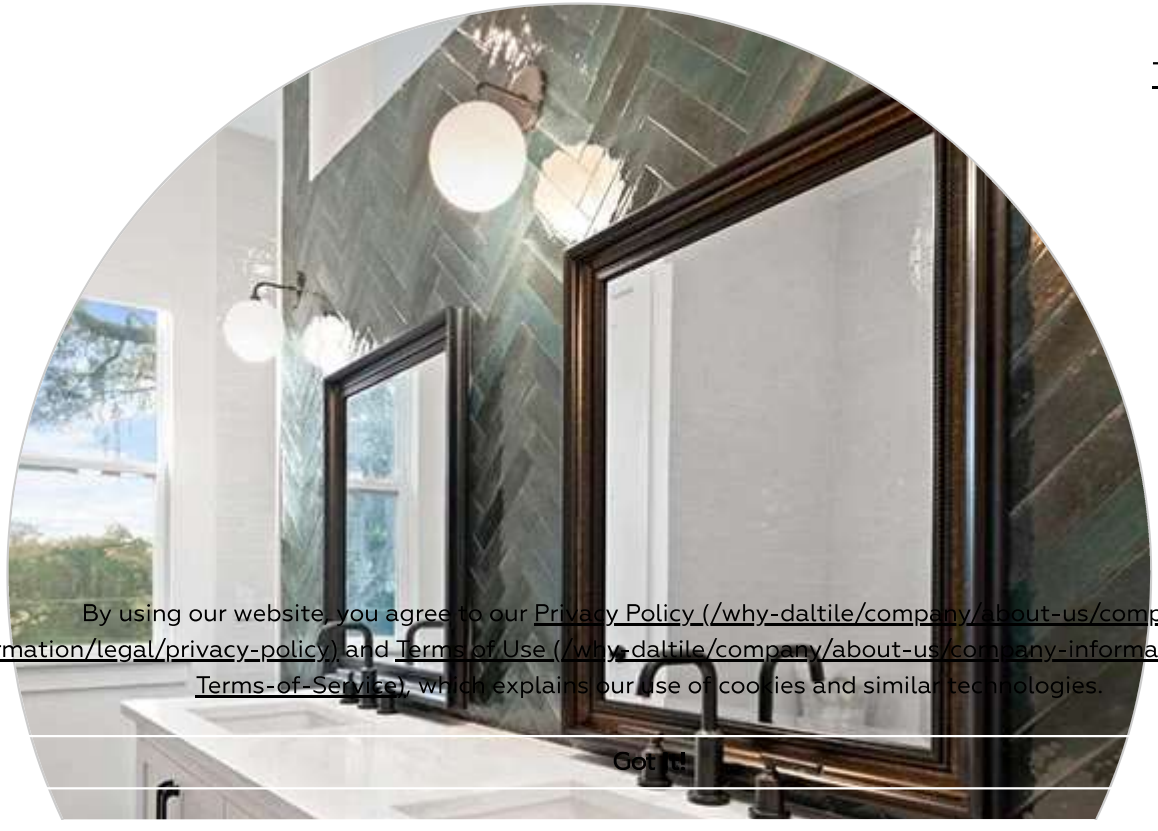
MADE IN THE USA

70 of our collections are manufactured in our American plants. Explore the incredible Daltile products Made in the USA.

AMERICAN PRIDE (/WHY-DALTILE/MADE-IN-THE-USA)

DESIGNING WITH TILE

(/Desi
Tools#Interac



By using our website, you agree to our Privacy Policy (/why-daltile/company/about-us/company-information/legal/privacy-policy) and Terms of Use (/why-daltile/company/about-us/company-information/legal/DTC-Terms-of-Service), which explains our use of cookies and similar technologies.

Got it!

Chat with us!



(/)

Search text...

DESIGN TOOLS

Create with our Stylizer and Mosaic Design Tool or tour our Virtual House.

VISUAL AID (/DESIGN-TOOLS#INTERACTIVETOOLS)

(/trend-hub/design-ideas-library)



By using our website, you agree to our Privacy Policy (/why-daltile/company/about-us/company-information/legal/privacy-policy) and Terms of Use (/why-daltile/company/about-us/company-information/legal/DTC-Terms-of-Service), which explains our use of cookies and similar technologies.

Got it!

Chat with us!



(/trac
professionals
and-designe
tile-serv

TILE YOUR WAY

By using our website, you agree to our Privacy Policy (/why-daltile/company/about-us/company-information/privacy-policy) and Terms of Use (/why-daltile/company/about-us/company-information/DC-Terms-of-Service), which explains our use of cookies and similar technologies.

Got it!

Chat with us!

Discover a wide array of personalized services for any tile installation, like no other.

(/featured-shapes)



THINK OUTSIDE THE BOX

Arabesque, hexagon, geometric & more, explore our favorite uniquely shaped tile.

FEATURED SHAPES (/FEATURED-SHAPES)

By using our website, you agree to our Privacy Policy (/why-daltile/company/about-us/company-information/legal/privacy-policy) and Terms of Use (/why-daltile/company/about-us/company-information/legal/DTC-Terms-of-Service), which explains our use of cookies and similar technologies.

Chat with us!

FOLLOW DALTILE

Got it!

Search text...

QUICK LINKS +

ABOUT US +

CUSTOMER SERVICE +

TRADE PROFESSIONALS +

RELATED INFORMATION +

Site Map

Privacy Policy (/about-us/company-information/privacy-policy)

Legal Notice (/about-us/company-information/legal-notice)

UGC Terms of Use (/about-us/company-information/user-generated-content-terms-of-use)

Internet Selling Policy (/about-us/company-information/internet-selling-policy)

Code of Conduct (/about-us/company-information/code-of-conduct)

WCAG 2.1 Compliant (/about-us/company-information/legal-notice)

By using our website, you agree to our Privacy Policy (/why-daltile/company/about-us/company-information/legal/privacy-policy) and Terms of Use (/why-daltile/company/about-us/company-information/legal/UGC-Terms-of-Service), which explains our use of cookies and similar technologies.

© Copyright 2022 Daltile. All Rights Reserved.

Got it!

Chat with us!

DKN Ready Mix

Find a Producer

Company

City brooklyn

State New York

Zip

Find

Export

Company	City/State	Contact	Subsidiary List
DKN Ready Mix	Brooklyn, NY	(p) (718) 218-6418 (e) nick@dknreadymix.com (w) www.dknreadymix.com	
Empire Transit Mix	Brooklyn, NY	(p) (718) 384-3000 (f) (718) 384-3113 (e) Dtammaro@empiretransitmix.com	
Gotham Ready Mix LLC	Brooklyn, NY	(p) (718) 246-4444 (f) (718) 246-1111 (w) www.gothamreadymix.com	Gotham Ready Mix LLC
Gotham Ready Mix LLC	Brooklyn, NY	(p) (718) 246-4444 (f) (718) 246-1111	

Company	City/State	Contact	Subsidiary List
MLV Concrete Inc.	Brooklyn, NY	(p) (718) 802-1800 (f) (718) 802-9666 (e) dtamarro@empiretransitmix.com	
Transit Mix Corp.	Brooklyn, NY	(p) (718) 386-8000 (f) (718) 386-8003 (e) dmf@transitmix.nyc	
USC-Kings, LLC A U.S Concrete Company	Brooklyn, NY	(p) (718) 438-6800 (w) www.us-concrete.com/kings	

© National Ready Mixed Concrete Association

Ductmate Industries Inc.



Building Relationships

Industry relationships are important to us and continue to help us shape the HVAC industry. We work with vital HVAC organizations to ensure that the needs of an ever-growing and evolving industry are met. Partnering with the best distributors in the nation guarantees that our industry-leading products are always available to our end users.

Our Industry Partners

SMART (https://smart-union.org/)

SMACNA (https://www.smacna.org/)

ASHRAE Certified (https://www.ashrae.org/)

HARDI PROUD MEMBER (https://hardinet.org/)

ARM MEMBER (http://arminstitute.org/)

M D (https://mxdusa.org/)

SPIDA SPIRAL DUCT MANUFACTURERS ASSOCIATION (https://www.spida.org/)

NADCA The HVAC Inspection, Maintenance and Restoration Association (https://nadca.com/)

Green Building Alliance (https://www.go-gba.org/)

USGBC MEMBER (https://www.usgbc.org/)

Our History

Founded in 1978 by Peter Arnoldt, Ductmate Industries has been one of the largest innovative forces in the commercial HVAC industry for over 40 years.

Learn More
(https://ductmate.com/company/history/)

Corporate Office

Charleroi, PA

210 Fifth Street
Charleroi, PA 15022

Phone: *800-990-8459*

Fax: *724-258-5494*

Empire Transit Mix

Find a Producer

Company

City brooklyn

State New York

Zip

Find

Export

Company	City/State	Contact	Subsidiary List
DKN Ready Mix	Brooklyn, NY	(p) (718) 218-6418 (e) nick@dknreadymix.com (w) www.dknreadymix.com	
Empire Transit Mix	Brooklyn, NY	(p) (718) 384-3000 (f) (718) 384-3113 (e) Dtammaro@empiretransitmix.com	
Gotham Ready Mix LLC	Brooklyn, NY	(p) (718) 246-4444 (f) (718) 246-1111 (w) www.gothamreadymix.com	Gotham Ready Mix LLC
Gotham Ready Mix LLC	Brooklyn, NY	(p) (718) 246-4444 (f) (718) 246-1111	

Company	City/State	Contact	Subsidiary List
MLV Concrete Inc.	Brooklyn, NY	(p) (718) 802-1800 (f) (718) 802-9666 (e) dtamarro@empiretransitmix.com	
Transit Mix Corp.	Brooklyn, NY	(p) (718) 386-8000 (f) (718) 386-8003 (e) dmf@transitmix.nyc	
USC-Kings, LLC A U.S Concrete Company	Brooklyn, NY	(p) (718) 438-6800 (w) www.us-concrete.com/kings	

© National Ready Mixed Concrete Association

Euclid

INDUSTRY COMMITMENT

Euclid Chemical is proud to support and serve the following organizations in further developing the concrete construction industry. We actively participate in additional local trade organizations and councils, promoting best practices.

Our employees serve on some of the biggest and most influential industry committees in construction, including The American Concrete Institute, The American Society of Concrete Contractors, The International Concrete Repair Institute, and The National Ready Mixed Concrete Association. Our work with these organizations underscores the value we place on community, shared knowledge and promoting best practices. These deep industry roots help guide us in consistently producing new technological and scientific advancements.

(https://www.acdi.net/)

(https://www.concrete.org/)

(http://www.acpa.org/)

(https://www.aia.org/events/64236-concrete-stands-the-test-of-time)

(https://www.ascconline.org/)

(https://www.astm.org/)

(http://www.csagroup.org/)

(http://fiberreinforcedconcrete.org/)

(https://www.icpi.org)

(http://www.icri.org/)

(https://ncma.org/)

(http://www.ncsea.com/)

(https://precast.org/)

(https://www.nrmca.org/)

(http://www.cement.org/)

(https://www.pci.org/)

(https://www.smenet.org/)

(http://www.smenet.org/uca)

For over a century, The Euclid Chemical Company has served the global building market as a worldwide quality supplier of specialty products and technical support services for the concrete and masonry construction industry.

Learn More ▸ ()

© 2018 The Euclid Chemical Company

About Cookies This website uses cookies and other tracking technologies (also known as pixels or beacons) to aid your experience (such as viewing videos), as well as "performance cookies" to analyze your use of this website and to assist with marketing efforts. If you click the "Accept All Cookies" button or continue navigating the website, you agree to having those first and third-party cookies set on your device. If you do not wish to accept cookies from this website, you can choose to not allow cookies from this website by updating your browser preferences. For more information on how we use Cookies, please read our Privacy Policy (/privacy-policy/).

Accept All Cookies

LEED CERTIFICATIONS

LEED Certifications

Euclid Chemical products that contribute to LEED credit include: Admixtures, Repair Products, Grouts, Cures and Seals, and Coatings. To open the individual product LEED letter, select the product name through the dropdown below.

Accelguard 80

Get certificate

Gerdau

Environment

(/)

Culture of Sustainability

Gerdau integrates green practices into our operations. Through initiatives including waste reduction, sustainable purchasing, pollution prevention, energy efficiency, and alternative transportation, we strive to lessen our impact on the environment.

Proud To Be Green

Click here to see our Recycling Steel video (https://www.youtube.com/watch?v=9iiSMA5C73s&feature=youtu.be)

Recycling

Air

We use cookies on this site to enhance your user experience

By clicking any link on this page you are giving your consent for us to set cookies. More info

No, thanks

OK, I agree



Recycling

Steel is an endlessly recyclable material. Each year, Gerdau transforms millions of tons of recycled scrap into new steel products. Most of the scrap comes from discarded materials. Material recycled from automotive, packaging and appliance production processes all go into the creation of new steel products.

Did You Know?

- Producing steel from scrap metal reduces the amount of material deposited in landfills.
- The use of steel scrap as a raw material reduces energy consumption in our production process, and minimizes emissions of CO2.
- Recycling scrap is also great for our economy, as it generates jobs for thousands of people through an extensive chain of scrap collection and processing operations.

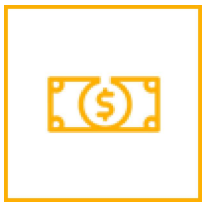
We use cookies on this site to enhance your user experience

No, thanks **OK, I agree**

By clicking any link on this page you are giving your consent for us to set cookies. More info

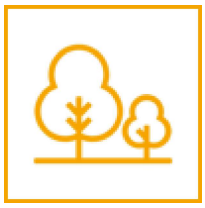
Learn more about our Metals Recycling Solutions

(https://www2.gerdau.com/metals-recycling)



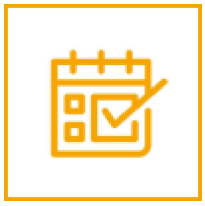
$67 million

invested to protect the environment



12,500 acres

of preserved forests



9,000 hours

of environmental education training

We use cookies on this site to enhance your user experience

No, thanks OK, I agree

By clicking any link on this page you are giving your consent for us to set cookies. More info



Co-Products

Co-products - which are the secondary materials produced during steel production - can be used in numerous industrial applications, such as road paving, railway ballasts, foundries, cement manufacturing and ceramics. Gerdau reuses 73% of its co-products globally, and donates other co-products to help municipalities improve the roads in areas near our operations.

Green Space

We use cookies on this site to enhance your user experience

By clicking any link on this page you are giving your consent for us to set cookies. More info

No, thanks **OK, I agree**

Gerdau's commitment to a sustainable future is reflected by the green areas we maintain on our mill properties. This effort to coexist with the surrounding land provides a buffer for neighboring property uses, and allows nature to prosper.



Other pages

Careers (https://jobs.gerdau.com/)

Gerdau Special Steel (https://gsn.gerdau.com/)

Metals Recycling (/metals-recycling)

We use cookies on this site to enhance your user experience

By clicking any link on this page you are giving your consent for us to set cookies. More info

No, thanks

OK, I agree

Sales:

(800) 237-0230 (tel:800-237-0230)

Sales@gerdau.com (mailto:sales@gerdau.com)

Copyright Gerdau S/A 2019

We use cookies on this site to enhance your user experience

By clicking any link on this page you are giving your consent for us to set cookies. More info

No, thanks **OK, I agree**

Gerdau LEED Letter V4 and Green Globes

January 17, 2023

LEED v4 and Green Globes – For New Construction and Major Renovations

Gerdau is a proud member of the U.S. Green Building Council (USGBC) and takes an active role in supporting a greener built environment through the implementation of the Leadership in Energy and Environmental Design (LEED) and Green Globes Certification Programs. Gerdau recognizes the impact that the built environment has on our natural environment, economy, health and productivity and supports the USGBC and GBI in their efforts to promote green construction and to maximize both economic and environmental performance.

The products and services that Gerdau provides can be used to help meet specific credits in LEED v4 rating system and points in the Green Globes rating system: Below is specific information to pertinent areas of the **LEED MATERIALS AND RESOURCES (MR) and GREEN GLOBES MATERIAL** section of their rating systems.

LEED - MATERIALS AND RESOURCES (MR) Credit: Building Product Disclosure and Optimization

Green Globes - MATERIALS Points

Environmental Product Declarations (EPDs)

- Gerdau has product specific 3rd. party certified EPDs (Type III) for each steel mill. The EPDs can be found on Gerdau website below.
  https://www2.gerdau.com/products-and-resources/certifications

Sourcing of Raw Materials

- The main component of raw material for the electric arc furnace steelmaking process is recycled steel scrap. Gerdau publishes recycled content (post-consumer and pre-consumer) for each steel mill. Data is updated annually. See table on page 2.

Material Ingredients

- Gerdau has a complete Health Product Declaration (HPD) in compliance with the Health Product Declaration open standard. The HPDs can be found on Gerdau website below.
  https://www2.gerdau.com/products-and-resources/certifications

- Gerdau complies with the "International Alternative Compliance Path – REACH Optimization". End use products do not contain substances of very high concern. Letter is available upon request.

In each of the above three sections, products sourced (extracted, manufactured, and purchased) within 100 miles of the project site are valued at 200% of their base contributing cost. Gerdau has regionally located steel mills and can determine the percent of the material harvest that is regional to your project.

This content is Public.

Please contact Marcos Burger at marcos.burger@gerdau.com or at (804) 481-6955 for project specific information.

2022 Recycled Steel Content for All Products by Mill

Mill	Postal Code	Post-consumer Scrap Content %	Pre-consumer Scrap Content %	Home or revert Scrap %	Total Recycled Content %	Non Recycled Content %	*Products Produced
Cambridge, ON	N1T 1R9	86.6	6.6	5.8	99.0	1.0	M, R
Cartersville, GA	30121	74.0	19.4	5.7	99.0	1.0	M, S
Charlotte, NC	28269	73.8	19.4	5.8	99.0	1.0	M, R, S, SBQ
Jackson, TN	38305	83.8	9.1	5.8	98.8	1.2	M,R, S
Selkirk, MB	R1A 1P6	70.9	7.3	20.3	98.4	1.6	M, R, SBQ
Midlothian, TX	76065	85.4	2.0	11.2	98.7	1.3	M, R, S, SBQ
Petersburg, VA	23803	72.5	12.0	14.5	99.0	1.0	S
Whitby, ON	L1N 7G8	86.6	6.6	5.8	99.0	1.0	M, R, S
Wilton, IA	52778	67.5	20.0	11.5	99.0	1.0	M,R, SBQ
All Mills		80.2	9.1	9.6	98.8	1.2	

Product Abbreviations: Merchant (M), Rebar (R), Special Bar Quality (SBQ), Structural (S)

If you need any further information, please contact the undersigned.

Sincerely,

Bhaskar Yalamanchili,
Director of Corporate Quality
Office: (813) 207-2394
Mobile: (409) 267-1071
bhaskar.yalamanchili@gerdau.com

This content is Public.

Gotham Ready Mix

Find a Producer

Company

City brooklyn

State New York

Zip

Find

Export

Company	City/State	Contact	Subsidiary List
DKN Ready Mix	Brooklyn, NY	(p) (718) 218-6418 (e) nick@dknreadymix.com (w) www.dknreadymix.com	
Empire Transit Mix	Brooklyn, NY	(p) (718) 384-3000 (f) (718) 384-3113 (e) Dtammaro@empiretransitmix.com	
Gotham Ready Mix LLC	Brooklyn, NY	(p) (718) 246-4444 (f) (718) 246-1111 (w) www.gothamreadymix.com	Gotham Ready Mix LLC
Gotham Ready Mix LLC	Brooklyn, NY	(p) (718) 246-4444 (f) (718) 246-1111	

Company	City/State	Contact	Subsidiary List
MLV Concrete Inc.	Brooklyn, NY	(p) (718) 802-1800 (f) (718) 802-9666 (e) dtamarro@empiretransitmix.com	
Transit Mix Corp.	Brooklyn, NY	(p) (718) 386-8000 (f) (718) 386-8003 (e) dmf@transitmix.nyc	
USC-Kings, LLC A U.S Concrete Company	Brooklyn, NY	(p) (718) 438-6800 (w) www.us-concrete.com/kings	

© National Ready Mixed Concrete Association

Heritage Plastics

16100 South Lathrop Avenue
Harvey, IL 60426
Office 708-339-1610
Phone 800-882-5543
Web atkore.com

January 13, 2022

To Whom It May Concern:

Thank you for your inquiry concerning the recycled content of our PVC conduit products. LEED Version 4 is the current version of LEED. Atkore Plastic Pipe Corporation may be branded Heritage Plastics, Allied Tube & Conduit, Cor-Tek or Queen City Plastics.

LEED MR Credit: Construction Waste Management

PVC is fully recyclable. Therefore, scrap produced during construction is not diverted to landfills.

LEED MR Credit: Recycled Content and Regional Materials
According to LEED requirements, mechanical, electrical and plumbing components are included in the calculations for recycled content.

PVC conduit and fabricated fittings are electrical components. Raw materials used include post-industrial recycled content that varies with size and production location. Except for the smallest diameters which have none, typical percentages vary from around 15% - 40%. There is no post-consumer material used in our PVC conduit and fabricated fittings. Molded PVC fittings do not contain recycled material.

For your information, our PVC conduit manufacturing plants are located in Thomasville, GA; Eugene and Pendleton, OR; Louisville, KY; Milford, UT; Tampa, FL; Weatherford, TX; Binghamton, NY and Fort Mill, SC. We are unable to provide point of extraction for raw materials.

LEED MR Credit: Material Ingredients Optimization

Atkore PVC pipe is compliant with the European Union's REACH program. REACH certifications are available upon request.

Please contact IndustryAffairs@atkore.com if you have any questions regarding this letter.

Sincerely,
Industry Affairs Team
Atkore Inc.
Phone: 1-800-882-5543
Email: IndustryAffairs@atkore.com



Atkore™ | BUILDING BETTER TOGETHER

2021 Sustainability Report



CEO Message

Atkore is excited to share our ongoing commitment to sustainability through our second sustainability report. We have continued to implement and execute a range of initiatives that improve the sustainability and performance of our business, and we are proud to share our progress with you.

We are especially pleased to showcase the launch of our new safety brand: Let's Make It Home. This campaign underscores Atkore's unwavering commitment to health and safety in all that we do. Our people are fundamental to our culture and our success, and Let's Make It Home represents our dedication to creating a place where every one of our employees feels respected, appreciated, and safe, every day. Only when we are safe, can we continue on our journey of Building Better Together.

Atkore's commitment to Diversity, Equity & Inclusion (DEI) is vital to our colleagues' and our business' well-being. In 2021, we launched unconscious bias training for all salaried employees and introduced DEI topics into our onboarding and immersion program—reflecting our ambition to embed equity and inclusion across all parts of our operations.

Reinforcing our commitment to continuous improvement, we have significantly enhanced our community engagement and corporate philanthropy initiatives this year. Our annual Atkore Family Foundation fundraiser set a new all-time record for funds raised, and we have engaged in more community outreach around our headquarters in Harvey, Illinois, and across the globe than ever before.

We continue to be a proud ENERGY STAR® Partner, and 22 sites participated in the ENERGY STAR Challenge for Industry in FY21. In combination with solar installations at certain locations in Europe and equipment upgrades at other facilities, we continually strive to improve our energy efficiency and reduce our greenhouse gas emissions.

In addition to addressing sustainability in our operations, we continue to support our customers in reaching their own sustainability goals and the global transition to a lower-carbon economy. Regulatory pressure to combat climate change across industries and geographies is pushing many to move towards renewable energy and electrification, and Atkore offers a variety of solutions. Our portfolio of products supports the electrification of buildings, the connection of electrical vehicle chargers to the grid, and the design and construction of solar power systems. As the impacts of climate change continue to escalate, we know that Atkore products have an important role to play in safely and sustainably transporting electricity and water from their generation sources to consumers.

Beyond our sustainability progress, adherence to the Atkore Business System (ABS) generated strong financial performance. Our commitment to sustainable business practices, Atkore's core values, and rigorous use of ABS created value for all of our stakeholders in 2021—our employees, communities, shareholders, and the environment, among others.

Sustainability is central to the strength, safety, and longevity of our business. As we continue on our journey of Building Better Together, adherence to the Atkore Business System and an enduring commitment to sustainable business practices will benefit our people, the planet, and society as a whole.

Sincerely,

Bill Waltz

Bill Waltz, President and CEO



ESG at Atkore

Atkore's values are the driving force behind our company-wide commitment to ESG. We strive to uphold responsible business practices across all of our activities and operations – from materials entering our warehouses to employees arriving home safely at the end of each day.



Hydrogate

ENVIRONMENTAL COMMITMENT

It is our desire to operate a business that is committed to the health and safety of both its employees and the environment. Through safety training, waste reduction efforts and clear communication to all stakeholders, Hydro Gate is proud to support sustainable growth in the natural gas mains and lines industry.

VIEW ENVIRONMENT, HEALTH & SAFETY VISION AND VALUES (HTTP://WWW.MUELLERWATERPRODUCTS.COM/ENVIRONMENT-HEALTH-SAFETY-VISION-AND-VALUES)

QUICK LINKS

Products (/products/)

Services (/services/)

Sales (/sales/)

Support (/support/)

Company (/company/)

Contact (/contact/)

Legal (/legal/)

Privacy Policy (/privacy-policy/)

Sitemap (/sitemap/)

Mueller refers to one or more of Mueller Water Products, Inc., a Delaware corporation ("MWP"), and its subsidiaries. MWP and each of subsidiaries are legally separate and independent entities when providing products and services. MWP does not provide products or services to third parties. MWP and each of its subsidiaries are liable only for their own acts and omissions and not those of each other. Mueller brands include Mueller®, Echologics®, Hydro Gate®, Hydro-Guard®, HYMAX®, i2O®, Jones®, Krausz®, Mi.Net®, Milliken®, Pratt®, Pratt Industrial®, Sentryx™, Singer®, and U.S. Pipe Valve & Hydrant. Please see muellerwp.com/brands to learn more.

Copyright © 2022 Mueller Co., LLC., subsidiary of Mueller Water Products, Inc. (http://www.muellerwaterproducts.com/) All Rights Reserved.

Iron World Manufacturing

Environmental Policy

As the “going green” movement continues, Iron World remains conscious of its actions as a fence manufacturer. During production, we maintain a high percentage of recycled materials, doing our part to reduce our organization’s carbon footprint and encourage the use of recycled materials throughout the fencing industry.

Steel has one of the highest recycle rates of source materials in the world. The steel industry has been recycling itself for well over a hundred years, encouraged by the fact that it is more economical to recycle steel from scrap than to produce from virgin materials. Producing a new steel product from recycled steel scrap uses approximately 75% less energy, on average, than making the same product from virgin ore.

All of our Maverick Series fence panels and posts are fabricated from materials consisting of a minimum of 63% recycled steel content, on average. As a chain link fence manufacturer, Iron World Fencing utilizes steel rod comprised of at least 75% salvaged steel. These percentages of recycled source materials allow Iron World to be in compliance with the Leadership in Energy and Environmental Design (LEED) standards for our fencing products.

Our customers can also contribute to the cause by purchasing and utilizing green materials and products, thereby promoting the conservation of Earth’s diminishing non-renewable resources. Additionally, the incorporation of green materials into construction projects can help reduce the environmental effects linked to the mining, transport, processing, and disposal of many steel industry resources.

At Iron World, our goal is provide the highest quality iron fencing and chain link fencing available, while remaining committed to our environmental responsibility as a fence manufacturer.

IRON WORLD MANUFACTURING, LLC

9390 Davis Avenue
Laurel, Maryland 20723

Phone: 301-776-7448
Toll Free: 866-310-2747
Fax: 301-776-7677

CONNECT

Contact













© Iron World Manufacturing, LLC | All Rights Reserved | Site by CWD

Johns Mansville

Sustainability

Environmental Responsibility

Social Responsibility

Corporate Responsibility

Sustainability

At JM, we are passionate about our ability to succeed in making the company more sustainable. We know that by doing good, we will do well. That is why we've embraced sustainability, working to define what it means to JM and how it benefits our stakeholders. We realize that through these efforts to become more sustainable we will become more resilient, more innovative and better positioned to continue serving the changing needs of our customers.

We're proud of the fact that as an energy-minded company, our products contribute to creating environments that are energy efficient, comfortable, safe and healthy. We're equally proud of the fact that we've created a company where people want to work, because we stay true to our values and conduct business in an ethical manner that makes a difference in our communities.

We've also worked hard to develop trusting relationships with our partners and suppliers who help us maintain a leadership position in sustainable building and specialty materials. Our

Download the Sustainability Report (/content/dam/jm/global/en/general-documents/sustainability/JM-2021-Sustainability-Report-9-27-2021.pdf)

sustainability journey compels us to evolve and improve in a balanced and responsible manner.

We have committed to our journey with intention and a renewed pledge to build a better tomorrow. Executing our pledge starts with taking a holistic view of sustainability that is easily understood by every JM employee. Therefore, we have developed a universal framework aptly called **Building a Better Tomorrow** that promotes cohesive understanding of JM's sustainability strategy across our company. It serves as a roadmap for where we want to go and what will drive us forward.

Within this framework, we will focus on three key drivers: reducing, expanding and innovating. Reducing our impact on the planet, expanding support of our global workforce and communities and innovating toward a lower carbon future. These drivers also helped us develop our new sustainability goals which we will strive to achieve.

Our new sustainability framework is inspired by what all of us at JM work to realize through the company's sustainability efforts. It is what we've dedicated ourselves to every day for over 160 years – building a better tomorrow.

(https://www.facebook.com/JohnsManville)

(https://twitter.com/JohnsManville)

(https://instagram.com/johnsmanville/)

(https://www.youtube.com/user/johnsmanvillevideos)

(http://www.linkedin.com/company/johns-manville)

INSULATION

Building Insulation (/en/building-insulation/)
HVAC Insulation (/en/hvac/)
Industrial Insulation (/en/industrial-insulation/)
Mechanical Insulation (/en/mechanical/)
OEM Insulation (/en/oem/)
Home Insulation (/en/homeowner-insulation/)
SDS Documents (/en/search-results/?q=insulation&type=documents)

COMMERCIAL ROOFING

Products (/en/commercial-roofing/)
Contractor Portal (https://www.jmconnexusportal.com/JM_CP_Login?ec=302&startURL=/s/)
Codes Corner (/en/commercial-roofing/jm-commercial-roofing-codes-corner/)
JMRoofing.News (/en/commercial-roofing/jmroofing-news/)
Specs and Details (/en/commercial-roofing/specs-and-details/)
Submittal Wizard (/en/commercial-roofing/submittals/)
SDS Documents (/en/search-results/?q=roofing&type=documents)

ENGINEERED PRODUCTS (/EN/ENGINEERED-PRODUCTS/)

Fiberglass (/en/fiberglass/)
Filtration & Separation (/en/filtration-separation/)
Nonwovens (/en/nonwovens/)
Advanced Composites (/en/advanced-composites/)
JMextraMile (https://www.jmextramile.com)
Document Library (/en/engineered-products/document-library/)

CAREERS (/EN/CAREERS/)

North America (https://jm.wd3.myworkdayjobs.com/en-US/External)
Germany (/en/careers/germany-careers/)
Slovakia (/en/careers/slovensko-kariera/)

WHO WE ARE (/EN/OUR-COMPANY/)

Innovation (/en/Innovation/)
Sustainability (/en/sustainability/)
History Heritage (/en/our-company/Historyandheritage/)
Core Values (/en/our-company/CoreValues/)
JM Newsroom (/en/our-company/jm-newsroom/)
For Our Suppliers (/en/our-company/for-our-suppliers/)

CONTACT (/EN/CONTACT-US/)

JM Locations (/en/our-company/jm-locations/)
Customer Login (/en/login/)

Commercial Roofing Locator (/en/commercial-roofing/commercial-roofing-locator/) Insulation Locator (/en/insulation-locator/)

Policies/Terms and Conditions (/en/login/policies-terms-and-conditions/)

© 2022 Johns Manville. A Berkshire Hathaway Company Privacy Policy (/en/privacy-policy/) Terms of Use (/en/legal/) Cookie Settings

California Transparency in Supply Chains Act (/en/our-company/for-our-suppliers/california-transparency-in-supply-chains-act/)

Long Island Precast

LONG ISLAND PRECAST



HISTORY

Long Island Precast has been serving the NY Metropolitan area since 1985.

WHY PRECAST?

Factory built and delivered to your job site. Environmentally friendly green designs.

CUSTOM DESIGN

If you imagine it we can build it. Our team of designers and engineers are ready.

CONTACT US TODAY

Long Island Precast, Inc.
20 Stiriz Road
Brookhaven, NY 11719
Phone (631) 286-0240
Fax (631) 286-6313
Email info@li-precast.com



NPCA

OFFERING THE FINEST INNOVATIVE PRECAST CONCRETE SOLUTIONS

OVER 30 YEARS EXPERIENCE

From its early start in 1985 casting leaching pools for the local drainage market, Long Island Precast has evolved into a major manufacturer of innovative precast products including Sound Walls for the NYSDOT, Highway Median Barriers, Precast Utility Buildings, Lift Stations, Retaining Walls and Water

ENVIROMENTAL SUSTAINABILITY

With most materials sourced within 500 miles and many structures cast with recycled fly ash or slag we continue our commitment to a responsible sourcing scheme (RSS)

PROFESSIONAL CERTIFICATIONS

NPCA Certified Plant
NYSDOT Approved for QC/QA Production

Quality units.

Long Island Precast has been recognized as a certified Veterans Owned Small Business

SELLING ONLY QUALITY BRANDS:

CALL US

Tel: (631) 286-0240 | Fax: (631) 286-6313

EMAIL US

info@li-precast.com

HOURS

Mon - Fri: 7am - 4:30pm

Marino Ware



LEED v4.1



Sustainability at Marino\WARE®:

Marino\WARE® believes sustainability and environmental management are not construction industry trends, but corporate responsibilities. Architects, designers and contractors demand tools and resources to improve the environmental performance of buildings, and Marino\WARE® products help them achieve their sustainable objectives.

MR Credit: Building Product Disclosure and Optimization-- Environmental Product Declarations (1.5 points)

Encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically and socially preferable life-cycle impacts.

Environmental Product Declaration (EPD)
Use at least 20 different permanently installed products sourced from at least five different manufacturers.

Environmental Product Declarations which conform to ISO 14025, 14040, 14044 and EN 15804 or ISO 21930 and have at least a cradle to gate scope.

- Product specific Type III EPD—Marino\WARE® has a third-party certification (Type III), including external verification in which Marino\WARE® is recognized as the participant by the program operator and is valued as one whole product for purposes of credit achievement calculation.

MR Credit: Building Product Disclosure and Optimization-- Sourcing of Raw Materials (1 point)

Encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically and socially preferable life-cycle impacts. To reward project teams for selecting products verified to have been extracted or sourced in a responsible manner.

Option 2. Leadership Extraction Practices

Recycled Content. Recycled content is the sum of post-consumer recycled content plus one-half the pre-consumer recycled content, based on cost. Products meeting recycled content criteria are valued at 100% of their cost for the purposes of credit achievement calculation.

Marino\WARE® Recycled Content:
Post-consumer Recycled Content 19.8%
Pre-consumer Recycled Content 14.4%
*Higher recycled content percentage may be available based on inventory.

MR Credit: Building Product Disclosure and Optimization-- Material Ingredients (1 point)

Encourage the use of products and materials for which life-cycle information is available and that have environmentally, and socially preferable life-cycle impacts. To reward project teams for selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology and for selecting products verified to minimize the use and generation of harmful substances. To reward raw material manufacturers who produce products verified to have improved life-cycle impacts.

Option 1. Material Ingredient Reporting

Health Product Declaration. Marino\WARE® has a published, complete Health Product Declaration with full disclosure of known hazards in compliance with the Health Product Declaration Open Standard.

MR Credit: Construction and Demolition Waste Management (up to 2 points)

To reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing and recycling materials.

Option 1. Diversion (1-2 points)

Path 1 or Path 2.
Marino\WARE framing products and accessories are 100% recyclable. This contribution calculation must be made by the contractor.

PROJECT NAME:

PROJECT ADDRESS:

CONTRACTOR:

www.MarinoWare.com

This technical information reflects the most current information available and supersedes any and all previous publications effective October 31,2019
SPC_LEED_V4_Form_October 31, 2019 | © WARE Industries, Inc. 2019

ENVIRONMENTAL PRODUCT DECLARATION

COLD-FORMED STEEL FRAMING SYSTEMS

STRUCTURAL, STUDRITE®, JOISTRITE®, CLIPSOURCE® CONNECTORS, QUICKFRAME, VIPERSTUD®, SHAFTWALL, AREA SEPARATION WALL, FAS TRACK, SLOTTED TRACK, LATH, SOUNDGUARD, ACCESSORIES



Marino\WARE manufactures and distributes a wide range of cold-formed steel framing products and accessories. Above are examples of SoundGuard (bottom right), ClipSource products (bottom left) and our StudRite system (top).

MARINO\WARE®

Sustainability at Marino\WARE®

Marino\WARE believes sustainability and environmental management are not construction industry trends, but corporate responsibilities. Architects, designers and contractors demand tools and resources to improve the environmental performance of buildings, and Marino\WARE products help them achieve their sustainability objectives.

Steel is inherently a green building product. It can be recycled time and time again. It is our goal to show the construction industry through our company specific Environmental Product Declaration that steel should be the product of choice for green building professionals.

For additional information, visit www.marinoware.com.

UL CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION UL.COM/EPD

ENVIRONMENTAL PRODUCT DECLARATION

MARINO\WARE®

Marino\WARE®
Cold-Formed Steel Framing Systems

According to ISO 14025, EN 15804, and ISO 21930:2017

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL Environment 333 Pfingsten Road Northbrook, IL 60611	https://www.ul.com/ https://spot.ul.com/
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	General Program Instructions v.2.5 March 2020	
MANUFACTURER NAME AND ADDRESS	Marino\WARE | 777 Greenbelt Pkwy Griffin Georgia 30223-4518	
DECLARATION NUMBER	4789995390.101.1	
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	Cold-Formed Steel Framing Products; 1 metric ton	
REFERENCE PCR AND VERSION NUMBER	Part B: Steel Construction Product EPD Requirements, v2.0 (August 26, 2020)	
DESCRIPTION OF PRODUCT APPLICATION/USE	Cold-Formed Steel Products are used in a wide range of steel framing products and accessories for both commercial and residential construction markets.	
PRODUCT RSL DESCRIPTION (IF APPL.)	N/A	
MARKETS OF APPLICABILITY	North America	
DATE OF ISSUE	July 1, 2021	
PERIOD OF VALIDITY	5 Years	
EPD TYPE	Product-Specific Type III	
RANGE OF DATASET VARIABILITY	N/A	
EPD SCOPE	Cradle-to-gate	
YEAR(S) OF REPORTED PRIMARY DATA	2020	
LCA SOFTWARE & VERSION NUMBER	GaBi v10	
LCI DATABASE(S) & VERSION NUMBER	GaBi 2021.1	
LCIA METHODOLOGY & VERSION NUMBER	TRACI 2.1	

This PCR Review was conducted by:	UL Environment PCR Review Panel epd@ulenvironment.com
This declaration was independently verified in accordance with ISO 14025: 2006. ☐ INTERNAL ☒ EXTERNAL	Grant R. Martin Grant R. Martin, UL Environment
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Thomas P. Gloria Thomas P. Gloria, Industrial Ecology Consultants

LIMITATIONS

Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc.

Accuracy of Results: EPDs regularly rely on estimations of impacts; the level of accuracy in estimation of effect differs for any particular product line and reported impact.

Comparability: EPDs from different programs may not be comparable. Full conformance with a PCR allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible". Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

ENVIRONMENTAL PRODUCT DECLARATION

Marino\WARE®
Cold-Formed Steel Framing Systems

According to ISO 14025, EN 15804, and ISO 21930:2017

1. Product Definition and Information

1.1. Company Description



Marino\WARE® helps build America. A wholly U.S. owned and operated steel framing manufacturer, Marino\WARE produces a complete line of steel construction products and services used in commercial building across the country.

The company's three large, self-sufficient mega-plants in South Plainfield, NJ, Griffin, GA, and East Chicago, IN sell—ViperStud® drywall framing, structural, shaftwall, StudRite, JoistRite, SoundGuard, ClipSource Connectors, plastering and drywall finishing products—all under one roof.

1.2. Product Description

The Marino\WARE steel framing products covered by this EPD are:

Material & Coatings:

Marino\WARE uses low alloy steel with metallic or conversion coatings.



Structural Stud & Track
- Used for load-bearing framing, curtain wall, headers, rafters and floor systems
- Conventional C-shape, wide variety of gauges and flange sizes



StudRite®
- Proprietary stud sytem used for load-bearing framing, rafters and curtain walls
- Lip reinforced repetitve triangular knockouts
- Lightweight, easy to use, less cutting by trades



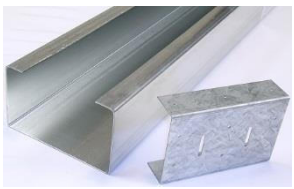
JoistRite®
- Used as a floor joist system
- Large lip reinforced repetitve triangular knockouts for easy pass through of trades

ENVIRONMENTAL PRODUCT DECLARATION

MARINO\WARE®

Marino\WARE®
Cold-Formed Steel Framing Systems

According to ISO 14025, EN 15804, and ISO 21930:2017



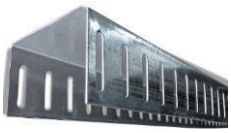
QuickFrame
Rough opening framing system that uses large C-shaped members to replace built up headers and jambs



ViperStud®
Proprietary drywall framing system that uses thinner high-strength steel to achieve performance equivalent of conventional thickness lower-strength steel drywall framing members



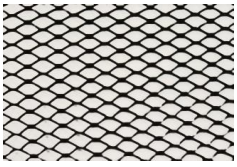
Shaftwall
CT stud framing system for non load-bearing framing that allows installtion of gypsum wallboad from one side only; easy to use for stairwells and shaft



Slotted Track & FAS Track
Fire-rated head-of-wall system that allows for deflection at the ceiling-to-floor intersection while providing a fire-rated joint



ClipSource® Connectors
Steel framing connectors produced in a wide variety of shapes and sizes for connecting framing members



Lath
Expanded metal lath is made by slitting and stretching galvanized steel to create small openings that allow plaster to bond with the lath



SoundGuard
Acoustically decoupled stud for interior partitions with high STC ratings

1.3. Application

Marino\WARE uses cold-formed steel to manufacture a wide range of steel framing products and accessories for

The commercial and residential construction markets. Common applications are:

1. Interior and Exterior framing, both for load-bearing and non-load bearing applications
2. Interior and exterior finishing
3. Floor framing
4. Accessories for interior and exterior framing

1.4. Declaration of Methodological Framework

The EPD has been created strictly in accordance to the standards and norms below:

- ISO 14025:2011 Type III environmental declarations - Principles and procedures [EN ISO 14025].
- EN 15942: 2011, Sustainability of construction works – Environmental Product Declarations – Communication format business-to-business. European Committee for Standardization [EN 15942].
- ISO 21930: 2017, Sustainability in building and construction – Environmental declaration of building products, International Organization for Standardization, Geneva, Switzerland [ISO 21930].
- Product Category Rule (PCR) Guidance for building-related products and services- Part A: Life Cycle Assessment Calculation Rules and Report Requirements [UL 2018]
- Product Category Rule (PCR) Guidance for building-related products and services- Part B: Designated steel construction product EPD requirements [UL 2020].

1.5. Technical Requirements

MATERIAL SPECIFICATION (ASTM)

ViperStud® Drywall Nonstructural Framing Members & Accessories	A1003/A653
Structural Framing Members & Accessories	A1003/A653
JoistRite® Framing Members & Accessories	A1003/A653
StudRite® Framing Members & Accessories	A1003/A653
QuickFrame™	A1003/A653
Shaftwall	A1003/A653
SoundGuard®	A1003/A653

PRODUCT SPECIFICATION	ASTM
ViperStud® Drywall Nonstructural Framing Members & Accessories	C645
Structural Framing Members & Accessories	C955
JoistRite® Framing Members & Accessories	C955
StudRite® Framing Members & Accessories	C645/C955
QuickFrame™	C955
Shaftwall	C645
SoundGuard®	C645
Beads & Trims (Metal, Paper, Vinyl)	C1047
Veneer & Plaster Accessories	C841/C1063
Metal Lath	C847

COATING SPECIFICATION	ASTM
ViperStud® Drywall Nonstructural Framing Members & Accessories	C645/A1003
Structural Framing Members & Accessories	C955/A1003
JoistRite® Framing Members & Accessories	C955/A1003
StudRite® Framing Members & Accessories	C645/C955/A1003
QuickFrame™	C955/A1003
Shaftwall	C645/A1003
SoundGuard®	C645/A1003
Metal Lath	C847/A1003

SUREBOARD

- IAPMO ES ER-0126
- IAPMO ES ER-0185

JOISTRITE®

- ICC-ES ESR #1741

CLIPSOURCE® CONNECTORS

- ICC-ES ESR #3578

VIPERSTUD® DRYWALL FRAMING

- Intertek CCRR-0154

STUDRITE®

- IAPMO ES ER-781

METAL LATH

- ICC-ES ESL #1005

STRUCTURAL STUD & TRACK

- ICC-ES ESR #4062

Marino\WARE products are not expected to create exposure conditions that exceed safe thresholds for health impacts to humans or flora/fauna under normal operating conditions.

1.6. Properties of Declared Product as Delivered

PRODUCT	SIZES	THICKNESS (MILS)
STRUCTURAL	1-5/8”–16” Stud & Track	33, 43, 54, 68, 97, 118
STUDRITE	3-5/8”, 4”, 6”, 8”	18, 30, 33, 43, 54, 68
JOISTRITE	8”, 9-1/4”, 10”, 11-1/4”, 12”, 14”	43, 54, 68, 97
QUICKFRAME	3-5/8”, 4”, 6”, 8”	54, 68, 97, 118
VIPERSTUD	1-5/8”–6”	25eq, 20eq, 30, 33
SHAFTWALL	2-1/2”, 4”, 6”	18, 30, 33, 43
SLOTTED / FAS TRACK	2-1/2”–10”	18, 30, 33, 43, 54, 68
FRAMERITE CONNECTORS	Various	Various
LATH	27” x 97”	1.75lb./yd^2, 2.5 lb./yd^2, 3.4 lb./yd^2

1.7. Material Composition

Marino\WARE manufactures a variety of steel framing products using low alloy metallic coated (ex. HDG) or conversion coated steel. As the cold-forming process solely represents the mechanical shaping of the input material, i.e. HDG steel, the product is entirely composed of coated steel.

Material	Mass [kg]	Mass [%]	DQI*
Coated Steel	1000	100	Measured

1.8. Manufacturing

The EPD represents Marino\WARE’s cold-forming process at three sites, South Plainfield, NJ, Griffin, GA, and East Chicago. The manufacturing operations include following steps and are summarized in Figure 1.

- Coil slitting
  - Decoiling
  - Slittling
  - Recoiling
- Roll forming
- Packaging
- Loading

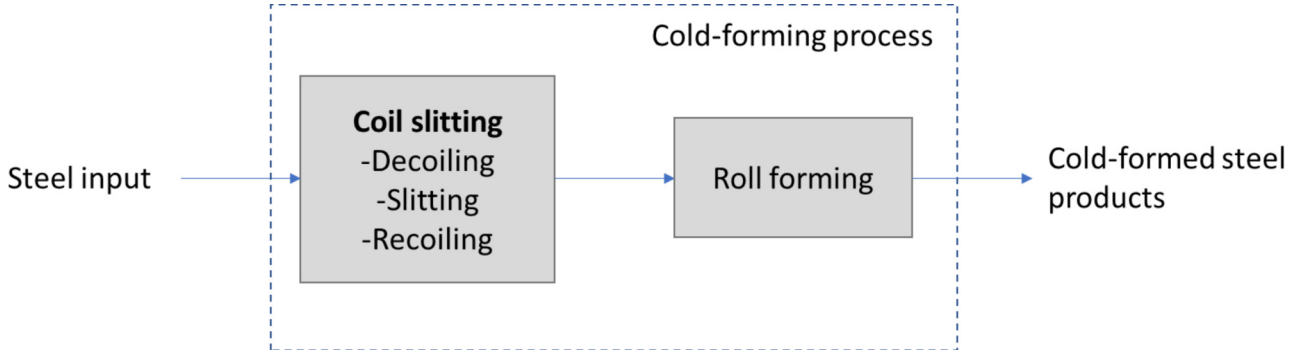


Figure 1: Flow diagram with cold-forming steel manufacturing steps

1.9. Packaging

All of the various steel framed products are packaged and shipped using one of the following material: steel banding, plastic wrapping, and wooden palets.

Product Image	Product Category	Product Description
	Exterior Framing: Skid (StudRite in photo-conventional framing packaged similiarly)	Framing members are nested together, and strapped with banding over lumber.
	Interior Framing: Skid (SoundGuard in photo-conventional framing packaged similiarly)	Framing members are nested together, and strapped with banding over lumber.
	Exterior Finishing: Metal Lath - Skids	Bundles are plastic strapped together, then bundles are stacked and strapped with banding over lumber.

Marino\WARE®
Cold-Formed Steel Framing Systems

According to ISO 14025, EN 15804, and ISO 21930:2017

Product Image	Product Category	Product Description
	Interior & Exterior Finishing accessories: Boxed goods	Cardboard boxes are stacked and strapped with banding over lumber.

1.10. Transportation

Transportation to customer after production not declared in this EPD.

1.11. Product Installation

Product Installation is not declared in this EPD.

1.12. Use

Use of product is not declared in this EPD.

1.13. Reference Service Life and Estimated Building Service Life

As the declared system boundary is A1-A3, a reference service life is not declared.

1.14. Reuse, Recycling, and Energy Recovery

Reuse, Recyling and Energy Recovery of product is not declared in this EPD.

1.15. Disposal

Disposal of product is not declared in this EPD.

2. Life Cycle Assessment – Product System and Modeling

A “cradle-to-gate” analysis using life cycle assessment (LCA) techniques was conducted for this EPD. The analysis was done according to the product category rule (PCR) for Designated Steel Construction Products and followed LCA principles, requirements and guidelines laid out in the ISO 14040/14044 standards. As such, EPDs of construction products may not be comparable if they do not comply with the same PCR. While the intent of the PCR is to increase comparability, there may still be differences among EPDs that comply with the same PCR (e.g., due to differences in system boundaries, background data, etc.).

2.1. Functional or Declared Unit

The declared unit for an EPD is one metric ton of steel construction product.

The declared unit of calculation is one metric ton of Cold-Formed Steel Product (1000 kg).

Name	Required Unit	Value
Declared Unit	Metric Ton	1

2.2. System Boundaries

The declared system boundary is cradle-to-gate. Cradle-to-gate includes the PCR life cycle modules A1, A2, and A3. The declared system boundaries are shown below:

Production			Installation		Use Stage							End-Of-Life				Next Product System
Raw material supply (extraction, processing, recycled material)	Transport to manufacturer	Manufacturing	Transport to building site	Installation into building	Use / application	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction / demolition	Transport to EoL	Waste processing for reuse, recovery or recycling	Disposal	Reuse, recovery or recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

X= declared module; MND= module not declared

The system boundary and life cycle stages assessed in this EPD are shown in Figure

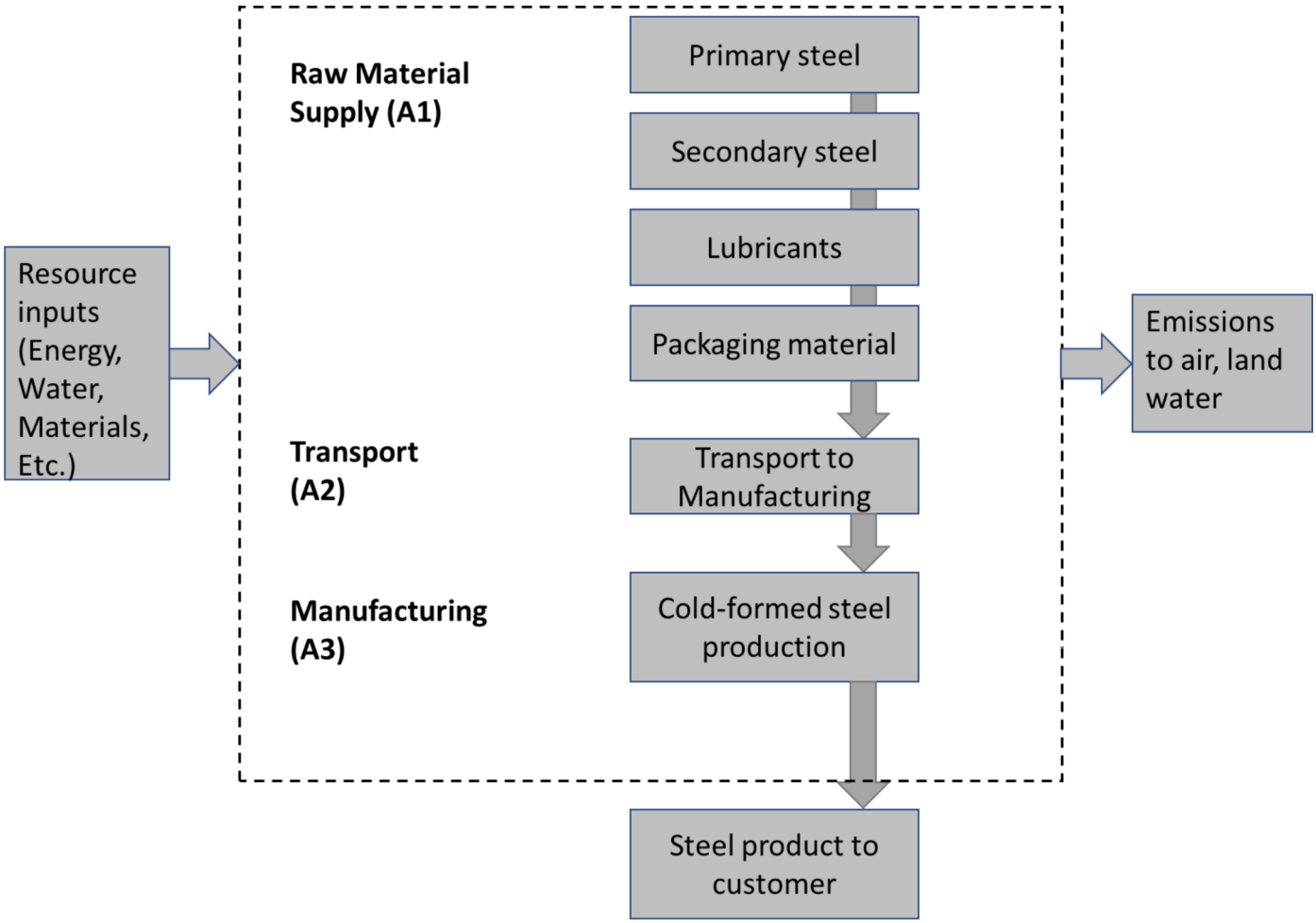


Figure 2: Flow diagram depicting the scope and system boundary

2.3. Estimates and Assumptions

Product Average (Procution data assumptions)

This product specific EPD uses weighted averages based on production output from identical manufacturing processes at three production locations reported. Data from one site is considered as proxy for the other two sites. The electricity consumption is split between the three eGRiD subregions, for the manufacturing sites based on the fractions of production output from each each site.

Transport assumptions

The three Marino\WARE plants receive their materials from different sources, i.e., across different transport distances. For HDG steel inputs, a weighted average transport distance was apllied based on each plant's fraction of total production and based on each plant's primary steel supplier's location. As a result, the weighted average distance is 793 kms. by heavy-duty truck. Lubricant, propane and packaging inputs were each assigned an estimated transport distance of 161 kms.

Transport distance of all waste materials, other than steel scrap, to disposal is assumed to be 32 kms and is carried out by truck. Only one-way transport distances have been modeled.

Final product packaging assumptions

Marino\WARE does not currently track packaging waste. It is assumed that 2% of the packaging material is processed as waste.

Steel assumptions

As is in line with the PCR, all steel manufacturing processes use scrap, regardless of production route. However, input of scrap is considered to enter the system without burden, and reprocessing into valuable secondary steel is assumed to be done outside of the system boundary. This approach is considered to be consistent with a cradle-to-gate analysis, as the load of using scrap as well as the credit of creating scrap at the end-of-life are similarly excluded from the system boundary.

Data approximations

Most of the material inputs declared by Marino\WARE for the production of cold-formed steel products could be matched with corresponding datasets from the GaBi 10 database. However, in some few instances a direct match was not possible and proxy data were used instead. It is worth noting that most of these proxies were used for auxiliary materials and packaging materials that do not significnatly contribute to the overall mass balances of the unit processes considered in this study.

2.4. Cut-off Criteria

All input/output process data for the production of cold-formed steel products have been modelled. No cut-offs have been applied.

2.5. Data Sources

All upstream data have been taken from the GaBi 2021 database (content version 2021.1), using GaBi software. All manufacturing data were collected from Marino\WARE for the calendar year 2019.

To ensure the highest data quality, primary data were collected by Marino\WARE. Where primary data could not be collected, background LCI data comes from the GaBi database.

2.6. Data Quality

Representativeness

Temporal: All primary data were collected for the year 2019. All secondary data come from the GaBi 2021 databases and are representative of the years 2011-2020. Most of the burdens come from the AISI datasets and not from primary data. As the study intended to compare the product systems for the reference year 2019, temporal representativeness is considered to be high.

Geographical: All primary and secondary data were collected specific to the countries or regions under study. Where country-specific or region-specific data were unavailable, proxy data were used. Geographical representativeness is considered to be high.

Technological: All primary and secondary data were modeled to be specific to the technologies or technology mixes under study. Where technology-specific data were unavailable, proxy data were used. Technological representativeness is considered to be high.

Completeness

All relevant process steps for each product system were considered and modeled to represent each specific situation. The process chain is considered sufficiently complete and detailed with regard to the goal and scope of this study.

Reliability

Primary data for the production of cold-formed steel products were collected by ClarkDietrich using a specifically developed spreadsheet provided by thinkstep. Cross-checks concerning the plausibility of mass and energy flows were carried out by Sphera on the data received via email, telephone consultation and teleconferencing.

The foreground data is considered to be very good as it meticulously recorded all relevant energy and material flows. The background data quality is considered to be good.

Consistency

All assumptions, methods and data are consistent with each other and with the study's goal and scope. Differ-ences in background data quality were minimized by mainly using LCI data from the GaBi 2021 databases (with the exception of the steel input which was informed by AISI data). System boundaries, allocation rules, and impact assessment methods have been applied consistently throughout the study.

2.7. Period under Review

Primary data collected represent production during the 2020 calendar year. This analysis is intended to represent production in 2020.

2.8. Allocation

Allocation of background data

Allocation of background data (energy and materials) taken from the GaBi 2021 databases is documented online at https://sphera.com/wp-content/uploads/2020/04/Modeling-Principles-GaBi-Databases-2021.pdf.

Allocation in the foreground data

The production process does not give rise to any co-products.

2.9. Comparability (Optional)

Any comparison of EPDs shall be subject to the requirements of ISO 21930. For comparison of EPDs which report different module scopes, such that one EPD includes Module D and the other does not, the comparison shall only be made on the basis of Modules A1, A2, and A3. Additionally, when Module D is included in the EPDs being compared, all EPDs must use the same methodology for calculation of Module D values.

3. Life Cycle Assessment – Results and Analysis

Table 1. Description of the system boundary modules

	PRODUCT STAGE			CONSTRUCT-ION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	Raw material supply	Transport	Manufacturing	Transport from gate to site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Building Operational Energy Use During Product Use	Building Operational Water Use During Product Use	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential
EPD Type	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

3.1. Life Cycle Impact Assessment Results

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Table 2. Impact Assessment Results: 1 metric ton of Cold-Formed Steel Product

TRACI v2.1	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
GWP 100 [kg CO_2 eq]	2.48E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ODP [kg CFC-11 eq]	1.73E-11	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
AP [kg SO_2 eq]	5.09E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EP [kg N eq]	2.75E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
SFP [kg O_3 eq]	8.92E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADP_{fossil} [MJ, LHV]	2.02E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

These six impact categories are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development. However, the EPD users shall not use additional measures for comparative purposes.

Global warming potential (GWP) excludes biogenic carbon.

3.2 Life Cycle Inventory Results

Table 3. Resource Use: 1 metric ton of Cold-Formed Steel Product

PARAMETER	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
RPR_E [MJ, LHV]	1.59E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RPR_M [MJ, LHV]	3.42E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RPR_T [MJ, LHV]	-	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
$NRPR_E$ [MJ, LHV]	3.05E+04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
$NRPR_M$ [MJ, LHV]	2.21E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
$NRPR_T$ [MJ, LHV]	-	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
SM [kg]	3.92E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RSF [MJ, LHV]	-	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NRSF [MJ, LHV]	-	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RE [MJ, LHV]	-	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
FW [m^3]	1.17E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Table 4. Output Flows and Waste Categories: 1 metric ton of Cold-Formed Steel Product

PARAMETER	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
HWD [kg]	1.16E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
NHWD [kg]	9.80E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
HLRW [kg]	1.10E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ILLRW [kg]	9.25E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
CRU [kg]	-	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MFR [kg]	8.70E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
MER [kg]	-	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EE [MJ, LHV]	-	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

4. Life Cycle Assessment Interpretation

Module A1 contributes to over 89% of the impacts across all impact categories except for ozone depletion (ODP), renewable primary resources with energy content used as material (RPRM), and non-renewable primary resources with energy content used as material (NRPRM). The fabrication operations at Marino\WARE (A3) contribute to almost 100% of the impacts in these categories.

Module A2 contributes very little across the categories with a maximum of about 10% in the case of eutrophication potential (EP), and 7% for smog formation potential (SFP).

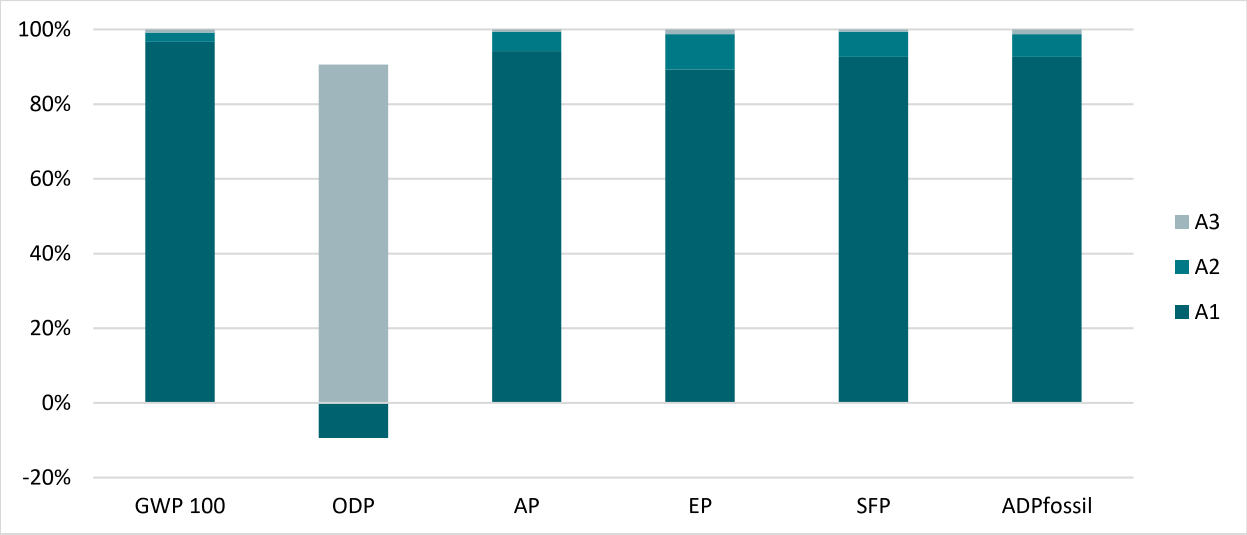


Figure 3: Cradle-to-gate life cycle impact assessment results

Other than the raw materials, inbound transport (i.e., transport of material inputs to the production site) has the highest contribution to manufacturing stage impacts across the categories and indicators with 3% contribution to GWP100 and 10% to eutrophication potential (EP).

Waste management (which includes transport of waste material to recovery or disposal, and relevant waste processing) makes negligible contributions to overall production phase impacts.

5. Supporting Documentation

Additional information Safety Data Sheets (SDS) and Health Product Declarations (HPD) may be found at

https://www.marinoware.com/resource-center/sds/

6. References

ACLCA. (2019). ACLCA Guidance to Calculating Non-LCIA Inventory Metrics in Accordance with ISO 21930:2017.

American Iron and Steel Institute (AISI). (2020). Life Cycle Inventories of North American Steel Products .

Bare, J. (2012). Tool for the Reduction and Assessment of Chemical and other Environmental Impacts (TRACI) - Software Name and Version Number: TRACI version 2.1 - User's Manual. Washington, D.C.: U.S. EPA.

CEN. (2019). EN 15804: 2012 + A1: 2013 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products.

EPA. (2012). Tool for the Reduction and Assessment of Chemical and other Environmental Impacts (TRACI) – User's Manual. Washington, D.C.: U.S. EPA.

IPCC. (2013). Climate Change 2013: The Physical Science Basis. Genf, Schweiz: IPCC.

ISO. (2006). ISO 14040: Environmental management – Life cycle assessment – Principles and framework. Geneva: International Organization for Standardization.

ISO. (2006). ISO 14044: Environmental management – Life cycle assessment – Requirements and guidelines. Geneva: International Organization for Standardization.

ISO. (2017). ISO 21930 Sustainability in building construction - Environmental declaration of building products.

Sphera. (2021). GaBi LCA Database Documentation. Retrieved from Sphera Solutions, Inc.: http://www.gabi-software.com/america/support/gabi/

UL Environment. (2018). Part A: Life Cycle Assessment Calculation Rules and Report Requirements, Version 3.2.

UL Environment. (2020). Part B: Designated Steel Construction Product EPD Requirements, Version 2.0.

UL Environment. (2020). UL Environment General Program Instructions, Version 2.5.

Cold-Rolled Steel Framing Systems by Marino\WARE

Health Product Declaration v2.2

created via: HPDC Online Builder

HPD UNIQUE IDENTIFIER: 21024
CLASSIFICATION: 05 40 00 & 09 22 16
PRODUCT DESCRIPTION: Marino\WARE helps build America. A wholly U.S. owned and operated steel framing manufacturer, Marino\WARE provides a complete line of steel construction products and services used in commercial building across the country. The company's three large, self-sufficient mega-plants in South Plainfield, NJ, Griffin, GA, and East Chicago, IN, each make every product sold all under one roof. This HPD covers the following Marino\WARE products: Structural, StudRite, JoistRite, Clipsource Connectors, QuickFrame, ViperStud, Shaftwall, Area Separation Wall, SoundGuard, FAS Track, Slotted Track, Lath, and accessories. In order to obtain cold-formed steel framing products that comply with the residual disclosure levels of this HPD, you must request mill certified steel at the time you place your order. If the request is made after manufacturing we cannot guarantee the applicability of this document. MasterSpecs 09 22 16.00 & 05 40 00

Section 1: Summary

Basic Method / Product Threshold

CONTENT INVENTORY

Inventory Reporting Format
- ○ Nested Materials Method
- ◉ Basic Method

Threshold Disclosed Per
- ○ Material
- ◉ Product

Threshold level
- ◉ 100 ppm
- ○ 1,000 ppm
- ○ Per GHS SDS
- ○ Other

Residuals/Impurities
- ○ Considered
- ○ Partially Considered
- ◉ Not Considered

Explanation(s) provided for Residuals/Impurities?
- ◉ Yes ○ No

All Substances Above the Threshold Indicated Are:

Characterized ○ Yes Ex/SC ◉ Yes ○ No
% weight and role provided for all substances.

Screened ○ Yes Ex/SC ◉ Yes ○ No
All substances screened using Priority Hazard Lists with results disclosed.

Identified ○ Yes Ex/SC ◉ Yes ○ No
All substances disclosed by Name (Specific or Generic) and Identifier.

CONTENT IN DESCENDING ORDER OF QUANTITY

Summary of product contents and results from screening individual chemical substances against HPD Priority Hazard Lists and the GreenScreen for Safer Chemicals®. The HPD does not assess whether using or handling this product will expose individuals to its chemical substances or any health risk. Refer to Section 2 for further details.

MATERIAL | SUBSTANCE | *RESIDUAL OR IMPURITY*
GREENSCREEN SCORE | HAZARD TYPE

HOT-DIP GALVANIZED STEEL [STEEL NoGS ZINC (POWDER) LT-P1 | AQU | PHY | END | MUL HYDROCHLORIC ACID BM-2 | RES | SKI | MAM EDETIC ACID BM-2 | EYE | MUL OXIRANE, METHYL, POLYMER AND OXIBANE, BUTYL ETHER LT-UNK MINERAL OILS LT-UNK CHROMIUM (VI) OXIDE LT-1 | RES | CAN | DEL | REP | GEN | AQU | PHY | MAM | SKI | MUL SODIUM NITRITE LT-P1 | AQU | PHY | MAM | END | MUL POTASSIUM HYDROXIDE LT-P1 | SKI PHOSPHORIC ACID LT-P1 | SKI PHOSPHORIC ACID, CHROMIUM(3++) SALT (1:1) LT-P1 | SKI]

Number of Greenscreen BM-4/BM3 contents ... 0

Contents highest concern GreenScreen Benchmark or List translator Score ... LT-1

Nanomaterial ... No

INVENTORY AND SCREENING NOTES:

VOLATILE ORGANIC COMPOUND (VOC) CONTENT

VOC Content data is not applicable for this product category.

CERTIFICATIONS AND COMPLIANCE

See Section 3 for additional listings.

VOC emissions: Extended Producer Responsibility (EPR) program - LEED compliant
VOC content: Environmental Product Declaration (EPD) by UL

CONSISTENCY WITH OTHER PROGRAMS

No pre-checks completed or disclosed.

Third Party Verified?

- ○ Yes
- ◉ No

PREPARER: Self-Prepared
VERIFIER:
VERIFICATION #:

SCREENING DATE: 2020-07-10
PUBLISHED DATE: 2020-07-14
EXPIRY DATE: 2023-07-10

Section 2: Content in Descending Order of Quantity

This section lists contents in a product based on specific threshold(s) and reports detailed health information including hazards. This HPD uses the inventory method indicated above, which is one of three possible methods:

- *Basic Inventory method with Product-level threshold.*
- *Nested Material Inventory method with Product-level threshold*
- *Nested Material Inventory method with individual Material-level thresholds*

Definitions and requirements for the three inventory methods and requirements for each data field can be found in the HPD Open Standard version 2.1.1, available on the HPDC website at: www.hpd-collaborative.org/hpd-2-1-1-standard

HOT-DIP GALVANIZED STEEL

PRODUCT THRESHOLD: 100 ppm

RESIDUALS AND IMPURITIES CONSIDERED: No

RESIDUALS AND IMPURITIES NOTES: Residuals and Impurities were Not Considered.

OTHER PRODUCT NOTES:

STEEL

ID: 12597-69-2

HAZARD SCREENING METHOD: Pharos Chemical and Materials Library

HAZARD SCREENING DATE: 2020-07-10

%: 86.8600 - 99.6000 GS: NoGS RC: PostC NANO: No SUBSTANCE ROLE: Galvanizing

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
None found		No warnings found on HPD Priority Hazard Lists

SUBSTANCE NOTES:

ZINC (POWDER)

ID: 7440-66-6

HAZARD SCREENING METHOD: Pharos Chemical and Materials Library

HAZARD SCREENING DATE: 2020-07-10

%: 0.4000 - 10.0000 GS: LT-P1 RC: None NANO: No SUBSTANCE ROLE: Coating

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
ACUTE AQUATIC	EU - GHS (H-Statements)	H400 - Very toxic to aquatic life
CHRON AQUATIC	EU - GHS (H-Statements)	H410 - Very toxic to aquatic life with long lasting effects
PHYSICAL HAZARD (REACTIVE)	EU - GHS (H-Statements)	H250 - Catches fire spontaneously if exposed to air
PHYSICAL HAZARD (REACTIVE)	EU - GHS (H-Statements)	H260 - In contact with water releases flammable gases which may ignite spontaneously
ENDOCRINE	TEDX - Potential Endocrine Disruptors	Potential Endocrine Disruptor
MULTIPLE	German FEA - Substances Hazardous to Waters	Class 2 - Hazard to Waters

SUBSTANCE NOTES:

HYDROCHLORIC ACID

ID: 7647-01-0

HAZARD SCREENING METHOD: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2020-07-10**

%: **0.0000 - 3.0000** GS: **BM-2** RC: **None** NANO: **No** SUBSTANCE ROLE: **Coating**

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
RESPIRATORY	AOEC - Asthmagens	Asthmagen (Rr) - irritant-induced
SKIN IRRITATION	EU - GHS (H-Statements)	H314 - Causes severe skin burns and eye damage
MAMMALIAN	EU - GHS (H-Statements)	H331 - Toxic if inhaled
MAMMALIAN	US EPA - EPCRA Extremely Hazardous Substances	Extremely Hazardous Substances

SUBSTANCE NOTES:

EDETIC ACID

ID: 60-00-4

HAZARD SCREENING METHOD: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2020-07-10**

%: **0.0000 - 0.0100** GS: **BM-2** RC: **None** NANO: **No** SUBSTANCE ROLE: **Coating**

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
EYE IRRITATION	EU - GHS (H-Statements)	H319 - Causes serious eye irritation
MULTIPLE	German FEA - Substances Hazardous to Waters	Class 2 - Hazard to Waters

SUBSTANCE NOTES:

OXIRANE, METHYL, POLYMER AND OXIBANE, BUTYL ETHER

ID: 9038-95-3

HAZARD SCREENING METHOD: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2020-07-10**

%: **0.0000 - 0.0100** GS: **LT-UNK** RC: **None** NANO: **No** SUBSTANCE ROLE: **Coating**

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
None found		No warnings found on HPD Priority Hazard Lists

SUBSTANCE NOTES: Proxy for reported component Polyalkylene Glycol Mixture

MINERAL OILS

ID: 8020-83-5

HAZARD SCREENING METHOD: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2020-07-10**

%: **0.0000 - 0.1000** GS: **LT-UNK** RC: **None** NANO: **No** SUBSTANCE ROLE: **Coating**

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
None found		No warnings found on HPD Priority Hazard Lists

SUBSTANCE NOTES: Proxy for reported component Petroleum, Natural or Synthetic Oils

CHROMIUM (VI) OXIDE

ID: 1333-82-0

HAZARD SCREENING METHOD: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2020-07-10**

%: **0.0000 - 0.0100** GS: **LT-1** RC: **None** NANO: **No** SUBSTANCE ROLE: **Corrosion inhibitor**

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
RESPIRATORY	AOEC - Asthmagens	Asthmagen (Rs) - sensitizer-induced
CANCER	IARC	Group 1 - Agent is Carcinogenic to humans
CANCER	CA EPA - Prop 65	Carcinogen
DEVELOPMENTAL	CA EPA - Prop 65	Developmental toxicity
REPRODUCTIVE	CA EPA - Prop 65	Reproductive Toxicity - Female
REPRODUCTIVE	CA EPA - Prop 65	Reproductive Toxicity - Male
CANCER	US CDC - Occupational Carcinogens	Occupational Carcinogen
CANCER	US NIH - Report on Carcinogens	Known to be a human Carcinogen
CANCER	EU - SVHC Authorisation List	Carcinogenic - Candidate list
CANCER	EU - SVHC Authorisation List	Carcinogenic - Banned unless Authorised
GENE MUTATION	EU - SVHC Authorisation List	Mutagenic - Candidate list
GENE MUTATION	EU - SVHC Authorisation List	Mutagenic - Banned unless Authorised
ACUTE AQUATIC	EU - GHS (H-Statements)	H400 - Very toxic to aquatic life
CHRON AQUATIC	EU - GHS (H-Statements)	H410 - Very toxic to aquatic life with long lasting effects
PHYSICAL HAZARD (REACTIVE)	EU - GHS (H-Statements)	H271 - May cause fire or explosion; strong oxidiser
MAMMALIAN	EU - GHS (H-Statements)	H301 - Toxic if swallowed
MAMMALIAN	EU - GHS (H-Statements)	H311 - Toxic in contact with skin
SKIN IRRITATION	EU - GHS (H-Statements)	H314 - Causes severe skin burns and eye damage
SKIN SENSITIZE	EU - GHS (H-Statements)	H317 - May cause an allergic skin reaction
MAMMALIAN	EU - GHS (H-Statements)	H330 - Fatal if inhaled
RESPIRATORY	EU - GHS (H-Statements)	H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
GENE MUTATION	EU - GHS (H-Statements)	H340 - May cause genetic defects
CANCER	EU - GHS (H-Statements)	H350 - May cause cancer

CANCER	EU - GHS (H-Statements)	H350i - May cause cancer by inhalation
REPRODUCTIVE	EU - GHS (H-Statements)	H361f - Suspected of damaging fertility
ORGAN TOXICANT	EU - GHS (H-Statements)	H372 - Causes damage to organs through prolonged or repeated exposure
CANCER	EU - REACH Annex XVII CMRs	Carcinogen Category 1 - Substances known to be Carcinogenic to man
CANCER	EU - REACH Annex XVII CMRs	Carcinogen Category 2 - Substances which should be regarded as if they are Carcinogenic to man
GENE MUTATION	EU - REACH Annex XVII CMRs	Mutagen Category 2 - Substances which should be regarded as if they are Mutagenic to man
MULTIPLE	ChemSec - SIN List	CMR - Carcinogen, Mutagen &/or Reproductive Toxicant
MULTIPLE	German FEA - Substances Hazardous to Waters	Class 3 - Severe Hazard to Waters
CANCER	MAK	Carcinogen Group 1 - Substances that cause cancer in man
SKIN SENSITIZE	MAK	Sensitizing Substance Sh - Danger of skin sensitization
CANCER	GHS - Korea	Carcinogenicity - Category 1 [H350 - May cause cancer]
CANCER	EU - Annex VI CMRs	Carcinogen Category 1A - Known human Carcinogen based on human evidence
GENE MUTATION	EU - Annex VI CMRs	Mutagen - Category 1B
GENE MUTATION	GHS - New Zealand	6.6A - Known or presumed human mutagens
CANCER	GHS - New Zealand	6.7A - Known or presumed human carcinogens
REPRODUCTIVE	GHS - New Zealand	6.8A - Known or presumed human reproductive or developmental toxicants
CANCER	GHS - Japan	Carcinogenicity - Category 1A [H350]
GENE MUTATION	GHS - Japan	Germ cell mutagenicity - Category 1B [H340]
REPRODUCTIVE	GHS - Japan	Toxic to reproduction - Category 1B [H360]
GENE MUTATION	MAK	Germ Cell Mutagen 2
CANCER	GHS - Australia	H350 - May cause cancer

SUBSTANCE NOTES: Galvanized steel typically leaves the mill with a passivation (anti-corrosion) coating. The passivant substances indicated in this HPD represent a standard mixture whose total percentage by mass is less than 0.01% compared to the product. Steel coated with an alternative, Cr6-free passivant can be obtained. Extended lead-times will apply, and products without passivant are more susceptible to corrosion.

SODIUM NITRITE

ID: **7632-00-0**

HAZARD SCREENING METHOD: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2020-07-10**

%: **0.0000 - 0.0100** GS: **LT-P1** RC: **None** NANO: **No** SUBSTANCE ROLE: **Coating**

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
ACUTE AQUATIC	EU - GHS (H-Statements)	H400 - Very toxic to aquatic life
PHYSICAL HAZARD (REACTIVE)	EU - GHS (H-Statements)	H272 - May intensify fire; oxidiser
MAMMALIAN	EU - GHS (H-Statements)	H301 - Toxic if swallowed
ENDOCRINE	TEDX - Potential Endocrine Disruptors	Potential Endocrine Disruptor
MULTIPLE	German FEA - Substances Hazardous to Waters	Class 3 - Severe Hazard to Waters

SUBSTANCE NOTES:

POTASSIUM HYDROXIDE

ID: **1310-58-3**

HAZARD SCREENING METHOD: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2020-07-10**

%: **0.0000 - 0.0100** GS: **LT-P1** RC: **None** NANO: **No** SUBSTANCE ROLE: **Coating**

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
SKIN IRRITATION	EU - GHS (H-Statements)	H314 - Causes severe skin burns and eye damage

SUBSTANCE NOTES:

PHOSPHORIC ACID

ID: **7664-38-2**

HAZARD SCREENING METHOD: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2020-07-10**

%: **0.0000 - 0.0100** GS: **LT-P1** RC: **None** NANO: **No** SUBSTANCE ROLE: **Corrosion inhibitor**

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
SKIN IRRITATION	EU - GHS (H-Statements)	H314 - Causes severe skin burns and eye damage

SUBSTANCE NOTES: Galvanized steel typically leaves the mill with a passivation (anti-corrosion) coating. The passivant substances indicated in this HPD represent a standard mixture whose total percentage by mass is less than 0.01% compared to the product. Steel coated with an alternative, Cr6-free passivant can be obtained. Extended lead-times will apply, and products without passivant are more susceptible to corrosion.

PHOSPHORIC ACID, CHROMIUM(3++) SALT (1:1)

ID: **7789-04-0**

HAZARD SCREENING METHOD: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2020-07-10**

%: **0.0000 - 0.0100** GS: **LT-P1** RC: **None** NANO: **No** SUBSTANCE ROLE: **Corrosion inhibitor**

HAZARD TYPE	AGENCY AND LIST TITLES	WARNINGS
SKIN SENSITIZE	MAK	Sensitizing Substance Sh - Danger of skin sensitization

SUBSTANCE NOTES: Galvanized steel typically leaves the mill with a passivation (anti-corrosion) coating. The passivant substances indicated in this HPD represent a standard mixture whose total percentage by mass is less than 0.01% compared to the product. Steel coated with an alternative, Cr6-free passivant can be obtained. Extended lead-times will apply, and products without passivant are more susceptible to corrosion.

Section 3: Certifications and Compliance

This section lists applicable certification and standards compliance information for VOC emissions and VOC content. Other types of health or environmental performance testing or certifications completed for the product may be provided.

VOC EMISSIONS — **Extended Producer Responsibility (EPR) program - LEED compliant**

CERTIFYING PARTY: Self-declared
APPLICABLE FACILITIES: All three Marino\Ware plants in South Plainfield, NJ, Griffin, GA and East Chicago, IN.
CERTIFICATE URL:

ISSUE DATE: 2020-07-10

EXPIRY DATE:

CERTIFIER OR LAB: LEED

CERTIFICATION AND COMPLIANCE NOTES: Cold-Formed Steel Framing is considered an inherently non-emitting source per LEED

VOC CONTENT — **Environmental Product Declaration (EPD) by UL**

CERTIFYING PARTY: Third Party
APPLICABLE FACILITIES: South Plainfield, NJ, Griffin , GA & East Chicago, IN
CERTIFICATE URL:

ISSUE DATE: 2015-08-17

EXPIRY DATE:

CERTIFIER OR LAB: UL Environment

CERTIFICATION AND COMPLIANCE NOTES:

Section 4: Accessories

This section lists related products or materials that the manufacturer requires or recommends for installation (such as adhesives or fasteners), maintenance, cleaning, or operations. For information relating to the contents of these related products, refer to their applicable Health Product Declarations, if available.

STEEL TAPPING OR SELF DRILLING SCREWS FOR COLD-FORMED STEEL

HPD URL: **NO HPD Available**

CONDITION WHEN RECOMMENDED OR REQUIRED AND/OR OTHER NOTES:
Used to connect framing members together

Section 5: General Notes

Steel products processed by Marino\WARE are not hazardous per OSHA GHS 29 CFR 1910, 1915, 1926. However, individual customer processes (such as welding, sawing during installation at the job site) may result in the formation of fumes, dust (combustible or otherwise) and/or particulate that may present the following hazards: OSHA HAZARDS: Carcinogen; Skin Sensitizer; Target Organ Effect – Lungs; GHS CLASSIFICATION: Carcinogenicity (Category 2); Skin Sensitization (Category 1); Specific Target Organ Toxicity-Repeated Exposure (Category 1); HAZARD STATEMENT(S): H317 Dust/fumes may cause an allergic skin reaction; H351 Dust/fumes suspected of causing cancer via inhalation; H372 Inhalation of dust/fumes causes damage to respiratory tract through prolonged or repeated exposure; PRECAUTIONARY STATEMENT(S): P202 Do not handle until all safety precautions have been read and understood; P261: Avoid breathing dust/fumes; P281 Use personal protective

equipment as required; P308+P313 If exposed or concerned: Get medical advice/attention.

Section 6: References

MANUFACTURER INFORMATION

MANUFACTURER: **Marino\WARE**
ADDRESS: **100 Hendrick Drive**
Suite 200
McDonough GA 30253, United States
WEBSITE: **www.marinoware.com**

CONTACT NAME: **Technical Services**
TITLE: **Technical Services**
PHONE: **(866) 545-15454**
EMAIL: **technicalservices@marinoware.com**

The listed contact is responsible for the validity of this HPD and attests that it is accurate and complete to the best of his or her knowledge.

KEY

Hazard Types

AQU Aquatic toxicity
CAN Cancer
DEV Developmental toxicity
END Endocrine activity
EYE Eye irritation/corrosivity
GEN Gene mutation
GLO Global warming
LAN Land toxicity
MAM Mammalian/systemic/organ toxicity
MUL Multiple
NEU Neurotoxicity
NF Not found on Priority Hazard Lists
OZO Ozone depletion
PBT Persistent, bioaccumulative, and toxic
PHY Physical hazard (flammable or reactive)
REP Reproductive
RES Respiratory sensitization
SKI Skin sensitization/irritation/corrosivity
UNK Unknown

GreenScreen (GS)

BM-4 Benchmark 4 (prefer-safer chemical)
BM-3 Benchmark 3 (use but still opportunity for improvement)
BM-2 Benchmark 2 (use but search for safer substitutes)
BM-1 Benchmark 1 (avoid - chemical of high concern)
BM-U Benchmark Unspecified (due to insufficient data)
LT-P1 List Translator Possible 1 (Possible Benchmark-1)
LT-1 List Translator 1 (Likely Benchmark-1)
LT-UNK List Translator Benchmark Unknown (the chemical is present on at least one GreenScreen Specified List, but the information contained within the list did not result in a clear mapping to a LT-1 or LTP1 score.)
NoGS No GreenScreen.

Recycled Types

PreC Pre-consumer recycled content
PostC Post-consumer recycled content
UNK Inclusion of recycled content is unknown
None Does not include recycled content

Other Terms:

GHS SDS Globally Harmonized System of Classification and Labeling of Chemicals Safety Data Sheet

Inventory Methods:

Nested Method / Material Threshold Substances listed within each material per threshold indicated per material
Nested Method / Product Threshold Substances listed within each material per threshold indicated per product
Basic Method / Product Threshold Substances listed individually per threshold indicated per product

Nano Composed of nano scale particles or nanotechnology
Third Party Verified Verification by independent certifier approved by HPDC
Preparer Third party preparer, if not self-prepared by manufacturer
Applicable facilities Manufacturing sites to which testing applies

The Health Product Declaration (HPD) Open Standard provides for the disclosure of product contents and potential associated human and environmental health hazards. Hazard associations are based on the HPD Priority Hazard Lists, the GreenScreen List Translator™, and when available, full GreenScreen® assessments. The HPD Open Standard v2.1 is not:

- *a method for the assessment of exposure or risk associated with product handling or use,*
- *a method for assessing potential health impacts of: (i) substances used or created during the manufacturing process or (ii) substances created after the product is delivered for end use.*

Information about life cycle, exposure and/or risk assessments performed on the product may be reported by the manufacturer in appropriate Notes sections, and/or, where applicable, in the Certifications section.

The HPD Open Standard was created and is supported by the Health Product Declaration Collaborative (the HPD Collaborative), a customer-led organization composed of stakeholders throughout the building industry that is committed to the continuous improvement of building products through transparency, openness, and innovation throughout the product supply chain.

The product manufacturer and any applicable independent verifier are solely responsible for the accuracy of statements and claims made in this

HPD and for compliance with the HPD standard noted.

Master Builders Solutions

Solutions and Support for Sustainable Construction

Construction is being redefined by sustainability. We have an opportunity to make a significant impact on the industry through solutions which reduce the carbon footprint, reduce the consumption of resources, re-use structures and promote the health of occupants – without sacrificing performance or economic productivity. Let's make construction more sustainable. Together.

Documentation to support Sustainable Design

LEED Documents

Emissions / EQ

Health Product Declarations

Red List Free Products

Contact Us

As a company, we take a holistic approach to sustainable construction and are committed to having a growing percentage of our portfolio contribute to more sustainable construction practices. Check out our most recent Innovations:

Master X-Seed – patented strength-enhancing admixture that is capable of reducing embodied carbon in concrete mixtures by 5 to 20 percent while maintaining the strength requirements to produce high quality, environmentally-preferable concrete for a sustainable solution.

Senergy Channeled Adhesive CI Design cladding systems – continuous insulation masonry veneer system that requires no mechanical fasteners, thus eliminating thermal bridging and improving energy efficiency of a structure.

Green Sense Concrete – Advanced concrete mixture optimization program for high-performance, lower embodied carbon concrete. This program can help reduce the embodied carbon of the concrete by 10-50%.

MasterSuna RCT 323 - concrete admixture that enables producers to recycle returned concrete, diverting returned fresh concrete from the waste stream and eliminating the need for carbon intense onsite concrete crushing.

Quantifying sustainability

Third-party validated tools and services allow Master Builders Solutions to evaluate and compare the sustainability of products to help construction professionals make informed decisions.

- **Environmental Product Declaration (EPD) Service for Concrete Mixtures** – Master Builders Solutions creates externally verified, ISO compliant EPD for concrete producers for any concrete product.

Emissions Testing Documentation



Support for Design Community

Visit our Architects and Designers page for additional support



Global Sustainability microsite

Explore a world of sustainable product and solution offerings.

SM Transparency Catalog™
Find all our products with transparency information.

mindful MATERIALS

- MasterSeal Traffic 1500 Low VOC
- MasterSeal Traffic 2000 Low VOC
- MasterSeal Traffic 2500 Primerless

07 92 00 Joint Sealants

- MasterSeal NP 1
- MasterSeal NP 520
- MasterSeal NP 100

09 67 23 Resinous Flooring

- Ucrete DP-BC6 with DP TC
- Ucrete DP-BC6 with MasterTop TC 565
- Ucrete DP-BC6 with MasterTop TC 693
- MasterTop 1234
- Ucrete UD 200 SR
- Ucrete UD 200
- GP 500
- MasterTop 1851 SRS CF

McNichols Co.

About Us

The Hole Story®

In The Community

Newswire

Ruman Racing

Certifications & Affiliations

Eco-Friendly: McNICHOLS & The Environment

As a Hole Products provider with 19 locations from coast to coast, **McNICHOLS** recognizes its responsibility to the environment. We have taken steps to become more sustainable, such as retrofitting our Metals Service Centers with energy-efficient lighting as well as implementing recycling. We are also proud that our Hole Products enable efficient, environmentally sound designs.

GREEN BUILDING POTENTIAL

Structures featuring **McNICHOLS®** Perforated and Expanded Metals, Wire Mesh and other products have obtained Leadership in Energy and Environmental Design (LEED) certification. Our products have post-consumer and post-industrial recycled content that varies by material type. They are specified for sunscreens, canopies and other design elements that reduce solar impact for commercial and residential projects. Average post-consumer and post-industrial recycled contents are listed below. Recycled content will vary by product line.

Aluminum Content: 10%-35% post-consumer, 50%-90% post-industrial.
Plain Steel Content: 20%-80% post-consumer, 10%-40% post-industrial.
Stainless Steel Content: 10%-25% post-consumer, 20%-35% post-industrial.
Copper Content: Average recycled content ranges from 45%-54%.

Call For A Fast Quote

Win A YETI Cooler

A widely recognized example is the Margarido House , a San Francisco area residence completed in 2008. **McNICHOLS®** Bar Grating forms the house's signature, wing-like sunshade, which provides natural cooling and supports a rainwater recycling system. The house is both LEED Platinum-certified and GreenPoint-rated.

SkySong 3, a multi-use commercial building in Scottsdale, Arizona, is another prominent example of a sustainable structure featuring **McNICHOLS®** Hole Products. **McNICHOLS®** Perforated Metal forms vertical fins along a large expanse of exterior glass, and **McNICHOLS®** Expanded Metal provides a central, semi-transparent design feature. The application helps diffuse solar impact and adds visual appeal. SkySong 3, which debuted in 2015, has achieved LEED Silver certification.

Building green has financial advantages. By conserving energy and water and reducing waste, environmentally friendly designs reduce operating and maintenance costs. Certain LEED certification levels also carry tax benefits. The U.S. Green Build Council launched the LEED program to recognize green building practices. We are honored to be involved in many projects that are eco-minded. Please allow **McNICHOLS** to help you with your next eco-friendly design!

RESPONSIBILITY AS A CATALOGER

Protecting our forests is a cornerstone of an environmentally responsible cataloger. As a distributor of product catalogs, **McNICHOLS** works with printers certified by the Forest Stewardship Council, a nonprofit organization that promotes environmentally appropriate, socially beneficial, and economically viable forest management. Our printers practice production methods that reduce print order overruns and waste. Several times a year, we cleanse our mailing lists to decrease the number of catalogs and printed materials we mail. We continue to reexamine the frequency of our mailings, as well as paper cost, weight, size, formats, and other factors that influence environmental friendliness. In addition, digital mediums such as mcnichols.com allow customers to experience and shop for products electronically without the use of printed materials. Each **McNICHOLS** invoice is marked with a reminder to "Go Green" and to pause before printing. These are just a few of the ways we choose to be a company that is eco-minded.

ENERGY STAR PARTNER

McNICHOLS is a proud partner in ENERGY STAR, a joint voluntary program of the U.S. Environmental Protection Agency and the U.S. Department of Energy. ENERGY STAR promotes energy conservation and fights climate change.

As an ENERGY STAR partner, we measure, track and strive to improve our energy performance. This designation represents our commitment to protecting the environment for future generations. We share this goal with our associates and in the communities in which we operate.

According to ENERGY STAR, thousands of organizations work with the EPA and ENERGY STAR to improve energy efficiency at their facilities. This includes 40 percent of Fortune 500 companies.

Call For A Fast Quote
Win A YETI Cooler

McWane Ductile

SUSTAINABILITY

PROTECTING THE ENVIRONMENT FOR GENERATIONS TO COME.

We take our commitment to the environment very seriously. From the management members to the foundry workers making the pipe, every member of McWane plays a part in our company's approach to environmental and safety issues. Our approach to environmental and safety issues starts with a clear vision from our leaders. It is supported by strong policies that place the environment and safety at the core of the business and through a substantial investment in state-of-the-art environmental technologies and modern infrastructure.

AT MCWANE, PROTECTING THE ENVIRONMENT AND OUR EMPLOYEES' HEALTH AND SAFETY IS ONE OF OUR HIGHEST PRIORITIES. OUR ENVIRONMENTAL, HEALTH, AND SAFETY MANAGEMENT SYSTEM IS DESIGNED TO PROVIDE AN ORGANIZED AND CONSISTENT APPROACH TO ACHIEVING THIS OBJECTIVE AND ASSURING CONTINUOUS IMPROVEMENT.

— JEET RADIA, SENIOR VICE PRESIDENT ENVIRONMENT, SAFETY & HUMAN RESOURCES





McWane addresses the unique environmental and safety challenges faced by our industry with a comprehensive Environmental, Health and Safety (EHS) management system based on the principles of the International Organization of Standardization (ISO) 14001 standard, Occupational Health and Safety Administration (OSHA) 18001 and OSHA Management Guidelines. ISO 14001 is an internationally recognized specification for environmental management systems. Our EHS management system allows us to manufacture our products in an environmentally-compliant and -friendly way and provide communities with a foundation for life with clean, safe, and dependable drinking water.

Our product is also environmentally friendly, as every piece of McWane Ductile pipe is made from up to 98 percent scrap metal.

In addition to producing environmentally beneficial products, we have developed ways to make our facilities more environmentally-compliant and friendly. McWane's environmental team has spearheaded company-wide initiatives to examine our manufacturing processes and look for ways to improve recycling, reuse opportunities, and reduce environmental impacts. We are also exploring ways to incorporate green building principles into future EHS capital improvements to reduce our environmental footprint further.

All McWane facilities have implemented environmental practices that, in many instances, exceed U.S. standards, producing a performance that is among the best of the industries in which we operate. We improve our performance every day so that we help protect our environment for generations to come.

SUBMITTAL BUILDER

In a continuous effort to make your job easier, we are constructing an online submittal builder to quickly and neatly package your personalized presentation. Stay tuned!

COMING SOON!

LEARNING CENTER

Looking for answers to your DI pipe questions? Find decades of Ductile iron expertise with installation guides, videos, tip sheets, training resources, and more in our Learning Center.

GIVE ME ANSWERS

POCKET ENGINEER

Stop struggling with those hard-to-figure field calculations and put ease and efficiency right at your fingertips with our Pocket Engineer for mobile and desktop devices.

CALCULATE NOW

McWane Ductile is proud to be a part of the **McWane** family of companies.

NEW JERSEY
183 Sitgreaves St.
Phillipsburg, NJ 08865
(908) 454-1161

OHIO
2266 S. 6th St.
Coshocton, OH 43812
740-622-6651

UTAH
1401 E 2000 S.
Provo, UT 84603
(801) 373-6910

NEWS RELEASES

National Manufacturing Day to Launch Second Consecutive McWane Scholarship Program for Skilled Trades
10/05/2022

McWane Ductile Announces $45 Million Dollar Investment, Expansion in Coshocton County
07/25/2022

Synapse Wireless Releases ZHA-S1 Twist Lock Zhaga Controllers for Intelligent LED Luminaire Control
04/05/2022

Copyright © 2022 McWane Ductile. All rights reserved.

Milwaukee Valve Scope Policy Statement

MILWAUKEE VALVE

Quality Environmental



Scope of the Quality Management System (QMS)

Design and manufacture of valves for the Commercial, Industrial, Marine and Defense Industries. Manufacture of valves for Industrial and Commercial Industries by wholly owned foreign entities sites.

Quality Policy Statement

To achieve customer satisfaction and fulfill applicable requirements
driven by continual improvement:
with a quality product…
on-time…
at an acceptable price.

Scope of the Environmental Management System (EMS)

Manufacture of valves and components with a direct focus on the Environmental Management System as pertains to the influence or control over the external and internal issues affecting the requirements of interested parties, suppliers and/or others.

Environmental Policy Statement

Milwaukee Valve Company is committed to sustainability, environmental awareness and protection, maintaining legal, regulatory and other compliance, continual improvement, and the prevention of pollution throughout our organizational activities, products, and services.

Revision 9
1/5/2022

Monarch Precast Concrete Corp.

MONARCH PRECAST CONCRETE

Search ...

Search ...

QUICK LINKS

PRODUCT CATALO

REQUEST A QUOTE

POSITIONS AVAILABLE

APPLY NOW

PRODUCT CATALOG

Who We Are

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok

A Reputation Built On Hard Work And Dedication

Company Overview

Monarch Precast Concrete 2021





Stormwater



Catch Basins



Flow Control Structures



Trench Drains



Utility Vaults



Interceptors



Septic Tanks



We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok



Dosing Stations

Pump Stations

Pump Eqpt. & Accs.

Seepage Tanks

Adjusting Rings

Specialty Products

Box Culverts

Our History

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok

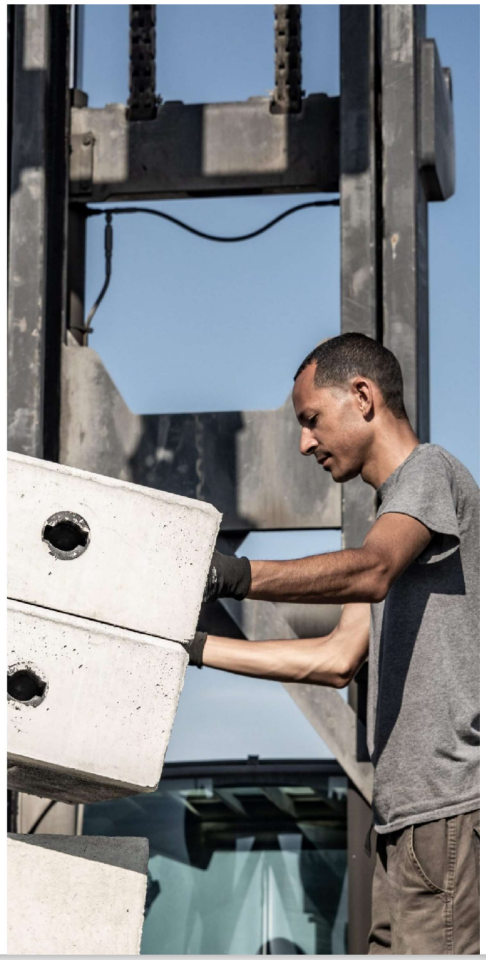
employees; a relentless focus on quality products and service; and a fierce loyalty to our customers. From residential septic; to storm and sanitary water; to commercial pump stations; to utility meter vaults, Monarch delivers unmatched quality, craftsmanship and expertise!

Today, our state-of-the-art manufacturing facility is situated on twenty-one acres of industrial property. There are two plants that total 37,000 square feet of production area. The newest plant, houses a fully automated computer-controlled batch plant with a two-yard, high-speed TEKA turbine mixer. All aggregates are stored indoors in climate-controlled bins with moisture probes to assure consistent quality mixes. The two plants have a total of eighteen cranes ranging from monorail style hoists to bridge cranes with a capacity of up to 30 tons. Forklifts ranging in capacity from 8,000 pounds to 35,000 pounds move the finished product to storage and shipment.



We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok



Quality and safety for our personnel and protecting the environment are of the upmost importance. Our ACI Level 1 certified technicians perform daily checks for tolerance and oversee meticulous quality control over aggregates operating in a climate-controlled production facility. Our service commitment offers end-to-end, technical support and advice through every step of the process to deliver unique precast concrete solutions that meet every project specification for prompt, reliable and safe on-site delivery. At Monarch we approach our work with a mentality that is grounded in **Teamwork**, **Respect**, and **Hard Work**.

Our in-house team of draftsmen, project engineers, fabricators, certified technicians, truck drivers and fleet deliver the best in precast concrete production to a growing Lehigh Valley region and the surrounding counties of Pennsylvania, New Jersey, New York and Delaware. Our fleet of delivery trucks are equipped with cranes for unloading and setting to ensure our products are delivered to the job site in the most prompt and efficient manner possible. Our largest crane truck has a capacity of 40,000 pounds.

From residential septic; to storm and sanitary water; to commercial pump stations; to utility meter vaults, Monarch Precast Concrete's Technical Support team is available to provide guidance on our expansive product catalog, answer any questions you may have … and assist you on your next project. Monarch Precast Concrete. Let's get to work!

What We Do >

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok

Our Commitment



Safety



Excellence



Community

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok

Environment

Quality Control

Our Quality Control Team of ACI Level -1 and NPCA-certified technicians perform daily batch testing and evaluate material performance to ensure you receive only the best concrete for the job.

For the 2nd consecutive year,
Monarch Precast receives the
NPCA's Top 25 Quality Assurance award.

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok

Quality Assurance for North America's precast concrete manufacturers. With over 400-precast concrete manufacturers participating in the NPCA's program, to obtain 'Top 25' status for 2021 is both an honor and a testament to the hard work, tenacity and talent of the entire team at Monarch Precast. To receive this award two years running (for both 2020 and for 2021) speaks to the strong culture of **Excellence** that exists at the company – each of us at Monarch Precast constantly strives to improve and to 'hone our craft.'

The NPCA's quality assurance program is rigorous and requires collaboration across the entire organization. It is not just the job of our Quality team, but represents our company's shared core value of Excellence. Our obsession with Excellence at all levels unites our commercial, production and logistics teams with the objectives of our customers. This is the third Top-25 award the company has received in the past five years. 2021 was also the fourth year in the last six where Monarch Precast received a perfect '100' points from the NPCA.

Safety & Environment

Monarch is proud to provide its employees with ongoing career training and education, maintaining a safe work environment with dependable employee benefits.

Professional Certifications

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok

- NPCA Certified Plant
- NPCA Certified Technicians
- Master Precast Certification - NPCA Top 25 Plant Certification

Penn-DOT Bulletin 15 Approved Manufacturer

We use cookies to ensure that we give you the best experience on our website. If you continue to use this site we will assume that you are happy with it.

Ok

Mueller Industries Inc.

Mueller Streamline Co.
8285 Tournament Drive, Suite 150
Memphis, TN 38125
P 901.753.3200

RECYCLED CONTENT – COPPER TUBE & FITTINGS

Mueller Industries, Inc. produces copper tube and fittings at multiple facilities and distributes these products through various brands. The aggregate recycled content of these products is depicted in the figures below.

While recycled content will fluctuate on a daily basis, the following statistics are based on historical usage that is representative of current operating procedures. Further, this data is applicable to all copper tube and wrot fittings made for plumbing, HVAC and refrigeration, medical gas and other applications.

COPPER TUBE	Post-Industrial Recycled Content:	35%
	Post-Consumer Recycled Content:	10%
COPPER FITTINGS	Post-Industrial Recycled Content:	35%
	Post-Consumer Recycled Content:	5%

Sustainability

Worldwide Locations

Sustainability

Sustainability

For Mueller Industries, responsibility goes well beyond the micro view of period performance and financial reporting. Responsibility for us is more expansive. It consists of the decision-making and actions that significantly influence sustainability and our long-term performance.

Sustainable has many definitions, and we use it in a broad sense. We take into account those actions that provide our employees with safe and healthy work environments - and those that impact the broader perspective of the communities in which we operate and the ecological systems we depend on for daily life and long-term operation.

Fortunately, this sense of responsibility is not new. It has been a part of our conscience, decision-making, and priority setting for generations. Energy & Water Conservation, Emissions & Carbon Footprint Management, and Waste Reduction & Recyclability have been and continue to be important areas of interest. We are committed to helping our constituents understand the important steps we are taking in continuing to make Mueller Industries a sustainable company.

company.

To learn more about our efforts, we invite you to view our annually published Sustainability Report.

Download Report

SITE MAP

© 2022 Mueller Industries | All Rights Reserved

Nucor 2022 Sustainability Report



NUCOR®

CORPORATE SOCIAL RESPONSIBILITY

2022



03 LETTER FROM THE CEO

04 WHO WE ARE & HOW WE CREATE VALUE

14 GOVERNANCE

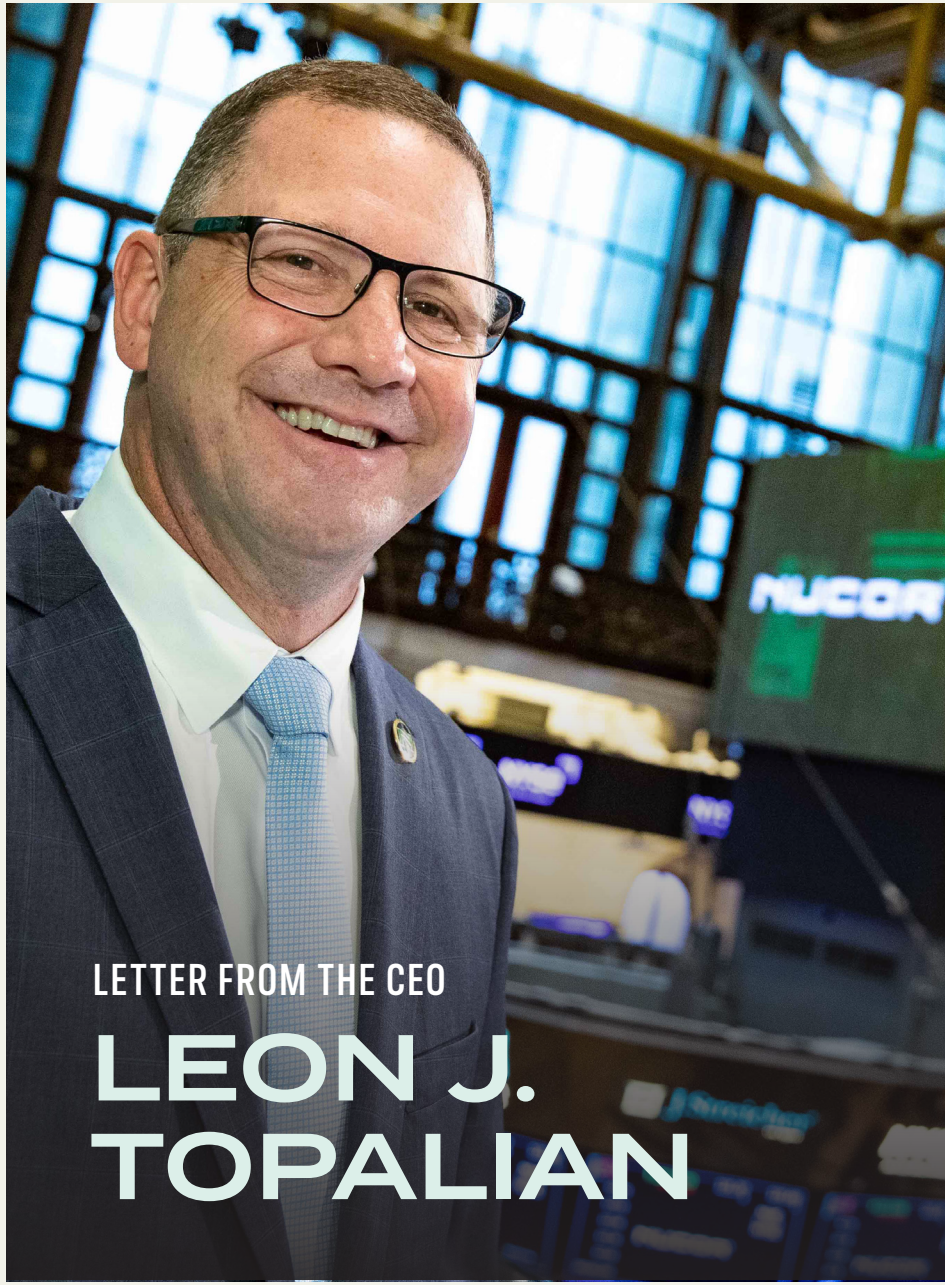
18 SAFETY & TEAMMATES

30 ENVIRONMENTAL PERFORMANCE

40 POLICY ENGAGEMENT

44 COMMUNITY & LOCAL STEWARDSHIP

48 GRI INDEX



Dear Stakeholders:

For more than 50 years, Nucor has been a leader in sustainability and decarbonizing the steel industry. This leadership position is serving us well as more of our customers are looking for ways to reduce emissions in their supply chains. This is no longer something they are planning to do in the future. It is happening right now, and Nucor is meeting this challenge by providing them with the product solutions they need to meet their goals.

We are not only engaging our customers in conversations about sustainability, but also government officials and our neighbors in the communities where we operate. They want to know what Nucor and the steel industry are doing to address carbon emissions. We have a great story to tell. In 2022, we took additional steps to advance our leadership position in sustainability.

- We shipped the first tons of our net-zero emissions Econiq™ steel to General Motors early in 2022, and also began supplying Econiq to Trane Technologies for their HVAC products.
- Our new steel plate mill, Nucor Steel Brandenburg, announced that it will produce a new product called Elcyon™, a first-of-its-kind sustainable heavy gauge steel plate product for offshore wind energy producers.
- Nucor became the first major industrial company in the world to join the United Nations 24/7 Carbon-Free Energy Global Compact, and is a founding member of the Global Steel Climate Council – a coalition advocating for a single transparent global emission standard focused on steelmaking emissions.
- We made investments in companies working to develop technology that have the potential to reduce our emissions even more, including NuScale Power, a developer of small modular nuclear reactor technology, and Electra, a start-up company developing a process to produce carbon-free iron that can be used to make steel.

Our ESG focus goes beyond environmental performance. Safety is Nucor's most important cultural value. Our 31,000 teammates continue to demonstrate their commitment to our goal of becoming the World's Safest Steel Company. In 2022, our team set a record low injury and illness rate for the fourth consecutive year. Twenty Nucor divisions went the entire year without a recordable injury, up from sixteen in 2021.

Our company has experienced tremendous growth in recent years. We are dedicated to building a more diverse and capable workforce as we grow. Inclusion and a sense of belonging are essential to our team-oriented culture which is based on trust and open communication.

I am inspired by the work our 31,000 teammates do every day to advance our sustainability goals. In this report, we share more details about these initiatives and the stories of how our teammates are putting our commitments into action.

Sincerely,



Leon J. Topalian
Chair, President & Chief Executive Officer



01

WHO WE ARE
AND HOW WE CREATE VALUE



Nucor entered the steelmaking business in 1969, providing steel products to our then-fledgling steel joist business in South Carolina. Utilizing revolutionary steelmaking technology, the Electric Arc Furnace, or EAF, to melt scrap into new steel using electricity, Nucor grew to supply its own steel products divisions. Recycling scrap steel in EAFs, known as circular steelmaking, gave Nucor an advantage over traditional steel mills, which used giant blast furnaces to make steel from raw ore (referred to as extractive steelmaking). That advantage continues in today's Nucor, now the largest steel producer in North America. Our business is organized into three segments: raw materials, steel mills and steel products.

Nucor's raw materials segment provides scrap and direct reduced iron (DRI), both of which feed our steel mills, and acquires additional metallic inputs from the marketplace as needed. Utilizing circular steelmaking via EAFs, our steel mills segment produces a wide range of primary steel shapes for sale to outside customers as well as to our downstream steel products businesses.

Approximately 20% of our steel mill production is converted into a wide range of items by Nucor's downstream steel products businesses, including structural steel tubing, electrical conduit, joists and joist girders, steel deck, steel fasteners, fabricated rebar, steel grating, metal buildings, insulated metal panels, racking systems, overhead doors, utility towers and structures, wire and wire mesh, piling and foundation products. This vertical integration, from primarily recycled raw materials through to final product, allows Nucor to operate more sustainably and provide the supply chain transparency that our customers are increasingly interested in, enhancing our position as a supplier of choice in our industry.

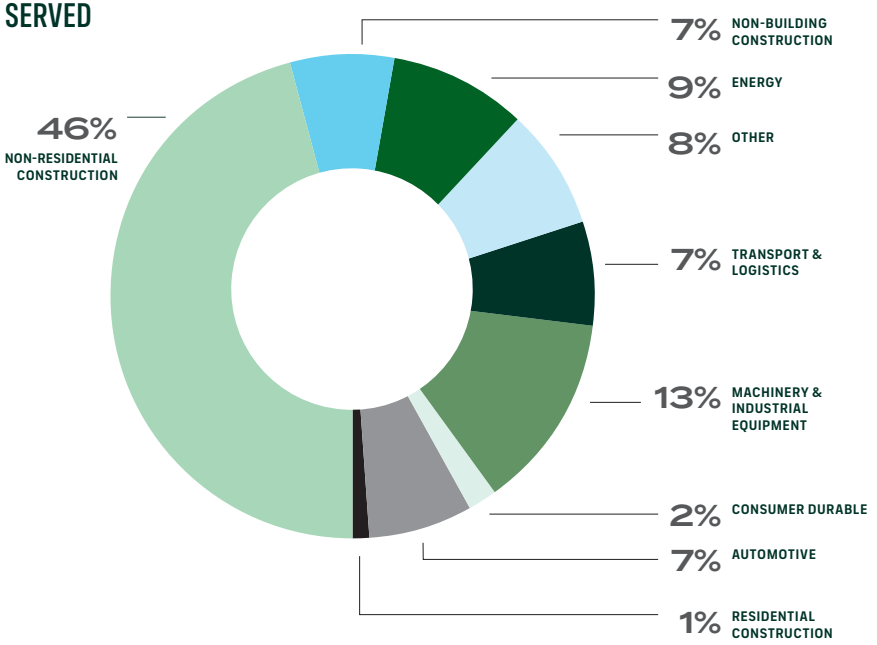
ANOTHER RECORD SETTING YEAR

Strong demand and pricing across most of the end-use markets we serve, and the disciplined execution of our growth strategy in recent years, drove our record financial results. In 2022, Nucor set a second consecutive earnings record of $7.60 billion or $28.79 per diluted share, exceeding the previous record of $6.83 billion or $23.16 per diluted share set in 2021.

Consolidated net sales in 2022 of $41.51 billion increased by 14% compared with consolidated net sales of $36.48 billion in 2021. Shipments to outside customers totaled 25.52 million tons, a decrease of 10% from the previous year, while the average sales price per ton increased 26%. While our 2022 performance unquestionably benefited from an exceptionally strong steel industry up-cycle, Nucor's results were also fueled by our team's focus and commitment to safely meeting our customers' needs.

Over the decades, our consistent focus on diversifying our product offering and lowering costs has enabled us to deliver profitable growth and create value for our stakeholders. As we have gained market share, we made it a priority to help lower the overall environmental footprint of the domestic steel industry in the United States, protect our teammates and support our communities. Fundamental to our success has been Nucor's commitment to remaining the employer of choice for our team of 31,000 men and women. Their dedication has forged Nucor into America's most diversified steel products company, and North America's largest recycler.

END-USE MARKETS SERVED



Based on Nucor internal data and estimates for Nucor shipments through service centers. Approximately 27% of Nucor steel by volume was sold to service centers in 2022.



From electric vehicles (EVs) to offshore wind towers to modern high-rise construction, steel is a ubiquitous component of the U.S. green economy. Its strength, aesthetics and relatively low cost have made steel the choice of architects, engineers, manufacturers and consumers for more than a century.

The markets and customers that Nucor serves are becoming increasingly aware and concerned about the environmental and social impact of their supply chains. And Nucor's circular EAF-based steelmaking facilities generate the lowest greenhouse gas (GHG) equivalent emissions per ton in the steel industry.

A large percentage of the steel Nucor produces eventually makes it into a wide range of construction applications. From nuts and bolts to the beams underpinning the nation's tallest skyscrapers, Nucor steel can be found on almost every construction site in America.

Construction of warehouses for goods distribution as well as data centers have been among the fastest growing markets for our products in recent years and continue to represent an important construction market sub-segment for Nucor.

Other important end-use markets include automotive, energy, machinery, heavy and agricultural equipment, transportation and appliances. Although each of these industries utilize a different mix of steel products, grades and sizes, they all require a steel producer that understands and anticipates the changing demands of the market.

Renewable energy is a significant growth opportunity that has drawn our focus. To achieve the United States' renewable energy goals, a massive amount of steel will be needed to build wind and solar power generation assets, as well as enhanced energy transmission infrastructure. Nucor is investing today in capabilities that will enhance its position tomorrow as a leader in sustainably producing the steel required for this renewable energy future. Nucor is not only providing steel to build out our nation's renewable energy infrastructure but is also supporting the development of new solar and wind energy projects by entering into electricity offtake agreements in the form of Virtual Power Purchase Agreement (VPPAs).

We continue to invest in new products and new capabilities, so that we can build on our industry leadership position by more sustainably meeting both current and emerging market needs. Over the past five years, Nucor has invested almost $13 billion expanding our product portfolio to include more value-added steel products and steelmaking capabilities. Throughout Nucor's history, we have served as a strategic partner for our customers; applying the latest innovations, staying abreast of design trends, and using market analytics to develop products that help solve their most pressing challenges. We regularly bring customers new opportunities to drive progress and growth together.



CONTINUED ACCOLADES IN THE AUTOMOTIVE MARKET

Nucor's performance as a valued partner in the supply of high-quality steels to the automotive sector was recognized once again in 2022. For the fifth straight year, General Motors recognized Nucor with its Supplier of the Year Award.

2022 marks the 31st time that General Motors has recognized its top suppliers through the Supplier of the Year Awards. Selection for the award is based on performance criteria as evaluated by a global cross-functional GM team with representatives from Product Purchasing, Global Purchasing and Manufacturing Services, Customer Care and Aftersales and Logistics.

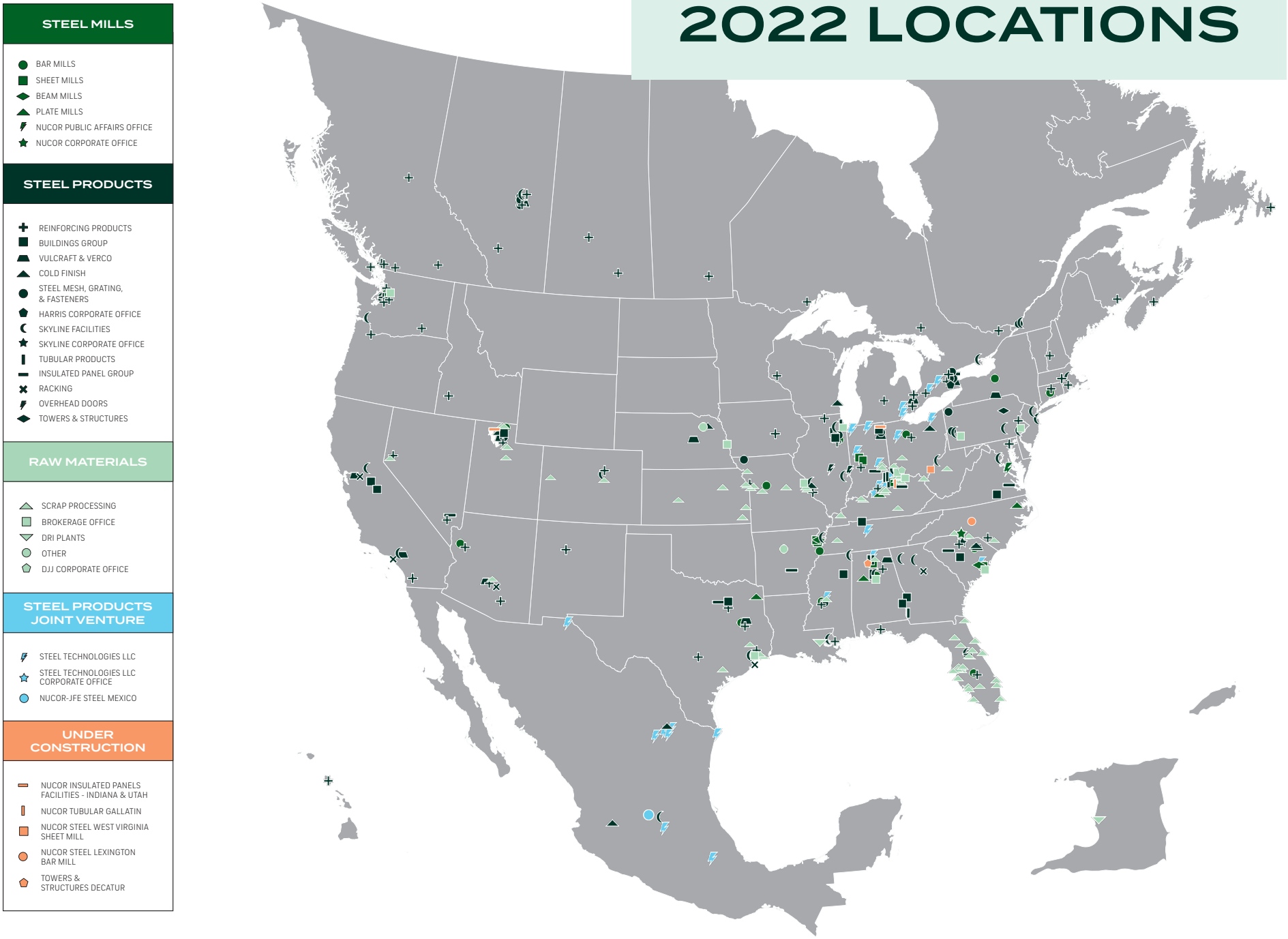
FIRST AWARD FROM TRANE

2022 marked the first year that Nucor was recognized with a Supplier of the Year Award from Trane Technologies, a leading manufacturer of HVAC equipment. Citing superior performance through Quality, Delivery, Cost and Sustainability, Trane specifically recognized Nucor's leadership in Sustainability and our Econiq™ steel offering in connection with the award.

QUALITY RECOGNITION FOR ENGINEERED BAR

Nucor also received recognition from heavy equipment maker Caterpillar in 2022 in the form of the CAT Platinum award. CAT's suppliers are certified through a Supplier Quality Excellence Process (SQEP) as meeting or exceeding stringent supplier performance standards, such as product quality and shipping performance, which are measured over the course of a year by a cross-functional global team of Caterpillar experts in the areas of engineering, manufacturing, logistics and procurement.

2022 LOCATIONS



ANNUAL OUTPUT CAPACITY & FINANCIAL SUMMARY

RAW MATERIALS SEGMENT	(METRIC TONS)
Direct Reduced Iron Operations (DRI)	4,500,000
Scrap Recycling Operations	5,824,000

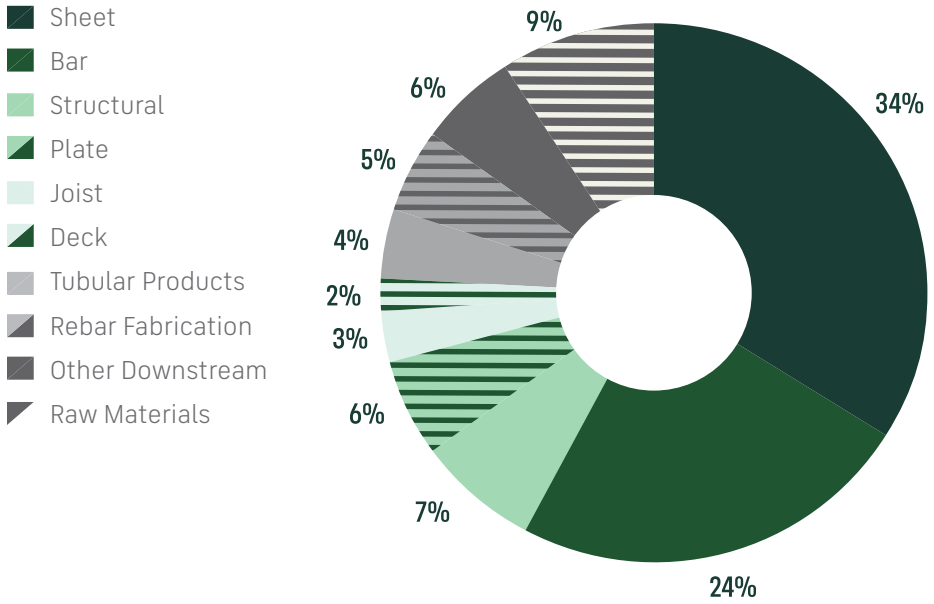
STEEL MILLS SEGMENT	(SHORT TONS)
Bar Mills	9,560,000
Plate Mills	2,925,000
Sheet Mills	13,800,000
Structural Mills	3,250,000

STEEL PRODUCTS SEGMENT	(SHORT TONS)
Buildings Group	360,000
Cold Finish	1,069,000
Fasteners	75,000
Grating	49,000
Rebar Fabrication	1,736,000
Steel Mesh	128,000
Tubular Products	1,365,000
Vulcraft/Verco Joist	745,000
Vulcraft/Verco Deck	560,000
Insulated Metal Panels	97,000
Warehouse Systems	168,000
Overhead Doors	125,000
Towers & Structures	10,000

RESULTS	2020	2021	2022
Net Sales	$20.1B	$36.5B	$41.5B
Steel Shipped	23.0M Tons	25.7M Tons	23.2M Tons
EPS	$2.36	$23.16	$28.79
Free Cash Flow	**$1.15B**	**$4.6B**	**$8.1B**

DIVERSIFIED PRODUCT MIX

TOTAL TONS SOLD TO OUTSIDE CUSTOMERS IN 2022





EXPANDING INTO NEW MARKETS

In mid-2022 Nucor completed our largest acquisition in company history, with the purchase of C.H.I. Overhead Doors for $3.0 billion. With this acquisition, Nucor added to its growing portfolio of businesses that support the broader construction market. C.H.I. is a leading manufacturer of overhead doors for residential and commercial markets in the United States and Canada. The company has approximately 800 teammates across two manufacturing plants in Arthur, Illinois, and Terre Haute, Indiana, and five regional warehouses located in California, Colorado, New Hampshire and New Jersey.

The acquisition of Summit Structures in mid 2022 formed the basis of a new group called Nucor Towers & Structures. The growing demand for utility infrastructure is being driven by grid hardening and replacements, renewable energy projects, and population growth. Additional demand for utility infrastructure will result from the Inflation Reduction Act (IRA), recently passed by Congress, which provides more than $300 billion for clean energy and climate programs. In December 2022, the company announced plans to expand production in the group with the addition of two state-of-the-art facilities. Each facility will utilize highly efficient straight-line production and will increase Nucor Towers & Structures' capabilities to provide engineered solutions for utility infrastructure and construction projects.

NET-ZERO STEEL • NET-ZERO STEEL • ECONIQ™

ECONIQ™ NET-ZERO CARBON STEEL

Launched in October of 2021 – with initial shipments in January 2022 – Nucor's Econiq steel products represent the first instance of widely available net-zero carbon steel. Utilizing Nucor's industry leading GHG intensity position via circular EAF steel production, along with 100% renewable electricity supply, and eliminating remaining Scope 1 emissions through the use of carbon offsets, Econiq steel continues to attract attention from automakers, manufacturers, renewable energy producers and others searching for ways to lower their carbon footprint. With supply contracts signed over the course of 2022, shipments of Econiq to end-use customers are expected to grow strongly in 2023.

BUILDING AMERICA'S INFRASTRUCTURE

AEOS HIGH STRENGTH STEEL BRINGS 66 HUDSON BLVD TO LIFE

Standing out in New York City requires a rare combination of ingenuity, innovation and grandeur. The new, 1,041-foor-tall-skyscraper at 66 Hudson Boulevard, commonly known as The Spiral, surely stands out.

Developed by Tishman Speyer and designed by Bjarke Ingels Group and WSP USA, The Spiral features 2.85 million square feet (about the area of a large shopping mall) – 66 stories – of rentable commercial office space. Turner Construction Company oversaw the completion of this complex structure, while Banker Steel together with NYC Constructors supplied and erected the building's fabricated steel – much of which was Nucor's Aeos™ A913 steel.

The structure's signature cascading spiral is actually a connected system of outdoor terraces, each supporting ample greenery and extending usable floor space. The Spiral's terraces and their supporting plate sizes shrink with each increment in elevation.

> **"Using Grade 65 Aeos steel beams, we were able to not only reduce the tonnage of this building, [we were able to] reduce the column size as well, which allows for more usable space for the clients."**
>
> Patrick Chan,
> Senior V.P. of Building Structures, WSP USA

Of the 31,000 tons of structural steel used in the project, approximately 4,900 tons were comprised of Nucor's Aeos high-strength steel beams, 2,700 tons consisted of plate and 2 million square feet incorporated Vulcraft decking – all supplied by Nucor. But AEOS steel was the key to reducing overall time and construction costs on the project, particularly during the welding process.

The path to innovation is hardly linear, but it never ceases to deliver world-class results. With dependable supply of Aeos steel, the 66 Hudson Boulevard project stayed on schedule, avoided major construction issues and stretched to the sky.



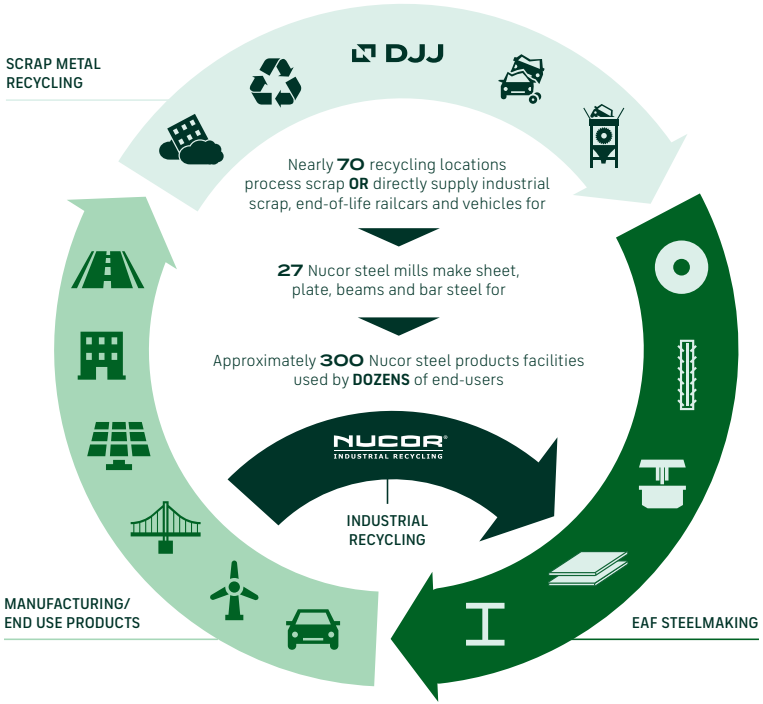
IMAGE COURTESY OF BINYAN STUDIOS
CASE STUDY: 66 HUDSON - THE SPIRAL

WORKING WITH OUR CUSTOMERS TO CREATE THE CIRCULAR STEEL ECONOMY

From the time we entered the steel business more than 50 years ago, Nucor has been focused on producing steel sustainably. When our first EAF roared into life in Darlington, South Carolina, it ushered in a new era of steelmaking in the U.S. and radically transformed the industry. The impact is still felt today with more than 70% of U.S. steel production coming from EAFs, making the U.S. one of the cleanest places in the world to make steel.

Throughout our over 50 years of circular steelmaking, Nucor has pushed its sustainability efforts further toward circular steelmaking. Our Nucor Industrial Recycling group's goal is to close the recycling loop by partnering with current and potential steel customers to find new and better ways to return steel scrap directly from manufacturing facilities back to our steel mills for remelting.

Vertical Integration & Product Lifecycle







GREENBRIER COMPANIES: A CIRCULAR PARTNERSHIP

The Greenbrier Companies, one of the largest manufacturers of railcars in North America, can produce over 25,000 railcars per year. They have four plants in Missouri and Arkansas. To make these railcars, Greenbrier utilizes steel plate from Nucor Steel Tuscaloosa, Nucor Steel Hertford, and soon Nucor Steel Brandenburg.

Nucor Industrial Recycling is now managing Greenbrier's scrap and transporting it directly to Nucor Steel Arkansas and Nucor-Yamato Steel. By shipping this material to the most freight-efficient home, Greenbrier can work to minimize its Scope 3 emissions. Additionally, Nucor Industrial Recycling is helping Greenbrier with a "rebody" program. Greenbrier brings in older railcars and can salvage many of the parts to be reused in new railcars. The parts that cannot be salvaged are processed by Nucor Industrial Recycling and shipped to Nucor mills where they are melted and made into new steel products.

Nucor's DJJ recycling business, the largest independent rail car fleet in the country, has also purchased 350 Gondola Railcars from Greenbrier, made with 100% Nucor Steel, to move material from our Recycling Yards and other Nucor Industrial Recycling Customers directly to our Steel Mills.

By remelting the recycled material from the Greenbrier production process and end-of-life parts from railcars, sending Greenbrier new recycled steel, and then purchasing Greenbrier railcars to be used to transport Nucor Industrial Recycling scrap steel, the Nucor Greenbrier partnership is an example of circularity and sustainability at its best.



OUR MISSION

GROW THE CORE
EXPAND BEYOND
LIVE OUR CULTURE

OUR CHALLENGE IS TO BECOME
THE WORLD'S SAFEST STEEL COMPANY.

WE LIVE EACH DAY WITH GRATITUDE
FOR THE FAMILIES, CUSTOMERS AND PARTNERS
THAT MAKE OUR WORK POSSIBLE.

NUCOR®

OUR MISSION



02

GOVERNANCE

At Nucor, we believe that our reputation for fair business dealings with our contractors, suppliers, customers and each other provides us with a strong foundation, and helps to ensure our success.

LEGACY OF CARING

Since our founding, Nucor has taken the long-term view. We believe that ongoing investment in our people, our communities, and in our partnerships will generate attractive returns for us far into the future. Our dedication to the health and safety of our teammates, our focus on being powerful and reliable partners for our customers, and our commitment to being good stewards of the communities where we live and work are all key elements of living the Nucor culture.

BOARD, STRUCTURES, COMMITTEES

Nucor's Board of Directors is currently made up of nine members, three of whom are women and one of whom is our current President and CEO. Eight of the Board members are independent as defined by SEC guidelines. The Chair role is held by our CEO. Our Lead Director is Christopher Kearney, retired Chairman, CEO and President of SPX FLOW, Inc. The Board has three committees: Audit, Compensation and Executive Development, and Governance and Nominating. The Audit Committee is responsible for financial oversight and compliance, the Compensation and Executive Development Committee determines compensation for senior officers and Directors, while the Governance and Nominating Committee evaluates and recommends nominees for Board membership and oversees and makes recommendations to the Board regarding corporate sustainability and other environmental, social and related governance ("ESG") matters. Detailed explanations of the Board, Committees and their respective responsibilities can be found on our **website**.

Nucor provides training for new members of our Board of Directors including detailed materials explaining the company's practices. Additionally, we ensure that senior managers and other staff members are available to familiarize board members with our company and the greater steel industry. We also organize regular visits by board members to our facilities. To increase their effectiveness in leading our company, Nucor encourages Directors to pursue educational opportunities related to their position and provides reimbursement for reasonable expenses related to those educational opportunities.

CURRENT (2023) BOARD MEMBERS


NORMA B. CLAYTON


PATRICK J. DEMPSEY


CHRISTOPHER J. KEARNEY


LAURETTE T. KOELLNER


MIKE LAMACH


JOSEPH D. RUPP


LEON J. TOPALIAN


JOHN H. WALKER


NADJA WEST



APPROACH TO RISK ASSESSMENT

The Board of Directors establishes guidelines to assess and manage risks faced by Nucor. In addition to Board oversight, our CEO and our entire executive team are fully engaged in risk management and mitigation. A comprehensive annual report on the risks facing Nucor is prepared by our Corporate Controller, Director of Internal Audit and General Counsel and submitted to the Audit Committee for review. The Audit Committee then meets with our managers and provides its recommendations on how Nucor should prioritize and manage the risk factors under consideration.

The risks identified include those related to climate change such as extreme weather events, disruptions to our supply chain and impacts to our markets. Some of Nucor's other ongoing risks include those related to economic conditions, legal or environmental liabilities, and cybersecurity. Specifically:

- Demand for steel products can be cyclical, causing significant fluctuations in prices and shipment volumes of our products.
- Nucor is also affected by fluctuations in the availability and costs of energy and raw materials on an ongoing basis.
- Cybersecurity is an area of increasing concern for all companies. We have increased our investments in technology and personnel to address this growing risk area in recent years.

SUSTAINABILITY

Our CEO and our entire executive team are fully engaged in Nucor's progress toward achieving our sustainability goals and initiatives. The team members managing day-to-day activities in pursuit of our sustainability objectives report to Nucor's Executive Vice President of Business Services and General Counsel.

ETHICS AND COMPLIANCE

Nucor has Standards of Business Conduct and Ethics that all officers and teammates are expected to follow. They cover issues including ethical business conduct, conflicts of interest, gifts and confidentiality. We also have a separate Code of Ethics for Senior Financial Professionals. Each senior financial officer, including our CEO, must sign this document by hand, and submit it to our corporate headquarters. These documents are available to view on our website **here**.

HUMAN RIGHTS

Nucor is firmly committed to respecting the human rights of all individuals. Our policies are based on the United Nations Universal Declaration of Human Rights and the United Nations Guiding Principles on Business and Human Rights, as they pertain to the steel industry. Nucor proactively works to ensure that our labor and supply chain policies reflect our commitment to human rights. Given our team-oriented culture with its focus on accountability, and that most of our operations are in North America, we consider our potential risk for violating human rights to be low. Nucor does not tolerate any form of forced labor, involuntary labor, child labor, human trafficking, or modern slavery, either in our operations or our supply chain. We also respect the rights of local people in the communities where we work and live, including the rights of indigenous peoples. Nucor also does not tolerate coercion of any kind, withholding of passports, or sexual exploitation. In geographic locations where human rights violations may occur, we monitor and certify our supply chains, including contractors, subcontractors and suppliers. Our expectations in this regard are captured in our Supplier Code of Conduct. If Nucor's human rights standards are more stringent than the laws of a particular area, we operate according to our own higher standards. For the complete text of the Nucor Human Rights Policy, please click **here**.

FAIR EMPLOYMENT PRACTICES

Our employment practices mandate fair and equitable treatment for all teammates, including competitive compensation and benefits and the right to work in an environment free of discrimination and harassment. Nucor will not tolerate any form of discrimination or harassment in any aspect of our business. Accordingly, Nucor considers discrimination and harassment to be major offenses that can result in suspension or termination. For the complete text of the Nucor Discrimination & Harassment Policy, please click **here**.

To ensure that our operations consistently function according to our high ethical standards, Nucor provides a framework for reporting violations. Teammates, as well as suppliers and contractors, may report violations to a manager, general manager, or to Human Resources. Individuals wishing to report anonymously may call a toll-free Hotline, which is monitored by a third party. Violators of our ethical standards may be suspended, terminated, or referred to government authorities where appropriate. Nucor prohibits any retaliation whatsoever against teammates who report violations.





03

SAFETY & TEAMMATES



At Nucor, we've long said Safety is Our #1 Value, but it's not just a motto. Our teammates understand they can rely on each other to ensure every person in the company goes home safely to their families at the end of their workday. We believe safe business is also smart business. Taking care of our customers begins with taking care of the teammates who get the job done.

2022 was another extraordinary year for Nucor. Our team delivered incredible financial and operating results with record sales and earnings, while also achieving our safest year in company history.

Our focus on safety and looking out for one another's well-being has always defined the way we work with each other, our customers and our partners. As a leading steel company, we have a responsibility to create a culture where all our teammates feel they are a part of our organization.

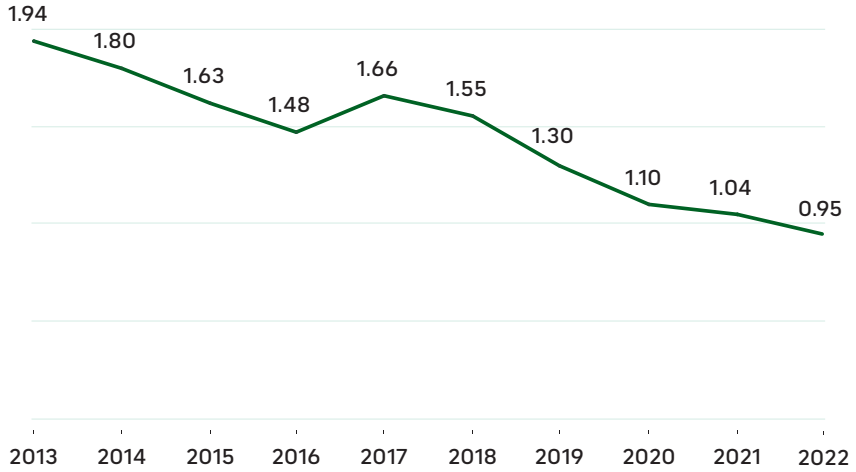
Nucor's commitments to inclusion and diversity have been integral parts of Nucor's culture of teamwork and trust since our start when Ken Iverson desegregated all aspects of our first steel products facility in Florence, South Carolina. And we have always understood that benefiting from diversity, equity and inclusion requires more than just reflecting demographics. We rely on our culture to guide us as we continuously look for ways to improve on our efforts to make every teammate feel they are part of the Nucor team.

2022
NUCOR'S SAFEST YEAR IN COMPANY HISTORY

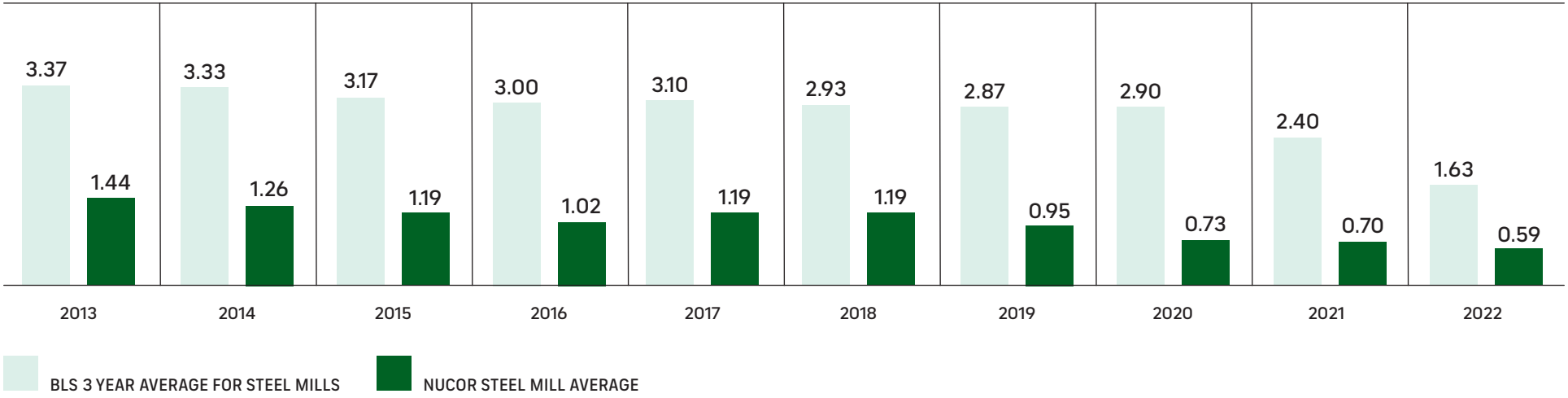
Becoming the World's Safest Steel Company is a lofty goal, and record years in safety are helping to get us there. Nucor had 20 divisions that had zero recordable injuries in 2022. We look forward to the day when our entire company achieves that same goal.

NUCOR INJURY & ILLNESS RATES (2013-2022)

ANNUAL OSHA RECORDABLES PER 200,000 HOURS/YEAR



COMPARISON OF INJURY & ILLNESS RATES BETWEEN NUCOR STEEL MILLS AND THE U.S. STEEL INDUSTRY AS PUBLISHED BY THE BUREAU OF LABOR STATISTICS (BLS) (2013-2022)





2022 SAFETY COIN

Nucor Challenge Coins are presented to each of our teammates. Teammates are encouraged to carry the coins with them so they remember the family and friends who are the "why" they work safely for each day. We are also challenged to engage with our fellow team members to know more about their "whys" – the people they are working safely for. Our 2022 Safety Coin continues our tradition of recognizing the work of our teammates to produce great results while ensuring that safety remains at the forefront of everything we do. When Nucor challenged our teammates to make Nucor the World's Safest Steel Company, they rose to the occasion. The challenge continues today as we all strive to improve upon our safety record for a fifth consecutive year.





PROTECTING OUR HANDS

Though not life-threatening, hand injuries can be devastating, as they limit one's ability to do basic things. A recent assessment found that hand injuries account for nearly half the injuries we see across Nucor. To meet the challenge of becoming the World's Safest Steel Company, we made the determination that we must drastically reduce hand injuries.

We have implemented specific training to recognize and make adjustments in situations where there is particular risk for hand injuries, as well as hold an annual enterprise-wide Hand Safety Week. Our fellow Nucor teammates are also coming up with their own innovative solutions to this problem and sharing these strategies across our Nucor family. Our teammates have led the way in helping to determine which ideas can be widely applied to ensure hand safety across the company.

In 2022, the percentage of injuries that occurred to hands increased from the 2021 low of 32% to 39%. Teammates are refocusing their efforts to continue to reduce the number of hand injuries across the enterprise.

PARTNERING WITH OSHA/ VPP STAR

Nucor partners with the Occupational Safety and Health Administration (OSHA) through its Voluntary Protection Program (VPP), which recognizes companies that voluntarily exceed the safety standards required by law. Achieving VPP Status requires a rigorous safety and health management system. Among our divisions, 24 of them participate in the VPP, and all of these have achieved VPP Star status, the highest award possible in the program. To qualify, divisions must have injury and illness rates below the national average for their industries.

Nucor also participates in the Special Government Employee Program (SGE), which allows our Nucor teammates to work alongside OSHA to perform on-site safety evaluations. Qualified volunteers from Nucor are eligible to participate in the SGE Program. These volunteers must be approved by OSHA, and their participation is funded by Nucor. Nucor has one of the largest numbers of SGE volunteers in the country.

DIVISIONS RECOGNIZED BY VPP

- Nucor Steel Hertford County
- Harris Rebar Mooresville, Indiana
- Kirby Building Systems
- Nucor Building Systems Indiana
- Nucor Buildings Group South Carolina
- Nucor Buildings Group Texas
- Nucor Buildings Group Utah
- Nucor Cold Finish Nebraska
- Nucor Fastener Indiana
- Nucor Steel Auburn
- Nucor Steel Berkeley
- Nucor Steel Gallatin
- Nucor Steel Indiana
- Nucor Steel Jackson
- Nucor Steel Kankakee
- Nucor Steel Kingman
- Nucor Steel Marion
- Nucor Steel Seattle
- Nucor Steel Texas
- Verco Phoenix
- Vulcraft Alabama
- Vulcraft Indiana
- Vulcraft Nebraska
- Vulcraft Texas



THE PRESIDENT'S SAFETY AWARDS & THE PRESIDENT'S SAFETY CUP

Nucor established the President's Safety Award in 1998, an annual award won by a mill or division where the Injury/Illness rate and Days Away, Restricted or Transferred (DART) rate is less than one-third the national average for comparable facilities.

In 2019 Nucor built on the President's Safety Awards recognition to create the President's Safety Cup, an annual award presented to the region that has the best safety record across all of its Nucor facilities.

Working as a region, and not just as an individual mill, encourages our teams to work alongside their regional teammates to share ideas and improve safety as a group.

The 2022 President's Safety Cup was awarded to the teammates of the Atlantic Region:

- Skyline
- Corporate Office
- Metal Recycling Services
- Nucor Steel South Carolina
- Nucor Steel Berkeley
- Nu-Iron
- Vulcraft South Carolina
- Vulcraft South Carolina Carrier
- Nucor Buildings Group South Carolina
- Cold Finish South Carolina
- True Core South Carolina
- Nucor Business Technology



MONITORING AND MEASURING

We take teammate feedback seriously, both on an ongoing basis, and through an employee-wide survey administered every three years. Negative responses have dropped by 25% since our first survey in 1986. The teammate survey was sent out in August of 2022 and had over a 90% participation rate. In addition, 88% of teammates stated they were satisfied with Nucor as a place to work compared to the national average of 73%.

Recently, we have added two more surveys to monitor the teammate experience at Nucor. Nucor participates in the Great Place to Work (GPTW) certification process, which surveys an anonymous random sampling of 5,000 teammates and compares our results to those of the average company surveyed by GPTW, as well as other manufacturing companies. This survey resulted in Nucor becoming Great Place to Work certified, as well as being ranked #12 on Fortune's Best Workplaces in Manufacturing and Production.

Notably, our employee survey results show that approximately 93% of our teammates feel a sense of pride working for Nucor and 83% of teammates feel Nucor takes a genuine interest in their well-being compared to 60% nationally. Additionally, since 1999 we have facilitated multiple, cross-divisional annual teammate forums to understand our progress on goals and the effectiveness of our inclusive and open-minded culture.

Nucor teammates know how fulfilling it is to be a part of our culture, but it is always gratifying when people outside of Nucor recognize that as well. That is why we were extremely pleased to be ranked number one in Fortune Magazine's list of the World's Most Admired Companies in our industry for the second year in a row. Fortune is a well-respected source on corporate reputation, surveying 4,000 executives, directors, and securities analysts to compile its list of Most Admired Companies. Nucor received this valuable recognition in 2022 because of the hard work and dedication of our teammates.

Competition between companies to attract and retain top talent was already intense before the COVID-19 pandemic and it is even more so now. Outside recognition like this from Fortune Magazine helps add to our ongoing efforts to recruit the best and the brightest to join our team. Fortune is merely recognizing what we already know to be true – the Nucor culture is admired because of our teammates.

93% OF OUR TEAMMATES ARE PROUD TO TELL OTHERS THAT THEY WORK FOR NUCOR

ATTRACTING AND RETAINING TEAMMATES

Our retention rate exceeds 92%.

In 2022 Nucor's Talent Team launched our talent brand and value proposition. The brand allows us to capture and share our unified story of who we are as an employer for the talent of tomorrow, and to differentiate ourselves from talent competitors. Our talent brand is simple — it's our teammates, our stories, and our culture that matter.

This new employer brand is built around recognizing everything Nucor teammates achieve as a team. Each and every one of them is Part of Something Bigger – and that's truly something to be proud of.

So much of what sets Nucor apart from our competition is how our team lives our culture each day.

The three pillars of the brand and value proposition are: **Family, Freedom and Stability.**



FAMILY

It's no surprise that "like a family" was consistently referenced when teammates were asked to describe the working culture at Nucor. And though other companies may say the same, at Nucor, there is no mistaking that our culture is indeed the "real deal." Our teammates often form deep bonds from time spent together, both inside and outside of work. Just one of the many reasons why Nucor is one of the companies included on Fortune Magazine's Top Workplace in Manufacturing and Production lists.

FREEDOM

The level of freedom Nucor affords its teammates is at the heart of our innovative culture. If a teammate has an idea that would make things more efficient, safer, or better, they are encouraged to develop it. Nucor doesn't hire the best and brightest to bury them under forms and bureaucracy. Nucor wants to leverage what the best and brightest are typically known for: thinking outside the box and making things better. So, our teammates are given the go-ahead to execute on good ideas and are encouraged to get back on the horse if things don't go as planned. Quite simply, Nucor believes that good teammates are going to want to do the right thing for themselves, their teams and their company, and leaves it to them to make it happen.

STABILITY

Possibly now more than ever, Nucor's unwavering commitment to its teammates resonates with today's workforce. Perhaps our founder, Ken Iverson, said it best:

> **"A teammate who does their job well today should feel confident they will have it tomorrow."**
>
> Ken Iverson,
> Founder

Nucor's reputation as a reliable employer has become a more important consideration among job seekers, especially over the past year, when companies have really been tested. Although, for Nucor, the values it represents are nothing new.

Nucor will continue to grow without losing sight of the remarkable culture that has made it a great place to work – and to build a career.

ENGAGING AND DEVELOPING OUR PEOPLE

According to our "Teammate Value Proposition" survey, 90% of teammates feel fulfilled in their current job.

Nucor maintains numerous internal programs and initiatives to help ensure the quality and equity of our teammate recruitment, retention and talent development systems. We also provide extensive "on-the-job" as well as external education training opportunities for teammates. Our $4,000 per school year reimbursement of educational expenses for teammates has helped many to pursue college degrees, helping them further advance their careers while they are employed at Nucor.

We consistently seek feedback from our teammates about these programs to ensure that we continue to meet the growth and development needs of our Nucor family. We also provide extensive support to help our teammates further their children's growth and development – providing $16,000 to each teammate's child to use for educational expenses after high school graduation. Through the Nucor Foundation, we regularly fund over $6 million a year in these scholarship payments and have contributed over $115 million since the inception of the program.

CORE PARTNER SCHOOLS

Investing in our core partner schools allows Nucor to develop the degrees that are needed to advance steelmaking technology, and to help young engineers find their passion in the metals industry.

At Tuskegee University, Nucor has invested in the Nucor Education & Research Center of Excellence, also known as the Nucor Lab. There, engineering students receive hands-on experience studying real-world examples from our mills and solving real problems for Nucor customers.

At the South Dakota School of Mines and Technology, Nucor has donated toward the construction of its new state-of-the-art Mineral Industries Building which, following its expected completion in early 2024, will house all disciplines related to steelmaking.

Nucor was the first industry partner to contribute to the Missouri University of Science and Technology's $300 million Arrival District Project, contributing $2.5 million in cash and in-kind donations.



In addition to these major investments, Nucor maintains an active presence on the campuses of our core schools through faculty interactions, student organizations, recruitment fairs, and student-led teams. Our current core schools are:

- South Dakota School of Mines and Technology
- Colorado School of Mines
- Tuskegee University
- Michigan Technical University
- Carnegie Mellon University
- Montana Technical University
- Purdue University
- Missouri University of Science and Technology
- University of South Carolina
- Indiana University



SUCCESSION PLANNING

Our robust succession planning process has meant that we typically fill senior leadership roles with internal candidates who fully embrace our culture. We regularly review the demographics of leadership candidates and create appropriate talent acquisition and development plans to ensure we are building a world-class, diverse workforce.

DIVERSITY, EQUITY AND INCLUSION

Nucor's commitments to inclusion and diversity have been integral parts of Nucor's culture of teamwork and trust since our start when Ken Iverson desegregated all aspects of our first steel products facility in Florence, South Carolina. And we have always understood that benefiting from diversity, equity and inclusion requires more than just reflecting demographics. We rely on our culture to guide us as we continuously look for ways to improve on our efforts to make every teammate feel they are part of the Nucor team.

Our focus on safety and looking out for one another's well-being has always defined the way we work with each other, our customers and our partners. As a leading steel company, we have a responsibility to create a culture where all our teammates feel they are a part of our organization. To do this, we need to know when and why people do not feel that they belong. Over the past few years, we have been listening, learning and conducting focus groups around race, gender and workplace equity issues with our teammates. We seek to better understand people's perceptions about our workplace and the level of belonging our teammates feel.

94%

OF OUR JOB CATEGORIES REFLECT THE DEMOGRAPHICS OF THEIR LOCAL COMMUNITIES

We have been holding focus groups for teammates that we believe have helped to promote open dialogue on making the workplace feel inclusive for all. And we have been incorporating the resulting feedback into our training on diversity issues.

In addition, diverse senior leaders have been sharing their experiences with Nucor teammates via video interviews to reinforce our values and expectations with the purpose of creating a stronger sense of belonging for all our 31,000 teammates.

We are optimistic that more open communication about differences and difficulties encountered will make us all more aware, supportive and empathetic, so that our culture continues to develop along a path of improving equity and inclusivity. We believe this kind of progress can help make Nucor even more diverse and high performing over time.

93% of teammates feel they are personally treated fairly according to the company's work rules and practices.

To ensure that our workforce reflects the local demographics of each of our facilities' locations, Nucor consults the U.S. Census Bureau for data on the percentage of racial and ethnic minorities in a given area and factors that data into our hiring practices for that region. Approximately, 94% of our job categories reflect the demographics of their local communities. Approximately 22% of our workforce identifies as a racial and/or ethnic minority.



COLLABORATING WITH PARTNERS TO ADVANCE INCLUSION IN HIRING AND DEVELOPMENT

Nucor maintains many partnerships that promote the hiring and development of teammates from more diverse backgrounds. Some of our partners include:

- Tuskegee University, one of the leading historically black universities in the United States, where we operate the Nucor Education and Research Center.
- The Society of Women Engineers, the world's largest advocate and catalyst for change for women in engineering and technology.
- The National Society of Black Engineers, one of the largest student-governed organizations, supports and promotes the aspirations of collegiate and precollegiate students and technical professionals in engineering and technology.
- INROADS, an organization that identifies, develops and prepares youth from underserved communities for leadership positions in business and industry.
- The Society of Hispanic Professional Engineers, the nation's largest association dedicated to fostering Hispanic leadership in the STEM field.

38%

OF NUCOR'S BOARD OF DIRECTORS ARE WOMEN AND/OR MINORITY.

DIVERSITY IN LEADERSHIP

We know the countless benefits of having diverse leadership at the helm of Nucor. That's why 38% of Nucor's Board of Directors are women and/or minority. We currently have three women (two of whom are minority women) seated on our Board of Directors. In addition, over the past two years, 35% of our placements into management and executive levels have been diverse.



LOOKING FORWARD

Nucor believes that inclusion is a cultural issue and that becoming a more inclusive company means developing a deeper level of trust among all of us, allowing us to know each other better, and to understand and value each other's differences.

While Nucor is proud of its approach and track record of fostering diversity, equity and inclusion, we recognize that there is still more work to be done. Looking ahead, we will continue to increase the representation of minorities and women among our leadership, partner with external organizations, and listen more carefully to each other. By continuously evaluating our approach and executing where we detect opportunities to improve, Nucor and all its stakeholders will benefit.

For further insight into how Nucor thinks about Inclusion, Equity and Diversity, including our most recently available EEO-1 data, please see our essay on this topic **here**.



04

ENVIRONMENTAL PERFORMANCE

ENERGY AND GREENHOUSE GASES

Nucor is America's largest steel producer and the largest recycler in North America. Since Nucor entered the steel business more than 50 years ago, sustainability has been a foundation of our operations. We pioneered the use of EAF technology to recycle scrap metal into new steel products. As a result, Nucor is among the cleanest steel producers in the world with combined Scope 1 and Scope 2 GHG emissions intensity that is only one-quarter of the global steelmaking average, and less than one-fifth of the average integrated steel producer. Today, Nucor's GHG emissions are 20 years ahead of the Paris Climate Accord's most aggressive benchmark, the 1.5 degrees scenario. For 2022, Nucor's greenhouse gas emissions were less than one-third of the Paris Agreement's 2030 target established by the Transition Pathways Initiative (TPI) for the steel sector. We are striving to reduce our impact even further. We have established multi-disciplinary teams to investigate technologies and operational adjustments we can deploy to further reduce the greenhouse gas intensity of our production processes and meet our definitive emission reduction targets. In addition, we are also helping our customers achieve their supply chain emission reduction goals through our low-embodied carbon steel and steel products, including our Econiq line of net-zero steel products.

NUCOR STEEL MILLS GHG INTENSITY GOAL IS

79%

LESS THAN TODAY'S WORLD AVERAGE





GREENHOUSE GAS REDUCTION TARGETS

Nucor committed to a 35% combined reduction in its direct emissions (Scope 1) and indirect emissions from purchased electricity (Scope 2) GHG intensity for its steel mills by 2030, measured against a 2015 baseline, the year the Paris Climate Agreement was adopted. Achieving this goal will take Nucor's steel mill CO2 emissions down to 77% less than the global steelmaking average at the time the goal was set, and 82% less than the extractive steelmaking average.

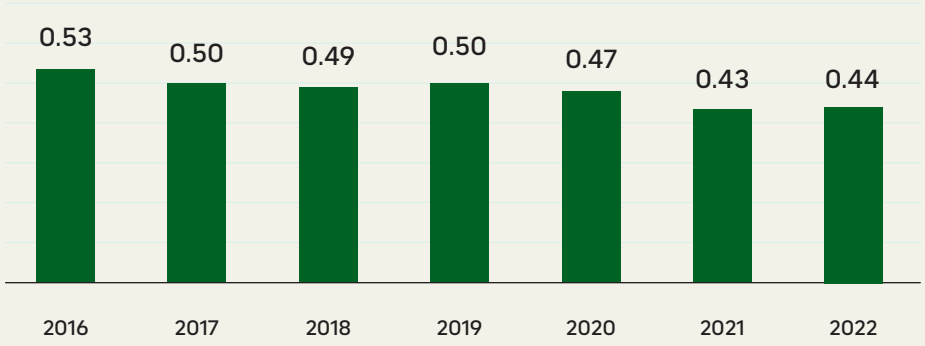
In addition:

- Nucor will continue to publicly disclose and reduce Scope 3 emissions.
- Beyond 2030, we are committed to continuing reductions in steel mill carbon intensity towards net zero-emission steel at scale.

You can read more about our Greenhouse Gas Reduction Strategy **here**.

SCOPE 1 & 2 INTENSITY TREND (NUCOR STEEL MILLS)

(METRIC TONS OF CO_2e PER METRIC TON OF STEEL PRODUCED)



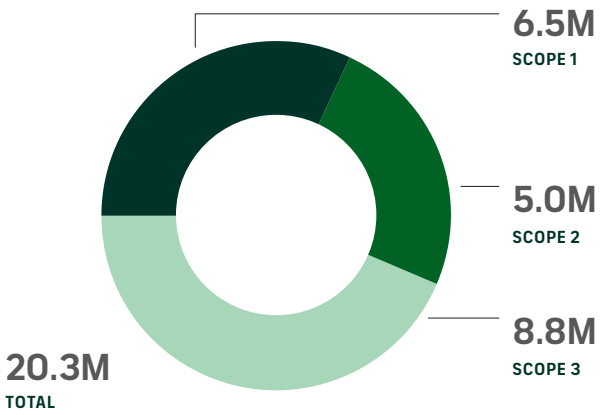
OVERVIEW OF NUCOR GHG EMISSIONS 2022

SCOPE 1: Direct emissions from operations. **SCOPE 2**: Indirect emissions from purchased electricity.
SCOPE 3: Emissions associated with raw materials and transportation.

NUCOR COMPANY WIDE (GHG)

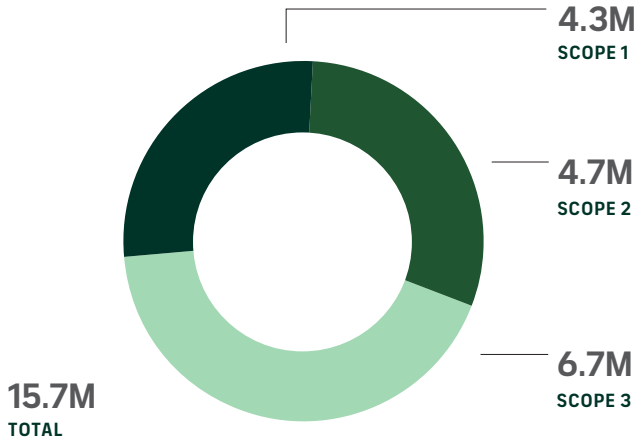
STEEL MILLS, DRI PLANTS, PRODUCT GROUPS, SCRAP PROCESSING & TRANSPORTATION

METRIC TONS OF CO_2e IN MILLIONS (M)



NUCOR STEEL MILLS (GHG)

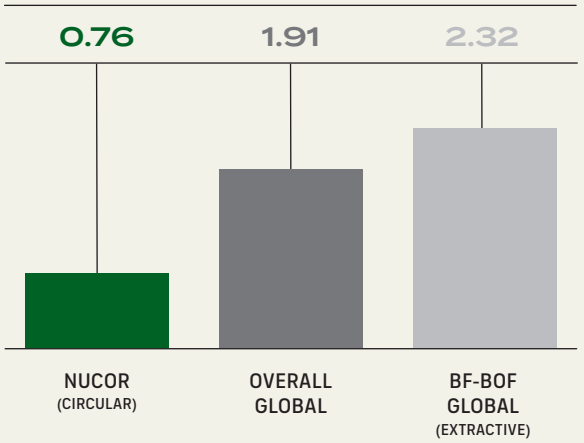
METRIC TONS OF CO_2e IN MILLIONS (M)



Note: Steel Mills Scope 1 & 2 Intensity Data was verified by a third party under ISO 14064-3:2019.

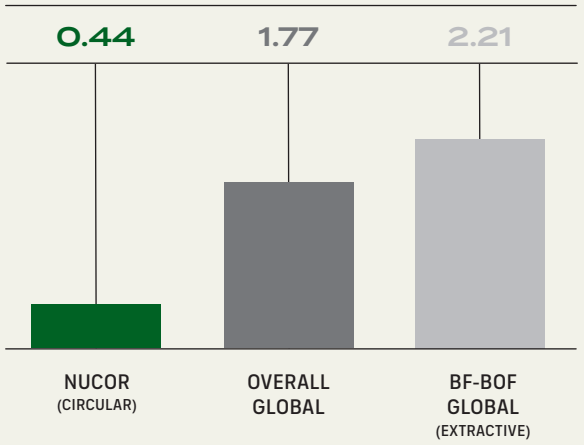
SCOPE 1, 2 & 3 INTENSITY

(METRIC TONS OF CO_2e PER METRIC TON OF STEEL PRODUCED)



SCOPE 1 & 2 INTENSITY

(METRIC TONS OF CO_2e PER METRIC TON OF STEEL PRODUCED)



*Nucor data is for 2022. Overall Global and BF-BOF Global data is for 2021, which was the latest available information as of the printing of this report.

NUCOR CONTINUES TO LEAD THE INDUSTRY

Nucor teammates have developed a data-driven, multi-pronged approach to ensure our success.



INCREASED USE OF RENEWABLE ENERGY

Nucor is exploring ways to increase renewable energy supply and power generation at our mills.

Nucor has entered into two VPPAs, helping to build new clean power generation in the U.S. We have also invested in a start-up company – NuScale Power – that is working to develop the next generation of nuclear power – small modular nuclear reactors.



ENERGY EFFICIENT PROCESSES

Nucor is developing innovative ways to reduce the energy requirements of our steel.

Nucor is currently building a new rebar "micro mill"–its third within the last 5 years–to make rebar for infrastructure and construction projects. Micro mills eliminate the need for reheat furnaces, reducing Nucor's use of natural gas.



PIONEERING CIRCULAR STEEL

Nucor is the largest recycler in North America, and we continue to pioneer the circular economy in steel.

We have established Nucor Industrial Recycling within our wholly owned scrap recycling business, David J. Joseph Company ("DJJ"), to work with current and potential steel customers to find new and better ways to return steel scrap directly from manufacturing facilities to steel mills for re-melting - improving resource efficiency for all participants in the steel value chain.



BREAKTHROUGH RESEARCH & DEVELOPMENT

Nucor is actively exploring dozens of innovative solutions, including carbon sequestration at various facilities, injection carbon alternatives, and greener transportation alternatives.

Nucor has invested in Electra, a start-up developing a process to produce carbon-free iron. While we primarily use scrap metal to make our steel, more demanding steel grades require high-quality metallics like direct-reduced iron. If successful at scale, Electra's process would be a source of high-quality, carbon-free iron to make steel.

SELECTED EFFICIENCY INITIATIVES

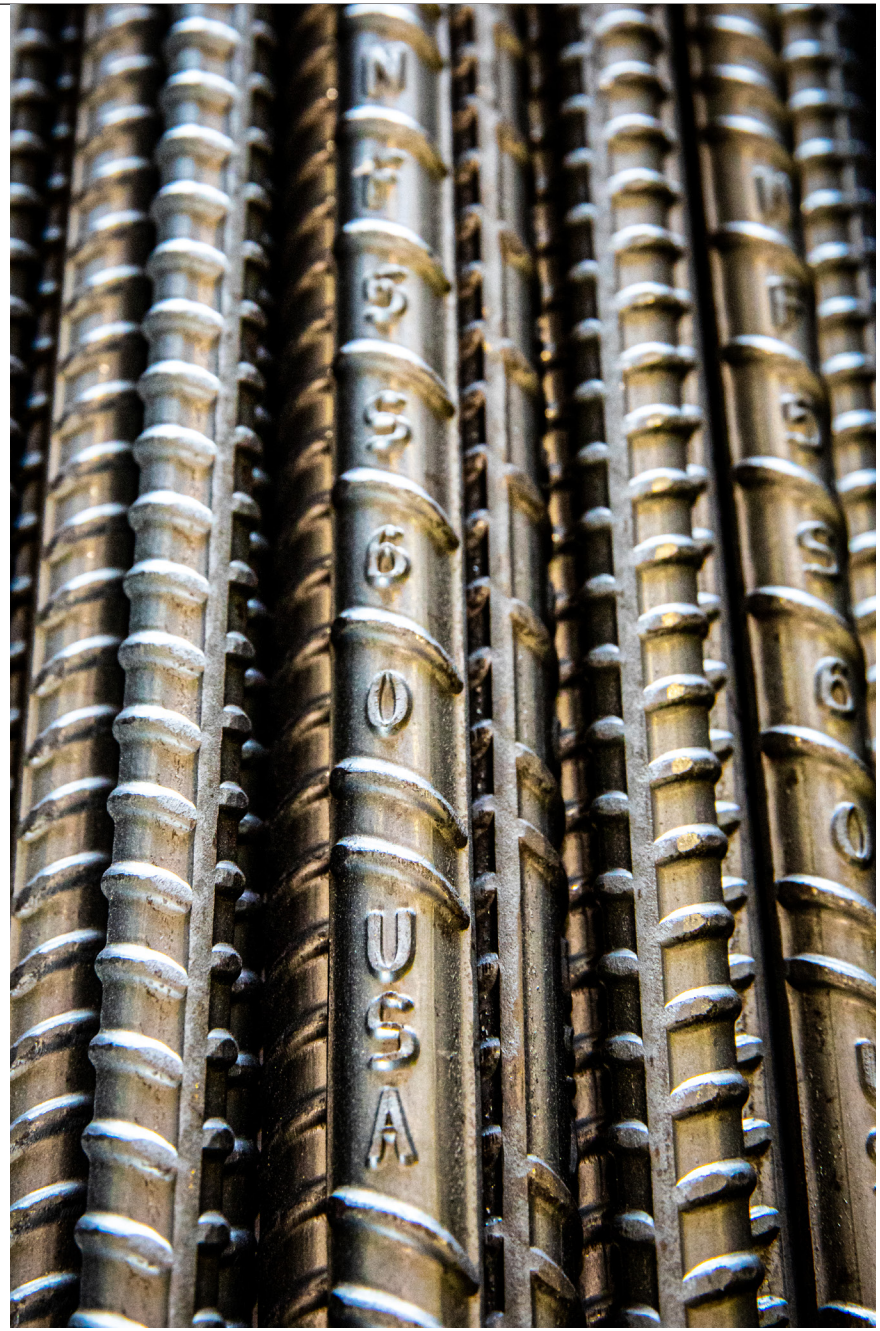
Our sheet group rolling mills have decreased heat loss by approximately 95%, from more than 200,000 BTUs/hour to less than 10,000 BTUs/hour per roll. This dramatic improvement was accomplished by switching from hollow, water-cooled rolls to dry rolls.

Our newest rebar mills in Sedalia, Missouri, and Frostproof, Florida, utilize continuous casters directly coupled with hot rolling of the billets, obviating the need for traditional reheat furnaces. This change in equipment has decreased gas usage by 75%. This energy saving equipment will continue to be installed at future rebar mills, including our upcoming mill in Lexington, NC.

Nucor is exploring new technologies to produce better grades of scrap shred by removing more non-ferrous material, increasing its value and broadening its application so that we can further reduce the use of extracted ore-based metallics in our manufacturing process. For example, high-quality flat-rolled products require very low levels of residual copper in order to meet the performance specifications of our customers.

Our melt shop teams work continuously to ensure that a well-formed layer of foamy slag develops on the steel melt's surface, preventing heat loss through the EAF walls, reducing the need for energy by between 3% and 10%. The same layer can also raise the efficiency of an oxy-fuel burner by between 40% and 70%, further reducing energy requirements.

We utilize SmartARC™ software to enhance the performance of our EAFs by optimizing the use of electricity and gas and by reducing our energy consumption and process emissions.



DOCUMENTING PRODUCT IMPACTS

Environmental Product Declarations (EPDs) are increasingly required in certain states and by many of our customers as they endeavor to improve the transparency of their supply chains. An EPD is an independently verified document that summarizes a product's life cycle impacts and provides quantitative data regarding where in the product's life cycle impacts are the greatest. EPDs are becoming more of a factor in sourcing decisions in the construction, automotive and renewable energy markets. Information from an EPD can also be used to obtain LEED (Leadership in Energy and Environmental Design) certification from the U.S. Green Building Council.

As EPDs become a more important part of product sourcing, companies involved in the recycling industry such as Nucor stand to benefit by being able to meet the demand for sustainable products. We are actively producing EPDs for products to comply with regulations and to remain a competitive partner. For more information, please click here.

SUPPORTING NEW CLEAN POWER GENERATION

Nucor is partnering with the University of Kentucky (UK) to conduct research funded by the U.S. Department of Energy. The UK Center for Applied Energy Research is developing a carbon capture system to remove carbon dioxide from fossil fuel combustion. Nucor Steel Gallatin, LLC in Ghent, Kentucky, is collaborating on this project by treating evolved gas from its EAF to determine if carbon capture systems can be cost-effective at steel mills. The Department of Energy awarded this project nearly $5 million as part of a broader effort to fund the research and development of innovative solutions to decarbonize the natural gas power and industrial sectors.

Sustainability CHARTER MEMBER worldsteel ASSOCIATION 2022

Nucor is proud to be a Charter Member of the World Steel Association Sustainability Charter. As one of the cleanest steelmakers in the world, we are committed to continuously making our operations safer and cleaner for our teammates and the communities we call home. We look forward to working with the global industry to ensure steel remains the foundation of a sustainable world.

Nucor also joined the United Nations 24/7 Carbon-Free Energy Global Compact and is a founding member of the Global Steel Climate Council (GSCC). For more information on these carbon reduction efforts, please refer to the Policy section of this report.





NUCOR CORPORATE ENVIRONMENTAL POLICY

As the largest steel products manufacturer in North America, Nucor recognizes our role in protecting the environment. We value the environment of the communities in which we operate, and recognize its importance to our teammates, their families, and our continued welfare. Protecting the environment is critical to our operations and the company's long-term success. To this end, we endorse the following principles:

PERFORMANCE

To continuously improve the effectiveness of our ISO 14001:2004 or ISO 14001:2015 Environmental Management System (EMS). Nucor will:

- Pursue pollution prevention and waste minimization opportunities;
- Investigate and develop technologies and operations that improve environmental performance;
- Regularly evaluate the EMS and make appropriate improvements.

STEWARDSHIP

Nucor recognizes our potential for environmental impact on the communities in which we operate. We will continuously strive to minimize these effects by evaluating our operations and researching new technologies and opportunities.

RESPONSIBILITY

Environmental protection is the individual obligation of each Nucor teammate and a primary responsibility of management. Nucor requires our contractors, vendors, and suppliers to comply with applicable environmental laws.

STANDARD

Nucor and its divisions will comply with the laws and regulations governing our operations. Environmental compliance is a priority for Nucor management equal with all other business functions.

OUTREACH

Nucor will strive to foster open dialogue so that we may effectively communicate with our teammates, our neighbors, and other concerned parties.



TRAINING TEAMMATES ON THE ENVIRONMENT

The Nucor Environmental University (NEU) is a virtual platform initiated in 2015 to train teammates on environmental compliance, and to connect teammates whose responsibilities include environmental performance.

NEU begins with a "Welcome to Nucor" series, which seeks to provide a thorough understanding of Nucor's approach to environmental management and compliance, along with the tools and resources we offer to help oversee it. This introductory series is followed by courses on laws such as the Clean Air Act, Clean Water Act, and Resource Conservation and Recovery Act. For teammates whose roles require more in-depth training, more advanced courses are available on subjects relevant to their areas of responsibility.

Thus far, more than 2,000 teammates have completed over 20,000 NEU courses and passed more than 11,600 related exams.

WATER USAGE

WATER TOTALS	
	2022
TOTAL FRESH WATER WITHDRAWN (1000 M^3)	31,000
PERCENTAGE RECYCLED	100.0%
PERCENTAGE OF OPERATIONS IN REGIONS WITH HIGH OR EXTREMELY HIGH WATER STRESS	0%

To minimize our impact, we strive to use water as efficiently as possible. We have developed treatment systems to recycle 100% of our water multiple times — as many as 8-10 — before it needs to be discarded. We have also built stormwater retention ponds throughout our operations to collect stormwater runoff for our use. For example, in Louisville, Kentucky, Nucor Tubular Group's utilization of the water from its retention ponds avoids the need to source more than 3.5 million gallons of water per month from the local municipal water supply.

None of our EAF steel mills are located in areas deemed to be High or Extremely High Water Stress Areas. Water is a crucial resource that we rely on for cooling products and machinery. Nucor understands that the large amounts of water that we withdraw for our operations can adversely affect local ecosystems and communities and we are committed to taking all reasonable measures to avoid any potential adverse impacts.

RECYCLING

The primary raw material of Nucor's steelmaking operations is recycled scrap steel or recycled steel. The process of recycling steel in an EAF generates particulate matter emissions that include contaminants such as paint, zinc, chrome and other metals. Initially, this particulate matter, known as EAF dust, is captured and collected in a pollution device called a baghouse. Because these contaminants contain valuable metals, the baghouse dust is recycled to recover these metals. Nucor sends all but a small fraction of the EAF dust it collects to recycling facilities that recover the zinc, lead, chrome and other valuable metals from this dust, which would otherwise be expensive to properly dispose of if it was classified as a hazardous waste under the Resource Conservation and Recovery Act (RCRA).

Whenever possible, Nucor recycles other waste products from our production processes too. This not only prevents potential air and water pollution, it also provides raw materials for other industries.

Nucor mills both beneficially reuse, and sell to external parties, steel slag in road materials as a granular base, embankments, engineered fill, highway shoulders, and hot mix asphalt pavement. The physical, chemical, mechanical and thermal properties of steel slag provide a vital resource for construction companies and activities.





05

POLICY ENGAGEMENT



As North America's largest steel products company, Nucor regularly engages with government officials on regulatory and policy issues that concern our company and the U.S. steel industry, as well as the broader manufacturing sector in which we, and many of our customers, operate. Our key priorities include a level playing field for trade, infrastructure investment, strong Buy America provisions and creating greater awareness of the essential role EAF produced steel must play in a modern and sustainable economy. In recent years, we have been taking a more proactive stance with respect to policy initiatives aimed at mitigating climate change. We are educating policymakers about the energy, emissions and recycling advantages of EAF-based steel production and the need to balance trade and climate policies to guard against offshoring and carbon leakage.

ADDRESSING CARBON EMISSIONS

As a global leader in producing steel with low carbon emissions, Nucor has become involved in international efforts to further reduce emissions. In 2022, Nucor became the first major industrial company in the world to join the United Nations 24/7 Carbon-Free Energy Global Compact, which is aimed at accelerating the decarbonization of the world's electricity systems to mitigate climate change and ensure access to clean, reliable and affordable electricity. Recycling scrap steel into new steel products is currently the lowest emitting steel production process available at scale, but it requires significant amounts of electricity. We believe that growing demand for energy will require utilizing all forms of clean, zero-carbon energy sources, from wind, solar and hydroelectric, to nuclear power.

Nucor is also a founding member of the GSCC, a coalition advocating for a single, transparent global emission standard that is focused on steelmaking emissions so that customers know which companies are producing the greenest steel products. There are other standards being promoted as "sustainable" or "green", but that label steel with GHG emissions intensities much higher than steels produced by EAF steel producers as sustainable or responsible. We are supporting the widespread adoption of the GSCC standard in order to facilitate a more straightforward assessment of steel producers' progress at lowering their GHG footprint.

FEDERAL INFRASTRUCTURE & CLEAN ENERGY SPENDING

Three recent pieces of legislation passed by Congress – the Infrastructure Investment & Jobs Act (IIJA), IRA, and CHIPs Act – are providing hundreds of billions of dollars to rebuild traditional infrastructure, build-out clean energy infrastructure, and re-shore semiconductor chip manufacturing back to the United States. Each of these initiatives is likely to be steel-intensive.

The bipartisan IIJA legislation also includes strong Buy America provisions, which means our infrastructure will be modernized using the cleanest, most sustainable steel in the world. Nucor produces more than a quarter of our nation's raw steel, and we do so with combined Scope 1 and Scope 2 emissions that are less than one-fifth the GHG intensity of a traditional blast furnace producer.

With more than 50% of Nucor's steel going into the construction market, we are well positioned to supply steel for these projects – and we will do so using clean and sustainable American steel. Every time an infrastructure project uses steel from a recycled source, they are choosing to reduce the world's greenhouse gas emissions by a factor of two to four.

TRADE — LEVELING THE PLAYING FIELD

Nucor advocates for a level playing field for American steel manufacturers. The governments of many countries subsidize — or even own — steel producing companies, and this often leads to these companies selling steel at artificially low prices that are harmful to the American steel industry. Foreign steel is also oftentimes produced in a manner that disproportionately impacts the environment and doesn't protect worker safety to the levels we have come to expect in the United States.

The steel Nucor manufactures at our facilities throughout the U.S. is simply more sustainable on many levels. It is made with a higher percentage of recycled content, less and cleaner energy, and consequently has lower GHG emissions per ton produced. In addition, steel manufacturing in the United States must comply with strict standards for worker safety and environmental protection, as required by the Occupational Safety and Health Administration, the U.S. Environmental Protection Agency and other regulatory agencies. In practice, we strive to far outperform minimum regulatory requirements such as these and keep our focus on what is best for long-term value creation that benefits all our stakeholders.

94.3%

With a score of 94.3%, Nucor is in the top tier of all companies, and considered a Trendsetter on the CPA-Zicklin Index, which seeks to bring transparency and accountability to corporate political spending. We continue to evaluate our lobbying activities and political disclosures, aiming for best-in-class standing for both accountability and effectiveness at advancing the interests of Nucor and its stakeholders.





POLITICAL ACTIVITY AND ACCOUNTABILITY

Nucor has a dedicated Public Affairs team which manages our efforts to provide clear and relevant information to governmental agencies and legislative bodies charged with regulating the U.S. steel industry. While doing so, this team conducts itself in a manner consistent with our **Standards of Business Conduct and Ethics** and adheres to all applicable laws and regulations regarding lobbying activities. On a regular basis, the Public Affairs team presents policy priorities, initiatives and expenditures to our Board of Directors and our Governance and Nominating Committee, which has oversight of all lobbying activities. We file quarterly lobbying disclosure forms with the Clerk of the House of Representatives and the Secretary of the Senate as required by the federal Lobbying Disclosure Act. Disclosure forms are also filed as necessary in the 21 states where we engage in lobbying.

Nucor complies with federal, state, and local campaign finance laws and regulations governing political contributions and the disclosure of these contributions. In accordance with federal law, Nucor does not contribute to any political candidates, parties or committees at the federal level. Contributions to federal candidates and committees are allowed only through the Nucor Corporation Political Action Committee, which is funded through voluntary contributions from eligible U.S. teammates. Nucor PAC fully discloses all contributions made and received through reports filed with the Federal Election Commission.

Our lobbying efforts and contributions are used to promote policies favorable to the steel industry and they are not based on the political preferences of any individual employed by Nucor. For further information on our political spending, lobbying and trade association support, please click **here**.



06

COMMUNITY & LOCAL STEWARDSHIP

Nucor's cultural focus on safety and teamwork means how we care for everyone in the Nucor family is central to our mission. When Nucor joins a community, we consider our neighbors part of the Nucor family, too. That's why Nucor is dedicated to the communities where we live and work. Our teammates are empowered to engage their local communities in the same way they are empowered to make independent decisions on the job. As a result, Nucor divisions and teammates contribute time, money and materials to a diverse range of local charities and causes. In the past year, Nucor donated over $20 million to local and national organizations. This figure does not include monies raised by teammates. From schools to hospitals, from veterans to first responders, our community support is driven by the passions of our teammates.

Below are just a few of the many ways we impact the communities in which we live and work.



NUCOR RAISES ONE-MILLION-DOLLARS FOR OPERATION STEEL WARRIOR

Operation Steel Warrior is a combined effort among Nucor divisions to assist the Gary Sinise Foundation (GSF) in building "smart" homes for severely disabled veterans. A "smart" home is a specially adapted, unique home that is made specifically for that particular veteran. No two homes are alike, and they are modified to account for that veteran's injuries and challenges.

The GSF builds a number of these special homes each year. Nucor adopts and supports one GSF veteran each calendar year through combined fundraising efforts across many Nucor divisions. The funds collected at the end of each year are sent to the GSF in the name of the sponsored veteran. Since 2013, Nucor Divisions have assisted ten veterans in receiving their dream home, and this year teammates surpassed the $1,000,000 mark for total funds raised!

In 2020, Nucor started supplying rebar to each and every home the GSF builds whether the veteran is adopted by Nucor or not. This is a tribute to the great teammates at Harris Rebar. So far, 12 homes across the country have received rebar from Harris!

Our latest veteran is US Marine Corps Lance Corporal John Doody, and his special home will be built in 2024. While some participating divisions have matching funds, the bulk of our donations come directly from employee participation. This is an outstanding testimony to the generosity of Nucor teammates.

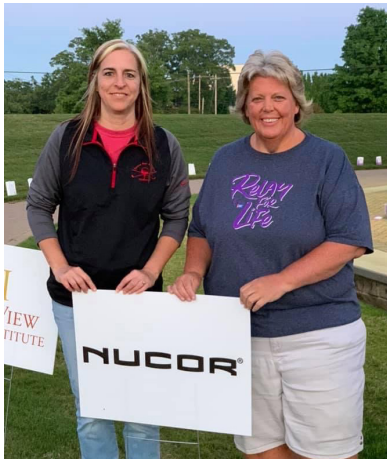
GARY SINISE
★ FOUNDATION ★











NUCOR RELAY FOR LIFE CHAPTERS RAISE MILLIONS OF DOLLARS FOR THE AMERICAN CANCER SOCIETY

Nucor teammates put Nucor's culture of community on display as Nucor Relay For Life Chapters broke multiple fundraising records in 2022. Nucor teams collectively raised over $1,317,000 at events across the country which led to Nucor receiving the Relay For Life Top Company Fundraising Award for 2022.

Four of the Top 10 Team Fundraisers (for teams with less than 50 people) were Nucor divisions, with three of them taking the first three spots. This included Nucor Steel Decatur, Nucor Steel Louisiana, and Nucor Logistics while Nucor Steel Kankakee took seventh place.

A Nucor teammate from Nucor Steel Louisiana was recognized as the number one individual fundraiser in the nation raising over $235,000.

Nucor Steel Hertford, as well as the divisions previously mentioned were also recognized as Teams of Excellence by raising at least $50,000. The Nucor Logistics team won an additional award for the Most Explosive Growth, with an 876% increase over last year's fundraising totals.

Both Nucor Steel Louisiana and Nucor Logistics also received the Hero of Research Award. The award offers Relay For Life teams who raise at least $175,500 during the Relay season an opportunity to name an existing post-doctoral fellowship research grant in honor of a loved one or their team. Once identified, this named grant is active for three years.

In addition to recognizing annual fundraising efforts, the American Cancer Society also recognizes teams that have reached lifetime fundraising milestones. Nucor Logistics was named a Legacy Team after surpassing the $1 million mark and Nucor Steel Decatur became the first ever Heritage Team, raising more than $5 million!

> **"Nucor is top tier and has set the gold standard for all Teams/Company's across the country!"**
>
> American Cancer Society Representative

NUCOR CHARITABLE FOUNDATION

In 2022 Nucor established and funded for the first time the Nucor Charitable Foundation to formalize and build structure around its corporate-level charitable giving. The mission of the Nucor Charitable Foundation is to support and sponsor organizations and programs in four categories: health and safety, education, military and veteran organizations, and organizations that impact the communities in which Nucor Corporation and its affiliates, employees, and families live and work.

In its first year of operation, the Nucor Charitable Foundation awarded more than 20 gifts totaling more than $9 million including $500,000 to the Carolinas Aviation Museum to help fund a new innovation center focused on creating economic pathways through workforce development and STEM education; $3 million for the Charlotte Rescue Mission in support of individuals at the intersection of addiction, homelessness and poverty as they work toward sobriety; $1 million for the Salvation Army Better the Future Campaign; and $1.5 million to the American Heart Association.

In addition to gifts awarded through the Nucor Charitable Foundation, Nucor Corporation also gifted $1 million to the Mayor's Racial Equity Initiative, a public-private partnership to provide solutions-driven, measurable strategies that produce equitable access, opportunities, treatment and outcomes for Charlotte's communities of color.

While Nucor Corporation has always been a team of civically minded individuals, it is exciting to see how much more of an impact we will make as a result of the work of the Nucor Charitable Foundation.

These are just a few examples of the projects the Nucor family takes on every year to make our home communities stronger. Follow us on social media for more on our mission of stewardship.

@NUCORCORP

@NUCORCORPORATION

@NUCOR-CORPORATION



07

GRI INDEX

GENERAL DISCLOSURES		INFORMATION OR PAGE REFERENCE
Organizational Profile		
102-1	Name of the organization	Nucor Corporation
102-2	Activities, brands, products and services	Reference pages 1-8 in our **2022 Nucor Corporation 10-K Filing** for additional information.
102-3	Location of the headquarters	Nucor Corporation 1915 Rexford Road Charlotte, North Carolina 28211
102-4	Location of operations	Please see page 7.
102-5	Ownership and legal form	Nucor is a steel and steel products company organized under the laws of the state of Delaware. Our common stock is listed on the New York Stock Exchange and traded under the symbol "NUE". Reference our **2022 Nucor Corporation 10-K Filing** for additional information.
102-6	Markets served	Please see pages 7 and 8.
102-7	Scale of the organization	See our **2022 Nucor Corporation 10-K Filing** concerning key financials and further information. Please also see pages 17-28 and 102-8 concerning staff numbers.
102-8	Information on teammates and other workers	Please see pages 17-28.
102-9	Supply chain	Nucor's supply chain includes iron ore suppliers, manufacturing equipment suppliers, logistics suppliers, office and IT suppliers, and utility providers.
102-10	Significant changes to the organization and its supply chain	There were no significant changes regarding the organization's size, structure, ownership, or its supply chain.
102-11	Precautionary Principle approach	We consider the environmental impacts of our business decisions, however, the precautionary principle does not explicitly guide those decisions.
102-12	External initiatives	TCFD
Strategy		
102-14	Statement from senior decision-maker	Please see page 2.
Ethics and Integrity		
102-16	Values, principles, standards and norms of behavior	Please see page 36.
102-17	Key impacts, risks and opportunities	Please see page 15.
Governance		
102-18	Governance structure	Please see pages 13-16.

GENERAL DISCLOSURES		INFORMATION OR PAGE REFERENCE
Stakeholder Engagement		
102-40	List of stakeholder groups	Customers, shareholders, teammates, public officials, academics, NGOs, investment analysts, business partners.
102-42	Identifying and selecting stakeholders	We identify important stakeholders continuously through a variety of methods. These include customer reviews, community engagement efforts, volunteer programs and shareholder interactions, among other channels.
102-43	Approach to stakeholder engagement	We conduct focused stakeholder engagement through surveys, social media, formal communication, shareholder outreach programs, team meetings, one-on-one discussions.
102-44	Key topics and concerns raised	Key topics and concerns are encompassed in our material topics which includes: Governance, Employee Safety and Development, Inclusion and Diversity, Environmental Performance, Customer Relations, Community Relations and Supply Chain.
Reporting Practice		
102-45	Entities included in the consolidated financial statements	All data presented in the report represents all wholly owned Nucor operations, unless explicitly noted otherwise.
102-46	Defining report content and topic boundaries	The content for this report was informed by topics of the SASB framework, the GRI Standards and other reporting standards relevant to Nucor and our activities and impacts. The content of this report covers all Nucor global operations.
102-47	List of material topics	Table of Contents.
102-48	Restatements of information	No restatements.
102-49	Changes in reporting	The boundaries for the report have not changed from previous years.
102-50	Reporting period	January 1 to December 31, 2022
102-51	Date of most recent report	April 29, 2022
102-52	Reporting cycle	Annual Reporting
102-53	Contact point for questions regarding the report	For more information contact us at: **investor@nucor.com**
102-54	Claims of reporting in accordance with the GRI Standards	This GRI content index was prepared in alignment with the Core option of the Global Reporting Initiative Standards.
102-55	GRI content index	Please see pages 47-55.
102-56	External assurance	This report was not externally assured.

TOPIC-SPECIFIC DISCLOSURES		INFORMATION OR PAGE REFERENCE
Material Topic: Governance		
The Nucor material topic "Governance" includes the GRI topics "201 Economic Performance," "205 Anti-Corruption," "206 Anti-competitive Behavior" and "419 Socioeconomic Compliance."		
Disclosure on Management Approach		
103-1, 103-2, 103-3		Please see pages 13-16.
GRI Topic-specific Disclosures: 201 Economic Performance		
201-1	Direct economic value generated and distributed	Please see page 8.
GRI Topic-specific Disclosures: 205 Anti-corruption		
205-1	Operations assessed for risks related to corruption	100% of our business operation and every functional area is included in our annual risk assessment, which includes bribery and corruption risk as a standard item.
205-2	Communication and training about anti-corruption policies and procedures	100% of governance body members and teammates have had our anti-corruption policies and procedures communicated to them.
GRI Topic-specific Disclosures: 206 Anti-competitive Behavior		
206-1	Legal actions for anti-competitive behavior, anti-trust and monopoly practices	In 2021, Nucor and other US steel producers were named in a federal antitrust case entitled ***JSW Steel (USA) Inc. and JSW Steel USA Ohio, Inc. v. Nucor Corp., United States Steel Corp., AK Steel Holding Corp., and Cleveland-Cliffs Inc.*** This Texas action alleged that Nucor, U.S. Steel, AK Steel, and Cleveland-Cliffs participated in a group boycott to prevent JSW from purchasing steel slabs. Nucor moved to dismiss this action and the District Court granted Nucor's motion to dismiss with prejudice. JSW appealed the decision to the 5th Circuit Court of Appeals and the parties are awaiting the decision of the court.
GRI Topic-specific Disclosures: 419 Socioeconomic Compliance		
419-1	Non-compliance with laws and regulations in the social and economic area	In 2022, there were no proceedings that were pending or contemplated under federal, state or local environmental, social or economic laws that Nucor reasonably believes may result in monetary sanctions of at least $1.0 million (the threshold chosen by Nucor as permitted by Item 103 of Regulation S-K promulgated under the Securities Exchange Act of 1934, as amended, and which Nucor believes is reasonably designed to result in disclosure of any such proceeding that is material to its business or financial condition). For more information please reference our **2022 Nucor Corporation 10-K Filing**.

TOPIC-SPECIFIC DISCLOSURES		INFORMATION OR PAGE REFERENCE
Material Topic: Employee Safety and Development		
The Nucor material topic "Employee Safety and Development" includes the GRI topics "402 Labor/Management Relations," "403 Occupational Health and Safety," "404 Training and Education," "408 Child Labor," "409 Forced or Compulsory Labor" and "410 Security Practices"		
Disclosure on Management Approach		
103-1, 103-2, 103-3		Please see pages 17-28.
GRI Topic-specific Disclosures: 402 Labor/Management Relations		
402-1	Minimum notice periods regarding operational changes	Nucor complies with all applicable regulations and agreements regarding notices of operational changes to our workforce.
GRI Topic-specific Disclosures: 403 Occupational Health and Safety		
403-1	Occupational health and safety management system	Please see pages 17-28.
403-2	Hazard identification, risk assessment and incident investigation	Please see pages 17-28.
403-3	Occupational health services	Please see pages 17-28.
403-4	Worker participation, consultation and communication on occupational health and safety	Please see pages 17-28.
403-5	Worker training on occupational health and safety	Please see pages 17-28.
403-6	Promotion of worker health	Please see pages 17-28.
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Please see pages 17-28.
403-8	Workers covered by an occupational health and safety management system	Please see pages 17-28.

TOPIC-SPECIFIC DISCLOSURES		INFORMATION OR PAGE REFERENCE		
Material Topic: Employee Safety and Development				
The Nucor material topic "Employee Safety and Development" includes the GRI topics "402 Labor/Management Relations," "403 Occupational Health and Safety," "404 Training and Education," "408 Child Labor," "409 Forced or Compulsory Labor" and "410 Security Practices"				
GRI Topic-specific Disclosures: 403 Occupational Health and Safety				
403-9	Work-related injuries	Work-Related Injuries	Number of Fatalities	Rate of Fatalities
		Teammates	0	0
		High-Consequence Work-Related Injuries	Lost Work Day Cases	Rate
		Teammates	85	0.27
		Recordable Work-Related Injuries	Number	Rate
		Teammates	297	0.95
403-10	Work-related ill health	Work-Related Injuries	Number of Fatalities Resulting from Work-Related Ill Health	
		Teammates	0	
GRI Topic-specific Disclosures: 404 Training and Education				
404-2	Programs for upgrading skills and transition assistance programs	Please see pages 25-28.		

TOPIC-SPECIFIC DISCLOSURES		INFORMATION OR PAGE REFERENCE
Material Topic: Inclusion and Diversity		
The Nucor material topic "Inclusion and Diversity" includes the GRI topic "405 Diversity and Equal Opportunity" and "406 Non-Discrimination."		
Disclosure on Management Approach		
103-1, 103-2, 103-3		Please see pages 26-28.
GRI Topic-specific Disclosures: 405 Diversity and Equal Opportunity		
405-1	Diversity of governance bodies and teammates	Please see page 26-28.
GRI Topic-specific Disclosures: 405 Diversity and Equal Opportunity		
406-1	Incidents of discrimination and corrective actions taken	In the reporting year, Nucor did not have any material incidents of discrimination.
Material Topic: Environmental Performance		
The Nucor material topic "Environmental Performance" includes the GRI topics "301 Materials," "302 Energy," "303 Water and Effluents," "304 Biodiversity," "305 Emissions" and "306 Waste."		
Disclosure on Management Approach		
103-1, 103-2, 103-3		Please see pages 26-28.
GRI Topic-specific Disclosures: 301 Materials		
301-1	Materials used by weight or volume	Please see page 8.
301-2	Recycled input materials used	Please see page 8.

TOPIC-SPECIFIC DISCLOSURES		INFORMATION OR PAGE REFERENCE
Material Topic: Environmental Performance		
The Nucor material topic "Environmental Performance" includes the GRI topics "301 Materials," "302 Energy," "303 Water and Effluents," "304 Biodiversity," "305 Emissions" and "306 Waste."		
GRI Topic-specific Disclosures: 303 Water and Effluents		
303-1	Interactions with water as a shared resource	Please see page 37.
303-2	Management of water discharge-related impacts	Please see page 37.
GRI Topic-specific Disclosures: 305 Emissions		
305-1	Direct GHG emissions (Scope 1)	Please see page 32.
305-4	GHG emissions intensity	Please see page 32.
305-5	Reduction of GHG emissions	Please see page 31.
305-7	Nitrogen oxides (NOX), sulfur oxides (SOX) and other significant air emissions	Please see page 37.
Material Topic: Customer Relations		
The Nucor material topic "Community Relations" refers to our efforts to build powerful partnerships with our customers that help them succeed.		
Disclosure on Management Approach		
103-1, 103-2, 103-3		Please see pages 13-16.
Detailed information on this Non-GRI Topic		
Non-GRI Topic	End-Use Markets Served	Please see page 5.

TOPIC-SPECIFIC DISCLOSURES		INFORMATION OR PAGE REFERENCE
Material Topic: Community Relations		
The Nucor material topic "Community Relations" includes GRI topic "203 Indirect Economic Impacts."		
Disclosure on Management Approach		
103-1, 103-2, 103-3		Please see pages 43-46.
GRI Topic-specific Disclosures: 203 Indirect Economic Impacts		
203-1	Infrastructure investments and services supported	Please see pages 43-46.
203-2	Significant indirect economic impacts	Please see pages 43-46.
Material Topic: Supply Chain		
The Nucor material topic "Supply Chain" includes GRI topics "204 Procurement Practices," "412 Human Rights Assessment," "414 Supplier Social Assessment" and "308 Supplier Environmental Assessment."		
Disclosure on Management Approach		
103-1, 103-2, 103-3		Please see pages 14-16.
GRI Topic-specific Disclosures: 412 Human Rights Assessment		
412-2	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	Each of our divisions uses Visual Compliance to screen all potential international suppliers.
GRI Topic-specific Disclosures: 414 Supplier Social Assessment		
414-1	New suppliers that were screened using social criteria	Each of our divisions uses Visual Compliance to screen all potential international suppliers.
GRI Topic-specific Disclosures: 308 Supplier Environmental Assessment		
308-1	New suppliers that were screened using environmental criteria	Each of our divisions uses Visual Compliance to screen all potential international suppliers.

Nucor Recycled Content Letter Mill Products

NUCOR CORPORATION
1915 Rexford Road
Charlotte, NC 28211
704.366.7000

March 2023

To: All Nucor Customers
Re: 2022 Recycled Content Averages for Nucor Steel Mill Products

Nucor Corporation is North America's largest recycler, using approximately 25.4 million net tons of scrap steel in 2022 to create new products. Nucor uses Electric Arc Furnace (EAF) technology at all its steel recycling facilities. EAFs use post-consumer scrap steel material as the major feedstock, unlike blast furnace operations that use mined iron ore as the major feedstock. Nucor has prepared the following information to help calculate the recycled content for products being used in "Green Building" applications or for projects in the LEED® certification program and to provide recycled content averages for customer use. These percentages are based on the total weight of products produced by the respective entity. The values reflect estimates of the product's pre- and post-consumer scrap content as a percentage of total inputs to the manufacturing process in accordance with ISO 14021:2016.

Recycled Content – Averages for Nucor Products

2022 Recycled Steel Content of Nucor Products (% by Total Weight)	
Product Group	**Average Recycled Content**
Nucor Bar Products	96.6%
Nucor Engineered Bar Products	91.1%
Nucor Beam Products	84.6%
Nucor Plate Products	68.2%
Nucor Sheet Products	60.6%
Total Nucor Steel Combined	77.3%

NUCOR CORPORATION
1915 Rexford Road
Charlotte, NC 28211
704.366.7000

Bar Mill Group

The Nucor Bar Mill Group produces rebar, angles, flats, rounds and other miscellaneous structural and non-structural shapes.

2022 Recycled Steel Content of All Nucor Bar Mill Group Products			
Facility	**Total Scrap Steel Used**	**Total Post-Consumer Recycled Content**	**Total Pre-Consumer Recycled Content**
Auburn, NY	94.2%	83.7%	10.5%
Birmingham, AL	97.6%	88.3%	9.4%
Frostproof, FL	97.3%	94.1%	3.2%
Jackson, MS	97.1%	88.1%	9.0%
Jewett, TX	95.3%	80.0%	15.3%
Kankakee, IL	97.1%	75.7%	21.3%
Kingman, AZ	82.5%	69.1%	13.5%
Marion, OH	97.0%	80.8%	16.1%
Plymouth, UT	96.2%	91.2%	5.0%
Seattle, WA	97.9%	88.5%	9.3%
Sedalia, MO	98.4%	82.4%	16.0%

Engineered Bar Products Group

The Nucor Engineered Bar Mill Products Group produces angles, flats, rounds and other miscellaneous shapes.

2022 Recycled Steel Content of All Nucor Engineered Bar Products Group			
Facility	**Total Scrap Steel Used**	**Total Post-Consumer Recycled Content**	**Total Pre-Consumer Recycled Content**
Darlington, SC	88.0%	51.8%	36.2%
Memphis TN	87.7%	54.4%	33.3%
Norfolk, NE	95.9%	59.8%	36.1%
Wallingford, CT	56.1%	37.1%	19.0%

NUCOR CORPORATION
1915 Rexford Road
Charlotte, NC 28211
704.366.7000

Plate Mill Group

The Nucor Plate Group produce a variety of plate products in a wide range of sizes. Nucor Plate mills use varying amounts of recycled materials based on metallurgical and market demands.

2022 Recycled Steel Content of Plate Mill Products			
Facility	**Total Scrap Steel Used**	**Total Post-Consumer Recycled Content**	**Total Pre-Consumer Recycled Content**
Hertford County, NC	69.3%	54.1%	15.2%
Tuscaloosa, AL	63.9%	34.1%	29.7%
Longview, TX	97.2%	52.3%	44.9%

Sheet Mill Group

The Nucor Sheet Mill Group produces hot band, cold rolled, pickled, and galvanized products. Nucor Sheet mills use varying amounts of recycled materials based on metallurgical and market demands.

2022 Recycled Steel Content of Nucor Sheet Mill Group Products			
Facility	**Total Scrap Steel Used**	**Total Post-Consumer Recycled Content**	**Total Pre-Consumer Recycled Content**
Crawfordsville, IN	82.8%	9.5%	73.3%
Hickman, AR	57.5%	31.6%	25.9%
Berkeley, SC	48.8%	26.7%	22.1%
Decatur, AL	58.9%	30.0%	28.9%
Gallatin, KY	58.0%	28.0%	30.0%

NUCOR CORPORATION
1915 Rexford Road
Charlotte, NC 28211
704.366.7000

Beam Mill Group

The Nucor Beam Group produces narrow and wide flange structural beams, channel, angle, and other structural products. Nucor Steel Berkeley uses a higher percentage of non-scrap iron due to metallurgical product demands for sheet steel produced using the same EAF's.

2022 Recycled Steel Content of Beam Mill Products			
Facility	**Total Scrap Steel Used**	**Total Post-Consumer Recycled Content**	**Total Pre-Consumer Recycled Content**
Nucor Yamato Steel, Blytheville, AR	96.7%	80.0%	16.7%
Berkeley, SC	49.0%	26.8%	22.2%

LEED Information

Nucor can provide a variety of documentation to help projects satisfy LEED v4/4.1 credit requirements. Nucor publishes a Corporate Sustainability Report which can be found on our website at https://www.nucor.com/sustainability/

We continue to develop product-specific Environmental Product Declarations and Health Product Declarations for a variety of product groups. Nucor has developed facility and product specific Environmental Product Declarations as well as participated in multiple industry-wide EPDs. Additionally, Nucor will work directly with any customer requiring product life cycle inventory data or other environmental footprint information.

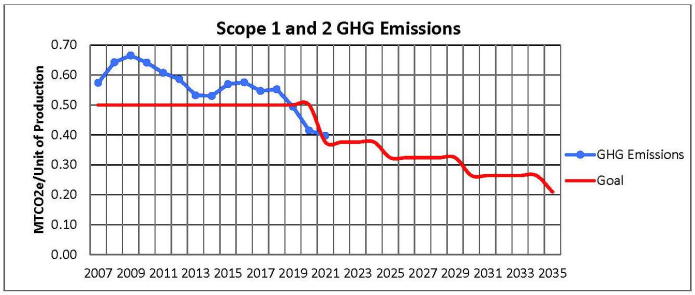
Additional industry information is available online through the Steel Recycling Institute at https://www.steelsustainability.org/

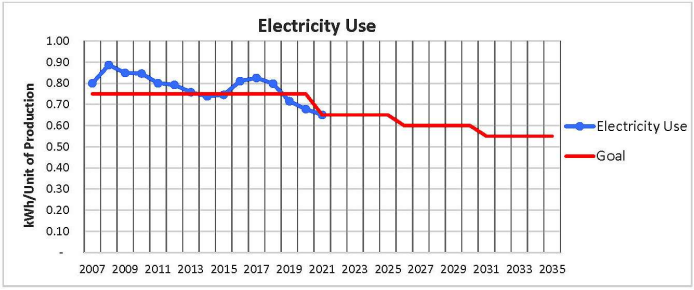
Okonite

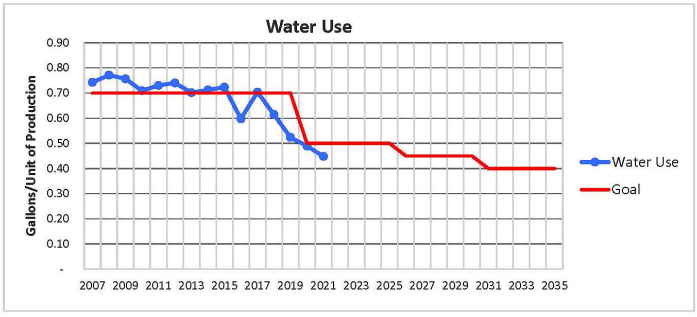


It is the policy of The Okonite Company to:

- Comply fully with the letter and spirit of all applicable environmental laws and regulations;
- Seek opportunities to exceed current standards for energy and water use, environmental protection, pollution prevention and climate change;
- Improve programs to increase energy efficiency, minimize waste, increase recycling, and reduce impacts on the environment;
- Train all employees concerning energy and environmental requirements, and ensure accountability for and recognition of actions;
- Ensure that regular reviews of all energy and environmental aspects of Okonite operations are conducted through an audit plan and corrective action program;
- Communicate effectively with local communities regarding energy and environmental progress and performance;
- Maintain a dialogue with customers, local communities and governmental agencies on energy and environmental matters and seek out partnerships to achieve results more effectively and efficiently;
- Lead efforts to draft and reform laws and regulations to create more effective energy policies and greater environmental benefits; and
- Continually improve energy and environmental performance using data and analytical methods.







One Nature Nursery

Drink the Kool Aid, sign up for our mailing list. ×

What We Do

More-than-organic Plants



You buy organic at the grocery store, why not at the plant nursery? We sell native, edible, and medicinal plants at our retail center, in our own projects, and for custom grow clients. Most of our plants are sourced from either local

Gardens, Parks, and Habitats



We work as artists and builders to improve landscapes of all shapes and sizes using bioregional plants and materials. No two of our commissions are the same. As needed, we collaborate with engineers,

Ecology, Applied



We work as applied ecologists and botanists to monitor and evaluate landscapes of all types. From Stream Hydrology to Expert Witnesses to Ecological Management Plans, our team's scientists are highly qualified to bring professional

genetic populations or, in the case of our edible and medicinal species, from varieties that favor the Hudson Valley's specific climate.

SHOP PLANTS AND MERCHANDISE

architects, surveyors, and other design professionals. We collaborate with a diverse set of ecologically-focused architects, academics, engineers, fabricators, and other leading professionals as needed.

LEARN ABOUT OUR UNIQUE APPROACH

expertise that respects the earth's living systems.

MORE ABOUT OUR SCIENTIFIC CONSULTING

WHO WE WORK FOR

Our clients are people and communities who want to restore, protect, and regenerate land.

We offer an integrated, focused set of services targeted to a diverse marketplace. These markets include:

- Municipalities and Government Agencies (especially those related to Public Open Space and/or Ecological Restoration)
- Residential Property Owners
- Environmental Not-for-Profits
- Private Developers and General Contractors
- Architecture, Engineering, Surveying, Planning, and Landscape Architecture Firms
- Commercial and Industrial Property Owners

CLIENT LIST (Private Projects not Listed)

Arm-of-the-Sea Theater
Ash Creek Conservation Association
The Brooklyn Greenway Initiative
The City of Beacon, NY
Beacon Hebrew Alliance
Camp Rockaway
Common Ground Farm
City of Bridgeport, CT
City of Stamford, CT
DPB Architects, PLLC
Etsy
FAMILY Architecture
The Figure Ground Studio
HDR
Hudson Highlands Nature Museum
Hudson Hills Academy
NYC Department of Environmental Protection
NYC Economic Development Corp.
Oak Point Properties, LLC
PlayLab
+ Pool
Reet Construction, LLC
River Architects
RGR Landscape, Inc.
Safe Harbors of the Hudson
SHoP Architects
Stamford Land Trust
Tectonic Engineering
Trout Unlimited
Ulster County Soil and Water
Vassar College
Verma Engineering

Hudson Land Design
Hudson Transit Oriented Development, Inc.
Iron Star Farms
The Town of Hyde Park
LandAir, Inc.
Landscape Restorations
Michael Singer Studios
Newburgh Community Land Trust
Wee Play Project
WindRI

Garden Center
321 Main Street
Beacon, NY 12508

email: info@onenaturellc.com
phone: (845) 440-1677

Certified B Corporation

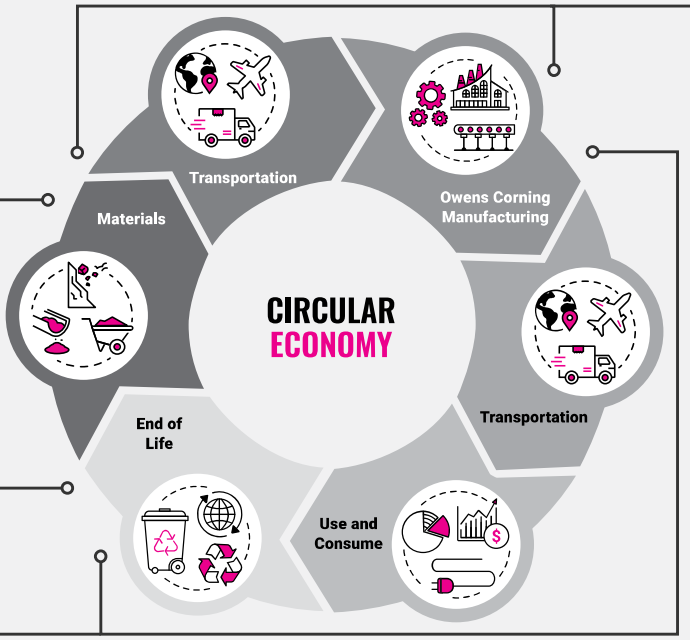
Owens Corning

2030 GOALS FOR THE CIRCULAR ECONOMY

By 2030: We will establish viable circular economy business models involving our materials and how they are used. We can accomplish this by:

Increasing recycled content and decreasing virgin raw materials used in our products.

Developing technical solutions and practical business models for our product materials and packaging, so they can be used for beneficial purposes even after they are no longer used for the original purpose.



Collaborating up and down the supply chain, with customers, suppliers, communities, academics, policy makers, government entities, and other organizations.

OUR APPROACH

The following objectives are essential to the establishment of our circular economy model.

Avoid the use of virgin raw materials whenever possible.
The demand for recycled content among our customers is already strong, and we expect it will continue to grow. Our ability to meet customer expectations regarding product content — with full transparency — will be a key advantage as demand increases. We will rely on the companies with which we do business to help develop strategies that will limit the extraction of virgin raw materials.

Our fiberglass insulation contains anywhere from 53% to 73% recycled content, depending on the product. This includes a high level of post-consumer content in our light-density building insulation, typically coming from recycled beverage containers.



Source materials and serve customers in ways that minimize transportation and its impact.
We are calling on our partners throughout our value chain to help us in our transition to a circular economy model. This includes local sourcing initiatives, including those in which cullet is sourced near our plant locations. More information about our efforts in this area can be found in the Supply Chain Sustainability chapter of this report.

Manufacture products in ways that reduce the amount of waste generated and ensure the least negative environmental impact.
Product innovation is central to this approach, through the development of products that are sustainably made and deliver positive impacts for customers. The ingenuity of our people is also key, as they discover new ways to increase efficiencies in our processes. In addition, the principles of product stewardship help us remain fully transparent as we demonstrate our commitment to sustainability.

Ensure that materials used in our products and packaging remain in the economy indefinitely.
In Europe, end-of-life solutions are already the subject of a strong legislative drive, and Owens Corning is working to go beyond compliance as regulations become increasingly stringent. One challenge we face is finding applications and external companies that accept some of our byproducts, so we are seeking solutions that minimize waste at every step. This often involves taking materials back into our own operations or repurposing materials for alternate uses. Through it all, our goal is to ensure that materials are not discarded into landfills, which will require open collaboration with other companies throughout our value chain.

SUSTAINABILITY

OUR PEOPLE AND OUR PURPOSE THAT IS OUR DIFFERENCE

OUR DEFINITION OF SUSTAINABILITY



For us, sustainability is about meeting the needs of the present while leaving the world a better place for the future. Sustainability is at the heart of our business, from the products we make to the way we make them. We're committed to considering the future in the decisions we make today, and working to expand our handprint while we reduce our footprint.

We've come a long way on our sustainability journey, and we're eager to continue our efforts. As we embark on our third set of long-term sustainability goals, we have broadened our perspective.

2021 Sustainability Report

Our 16th annual sustainability report highlights our progress and our Environmental, Social, and Governance commitments. It's full of stories about how our employees make a difference and data that reflects our successes and our opportunities.

Learn More >

2030 Sustainability Goals

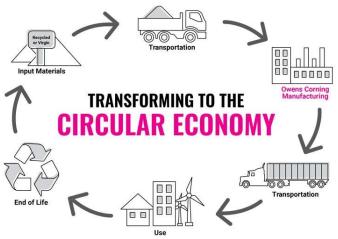
We are committed to considering the future in all we do, with a commitment to care for people and the planet while delivering a material difference to all stakeholders.

Learn More >

TRANSFORMING TO THE CIRCULAR ECONOMY

We're taking action to transform our operations to a circular economy model, in line with our 2030 sustainability goals.

LEARN MORE



RECENT NEWS

More News >

COMPANY NEWS

OWENS CORNING RELEASES 16TH ANNUAL SUSTAINABILITY REPORT

Titled "Building a Sustainable Future," the report presents the results of the company's sustainability work and progress toward its ambitious slate of 2030 goals.

LEARN MORE

EXTERNAL RECOGNITION

OWENS CORNING NAMED ONE OF 2022 WORLD'S MOST ETHICAL COMPANIES® BY ETHISPHERE

On the list for the 5th consecutive year, Owens Corning is one of only three honorees in the Construction

three honorees in the Construction and Building Materials industry.

LEARN MORE

EXTERNAL RECOGNITION

OWENS CORNING IS ONE OF SUSTAINALYTICS 2022 TOP-RATED ESG COMPANIES

Owens Corning's rating of 15.2 placed it in the "low risk" category and represents one of the lowest scores among the 134 companies in the Building Products industry group on the list.

LEARN MORE

BUILDING A SUSTAINABLE FUTURE

We've come a long way in our sustainability journey, and we're excited about the work ahead. Learn more about our aspirations, initiatives, and progress.

MESSAGE FROM OUR CEO & CSO



Guiding Aspirations for Sustainability at Owens Corning

Our sustainability goals are built on three key pillars:

- **Expanding our product handprint**. We endeavor to increase the positive impacts our products have on the world.
- **Reducing our environmental footprint**. We seek to limit the negative impact our operations have on the environment.
- **Increasing our social handprint**. We work to safeguard people's safety and help ensure that they live with health, happiness, and human dignity.

In each of these areas, we have set ambitious goals for 2030 that are science-based and focused on outcomes – and will require the engagement and ownership of our entire company to be successful.

The goals are the way we will measure our progress in fulfilling our guiding aspiration for 2030. We are working to:

- double the positive impact of our products;
- halve the negative impact of our operations;
- eliminate injuries and improve the quality of life for our employees and their families;
- advance our inclusion and diversity;
- and have a positive impact on our communities.

We are committed to considering the future in all we do, with a commitment to care for people and the planet while delivering a material difference to all stakeholders.

2030 SUSTAINABILITY GOALS

Pinelands Nursery

OUR COMMITMENT TO SUSTAINABILITY

We've always prided ourselves on our sustainability efforts. A few years ago, we joined the New Jersey Sustainable Business Registry becoming the 2nd nursery to do so! Since we were already doing many things that qualified us for the registry, it was a no-brainer for us to join. Here are a few of the things we do that help us be sustainable:



Pollinator Friendly

We're a native plant nursery. How could we not pride ourselves on our pollinator friendliness? In addition to growing plants that pollinators just plain love, we've created 30+ acres of pollinator habitat with our seeds fields and surrounding buffers. If that wasn't enough, a few of our employees are beekeepers as well. We actually have over 20 working beehives on our farms. In addition to helping pollinators, our nursery is completely neonicotinoid free. To top it all off, our past president, Don Knezick, was honored as the Pollinator Partnerships Pollinator Steward of the Year in 2015.



Water Conscious

We've always been water conscious at the nursery. We started by recapturing irrigation and rain water to use for irrigation in other parts of the nursery. We switched some of our larger pots to drip irrigation, so there was less water loss. We recently invested in an automatic watering system so that plants only get the precise amount of water that they need and not a precious drop more! The cherry on top is that we got our team reusable water bottles to reduce plastic and water waste.



Environmentally Focused

Science shows that native plants are super beneficial to the environment. In an effort to be even more environmentally conscious, we took our efforts one step further. The boxes we use for shipping are made from recycled materials. We have solar panels on the roofs of our buildings that create much of the electricity we use for the year. In addition, we typically donate over $30,000 worth of trees, plants, and seeds each year to deserving municipal and non-profit restoration projects.

Subscribe to our newsletter for weekly availabilities!

email address

Subscribe

CONTACT US

323 Island Road,
Columbus, NJ, 08022
US
609-291-9486
web@pinelandsnursery.com

© 2022 All Rights Reserved. Designed / Developed by evolutionX.io

Pioneer Industries LLC.

Sustainability and Sustainable Building Solutions from ASSA ABLOY

ASSA ABLOY

The global leader in door opening solutions

ASSA ABLOY Sustainability Commitments

United States Green Building Council Information

LEED and High Performance Door and Hardware Contributions

LEED Case Studies from ASSA ABLOY Group Brands

High Performance Doors & Hardware for Energy Efficient Buildings

Additional Information



ASSA ABLOY Sustainability Commitments

ASSA ABLOY Global Sustainability Philosophy

Certified Green Building Space Projected Growth

Sustainability Reports & Global Reporting Initiative

Sustainable Innovation Process

Sourcing and Suppliers

Certified Environmental Management Systems

Carbon Disclosure Project

UN Global Compact

Regenerative Network

Habitat for Humanity

Global Recognition from Stakeholders

United States Green Building Council Information

LEED and High Performance Door and Hardware Contributions

LEED Case Studies from ASSA ABLOY Group Brands

High Performance Doors & Hardware for Energy Efficient Buildings

Additional Information

ASSA ABLOY Sustainability Commitments



ASSA ABLOY

The global leader in door opening solutions

ASSA ABLOY Sustainability Commitments

ASSA ABLOY Global Sustainability Philosophy

Certified Green Building Space Projected Growth

Sustainability Reports & Global Reporting Initiative

Sustainable Innovation Process

Sourcing and Suppliers

Certified Environmental Management Systems

Carbon Disclosure Project

UN Global Compact

Regenerative Network

Habitat for Humanity

Global Recognition from Stakeholders

United States Green Building Council Information

LEED and High Performance Door and Hardware Contributions

LEED Case Studies from ASSA ABLOY Group Brands

High Performance Doors & Hardware for Energy Efficient Buildings

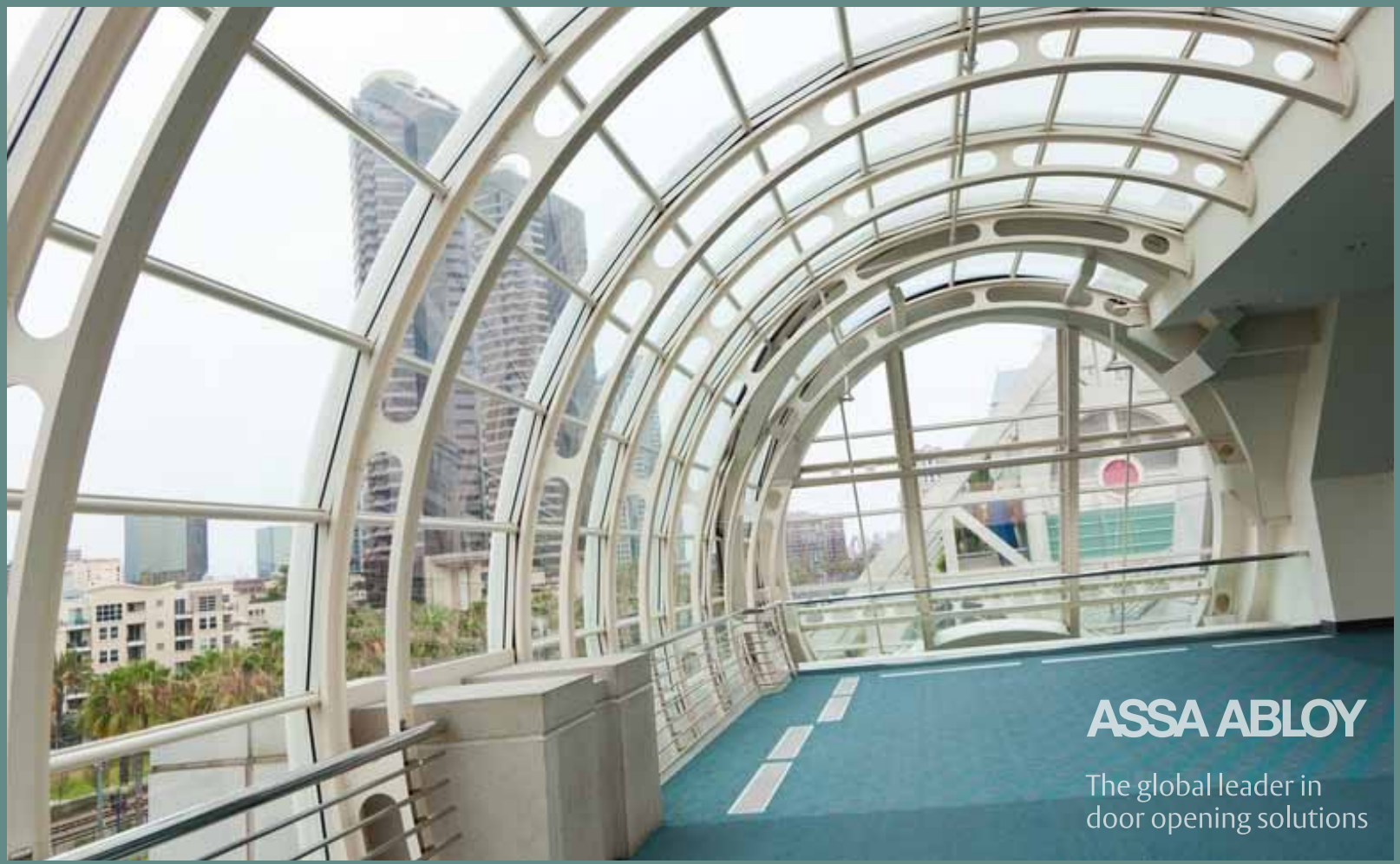
Additional Information

ASSA ABLOY Global Sustainability Philosophy

ASSA ABLOY is committed to providing products and services that are environmentally sound throughout the entire production process and the product life-cycle

Our unconditional aim is to make sustainability a central part of our business philosophy and culture, but even more importantly is the job of integrating sustainability into our business strategy

Source: ASSA ABLOY Sustainability Policy



ASSA ABLOY Sustainability Commitments

ASSA ABLOY Global Sustainability Philosophy

Certified Green Building Space Projected Growth

Sustainability Reports & Global Reporting Initiative

Sustainable Innovation Process

Sourcing and Suppliers

Certified Environmental Management Systems

Carbon Disclosure Project

UN Global Compact

Regenerative Network

Habitat for Humanity

Global Recognition from Stakeholders

United States Green Building Council Information

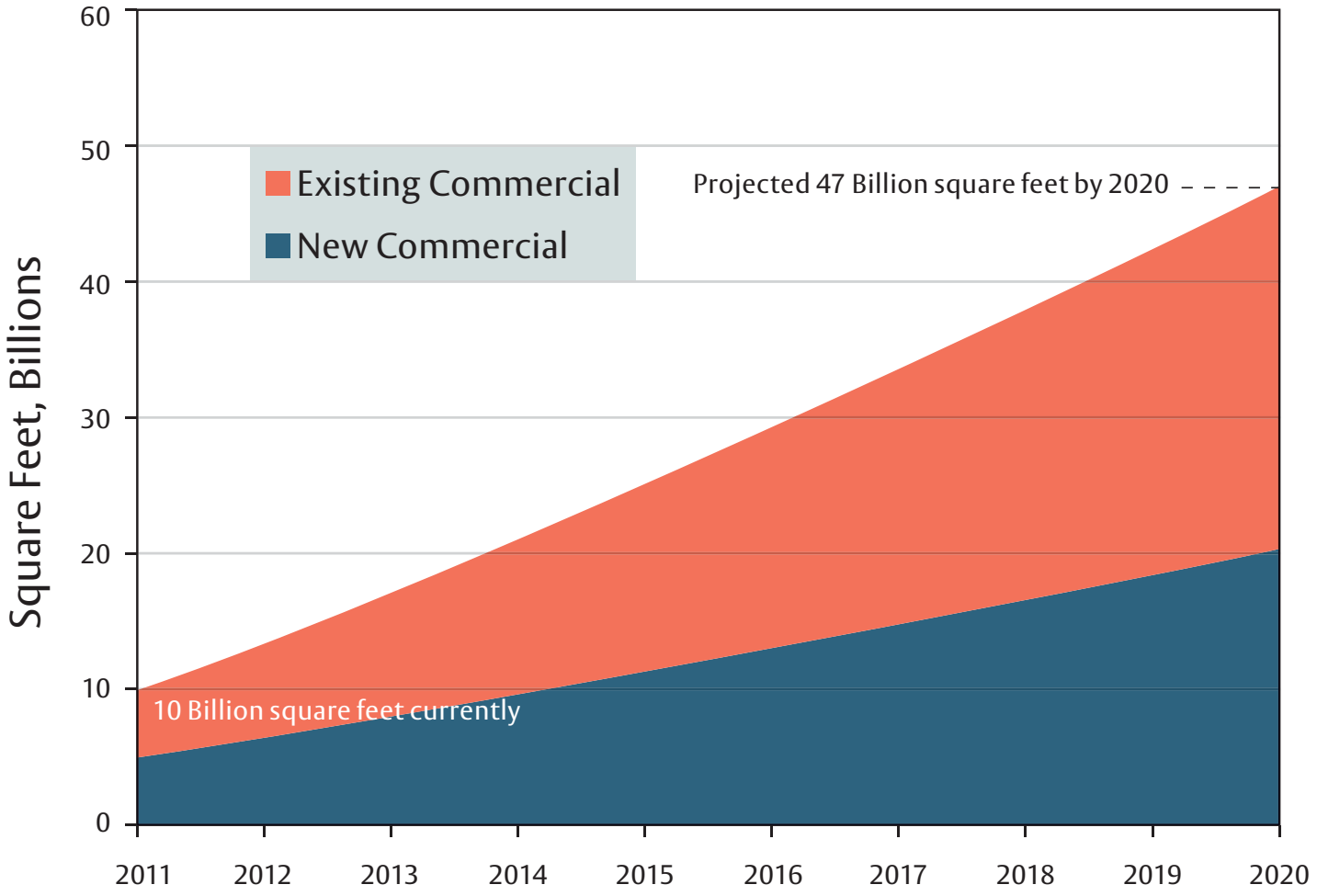
LEED and High Performance Door and Hardware Contributions

LEED Case Studies from ASSA ABLOY Group Brands

High Performance Doors & Hardware for Energy Efficient Buildings

Additional Information

Certified Green Building Space Projected Growth



ASSA ABLOY

The global leader in door opening solutions

PPG Amercoat



Overview of PPG's economic, environmental and social impact

Data Highlights

DOWNLOAD

	2017	2018	2019	2020	2021
Economic					
Net sales from continuing operations (millions)	$14,748	$15,374	$15,146	$13,834	$16,802
Net income from continuing operations (millions)	$1,369	$1,323	$1,243	$1,056	$1,420
Adjusted earnings per diluted share from continuing operations[1]	$5.86	$5.92	$6.22	$6.12	$6.77
Dividends per share	$1.70	$1.86	$1.98	$2.10	$2.26
Environmental[2]					
Percent of sales from sustainably advantaged products	32	32	33	35	38
Total waste disposed (thousand metric tons)	147.10	140.98	106.97	85.77	84.97
Waste disposal intensity (metric tons per 100 metric tons of production)	3.52	3.34	2.69	2.33	2.20
Hazardous waste generated (thousand metric tons)	114.06	112.49	105.86	88.21	89.31
Recycled or recovered hazardous waste (percent)	49	48	46	49	54

	2017	2018	2019	2020	2021
Non-hazardous waste generated (thousand metric tons)	115.78	107.89	73.96	62.38	67.98
Recycled or recovered non-hazardous waste (percent)	22	23	33	34	36
Water withdrawn (million cubic meters)	19.30	18.34	17.94	14.50	16.92
Net water consumption (million cubic meters)	11.10	9.65	9.99	7.13	8.48
Water intensity (cubic meters per metric ton of production)	4.62	4.35	4.50	3.94	4.37
Energy consumption (million gigajoules)	13.48	13.66	12.90	10.57	12.35
Total energy intensity (gigajoules per metric ton of production)	3.21	3.23	3.23	2.87	3.20
Direct energy intensity (gigajoules per metric ton of production)	1.89	1.93	1.90	1.66	1.94
Indirect energy intensity (gigajoules per metric ton of production)	1.32	1.30	1.33	1.21	1.27
Total greenhouse gas emissions (million metric tons of carbon dioxide equivalents)	1.00	0.99	0.92	0.77	0.84
Total greenhouse gas emissions intensity (metric tons of emissions per metric ton of production)	0.24	0.23	0.23	0.21	0.22
Direct (Scope 1) greenhouse gas emissions intensity (metric tons of emissions per metric ton of production)	0.09	0.10	0.10	0.08	0.10
Indirect (Scope 2) greenhouse gas emissions intensity (metric tons of emissions per metric ton of production)	0.15	0.14	0.13	0.12	0.12
Spills and releases rate (total spills and releases per 1,000 employees)	1.84	1.32	1.25	1.24	1.28
Social					
Total employees	47,200	47,300	47,600	46,900	49,300
Fatalities	0	1	0	0	0
PPG injury and illness rate	0.31	0.27	0.32	0.26	0.26
Sites implementing a wellness program (percent of sites with 50 or more employees)	70	58	70	70	90
Charitable contributions (millions)	$10.50	$9.10	$11.80	$13.00	$13.30
Sites implementing the PPG Community Engagement Framework (percent)	75	70	65	80	80
Employee volunteer hours[3]	17,000	24,802	36,000	3,587	11,750

[1] Beginning in 2021, the Company reports adjusted earnings per diluted share excluding amortization expense relating to intangible assets from completed acquisitions. Adjusted earnings per diluted share for 2020 has been recast to exclude acquisition-related amortization expense. For detailed information regarding these adjustments, see the Regulation G Reconciliation in Item 7 of our 2021 Form 10-K.

Communities program and Charity Partner program in Europe, Middle East and Africa.

FOLLOW PPG

BUSINESSES

REGIONS

CORPORATE

The *PPG logo, Agilon, Aquabase, Colorful Communities, Coraflon, Envirobase, Hi-Sil, Nexa Autocolor, We protect and beautify the world, Versaflex, PPG Hi-Temp, Nutrishield* and *Opticor* are registered trademarks and *B1:B2, Corachar, Lineguard, Moonwalk, Envirocron, Ergoluxe, PPG Paints, Lineguard* and *PPG Safeassure* are trademarks of PPG Industries Ohio, Inc. *Comex* and *Vinimex* are registered trademarks of Consorcio Comex, S.A. de C.V. *Homax* and *Liquid Nails* are registered trademarks and the *Master's Mark, Copper Armor, Fuze*it Max* and *Homax Tex>>Pro* are trademarks of PPG Architectural Finishes, Inc. *Luxuriant* and *Eco Touch* are trademarks of PPG Coatings (Shanghai) Co., Ltd. *Taubman's Easycoat Pro* is a trademark of PPG Industries Australia Pty Ltd. *Dyrup* is a registered trademark of PPG Coatings Denmark A/S. *Desothane* and *Aerocron* are registered trademarks of PRC-Desoto International, Inc. *Ripolin* is a trademark of PPG AC-France. *Ennis-Flint* is a registered trademark of Ennis-Flint, Inc. *Tikkurila* is a registered trademark of Tikkurila Oyj. *Cetelon* is a trademark of Cetelon Lackfabrik GmbH. *Worwag* is a registered trademark of Karl Worwag Lack-und Farbenfabrik GmbH & Co. KG. *Thermodrop* is a registered trademark of Southern Synergy LLC. *Ergo Cup* is a registered trademark and Institute of Industrial and Systems Engineers, Inc. *Ecovadis* is a registered trademark of Covadis Société Par Actions Simplifiée (SAS). All company names and third-party marks appearing in this report are property of their respective owners. © 2022 PPG Industries, Inc. All Rights Reserved.

The *PPG logo* is a registered trademark of PPG Industries Ohio, Inc. © 2022 PPG Industries, Inc. All Rights Reserved. | Legal Notices & Privacy Policies | CA Transparency in Supply Chain Disclosure | Global Code of Ethics | TISC for PPG Architectural Coatings UK Limited | TISC for PPG Industries (UK) Limited | PPG Industries UK Ltd 2017 Gender Pay Gap Report | No Surprises Act Notice

Precast Concrete Sales Company

845.268.4949 pcsinfo@precastconcretesales.com

Precast Concrete Sales Company

Select Page

PRECAST CONCRETE SALES COMPANY

What Can We Do for You?

Contact Us



ABOUT| Precast Concrete Sales Company

Precast Concrete Sales Company was founded in June of 1976 by Raymond M. Fisher (1928-2007). Mr. Fisher had worked most of his career for Omega Concrete Products Co., Inc. In May of 1977, after graduating from Siena College, Gregory Fisher joined the firm….

READ MORE

Our Products

Visit our **PRODUCTS** page to view our **catalog** and to view, print or download our **PDF files**…

PRODUCTS| view

Precast Concrete Sales

Precast Manufacturing Company

Request a Quote

Visit our **REQUEST A QUOTE** page to fill out and submit our **ONLINE Request a Quote form** or to **DOWNLOAD our Request a Quote form PDF**…

REQUEST QUOTE| view

In 1995, the Fishers purchased a precast plant in Phillipsburg, New Jersey. Their new acquisition is called **Precast Manufacturing Company**…

WEBSITE| Precast Manufacturing Company

Hours•Phone•Email

MONDAY: 7:00 - 5:00

TUESDAY: 7:00 - 5:00

WEDNESDAY: 7:00 - 5:00

THURSDAY: 7:00 - 5:00

FRIDAY: 7:00 - 5:00

SATURDAY: 7:30 - 11:30

SUNDAY: CLOSED

(Phone) **845.268.4949**
(Fax) **845.268.4376**

pcsinfo@precastconcretesales.com

WE DO NOT DELIVER OUT OF

THE TRI-STATE AREA

Contact Us



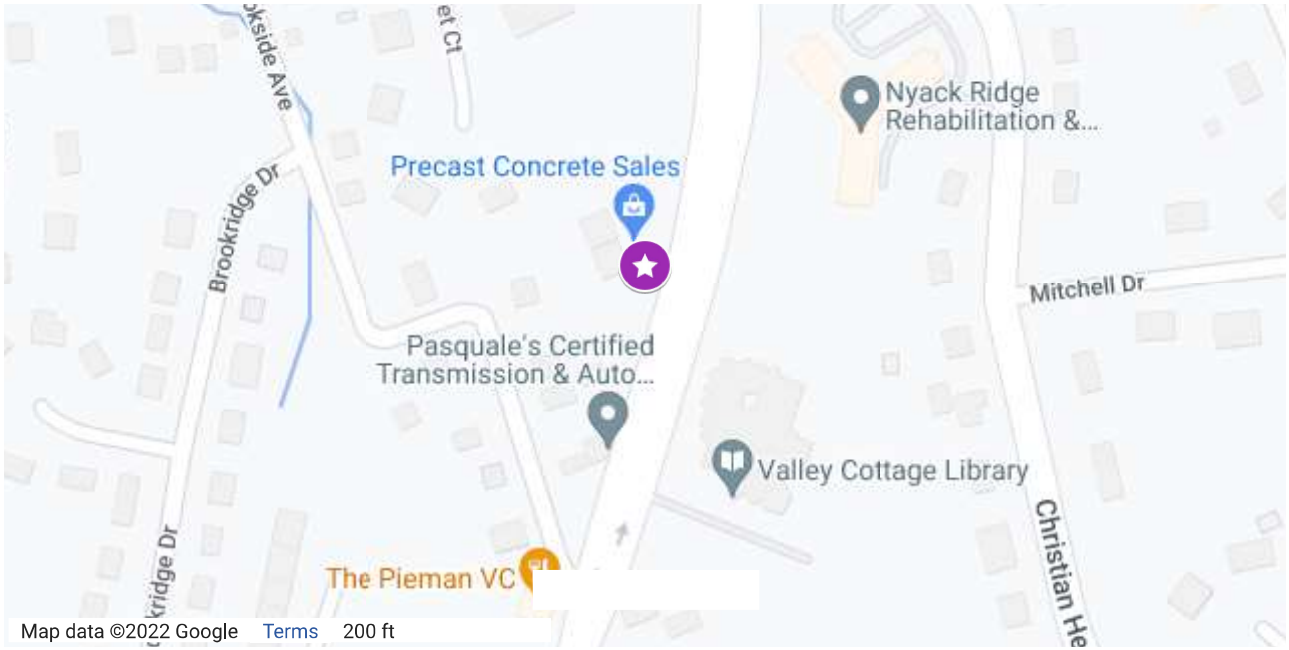
845-268-4949

Map

123 Rt. #303, P.O. Box 516; Valley Cottage, NY 10989

Precast Concrete Sales Co ☆

This map was made with Google My Maps. Create your own.



NPCA CERTIFIED PLANT

New York State Department of Transportation

PRODUCTS| catalog

Copyright © 2022 **Precast Concrete Sales Company** | Website by **D.C. Helms, Inc.**

Propex Fabrics



ENGINEERED ENVIRONMENTAL SOLUTIONS

Propex®
GEOSOLUTIONS

VERIFIED
by SCS GLOBAL SERVICES
ENVIRONMENTAL PRODUCT DECLARATION
BASED ON LCA

Minimal Carbon Footprint

SCS Global has verified that the carbon footprint for 1m^2 of PYRAMAT 75 is 2.7 kgCO2e, from cradle to grave.

Reduced Transportation Emissions

Projects that utilize PYRAMAT or ARMORMAX require significantly less truckloads of material, reducing transportation emissions by up to 95%.

Promotes Vegetation

Our erosion control solutions are engineered to lock seeds and soil in place to promote rapid root development for long-term vegetation. The result is a natural look versus the hard and colorless appearance of rock rip rap or concrete.

Supports Living Shorelines

Using an HPTRM helps maintain cooler water temperatures than traditional hard armoring alternatives. Hard armoring solutions can increase water temperatures, which can adversely impact fish and aquatic life.

Sustainable Manufacturing

Our manufacturing facility is ISO 14001 certified, recognizing that Propex is actively measuring its environmental impact and continuously looking for ways to improve our green commitment.









FREQUENTLY ASKED QUESTIONS

WHAT IS PROPEX'S CARBON FOOTPRINT?

Cradle to grave, the verified carbon footprint for 1m2 of PYRAMAT 75 is 2.7 kg CO2e, which is about the same as driving for 7 miles. This certification verifies that PYRAMAT 75 meets the following criteria:

- World Resources Institute/World Business Council for Sustainable Development's "The Greenhouse Gas Protocol: Product Life Cycle Accounting and Reporting Standard" dated September 2011.
- PAS 2050:2011
- ISO 14064-3:2006

WHAT IS THE DIFFERENCE BETWEEN ENGINEERED PLASTICS AND SINGLE USE PLASTICS?

Engineered plastics, like PYRAMAT® are stabilized to prevent degradation and engineered to withstand UV and other environmental exposure, whereas single-use plastics are not stabilized and begin to breakdown immediately.

HOW LONG DO PROPEX'S PRODUCTS LAST?

High Performance Turf Reinforcement Mats (HPTRMs) are engineered plastics that are designed for long-term or even permanent solutions. PYRAMAT 75 has a functional longevity of 75 years when exposed to daily UV rays. If the PYRAMAT is covered with vegetation, it functional longevity can last much longer.

DO ENGINEERED PLASTICS LEACH WHEN EXPOSED TO WATER?

Propex erosion control products are made from polypropylene, which has been found to contain no leachable components, unlike single-use plastics that are made from various nonstabilized polymers that breakdown into microplastics and leach harmful chemicals. In fact, **the EPA has identified High Performance Turf Reinforcement Mats (HPTRMs) like PYRAMAT as a Best Management Practice (BMP)** for improving water quality because it encourages infiltration of water back into the ground table and filters out sediment and pollutants.

HOW DOES PROPEX'S MANUFACTURING IMPACT THE ENVIRONMENT?

Our facility in Ringgold, GA is ISO 14001 certified. This international certification recognizes that Propex is actively measuring its environmental impact and continuously looking for ways to improve it. Some of the ways we do this is by re-pelletizing previously extruded polypropylene so it can be recycled into new product and installing motion sensor lights in the plant to reduce energy consumption.



VEGETATED INSTALLATIONS









CERTIFIED ISO 14001:2015

CE

Propex® GEOSOLUTIONS

SHAPING THE LANDSCAPE OF INNOVATION™

PropexGlobal.com | 800 621 1273 |

Republic Conduit

NUCOR®
TUBULAR PRODUCTS
REPUBLIC CONDUIT, INC.

LEED Statement

October 18, 2018

To whom it may concern,

All of Republic Conduit's steel conduit products contain a high level of recycled steel. Republic's products are made from domestically melted steel (produced by Mini Mills and Integrated Mill) in different U.S. locations. The following is a description of the Republic Conduit steel conduit products

	Scrap (%)	Pre Consumer (%)	Post Consumer (%)
Galvite® Rigid Steel Conduit (GRC)	30 - 60	20 - 45	8 - 20
Intermediate Metal Conduit (IMC)	30 - 60	20 - 45	8 - 20
Electrunite® Electrical Metallic Tubing (EMT)	30 - 60	20 - 45	8 - 20

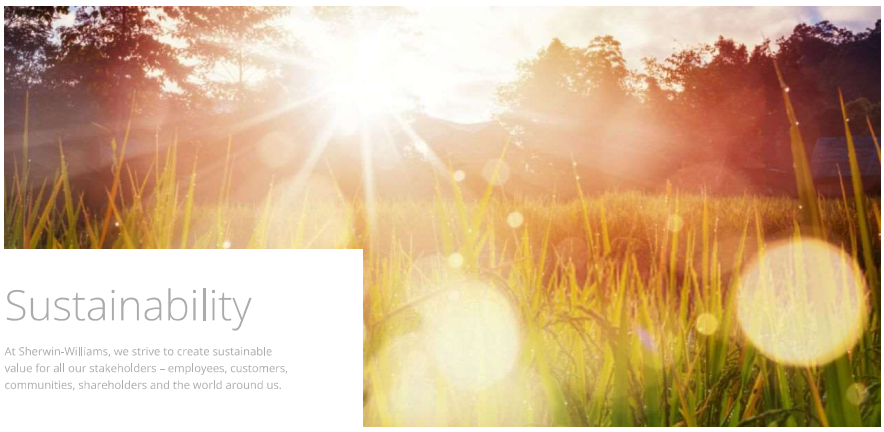
Republic Conduit has two (2) facilities which produce electrical steel conduit products; Cedar Springs, Georgia and Louisville, Kentucky Republic Conduit products do not contain measurable amounts of volatile organic compounds (VOC) when shipped.

Please feel free to contact me if you need additional information.

Sincerely,

Gustavo Fuentes
Quality Manager
gustavo.fuentes@nucor.com

Sherwin-Williams



Sustainability

At Sherwin-Williams, we strive to create sustainable value for all our stakeholders – employees, customers, communities, shareholders and the world around us.

Download The 2021 Sustainability Report

Our Approach

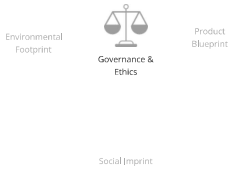
The Sherwin-Williams Company culture is built on trust, respect, execution and inclusion, which guide our commitment to take care of our customers, respect our employees and the environment, create value for our shareholders and support the communities in which we live and work.

Sustainability is rooted in our values and our way of doing business. We embrace an enterprise-wide approach, integrating sustainability into our worldwide business operations and embedding it in our product innovation and product delivery processes.

We have the commitment, strategy, goals and programs in place to drive progress in our top-tier focus areas of: Climate and Carbon, Product Stewardship, Life Cycle Assessment, Occupational Health and Safety, and Talent Acquisition and Employee Engagement.

Sustainability Framework

Accelerating our progress and expanding our positive impact on the world around us
Addressing the focus areas that are most significant to our Company and stakeholders is a key component of our sustainability strategy. We are committed to driving meaningful progress.



SUSTAINABILITY FOCUS AREAS

SUSTAINABILITY GOALS

DOCUMENTS & DOWNLOADS

FAQS

Related News

June 14, 2022

Through this year's theme "Building on the Good", we reflect on the progress we have made in pursuit of our goals and outline the steps we are taking to chart a path for a brighter, more sustainable future. >

November 9, 2021

Yahoo Finance names Sherwin-Williams as one of seven best ESG stocks to buy for holistic profitability – noting, "...SHW stock proves that you can be responsible and profitable." >

November 10, 2021

Newsweek ranks Sherwin-Williams 37th of 500 companies, and 5th in our industry category on America's Most Responsible Companies 2022 list. >

©2022 The Sherwin-Williams Company

Sherwin-Williams 2021 Sustainability Report

SHERWIN-WILLIAMS®

Building on the Good



2021 SUSTAINABILITY REPORT

FORWARD-LOOKING STATEMENTS AND OTHER INFORMATION

This 2021 Sustainability Report contains certain "forward-looking statements," as defined under U.S. federal securities laws. These statements can be identified by the use of forward-looking terminology such as "believe," "expect," "may," "will," "should," "project," "could," "plan," "goal," "target," "potential," "seek," "intend," "aspire" or "anticipate" or the negative thereof or comparable terminology. These forward-looking statements include, but are not limited to, the goals, targets and commitments presented in this 2021 Sustainability Report, and are based upon current expectations, predictions, estimates, assumptions and beliefs concerning future events and conditions. Readers are cautioned not to place undue reliance on any forward-looking statements. Forward-looking statements are necessarily subject to risks, uncertainties and other factors, many of which are outside the control of the Company that could cause actual results to differ materially from such statements and from the Company's historical performance, results and experience. These risks, uncertainties and other factors include such things as: with respect to our ability to successfully meet our goals, targets and commitments presented in this 2021 Sustainability Report, including within the expected timeframe, changes in laws, regulations, prevailing standards or public policy, the alignment of the scientific community on measurement and reporting approaches, the complexity of commodity supply chains and the evolution of and adoption of new technology, including traceability practices, tools and processes; general business and economic conditions; the Company's ability to successfully integrate past and future acquisitions into its existing operations, as well as the performance of the businesses acquired; strengths of retail and manufacturing economies and the growth in the coatings industry; changes in the Company's relationships with customers and suppliers; changes in raw material availability and pricing; adverse weather conditions or impacts of climate change, natural disasters and public health crises, including the COVID-19 pandemic; the duration, severity and scope of the COVID-19 pandemic and the actions implemented by international, federal, state and local public health and governmental authorities to contain and combat COVID-19, which may exacerbate one or more of the aforementioned and/or other risks, uncertainties and factors more fully described in the Company's reports filed with the Securities and Exchange Commission (SEC); and other risks, uncertainties and factors described from time to time in the Company's reports filed with the SEC. Since it is not possible to predict or identify all of the risks, uncertainties and other factors that may affect future results, the above list should not be considered a complete list. Any forward-looking statement speaks only as of the date on which such statement is made, and the Company undertakes no obligation to update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.

This 2021 Sustainability Report does not cover all information about our business. The inclusion of information or references in this report, including the use of "materiality" or similar terms, should not be construed as a characterization regarding the materiality of such information to our business or financial results or that such information is necessarily material to investors or other stakeholders for purposes of U.S. federal securities laws.

The goals, targets and commitments presented in this 2021 Sustainability Report are aspirational and not guarantees or promises that such goals, targets or commitments will be achieved. In addition, historical, current and forward-looking information included in this 2021 Sustainability Report may be based on standards and practices for measuring progress that are still developing, internal controls and processes that continue to evolve, and assumptions that are subject to change. Accordingly, such historical, current and forward-looking information or underlying assumptions may be subject to modifications in future reports due to such developing standards, practices and controls and processes.

Certain sustainability- and ESG-related historical data for dates and periods prior to 2021 presented, discussed, referenced or otherwise included in this 2021 Sustainability Report has been revised to reflect updates made as a result of our internal review processes and developing standards, practices, and controls and processes.

Readers are cautioned not to place undue reliance on any such information set forth in this 2021 Sustainability Report.



Thank you for your interest in the Sherwin-Williams 2021 Sustainability Report. This report reflects the continued progress of our sustainability journey and provides an overview of our sustainability commitments, goals and aspirations under the framework of Environmental Footprint, Product Blueprint and Social Imprint. It provides our enterprise-wide approach to sustainability and the commitments we are making for reducing our environmental footprint and ***Building on the Good*** for our stakeholders – our employees, customers, shareholders and the communities where we operate. This report covers the 2021 calendar year, except where noted.

The content of this report is influenced by the results of our materiality assessment to help ensure our sustainability strategies incorporate topics that are applicable to our Company and important to stakeholders. We have also referenced established sustainability and environmental, social and governance (ESG) reporting frameworks, ratings and rankings – such as the Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB) and the Task Force on Climate-related Financial Disclosures (TCFD). Our SASB Index, TCFD Disclosure and Investor ESG Summary are included later in this report and you can view all our sustainability materials at sustainability.sherwin-williams.com.

Contents

CEO Letter	**2**
About the Company	**3**
Our Sustainability Strategy	**8**
Governance and Ethics	**12**
Environmental Footprint	**18**
Product Blueprint	**28**
Social Imprint	**34**
Appendix	**55**



To Our Stakeholders

At Sherwin-Williams, corporate responsibility and sustainability are central to how we do business. We demonstrate our ongoing commitment to our employees, customers, communities, shareholders and other stakeholders through our continued efforts to develop and implement comprehensive policies, goals and programs in pursuit of our environmental, social and governance (ESG) objectives. We are ***Building on the Good***.

2021 Milestones

2021 marked a significant milestone as we announced an integrated framework for our sustainability strategy built around our three ESG pillars – **Environmental Footprint**, **Product Blueprint** and **Social Imprint** – and centered on a strong foundation of Governance and Ethics. Within these pillars, we unveiled new goals to guide our efforts to address climate change, expand our portfolio of "sustainably advantaged products," and make our Company a safe, more inclusive place to work.

Our 2021 Sustainability Report reflects the progress we have made in pursuit of our goals and outlines the steps we are taking that reflect our commitment to continuous improvement in everything we do. For the first time, we are utilizing the Task Force on Climate-related Financial Disclosures (TCFD) framework to report on our climate-related risks and opportunities. Utilizing the TCFD framework supports our efforts to enhance our environmental reporting and internal processes and initiatives, address investor and stakeholder expectations, and be a leader in using ESG disclosure best practices.

We also formalized our approach to integrating sustainability into our innovation and product development processes by rolling out our Sustainability by Design program across the enterprise in 2021. Through the implementation of the Sustainability by Design program, we are enhancing the sustainability profile of our paint and coatings, while meeting the strict performance criteria expected of our industry-leading products.

We have advanced our commitment to foster a culture that promotes the unique contributions of our employees – empowering our people and Company to reach our full potential, while embracing and celebrating our differences. We also continued to give back to the communities where we live and work – a proud part of our Company legacy.

Demonstrating Excellence in the Face of Obstacles

This past year continued to present unique and unprecedented challenges across our global footprint. Despite significant and industry-wide raw material shortages, high cost inflation, ongoing challenges of the COVID-19 pandemic and worldwide impacts of the conflict between Russia and Ukraine that have emerged since early 2022, our team continues to respond with powerful resiliency.

We challenged ourselves to be a more innovative, solutions-driven business. By continuing to develop our suite of products, listen to our customers, focus on differentiated distribution channels and explore ways to reduce future supply risk, we are well positioned for future success. As a result of the dedication, professionalism and determination of our more than 61,000 employees, we protected the health of each other and the Company, while continuing to operate in line with our sustainability objectives.

A Commitment to Progress

Our stakeholders serve as a compass guiding our sustainability initiatives. Thank you for your interest in and support of our efforts to create value, be a responsible corporate citizen and remain a global leader in working to protect and preserve the communities in which we live and work.

We are committed to ***Building on the Good*** that we have already accomplished and to charting a path for a brighter, more sustainable future. We welcome the opportunity to share our progress with you in our 2021 Sustainability Report and beyond.



John G. Morikis
Chairman and Chief Executive Officer

About the Company

Founded in 1866 by Henry Sherwin and Edward Williams, The Sherwin-Williams Company (NYSE: SHW) has spent more than 155 years creating a legacy of growth, creativity and innovation to meet the needs of our growing customer base and dedicated workforce.







Today, we are a global leader in the development, manufacture, distribution and sale of paint, coatings and related products to professional, industrial, commercial and retail customers.

Every day, our 61,000+ employees provide the energy and experience to build on our track record of success – enabling us to innovate and grow in new and exciting ways. With our people as the foundation of our Company, we offer industry-leading innovation, value-added service and expertise, and differentiated distribution.

With global headquarters in Cleveland, Ohio, Sherwin-Williams® branded products are sold exclusively through a chain of more than 4,800 Company-operated stores and more than 200 branches in the United States, Canada, the Caribbean and Latin America. Additional brands are sold through leading mass merchandisers, home centers, independent paint dealers, hardware stores, automotive retailers and industrial distributors across North America and in parts of Europe and China. We also supply a broad range of highly engineered solutions for the construction, industrial, packaging and transportation markets in more than 120 countries around the world.

Corporate Purpose

We inspire and improve the world by coloring and protecting what matters.

At The Sherwin-Williams Company, we fulfill our purpose through the development, manufacture, distribution and sale of innovative paint and coatings products, striving to deliver benefits for all major stakeholders. **Employees** participate in an inclusive and diverse environment that provides extensive opportunities for professional development and personal wealth-building. **Customers** benefit from a solutions-driven approach emphasizing application-specific expertise, industry-leading innovation, value-added service and differentiated distribution. **Communities** where we operate prosper through job creation, direct financial support, in-kind gifts, employee volunteerism and civic engagement. **Shareholders** can expect a deep and experienced management team focused on long-term value creation through sales growth, return on sales, return on net assets employed and cash generation. Sustainability is embedded within our corporate purpose, with a focus on our Environmental Footprint, our Product Blueprint and our Social Imprint. Our integrated approach to the stakeholders we serve seeks to inspire and improve society as a whole.

Our Values

- Integrity
- People
- Service
- Quality
- Performance
- Innovation
- Growth

Our Business Segments

Sherwin-Williams is comprised of three reportable segments, which provide customers with innovative solutions to ensure their success:

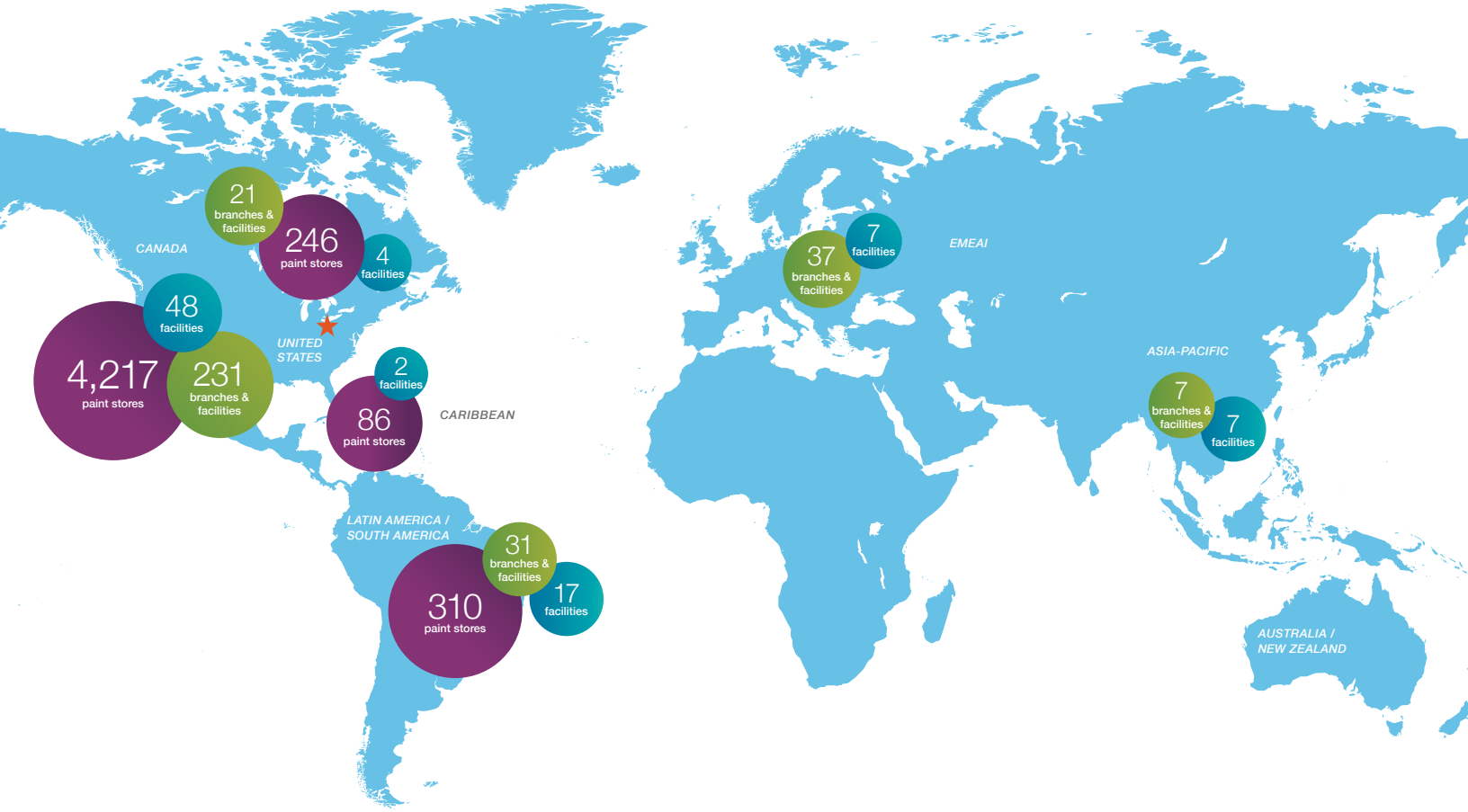
› **The Americas Group** operates the exclusive outlets for Sherwin-Williams® branded paints, stains, supplies, equipment and floor covering in the United States, Canada and the Caribbean. The Group also manufactures and sells architectural paints, industrial coatings and related products in Latin America through Company stores, dedicated dealers and selected retailers.

› **Consumer Brands Group** offers one of the industry's most recognized portfolios of branded and private-label products through retailers across North America and in parts of Europe and China. The Group also operates a highly efficient global supply chain for paint, coatings and related products.

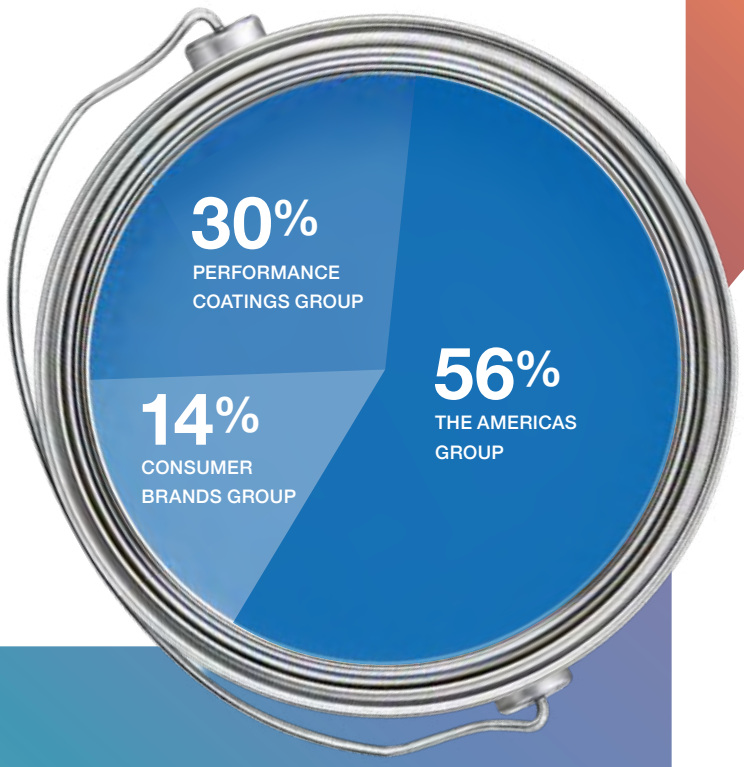
› **Performance Coatings Group** provides a broad range of coatings and finishing solutions to general industrial, industrial wood, protective and marine, automotive refinish, packaging and coil customers in more than 120 countries.

Our Global Reach

● The Americas Group ● Consumer Brands Group ● Performance Coatings Group ★ Corporate headquarters



2021 REVENUES **$19.94 billion**



NUMBER OF EMPLOYEES **61,000+**



120+ COUNTRIES



132 MANUFACTURING & DISTRIBUTION FACILITIES



4,850+ STORES



Awards and Accolades in 2021

Year after year, Sherwin-Williams continues to be recognized for its global leadership, and 2021 was no exception. Sustainability is not just an area of focus, it is ingrained in our culture. Sherwin-Williams is proud to be a supportive, forward-thinking partner not just in the paint and coatings industry, but also in the communities where we operate.

Product Blueprint

- FacilitiesNet®: Vision Award Winner, Interiors – SuperPaint® with Air Purifying Technology
- Metropolis®: Planet Positive Awards – Living Well™ Collection
- Association for Materials Protection and Performance®: Eric S. Cline Award – Zinc Clad® 4100 and Envirolastic® Polyaspartic Urethane
- Association for Materials Protection and Performance®: George Campbell Award – Zinc Clad® III HS, Macropoxy® 646 Fast Cure, Acrolon™ 218 HS
- PaintSquare®: Elevation Award – Resuflor™ Terrazzo TG
- The Queen's Award for Enterprise Magazine: Innovation – FIRETEX® FX6002

Governance and Ethics

- Forbes®: Green Growth 50 – #21
- Investor's Business Daily®: 100 Best ESG Companies
- Newsweek®: America's Most Responsible Companies
- The Wall Street Journal®: 250 Best Managed Companies of 2021
- Yahoo! Finance®: 7 Best ESG Stocks
- BMO®: Best-in-Class for ESG
- MSCI®: ESG Rating improved from 'BBB' to 'A'
- Transport Topics®: 100 Largest Private Carriers in North America

Social Imprint

- Forbes®: World's Best Employer
- Forbes®: America's Best Employers for Diversity
- Forbes®: America's Best Employers for Women
- Forbes®: America's Best Employers for Veterans
- Forbes®: America's Best Employers for New Graduates
- Forbes®: America's Best-In-State Employers
- The Cleveland Plain Dealer®: Northeast Ohio Top Workplaces





Our Sustainability Strategy



The Sherwin-Williams culture is built on trust, respect, execution and inclusion, which guide our commitment to take care of our customers, respect our employees and the environment, and support the communities in which we live and work. Sustainability is rooted in our values and our way of doing business. We embrace an enterprise-wide approach to sustainability – striving to integrate it into every Sherwin-Williams business, region and function worldwide, and embedding it in our product innovation and development processes and in product delivery to our valued customers.

In 2019, we conducted a robust materiality assessment to identify, prioritize and validate the sustainability and ESG topics applicable to our businesses and important to our stakeholders. The following top-tier focus areas identified through that assessment have been incorporated into our sustainability framework – Climate and Carbon; Product Stewardship; Life Cycle Assessment; Occupational Health and Safety; Talent Acquisition; and Employee Engagement. Learn more about our materiality assessment at sustainability.sherwin-williams.com.

We look forward to the work ahead and our next achievements. In 2021, we set ambitious, meaningful goals and aspirations and enhanced our strategy with a strong focus on three pillars: Environmental Footprint, Product Blueprint and Social Imprint. These pillars sit on a foundation of Governance and Ethics, designed to ensure broad engagement and appropriate oversight for sustainability and ESG initiatives throughout the Company.



Environmental Footprint

Our 2030 Goals

Doing Our Part for the Planet: Sherwin-Williams is committed to reducing our environmental footprint. We apply a continuous improvement approach to reducing our carbon emissions, energy use and waste generation while expanding our renewable energy use and recycling methods. Our 2030 Environmental Footprint goals* include:

- Reduce absolute Scope 1 and 2 greenhouse gas emissions by **30%**
- Increase electricity from renewable sources to **50%** of total electricity usage
- Increase operational energy efficiency by **20%**
- Reduce waste disposal intensity by **25%**

** 2019 is the baseline year*



Product Blueprint

Our Product Development Philosophy

Driving Sustainability Through Innovation: Under the Sustainability by Design program, we formalized our approach to integrating sustainability into our innovation and product development processes. We have also worked to further define and extend our portfolio of "sustainably advantaged products." Through life cycle thinking and a strong commitment to product stewardship, we continue to provide world-class products in a safe and responsible manner. 2021 marked a significant year as indicated by the progress below:

Implemented Sustainability by Design program across the enterprise, serving as our proactive, foundational process to aid the growth of our "sustainably advantaged products" portfolio

Established a baseline for "sustainably advantaged products" and developed a plan for expanding this product portfolio in the future

Developed a structured process for measuring and assessing Scope 3 emissions



Social Imprint

Our Commitment to People and Communities

Elevating a Culture of Safety, Inclusion and Community: We are committed to the safety of our global employee base and to fostering a culture of inclusion where differences are welcomed, celebrated and appreciated to positively impact our people and business. Our culture and commitment to our people and inclusion, diversity and equity (ID&E) are important factors in driving employee engagement and attracting, retaining, developing and progressing a diverse pipeline of talent. We also care deeply about supporting and being active in the communities in which we live and work. Our goals and aspirations include:

Reduce recordable case rate to **0.8** by 2025, compared with **1.06** in 2020*

Reduce ergonomic injuries by implementing two ergonomic interventions per year in each manufacturing site

Increase women in management roles to **30%** by 2025, compared with **26%** in 2020*

Increase underrepresented racial/ethnic groups in U.S. management roles to **30%** by 2025, compared with **26%** in 2020*

Achieve and improve upon a favorable score on the Sherwin-Williams Inclusion Index, based on results of our global employee engagement survey

Foster economic inclusion for underrepresented suppliers

** 2020 is the baseline year*



Governance and Ethics

Our sustainability and environmental, social and governance (ESG) framework is centered on a strong foundation of governance and ethics, with our governance structure designed to ensure broad engagement and appropriate oversight across the organization.

IN THIS SECTION:

Sound Corporate Governance Practices

Board Composition and Diversity

Our Responsible Compensation Practices

Board Oversight

ESG and Sustainability Governance

Ethics, Integrity and Compliance

FOR MORE INFORMATION

Additional information about our board and committees can be found in our Corporate Governance documents and Committee Charters, 2022 Proxy Statement and other materials at **investors.sherwin-williams.com**.

Sound Corporate Governance Practices

Our corporate governance practices are designed to enable our Board of Directors to set objectives and monitor performance and to strengthen the accountability of the board and management. We actively monitor our corporate governance practices to ensure we continue to manage our business in accordance with high standards of ethics, business integrity and corporate governance. The following table highlights some of our corporate governance practices and policies.

Corporate Governance Practices and Policies

Annual election of all directors	Mandatory retirement age of 72 for directors
Majority voting standard and resignation policy for directors in uncontested elections	Orientation program for new directors
Director overboarding policy	Annual board and committee self-assessments
Proxy access rights available to 3-year, 3% shareholders, for up to 20% of board	Executive sessions of independent directors are held with each regularly scheduled board meeting
10 of 11 directors are independent	Directors have complete access to management
Robust independent lead director role and governance responsibilities	Prohibition on hedging and pledging of our securities
Board committees are entirely composed of independent directors	Significant director and executive stock ownership guidelines
Board oversight of risk management	Policy to include women and racially or ethnically diverse persons in the pool of candidates from which director nominees are chosen
Board and committee oversight of key sustainability and ESG policies and strategies	Director matrix that includes consideration of self-identified diversity characteristics, such as gender, race and ethnicity

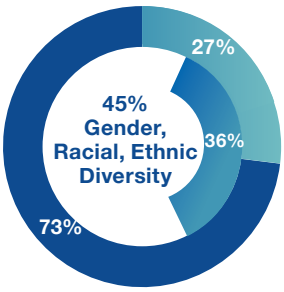
Source: 2022 Proxy Statement

Board Composition and Diversity

Our board believes our directors should have a diverse mix of experiences, qualifications, attributes and skills that enables the board to provide effective oversight of our management and business. The Sherwin-Williams board uses a thoughtful approach to board composition to ensure a proper balance between the addition of new directors who bring fresh and diverse perspectives and the stability of the board as a whole. In 2021, the board adopted a policy to include, and to request that any search firm it engages include, women and racially or ethnically diverse persons in the pool of candidates from which potential directors are chosen. Our directors reflect the board's efforts and commitment to achieving diversity, including with respect to age, gender, race and ethnicity, and the need for periodic refreshment to maintain this commitment.

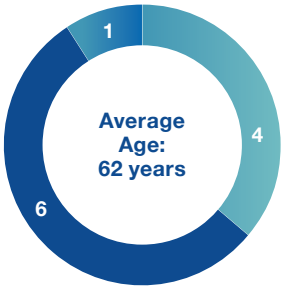
Board Composition and Skills Summary

Diversity*



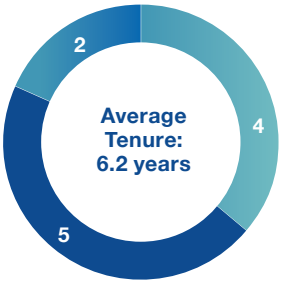
- Female
- Male
- Racial/Ethnic Diversity

Age



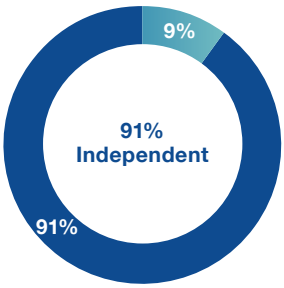
- ≤60 years
- 61-69 years
- 70+ years

Tenure



- ≤4 years
- 5-9 years
- 10+ years

Independence

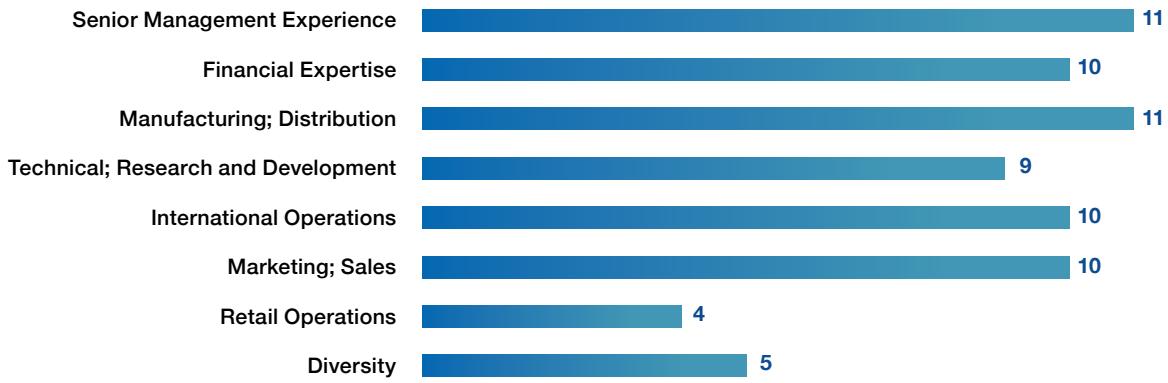


- Independent
- Non-Independent

* Based on directors' self-identified diversity characteristics

Source: 2022 Proxy Statement

Balanced Mix of Skills and Experience



Source: 2022 Proxy Statement

Our Responsible Compensation Practices

We design and manage our compensation programs to align with our overall business strategy and to focus our employees on delivering sustained financial and operating results. It is important that our compensation programs: (a) be competitive; (b) maintain a performance- and achievement-oriented culture; and (c) align the interests of our executives with those of our shareholders.

Our compensation programs, practices and policies demonstrate our commitment to responsible pay and governance principles.

We review and evaluate our compensation programs, practices and policies on an ongoing basis, and modify them to address evolving best practices, developments in and factors affecting our business, input from our shareholders, market compensation information and changing regulatory requirements. The following table highlights some of the more significant best practices we have adopted, and the practices we have avoided, to maintain our commitment.

Responsible Executive Compensation Practices

Annual say-on-pay vote	Clawback and recapture policy
Independent compensation committee	No excessive or unnecessary risk-taking in compensation policies
Independent compensation consultant	No excessive perks
Peer group benchmarking to median pay	No payment of dividend equivalents on unvested restricted stock units
Emphasis on performance-based pay	Double-trigger vesting of long-term equity incentive awards upon change in control
Responsibly administered incentive compensation programs	No repricing or replacing of underwater stock options without shareholder approval
Balanced compensation structure	No above-market earnings on deferred compensation
Diversified performance metrics tied to financial and operating performance	No employment agreements with named executives
Significant stock ownership guidelines for our directors and executives	

Source: 2022 Proxy Statement

Board Oversight

While our management and their teams are responsible for assessing and managing the Company's business, day-to-day affairs and exposure to various risks, our Board of Directors has responsibility for the oversight of management and various risks. Our board committees assist with this oversight responsibility by reviewing specific risk areas, including certain ESG and sustainability risks, and making regular reports to the board.

Our board committees are composed entirely of independent directors and include the Nominating and Corporate Governance Committee, Compensation and Management Development Committee, and Audit Committee.

Board and Committee Responsibilities

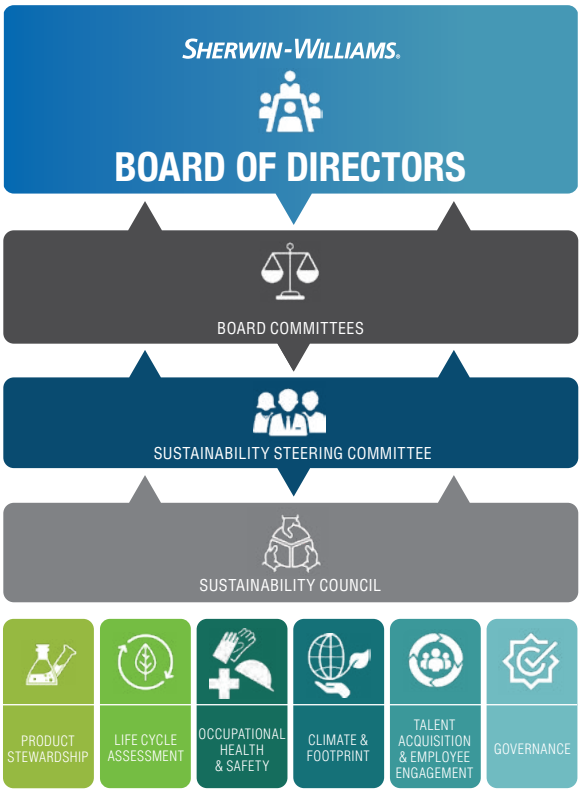
	AUDIT COMMITTEE	COMPENSATION COMMITTEE	NOMINATING COMMITTEE	FULL BOARD OF DIRECTORS
Enterprise Risk Management	●			●
Cybersecurity	●			●
Financial	●			●
COVID-19 Response	●	●		●
Compensation Policies and Practices		●		●
Management Development and Succession		●		●
Attraction, Retention and Development of Talent		●		●
Inclusion, Diversity and Equity		●		●
Board Succession			●	●
Corporate Governance			●	●
Environmental (including the impacts of climate change)			●	●
Health and Safety			●	●
Product Stewardship			●	●
Sustainability			●	●
Corporate Social Responsibility			●	●
Public Policy and Political Engagement				●

Source: 2022 Proxy Statement

ESG and Sustainability Governance

Our Sustainability Steering Committee seeks to ensure an enterprise-wide approach to developing and overseeing our ESG and sustainability strategies and initiatives, and to drive alignment across the organization to address emerging risks and opportunities. The committee includes members of senior management and other senior leaders across the organization, including those within the areas of Environmental, Health and Safety and Regulatory Affairs, Legal, Investor Relations, Finance, Corporate Communications, Human Resources, Global Supply Chain, Global Sustainability and Global Operations.

Our Sustainability Council consists of subject matter experts responsible for leading working groups that manage various ESG and sustainability initiatives, policies and programs. The council has six working groups to address the focus areas across our sustainability framework and our governance structure. The council focuses on deeper integration of sustainability and other ESG initiatives throughout the Company, the proactive identification of emerging ESG and sustainability trends and opportunities, and driving the Company's progress with respect to its sustainability initiatives, goals and aspirations. The council periodically reports on progress to the Sustainability Steering Committee, and members of the Steering Committee provide periodic updates to the board and its committees.



Ethics, Integrity and Compliance

We are dedicated to the highest standards of business ethics and integrity, and believe in aligning our business activities with our guiding values to maintain our foundation for continued growth as a leading global paint and coatings company. Our collective actions impact our reputation and credibility with our employees, customers, suppliers, communities and shareholders. We are committed to ensuring work-related activities reflect standards of integrity, loyalty, concern for others and accountability.

The Sherwin-Williams Code of Conduct serves as a guide for ethical decision-making and upholding the highest ethical behavior at all levels of the Company, including adhering to these tenets:

- Maintain high standards of integrity
- Win on our merits
- Be loyal to our Company and fellow employees
- Take responsibility
- Grow in character
- Treat others as you would like to be treated

Each year, we conduct global compliance training with our employees to help ensure that integrity guides our business every day, and in every decision we make. In addition, our Supplier Code of Conduct, applicable to all suppliers globally, requires that our business partners operate in a manner that is consistent with our values.

Sherwin-Williams values and respects the human rights of all people, including our employees and persons engaged with us – such as suppliers, vendors, subcontractors at all tiers and their employees. We are committed to working with our suppliers to ensure that human rights are respected and that no trafficking of persons, forced labor or child labor exists at any level in our supply chain. More information on our commitment is available in our Human Trafficking Policy.

As outlined in our Code of Conduct, we encourage employees to report potential policy or ethics violations and any type of harassment, threats or safety concerns to management or the Loss Prevention team, or anonymously using our EthicsPoint Reporting System. EthicsPoint is an independent, third-party incident management reporting provider that administers our ethics helpline and web portal.



Environmental Footprint

IN THIS SECTION:

Climate and Carbon

Energy Efficiency

Waste Reduction

EHS Governance and Strategy

Environmental Performance Data

At Sherwin-Williams, demonstrating environmental responsibility across our global operations is fundamental to our business. We are committed to decreasing our environmental footprint by reducing emissions and maintaining responsible consumption and production practices. Mitigating climate change is a central focus of our sustainability efforts, and our work to be an environmentally responsible corporate citizen reflects our commitment to advancing the interests of our stakeholders. We are dedicated to doing our part to reduce our impact on climate change.

We believe in measuring our progress and being accountable by setting goals to advance our objectives. We apply a continuous improvement approach to reducing our carbon emissions, energy use and waste generation, while expanding our sourcing of renewable energy and recycling methods. We recognize that while change takes time, gradual improvements will help us realize our objectives and make a lasting impact across our global operations.

Year after year, we challenge ourselves to optimize processes, institute new programs and retrofit existing facilities to reduce our environmental footprint.



Environmental Footprint

As determined by our materiality assessment, our Environmental Footprint is comprised of the following areas of focus: Climate and Carbon, Energy Efficiency and Waste Reduction. In 2021, we remained dedicated to reducing our environmental footprint in the near term, while laying a strong foundation for our longer-term environmental footprint reduction strategy. Our 2030 Environmental Footprint goals – which were designed to be science-based, realistic and achievable – provide quantitative targets that serve as the basis for all our environmentally focused sustainability strategies.

Our 2030 Environmental Footprint Reduction Goals

Sherwin-Williams 2030 goals span the priority areas of our Environmental Footprint. Rolled out in early 2021 and benchmarked against a 2019 baseline, these goals build on our past progress and demonstrate a significant evolution in our sustainability strategy and approach. We are committed to the following goals for 2030*:

Greenhouse Gas Emissions

Reduce absolute Scope 1 and 2 greenhouse gas emissions by **30%**

Renewable Energy

Increase electricity from renewable sources to **50%** of total electricity usage

Energy Efficiency

Increase operational energy efficiency by **20%**

Waste Reduction

Reduce waste disposal intensity by **25%**

** 2019 is the baseline year*

Climate and Carbon

Our Climate Strategy

Our climate strategy reflects our Company's comprehensive global effort to reduce our greenhouse gas (GHG) emissions. We strive to ensure our work in this area captures every part of our business – from transportation and materials sourcing to the products we manufacture and sell.

While it has long been a priority, our climate strategy has evolved over time. From 2009 to 2020, we focused our efforts on reducing our GHG emissions intensity, which is the rate of GHG emitted per 100 pounds of product produced. In 2021, we aligned our climate strategy to reflect a science-based targets approach influenced by the Paris Agreement and its goal to limit global warming to well below 2.0 degrees Celsius. Our 2030 goal of reducing our absolute Scope 1 and Scope 2 emissions by 30% compared with a 2019 baseline was developed on this basis. We determined tracking and weighing our absolute GHG emissions, rather than setting an intensity-based goal, better aligned with the global need for mitigating the physical amount of GHGs emitted into the atmosphere over time.

We are taking a comprehensive approach to achieve our 2030 goal, which includes, but is not limited to, virtual power purchase agreements, solar installations, introducing electric vehicles into our fleet and energy efficiency improvements in our operations.

We are aligning our climate-related analysis and reporting with the Task Force on Climate-related Financial Disclosures (TCFD) framework as part of our efforts to quantify our environmental footprint, assess our climate risk, demonstrate transparency and operate in alignment with recognized industry best practices.

This framework will continue to serve as a tool to help us further evaluate our climate-related risks and opportunities, while measuring our progress in line with global standards.

In addition, since 2006, Sherwin-Williams has voluntarily participated in CDP's Climate Change reporting initiative, which catalogs our climate change-related risks, opportunities, governance and communications as they relate to our carbon output.

SHERWIN-WILLIAMS PUBLISHES ITS FIRST TCFD DISCLOSURES

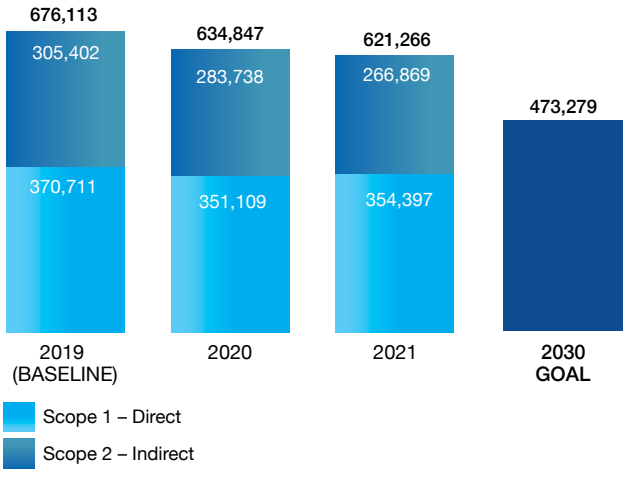
In 2022, we published our first disclosures that align with the Task Force on Climate-related Financial Disclosures (TCFD) framework. Our TCFD disclosures are included in the appendix of this report and posted separately on our website at sustainability.sherwin-williams.com. These disclosures reflect our current understanding of our risks and opportunities related to climate change. We value the information we have gleaned from the TCFD analysis and its influence in further developing our climate strategy and initiatives.

Carbon Emissions Performance

The chart below presents total carbon emissions for our global footprint. The decline in emissions from 2020 to 2021 was due to a combination of factors: the continued evolution of the energy grid toward greater use of renewable energy, ongoing energy efficiency initiatives in our facilities (including the installation of light-emitting diode [LED] lighting), and a 5.6% improvement in the fuel efficiency of our fleet vehicles. We remain committed to our 2030 goal to reduce absolute Scope 1 and 2 greenhouse gas emissions by 30% compared with our 2019 baseline. For more information on our environmental data, see the Sherwin-Williams Investor ESG Summary in the appendix of this report and on our website at **sustainability.sherwin-williams.com**.

Total CO_2e Emissions

metric tons, all global locations





FEATURE STORY

Sherwin-Williams Drives Electric Vehicle Adoption

To continue building on our long-standing track record of fleet reliability, Sherwin-Williams developed a strategic pilot program to test the integration of electric vehicles (EVs) into our delivery and sales fleet. By the end of 2021, through a series of successful rollouts, the pilot program grew to include 22 vehicles with electric technology – with future expansion of EVs and hybrid technology on the horizon.

"The goal of the project is to prepare and test the technology," said Joseph Lukacs, Sherwin-Williams Global Director of Fleet Operations. "This will help us determine if utilizing EVs is feasible in both our passenger and delivery fleets, without impeding sales or service."

Lukacs and his team worked with suppliers to identify a series of EVs that would fit Company needs. "For example, one of our subcompact hatchback vehicles in the pilot program has a range of 240 miles and a payload capacity of 500 pounds," Lukacs explained. "This is perfect for handling smaller loads where space provides a challenge for the larger delivery vehicles – all while giving off zero emissions."

The Fleet Operations team plans to continue the momentum by engaging broader testing groups across multiple divisions throughout the Company, while continuing to monitor new technology. The continuation of this expansion supports the Company's commitment to reduce our carbon emissions; the more electric and hybrid vehicles we add to our delivery and sales fleet, the less gas-powered energy is consumed Company-wide.

"It's an exciting time and ultimately we want to show there are areas in which technology can help," Lukacs concluded. "This drives home the commitment Sherwin-Williams has to sustainability and dedication to being on the forefront of new technology."





AWARDING OUR FLEET EFFORTS

Joseph Lukacs, Sherwin-Williams Global Director of Fleet Operations, received the inaugural Innovation Partner Award from fleet management company LeasePlan USA, and was the runner-up for Fleet Professional of the Year by *Automotive Fleet Magazines*. His recognition on behalf of Sherwin-Williams showcases industry acknowledgement of the organization's efforts surrounding the EV/hybrid pilot program.

Energy Efficiency

Sherwin-Williams is committed to the efficient use of energy, with a focus on reducing energy use, as well as expanding our use of renewable energy within our manufacturing facilities and fleet operations.

Each year, we evaluate opportunities to improve our energy efficiency through our assessment of new technologies, the optimization of current processes and the exploration of alternative fuel solutions to achieve our goal of increasing our operational energy efficiency by 20% by 2030.

In 2021, Sherwin-Williams hired a leading third-party consultant to help build our energy reduction strategy and develop policies to meet our objectives. Our global energy efficiency auditing program is a foundational element of our strategy. We have also committed to routine site-specific energy audits to analyze the performance of individual Sherwin-Williams facilities and identify opportunities for improvement.

Sherwin-Williams has a goal for every production facility to undertake sustainability projects annually. The resulting improvements are tracked to measure our progress. Priority for our energy investments is given to the projects with the highest potential for impact.

Some of our energy-saving initiatives include:

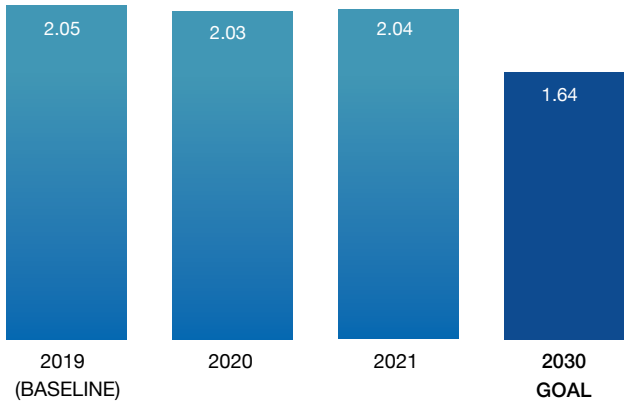
- Installing centrally managed and programmable HVAC systems
- Installing compressed air optimization system and air leak elimination technology
- Adopting energy-efficient building construction specifications
- Scheduling equipment idle and controlled shutdowns
- Improving packaging to eliminate unnecessary weight and volume of material being shipped
- Installing lighting replacements and controls
- Participating as a U.S. Environmental Protection Agency (EPA) SmartWay Transport Partner as a shipper/carrier
- Participating in the U.S. Department of Energy's Better Plants Challenge Program
- Pursuing LEED® (Leadership in Energy and Environmental Design™) certification for new builds, including our headquarters building in Cleveland, and Global Research and Development Center in Brecksville, Ohio, both currently under construction
- Upgrading fleets to higher-miles-per-gallon vehicles
- Upgrading equipment with higher-efficiency units
- Using hybrid and electric vehicles in the fleet
- Utilizing sophisticated planning software to determine the most efficient distribution routes

Energy Consumption

The charts below present total energy performance (intensity) and total energy consumption for our global footprint. We are presenting both sets of data for consistency and comparison reasons. Our 2019, 2020 and 2021 energy consumption numbers include a very small amount of renewable energy that is not yet impactful enough to show up in the results. However, we do expect it to become a significant part of our energy portfolio in the years ahead, and when it does, we will reflect it in this data set. The total energy performance goal for 2030 represents a 20% increase in energy efficiency compared with the baseline year of 2019. For more information on our environmental data, see the Sherwin-Williams Investor ESG Summary in the appendix of this report and on our website at **sustainability.sherwin-williams.com**.

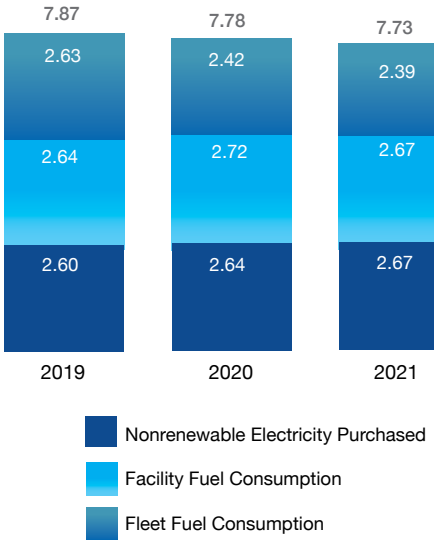
Total Energy Performance (Intensity)

gigajoules per metric ton of production, all global locations



Total Energy Consumption

million gigajoules, all global locations



Focusing on Renewable Energy

Sherwin-Williams has established a goal to increase electricity from renewable sources to 50% of total electricity usage by 2030. To help us achieve this goal and our 2030 carbon reduction goal, we are exploring a variety of renewable energy mechanisms and tools. Our options may include, but will not be limited to, on-site renewable energy generation at some Company locations, virtual power purchase agreements (VPPAs) and renewable energy credits (RECs).

In 2021, we began work on an on-site solar project at our Orlando, Florida, plant, which builds on the success we have had using solar energy at our plants in Dresden, Germany, and Minerbio, Italy. We are also taking steps to procure VPPAs in the U.S. While we are still assessing our renewable energy options and the potential for VPPAs in other markets, we believe these initiatives will support the mitigation of our carbon footprint in the long term.

Improving Energy Efficiency in Our Stores

We believe seemingly minor changes made at a large scale can equate to a substantial impact. Since 2019, The Americas Group (TAG) has worked to reduce electricity and gas consumption at our paint stores by replacing traditional thermostats with smart thermostats. Smart thermostats can be centrally monitored and controlled based on a store's operational hours to maximize energy savings. The installation of these units typically results in a 15% reduction in energy consumption per store. We continue to evaluate individual stores to look for ways to bolster our energy efficiency.

GENERAL INDUSTRIAL EFFORTS IN CHINA RECOGNIZED FOR SUSTAINABLE LEADERSHIP

The Sherwin-Williams General Industrial team in China was recognized at the 11th annual Philanthropy Festival & Corporate Social Responsibility Carnival in Shanghai in early 2022. The team received the following accolades: Green Model of the Year and Responsible Business Leader of the Year, presented to Julie Zhu, General Industrial Division General Manager for the Asia-Pacific Region.



DRESDEN COATINGS FACILITY EMPLOYEES HELP PROTECT WILD BEE POPULATION

In Germany and across the globe, habitats of wild bee populations are being destroyed, leaving the species in danger. Team members at our Sherwin-Williams General Industrial facility in Dresden completed a project in 2021 to protect and support the wild bee population on the property. Facility employees surveyed the area and created a plan to improve the grounds where bees and other insects could live harmoniously. The team planted new flowers and trees, created a plan for continually meeting wildlife requirements and installed two insect houses to provide habitats for the bees, other insects and wildlife on the facility grounds.







FEATURE STORY

Spotlighting LED Installation in Manufacturing Facilities

The future of sustainable lighting at Sherwin-Williams is bright, and light-emitting diode (LED) technology is part of a global energy-saving solution. Widely viewed as the most energy-efficient lighting solution, LED products keep spaces well-lit while offering significant cost savings. A global initiative to upgrade to LED bulbs and lamps in 113 Sherwin-Williams manufacturing facilities is underway and will help the Company achieve its goal of increasing operational energy efficiency by 20%.

In the Europe, Middle East, Africa and India (EMEAI) region, the Bellö, Sweden, facility electricians are updating fluorescent and incandescent lighting products with new LED bulbs – averaging around four bulb replacements each month. The facility is currently seeing a 39% energy reduction for plant lighting since implementation began.

In the Latin America (LATAM) region, Sumare manufacturing facility employees in São Paulo, Brazil, are working to replace 168 fluorescent bulbs with LED solutions. With a nearly 30% return on investment (ROI) for this project, the facility team plans to reduce its power needs by approximately 190,000 kilowatt hours per year.

Similarly, our Orlando, Florida, plant is experiencing significant benefits from updating its on-site lighting. In 2021, the team saw a cost savings of $60,000 after the bulb installation and noted a decrease in slips, trips and falls, in part due to the improved LED lighting.

Brandon Garnet, Sherwin-Williams Global Supply Chain (GSC) Divisional Continuous Improvement Manager, spoke about a project underway to upgrade lighting to LEDs in our North American GSC facilities. “We wanted a turnkey solution,” he said. “We are currently working with a vendor to help us implement LED lighting in all 39 North American facilities.”

In 2022, the team will start with the four largest sites – Buford, Georgia; Greensboro, North Carolina; Fredericksburg, Pennsylvania; and Massillon, Ohio – with the project estimated to be complete by 2025.

“By converting our GSC manufacturing facilities to LED lighting by 2025, we should experience a significant savings of total kilowatt hours per year,” Garnet said. “This project alone equates to 10% of our overall goal for electrical reduction across our supply chain. I’m proud to be part of a monumental sustainable change, and I can’t wait to see how the project positively affects the environment, Company and employees over the next few years.”



Waste Reduction

Sherwin-Williams continuously strives to reduce waste in our operations. Our waste reduction efforts focus on two primary areas:

1) Reducing the amount of waste that we generate; and
2) Increasing our reuse and recycling.

All Sherwin-Williams manufacturing facilities have unique waste reduction targets and programs. Our waste reduction initiatives are commonly centered on improving quality control processes, reducing the number of distressed batches of product, managing raw materials and conducting finished product inventory, thereby eliminating the waste before it is generated.

In 2021, our Global Supply Chain (GSC) division began value stream mapping our operations to get a better understanding of our waste processes. The value stream mapping tool systematically reviews the energy consumption and waste generation of each step in the manufacturing and distribution process, providing a living document to help build a pipeline of sustainability projects.

Sherwin-Williams has a long history of reusing and recycling byproducts of our production process and incorporating excess raw materials, off-specification paint and wash water back into production as alternative raw materials in the manufacture of new batches. We are proud of these efforts and continue to encourage our facilities to maximize this activity.

All facilities have defined recycling programs in place where materials such as cardboard, paper, plastic and metal are diverted from the waste stream. Recycling rates at all our large manufacturing, distribution, administration and laboratory facilities are tracked globally using our EcoMet database. Waste that is unable to be recycled or reused is managed in accordance with applicable regulations and corporate guidelines. In 2021, the Company recycled approximately 40% of total waste generated.

As part of our product stewardship initiatives, Sherwin-Williams supports the recycling of post-consumer paint through our participation in the PaintCare® paint recycling program. We have been involved in the PaintCare program since its inception in 2009 and have collected more than 3.5 million gallons of paint for recycling since 2018. The nonprofit program, which is currently available in 10 states and the District of Columbia, is managed by the American Coatings Association and helps keep unused and discarded paint out of residential waste streams. PaintCare attempts to reuse and recycle the leftover paint and containers before properly disposing of any remainder.



PAINT TECHNOLOGY TARGETS CONSUMER WELL-BEING

Sherwin-Williams is creating innovative, sustainable painting solutions that continue to work hard even after application is complete. One of these solutions is the Living Well™ collection – a series of paint offerings with air purifying and sanitizing technologies. Launched in early 2021, the air-purifying technology helps reduce volatile organic compound (VOC) levels from potential sources such as carpeting, cabinetry and fabrics, and it works to reduce unwanted household odors*. The sanitizing technology is Environmental Protection Agency (EPA)-registered and is designed to eliminate 90% of certain bacteria** for up to four years after application.

Advanced purifying and sanitizing technology is now available for more than just medical and commercial realms as household consumers around the globe are continually prioritizing products that contribute to their overall well-being. This leading-edge product line was launched with the everyday paint consumer in mind.

**Reduces VOC levels from potential sources like carpet, cabinets and fabrics and works to reduce unwanted household odors. The length of time SuperPaint® with Air Purifying Technology Interior Acrylic Latex actively reduces odors and formaldehyde depends on the concentration, the frequency of exposure and the amount of painted surface area.*

***EPA-registered paint that kills 99.9% of Staph (Staphylococcus aureus), E. coli (Escherichia coli), MRSA (Methicillin-resistant Staphylococcus aureus), VRE (Vancomycin-resistant Enterococcus faecalis) and Enterobacter aerogenes on painted surfaces within two hours of exposure, and continues to kill 90% of bacteria for up to four years when the integrity of the surface is maintained.*

Waste Reduction Performance

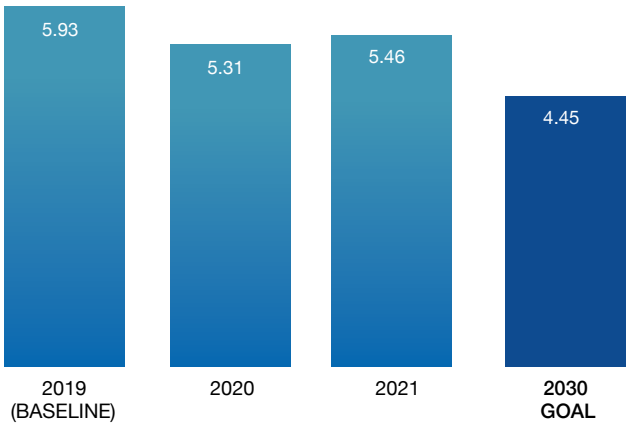
The chart and table below present the total waste treated and disposed performance and the breakdown of total waste, hazardous waste and nonhazardous waste for our global footprint. We are presenting both sets of data for consistency and comparison reasons. The goal for 2030 represents a 25% reduction in waste disposal intensity (all waste streams) compared with the baseline year of 2019. We expect this reduction will be achieved by focusing our operations to drive toward zero solid waste to landfill and by maximizing reuse of manufacturing byproducts, such as wash water, on-site. In 2021, our amount of waste treated and disposed was impacted by a combination of factors, including cleanup of equipment at several closed manufacturing facilities (which generated more waste and higher waste intensity than ongoing production would have generated at those facilities) and a decrease in the availability and economic viability of recycling outlets for our waste. For more information on our environmental data, see the Sherwin-Williams Investor ESG Summary in the appendix of this report and on our website at **sustainability.sherwin-williams.com**.

DRIVING EFFICIENCIES IN WASTE MANAGEMENT

In 2022, more than 50 paint stores in The Americas Group will begin utilizing waste monitoring devices as part of a pilot program, with approximately 50% utilizing dumpster cameras and the other half using sonar-like devices that monitor load levels to better understand actual waste generation and manage their waste. The automated cameras, which continuously monitor the containers, notify the facilities' waste management providers when the dumpsters are full. This investment helps cut back on unnecessary collections and subsequent emissions from waste trucks. These cameras can also identify when foreign materials are placed into the waste dumpsters, which helps stores reduce contamination and improve their recycling percentage.

Waste Treated and Disposed Performance

metric tons per 100 metric tons of production, all global locations



Along with the environmental data published in this section, additional Sherwin-Williams environmental performance data can be found in the SASB Index starting on page 56 of this report, in our Investor ESG Summary Report starting on page 68 of this report, and on our website at **sustainability.sherwin-williams.com**.

Waste Performance*

Year	Generated (thousand metric tons)	Recycled[1] (thousand metric tons)	Recycled[1] (percent)	Treated and Disposed[2] (thousand metric tons)
TOTAL WASTE				
2019	381.3	153.7	40.3%	227.6
2020	353.6	150.2	42.5%	203.4
2021	341.1	134.6	39.5%	206.5
NONHAZARDOUS WASTE				
2019	313.5	127.2	40.6%	186.3
2020	288.8	122.6	42.4%	166.2
2021	271.0	106.9	39.4%	164.2
HAZARDOUS WASTE[3]				
2019	67.8	26.5	39.1%	41.3
2020	64.8	27.6	42.6%	37.2
2021	70.0	27.7	39.6%	42.3

[1] "Recycled" includes recycling and reuse of materials

[2] "Treated and Disposed" includes incineration and energy recovery

[3] "Hazardous Waste" is defined by the country of generation

** Waste data includes all locations globally*

EHS Oversight and Strategy

Sherwin-Williams manages the governance of our environmental programs under our Environmental, Health & Safety (EHS) and Sustainability groups. At the highest level of the Company, the Board of Directors oversees various risks, with the Nominating and Corporate Governance Committee (Nominating Committee) assisting the board in reviewing risks relating to our key EHS and sustainability policies and strategies.

As discussed in further detail in the Governance and Ethics section of this report, we have a Sustainability Steering Committee, composed of members of senior management and other senior leaders. Members of the Steering Committee provide periodic reports to the board and Nominating Committee, and the Steering Committee is responsible for ensuring an enterprise-wide approach to overseeing the development of our overall sustainability strategies. The Steering Committee oversees a Sustainability Council, which consists of subject matter experts.

In 2021, a new sustainability Climate and Footprint working group was formed as a subgroup to the Sustainability Council. This working group meets monthly to address more tactical issues related to the Company's climate and environmental footprint actions. With representation from all business divisions, the group reports to the Sustainability Council and offers ideas and feedback to help improve processes throughout the organization.

Our core sustainability structure was enhanced in 2019 and continues to be a driver in integrating sustainability programs and initiatives across our business. Our EHS Council, consisting of environmental, health and safety subject matter experts, has been in place since 2015 and reports monthly to senior management. The EHS Council is responsible for implementation of our EHS strategy and commitments. This includes ensuring the consistent application of best practices and managing investments in environmental, health and safety projects. Division leadership implements these strategic initiatives across our businesses and operations. Environmental performance is captured in an internal EHS scorecard, which is published monthly.



Environmental, Health and Safety Management

The Company has a Global Environmental, Health and Safety Policy, which sets forth the Company's commitment to global leadership and excellence in EHS through our operations, business and products. Our EHS policy includes the Sherwin-Williams commitments to:

- Provide our employees with a safe and healthy workplace;
- Conserve resources and prevent pollution;
- Comply with all applicable EHS legal requirements and supplement that compliance with our own standards; and
- Develop, manufacture, distribute and sell our products in a way that preserves resources, prevents pollution and minimizes environmental impacts from our activities.

We are also committed to continually improving our EHS and sustainability performance. We have a strong record of regulatory compliance, risk management and adherence to our internal standards, which combined provide a foundation for our EHS management program.

We actively manage EHS to ensure our operations are safe for our employees and the communities in which we operate, and have minimal environmental impacts. We provide EHS training opportunities for employees. In addition, all our products must meet applicable requirements for hazard communication, chemical inventories, volatile organic compounds (VOCs) and other relevant regulations in the areas in which they are sold. We continuously track and assess the impact of new regulations and adjust our systems to comply effectively. We ensure that proper hazard communication documents are distributed to our customers.

All manufacturing and distribution sites must conform to our EHS management system, which is in strong alignment with third-party certifications, such as the ISO 14001 voluntary standard for environmental management and the OSHA Voluntary Protection Programs (VPP), and other best practices. Approximately 36% of our manufacturing and distribution facilities are ISO 14001-certified. Whether a facility is third-party-certified or not, it is required to conform to our EHS management system and the core principles of compliance with legal requirements, prevention of pollution and continual improvement.



Product Blueprint

Enhancing our Product Blueprint is one of the most compelling ways that Sherwin-Williams is ***Building on the Good*** for our stakeholders. Our Sustainability by Design program is a signature effort in our five-stage Stage-Gate process to formally incorporate sustainability attributes such as life cycle thinking within our innovation and product development processes. In the spirit of continuous improvement, this program enables us to evolve our products and processes to deliver and grow our "sustainably advantaged products" offering.

IN THIS SECTION:

Sustainability by Design

'Sustainably Advantaged Products'

Life Cycle Assessment

Product Stewardship



Product Blueprint

Sherwin-Williams is focused on our Product Blueprint, and our Sustainability by Design program reflects our dedication to product stewardship, chemicals management and compliance excellence. We are committed to providing world-class products that can be manufactured and used in a safe manner.

Paint and coatings are inherently sustainable – they provide protection, durability and longevity to the surfaces to which they are applied. As we continue ***Building on the Good***, we are further expanding our portfolio of "sustainably advantaged products" to benefit our business, our customers and our other stakeholders.

Our Product Blueprint Philosophy

Launched in 2021, Sherwin-Williams has integrated the Sustainability by Design program into our product innovation and development processes. This program embeds life cycle thinking into the earliest stages of these processes and better enables us to expand our portfolio of "sustainably advantaged products." 2021 was an important year focused on building a foundation and driving progress, as demonstrated by the goals we achieved:

Implemented Sustainability by Design program across the enterprise, serving as our proactive, foundational process to aid the growth of our "sustainably advantaged products" portfolio

Established a baseline for "sustainably advantaged products" and developed a plan for expanding this product portfolio in the future

Developed a structured process for measuring and assessing Scope 3 emissions

Our Sustainability by Design Journey

Innovation and continuous improvement are foundational to our product development process and the cornerstones of our Sustainability by Design program. From initial concept through commercialization, we identify ways to make our products more sustainable and better performing by evaluating chemical formulations, product performance, manufacturing processes, health and safety considerations and product packaging, among other areas. This formal process also provides flexibility to evolve with the needs of each of our businesses.

By achieving our 2021 Product Blueprint goal of integrating our Sustainability by Design program throughout the enterprise, we have laid the foundation to continue growing our "sustainably advantaged products" portfolio.

Key milestones helped to strengthen and expand our sustainable product development process.

Highlights from 2021 include:

- Extended Sustainability by Design program across the enterprise, enhancing our capability to innovate based on sustainability attributes on a large scale
- Established a baseline for "sustainably advantaged products" and developed a plan for expanding this product portfolio in the future
- Advanced our position to start managing our Scope 3 emissions by enhancing the technicality and organization of our processes
- Integrated our Sustainability by Design program into our existing Stage-Gate process
- Defined five "Sustainability Attributes" of focus for product innovation, development and categorization – Air Quality, Formula Stewardship, Resource Conservation, Circularity and Performance
- Launched internal sustainability training, with a focus on how to think about sustainability, to determine the attributes most important to each business and/or product line

Sustainability by Design Stage-Gate Process



Sherwin-Williams Sustainability Attributes

Sherwin-Williams focuses on the following sustainability attributes in product innovation and development:

Air Quality	Formula Stewardship	Resource Conservation	Circularity	Performance
• Reduction of VOCs • Air purifying technology	• Hazard / risk • Alternative substances • Bio-based content • Ecolabel certification • Life cycle assessment / environmental product declaration	• Resource reduction • Waste reduction • Environmental footprint	• Recycled content / recyclability • Sustainable packaging	• Improved durability • Application efficiency / reduced labor

Aligning the Sustainability by Design program with our Stage-Gate process clarified and streamlined our approach for business implementation. Comprehensive training reinforced the importance of sustainability and increased our teams' awareness and understanding of the Sustainability by Design process and how it relates to daily functions and procedures. We made this training available to employees, including our research and development (R&D) and marketing teams.

In addition, we enhanced our Sustainability by Design program by creating a digital tool that enables our product designers, marketers and formulators to better identify and create more sustainable solutions. The tool facilitates goal setting, the categorization of products with specific sustainability attributes and enhances employee accessibility and understanding of our Sustainability by Design program.

Use of this new tool allows us to:

- Enable R&D teams to assess environmental and toxicological hazards
- Standardize our method for organizing and categorizing our products
- Improve our ability to monitor and measure key performance indicators (KPIs)
- Streamline employee involvement within the process

In 2021, our inaugural Technical Achievement in Sustainability awards were given in recognition of high-performing employees who made contributions toward expanding our "sustainably advantaged products" portfolio.

PARTNERING WITH SUPPLIERS TO *BUILD ON THE GOOD*

We pride ourselves on the relationships we have with our suppliers and regularly engage with them to maintain a supply chain in which continuous improvement and sustainability principles are at the forefront.

Throughout 2021, we enhanced collaboration within our network of suppliers to ***Build on the Good***. A driving focus in these collaborations has been our Product Blueprint. Through supplier engagement, we have pursued opportunities to improve product sustainability, including using renewable feedstocks and more sustainable raw material alternatives. These collaborations have provided insight and a better understanding of our Scope 3 emissions.

A Growing Portfolio of 'Sustainably Advantaged Products'

Sherwin-Williams has a long and distinguished history of producing "sustainably advantaged products" by aligning with industry-leading guidelines and third-party certifications. "Sustainably advantaged products" are products that achieve a level of third-party green chemistry, ecolabel or similar recognition, or can be shown to be more sustainable than what is currently the norm for the industry.

Throughout 2021, we continued to expand our portfolio of "sustainably advantaged products."







FEATURE STORY

Delivering ‘Sustainably Advantaged’ Solutions

As an industry leader in the development of best-in-class product technology, we are expanding our portfolio of “sustainably advantaged products” that meet, and often exceed, third-party green chemistry, ecolabel or similar recognitions. With growing demand for more sustainable construction materials, the importance of validation from third-party governing bodies is evolving into an essential requirement for many commercial projects.

Certifications from third parties utilize benchmarking standards (scoring) set by governing partners, such as the U.S. Green Building Council’s Leadership in Energy and Environmental Design™ (LEED®) green building program, to meet standardized criteria. Third-party validation through partners, such as Underwriters Laboratories® (UL) and NSF International, is considered credible with customers as these organizations possess the expertise to conduct an impartial evaluation of key sustainability attributes.

For sustainability deliverables, such as Environmental Product Declarations (EPDs) and Material Ingredient disclosures, programs like LEED recognize products with third-party validations as 1.5 products in the calculation as opposed to one product each for those that are self-declared. Sherwin-Williams was the first coatings manufacturer to have Material Ingredient disclosures externally validated, a move beyond the LEED requirements at the time.

“This validation stems from an objective third party coming to conclusions regarding components going into the product and identifying the potential hazards,” explained Doug Mazeffa, Sherwin-Williams Global Sustainability Director. Mazeffa has served on leadership committees with the U.S. Green Building Council, which oversees LEED. “We support employees engaging and providing input to facilitate collaborative development of building product manufacturing standards.”

Specifiers and applicators, along with other industrial customers, are seeking coatings that deliver optimal performance while meeting these third-party requirements. Sherwin-Williams offers these professional customers optimal solutions while obtaining the sustainable building credits their customers need.

“We are proudly raising the bar and delivering value to our customers by developing ‘sustainably advantaged products’ and adding third-party validations to address concerns associated with self-declarations,” Mazeffa added. “Sherwin-Williams has been leading the charge in transparency and credibility for our programs and products.”

The Company also led the industry as the first coatings manufacturer to estimate its products’ environmental impacts through EPDs. “These are third-party-validated by NSF International,” Mazeffa said. “Sherwin-Williams has more EPDs than any other member of the coatings industry.”

The Global Director describes EPDs as “an environmental nutrition label” – with disclosures around a product’s carbon footprint and energy consumption needed to achieve certain LEED credits. “Sherwin-Williams was also the first in the industry to publish LEED-eligible Action Plans to support the optimization credits for both EPDs and Material Ingredients,” Mazeffa concluded. “We offer the most LEED-eligible products in our industry.”



Life Cycle Assessment at Sherwin-Williams

At Sherwin-Williams, we produce paint and coatings that protect the appearance and longevity of the structures and products to which they are applied, resulting in reduced life cycle impacts and costs for our customers. We have a rigorous and science-based life cycle assessment (LCA) program, which is the foundation for an expanding number of Environmental Product Declarations (EPDs) on our architectural and industrial product lines.

Our process starts with deciding how a particular product will be evaluated and the environmental attributes to be studied. The LCA evaluates factors such as raw material consumption, distribution to retail centers, customer travel to purchase and apply the coating, usage considerations and packaging. Subsequently, we develop an EPD, which standardizes environmental impact information to provide transparency regarding the product's environmental footprint and eligibility for credit in green building programs such as LEED®. EPDs are an important tool to help specifiers and users compare various products.

A key component of our LCA process is life cycle thinking, during which we consider and quantify impacts throughout our value chain. This includes assessing impacts throughout the product life cycle – from raw material extraction to product disposal at end-use. We highlight considerations for how we may innovate and develop a product as well as partner with suppliers, distributors and customers. Through life cycle thinking, we can better understand the systems and variables through which our products interplay. This improves our ability to address customer needs, prioritize sustainability attributes such as performance and collaborate with key stakeholders within our value chain to align actions.

Following the implementation of our enterprise-wide Sustainability by Design program throughout 2021, LCA continues to be a valuable tool for measuring the sustainability impacts of existing products and developing additional "sustainably advantaged products."

LEADERSHIP IN SUSTAINABLE ARCHITECTURAL PRODUCTS

A large number of our architectural "sustainably advantaged products" meet or exceed sustainability criteria set by leading third-party organizations, programs, standards and codes such as:

- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- Collaborative for High Performance Schools® (CHPS)
- Cradle to Cradle Products Innovation Institute
- EU Ecolabel
- Green Globes®
- GREENGUARD Environmental Institute (GEI) and UL GREENGUARD
- International Green Construction Code®
- Leadership in Energy and Environmental Design™ (LEED®)
- Nordic Swan Ecolabel
- The Master Painters Institute®
- USDA BioPreferred® Program
- WELL Building Standard®

For more information on our certifications and regulatory obligations for our architectural products, see the product reference guide on our website.

PRODUCTS THAT DRIVE PRODUCTIVITY HAVE SUSTAINABILITY ADVANTAGES

Developing products that increase productivity is essential for the Sherwin-Williams commercial market – for the benefit of our customers and to progress our Company-wide sustainability goals. Our product development teams continue to operate with a productivity mindset, helping to advance products that work harder for our customers once application is complete.

For example, Scuff Tuff® Interior Water-based Enamel provides heightened durability and abrasion resistance. It was developed for use in high-traffic spaces that are prone to wear and tear, such as apartment complexes and commercial buildings. Following application, the product maintains a quality finish longer than typical architectural coatings, reducing the number of repaints needed over time.

LATITUDE® Exterior Acrylic with ClimateFlex Technology™ also provides great benefits for our commercial customers. This technology provides early moisture resistance, smooth application at extreme temperatures (35°F-120°F) and a durable finish that protects against peeling, cracking and dirt pickup in harsh climates. The exterior coating provides painters the ability to perform jobs that would traditionally need to be rescheduled, ultimately cutting down total painting time and the need for additional weather-related touch-ups.



Social Imprint

We are committed to the safety of our global employee base as evidenced by achieving our safest year on record in 2021. We are committed to fostering a culture of inclusion, diversity and equity where differences are welcomed, celebrated and appreciated to positively impact our people and business. We care deeply about supporting and being actively engaged in the communities where we live and work.

IN THIS SECTION:

Occupational Health and Safety

Inclusion, Diversity and Equity

Talent Acquisition and Employee Engagement

Community Engagement



Social Imprint

Our commitment to our people, customers and communities is intrinsic to our guiding values that lay the foundation for our Culture of Excellence. Our people are central to the Company's success – today and in the future. Our culture and commitment to our employees and communities are important factors in attracting, retaining, developing and progressing the best talent in our industry.

Our Goals and Aspirations for ***Building on the Good*** for Our People and Our Communities

Reduce recordable case rate to **0.8** by 2025, compared with **1.06** in 2020*

Reduce ergonomic injuries by implementing two ergonomic interventions per year in each manufacturing site

Increase women in management roles to **30%** by 2025, compared with **26%** in 2020*

Increase underrepresented racial/ethnic groups in U.S. management roles to **30%** by 2025, compared with **26%** in 2020*

Achieve and improve upon a favorable score on the Sherwin-Williams Inclusion Index, based on results of our global employee engagement survey

Foster economic inclusion for underrepresented suppliers

** 2020 is the baseline year*



Our People-Centric Culture

We are committed to the fair, consistent and equitable treatment of our employees in relation to working conditions, wages, benefits, policies and procedures. Our policies and programs are designed to respond to the needs of our employees in a manner that provides a safe, professional and rewarding workplace.

Our people-centric culture promotes the unique contributions of our employees – empowering them and our Company to reach our full potential, while embracing and celebrating our differences. We have established specific inclusion, diversity and equity goals and aspirations that are reflected in all talent management and employee engagement strategies to ensure our workforce reflects those we serve.

Through the years, Sherwin-Williams has built a legacy of prioritizing the safety, well-being and engagement of our employees. Simultaneously, we empower them – individually and collectively – to make positive contributions in the communities where they live and work around the globe.



Occupational Health and Safety

S-W Cares

The safety of our employees and customers is a core value. *S-W Cares* is our safety culture initiative to define a roadmap for achieving environmental, health and safety (EHS) excellence across the Company. It puts resources, policies and accountability in place to deliver on our EHS commitments. It also provides a governance structure that is supported by tools to continuously measure our efforts to ensure safe workplaces, protect the environment and meet or exceed regulatory requirements.

Each letter in "cares" defines an expectation for our teams and leaders to sustain and improve our safety performance. To embody *S-W Cares*, our leaders and teams must:

Champion	Lead by example
Act	Find, own and fix issues
Recognize	Reward individual and team EHS efforts
Empower	Allow people the time to support a safe and healthy work environment
Share	Share successes and best practices

We have formal systems and programs – like the *TLC Stay Safe Out There* campaign – to help employees "find, own, fix and report" workplace EHS hazards before they lead to an incident. Every manufacturing site has a safety action plan and conducts monthly training to reinforce specific focus areas and ensure the implementation of best practices. Employees then use what they have learned to audit their personal workspaces. The effort shows that all employees – regardless of their role – can directly impact the safety of the workplace.

One EHS Management System Across Sherwin-Williams

Our EHS Management System (EHSMS) covers all Sherwin-Williams facilities across our three reportable segments – The Americas Group (TAG), Consumer Brands Group (CBG) and Performance Coatings Group (PCG) – and our Global Supply Chain division, which is managed within CBG.

During 2021, we focused on further centralizing and standardizing the implementation of our EHSMS and began to socialize and communicate these changes throughout Sherwin-Williams. Culture, in the form of *S-W Cares*, is at the center of the EHSMS. The most significant change from previous iterations is clear definition and implementation guidance for the five essential components of the EHSMS:

- Culture
- Planning
- Implementation and Operations
- Verifications and Process Accountability
- Action Management and Continuous Improvement

Our intention moving forward is to utilize standardized EHSMS processes and tools, including site plan templates, checklists and worksheets, which are adaptable for all parts of the organization. This approach enhances clarity and consistency and further ingrains continuous improvement into our functions and responsibilities. We began this initiative by rolling out the more formalized set of tools for EHSMS implementation to our manufacturing locations. This process is ongoing, and we intend to continue socializing and implementing it across our organization in 2022 and 2023.

Ambitious Safety Goals

As we continually strive to achieve zero recordable injuries, we have set ambitious safety goals for 2025 in the following areas:

- **Process Safety**: Drive a continuous improvement maturity path by having all 65 global manufacturing sites advance within our four-tier blueprint to minimize disruptive fires and spills across the enterprise
- **Safety & Risk**: Achieve a recordable cases rate (RCR) of 0.8
- **Occupational Health**: Reduce the number of ergonomic injuries by implementing at least two interventions per year at each manufacturing site

ENHANCING SAFETY AT OUR STORES

In the spirit of a centralized strategy that gives stores and facilities the flexibility to do what works best for them, we continue to develop segment-specific initiatives. This includes the 2021 expansion of our tactical EHS handbook and companion mobile app for the unique operations of our retail stores. These widely used tools were effective at the sales floor level in improving safety awareness and increasing safe behaviors.

We encouraged store implementation and use of the TAG EHS handbook and mobile app through our *TLC Stay Safe Out There* campaign. This initiative is organized into three levels – bronze, silver and gold – with each level associated with enhanced safety performance. TAG's Environmental, Health, Safety and Transportation team continued to drive injury reduction and sustainability improvements. TAG's 2021 results included a 37% reduction in recordable injuries, a reduction in the number of hazardous waste generating stores, and progress toward a hybrid and electric delivery fleet. We continue to set goals for district managers to drive consistent progress at the local, district and regional levels.

Throughout 2021, we focused on stores moving from a base level to the bronze level, with approximately 99% of stores achieving this goal. This bronze level ensures that many known injury causal factors in stores were routinely evaluated and, when identified, corrected in our store environment.
In 2022 and beyond, we expect the balance of our stores to reach the bronze level and for many of our stores to progress from bronze to silver and ultimately to gold.

2021 Safety Performance Data

0.81
RECORDABLE CASE RATE

60
NUMBER OF MANUFACTURING AND DISTRIBUTION FACILITIES ACHIEVING ZERO RECORDABLES IN 2021

31
NUMBER OF SITES GLOBALLY WITH OSHA'S VPP STAR RATING OR OHSAS 18001 CERTIFICATION

0.53
REPORTABLE FLEET ACCIDENTS PER MILLION MILES

Process Safety Management

Throughout 2021, we continued to invest in a proactive, ongoing improvement effort to strengthen process safety management (PSM) at all 65 global manufacturing sites. While regulatory compliance is an expectation of all our facilities, we utilize a four-tier PSM scorecard to assess our sites' position along a PSM implementation maturity path. The scorecard reserves a top score of 4 for facilities that demonstrate a comprehensive, mature PSM program. This includes a high degree of leadership, engagement and communication, conducting and resolving process hazard analyses and maintaining employee engagement and awareness.

We are committed to driving continuous improvement at all 65 global manufacturing sites. In 2021, 30.7% of our sites achieved level 2 on our PSM scorecard. Our PSM progress is reviewed on a quarterly basis.

Ergonomic Interventions

Sherwin-Williams continues to focus on preventing injuries through ergonomic interventions, with a goal of two interventions per year at each manufacturing site. In 2021, we implemented more than 375 ergonomic interventions.

In assessing our safety performance and history of ergonomic injuries, we have identified repetitive, manual handling of 5-gallon pails as a key ergonomic risk factor in our operations. To address this risk, we have assembled a continuous improvement team to document all engineering and administrative controls for pail handling and have published several training videos on how to properly lift and handle a 5-gallon pail.

The sharing of best practices across our organization is central to our ergonomic intervention efforts. We facilitate this by making ergonomic intervention information available to all sites electronically via an ergonomic control solutions webpage. This collaborative approach helps our sites learn from each other and reinforces our belief in "not having to fix the same thing twice."

To recognize the ergonomic accomplishments of high-performing teams and plant managers, we celebrate successes and milestones with our annual Ergo Excellence Awards. Sites participate by submitting their intervention actions. Winners are selected to acknowledge their focus on ergonomics. Our 2021 Ergo Excellence Award winning sites were Singapore, with an ergonomic process redesign, and Garland, Texas, with an inline checkweigher, which eliminated a large amount of manual handling.

Collaboration Between Divisions Drives Continuous Improvement

Our EHS practices and procedures are overseen by a steering committee that includes senior leaders from our three segments, as well as our Global Supply Chain division. An EHS Council, comprised of representatives from each segment and division, sets and tracks goals that are reported to the steering committee, as well as members of the Sustainability Council. The EHS Council also functions as a think tank, allowing divisions to share learnings and leverage improvements.

Collaboration between divisions about EHS topics has dramatically increased and helped drive Company-wide improvements. "For several months, we discussed and listened to each other about what would make the management system work," said Brian Haynack, Sherwin-Williams EHS Director – Strategic Excellence. "That was so valuable to gain an understanding of where the business wants us to take this."

As we have introduced programs like PSM and other initiatives that encourage a centralized approach to EHS management, leaders within our EHS governance structure have proven instrumental in providing oversight and encouraging implementation division-wide.



FEATURE STORY

Striving to Drive a Continuous Improvement Maturity Path on a Global Scale

Nearly 30 years ago, the U.S. Occupational Safety and Health Administration (OSHA) established PSM requirements for managing dangers associated with processes that use highly hazardous chemicals. The standard addresses general and construction industries and integrates technologies, procedures and management practices into the requirements. While PSM is a U.S. OSHA standard, there are several standards throughout Europe – including the Seveso Directive – as well as standards in many other countries in which Sherwin-Williams operates, such as Mexico, Brazil and South Africa.

Sherwin-Williams instituted a global management standard to govern all process safety activities within the Company with a goal to help reduce risk to employees, operations and the environment in a way that extends beyond the legal standards. "We want to make sure we are meeting the legal requirements – but we also need to meet The Sherwin-Williams Company standard – which is a higher bar," said John Vosicky, Sherwin-Williams Senior Director of Global EHS and Remediation.

PSM is a program that requires participation from many groups within the organization, including:

- Senior leadership to sponsor the program;
- Corporate teams from digital technology, engineering operations and EHS team members to develop and manage the technical aspects;
- Site leaders and staff to execute the programs; and
- Operators and maintenance staff to maintain the covered equipment safely and effectively.

"Senior leaders are key to making a program like PSM function within Sherwin-Williams," explained Joseph Aleksa, Sherwin-Williams Process Safety Director. "Their understanding and support of the program give it the attention it needs to succeed."

One site that has gone beyond the legal requirements to meet the higher Sherwin-Williams standard is our resin and coatings facility in Garland, Texas. The Garland-Shiloh site continues to work toward elevating its compliance status even more. Similarly, our Singapore resin plant has achieved significant PSM continuous improvement beyond the Sherwin-Williams and in-country requirements.

Our EHS teams have set tangible goals for all global process safety operations. They are planning to drive continuous improvement in PSM by 2025 and beyond. "We have executive sponsorship to get all our program sites to reach our goals, and we're meeting with senior leaders quarterly to ensure we are continually moving forward," Vosicky concluded.



FEATURE STORY

Celebrating Our 2021 Excellence in EHS Award Winners

Every year, we commend facilities that have made significant progress in the area of environmental, health and safety (EHS). In 2021, four Sherwin-Williams sites were recognized with our 2021 Excellence in EHS Award for their contributions to the Company's lowest recordable injuries case rate in our history.

Excellence in EHS Award: Elkhart, Indiana

At the Sherwin-Williams site in Elkhart, Indiana, employees have embraced fun activities like the Spill Scavenger Hunt Safety Olympics, to take a proactive approach to safety. Emphasizing spill safety has led to an 80% reduction in hose-burst failure and a 46% reduction in spills compared with 2020. The 88,000-square-foot site has been recordable-injury-free for more than two years.

Cross-Functional EHS Ownership: Bangalore, India

In addition to regular EHS training programs, employees at the Sherwin-Williams site in Bangalore, India, used several safety campaigns to ensure awareness of general health and safety measures in 2021. They were recognized for the cross-functional ownership of EHS priorities that has led to four years injury-free. The site EHS committee sought to foster its safety culture through accountability, as well as engagement activities for employees and their family members. Focus topics included hand injury prevention, National Safety Week, World Environment Day and a process safety campaign.

Excellence in EHS – Most Improved: Brodziszewo, Poland

Engagement is the name of the game at the Brodziszewo, Poland, site. From regular leadership tours of the facility to monthly safety committee meetings and financial bonuses for team members who submit safety suggestions, employees at the facility have made safety part of the culture. As a result, the site has gone more than three years without a recordable incident. Other improvements include solvent containment solutions, ergonomic updates and material storage changes.

Most Improved EHS Site – Honorable Mention: Andover, Kansas

In 2021, the Andover, Kansas, facility received Honorable Mention for the Most Improved EHS Site after consecutive years of sustained improvement. The Andover team experienced 100% employee participation in an Employee Engagement Challenge and improved in nearly every site safety metric. By targeting a packaging process that created significant ergonomic risk, the team eliminated seven repetitive steps and reduced waste. They did this important work and more – all while improving engagement and reducing turnover.







A Focus on Fleet Safety

Each year, Sherwin-Williams drivers traverse millions of miles to bring paint and coatings from manufacturing and distribution centers to our stores and customers. In 2021, our fleet recorded nearly 82.8 million miles and we continued to see year-over-year improvement in our safety performance. Some of the efforts taken to achieve improvements in our safety performance include the use of wireless cameras and a new onboard computer logging device that helps to coach drivers and monitor incidents – both in real time and after the fact. Within the Global Supply Chain (GSC) division, the Driver Safety Committee is encouraged to highlight issues and provide solutions. At least one driver represents each distribution center on the committee.

The Americas Group (TAG) also continues to benefit from an increased safety focus, with TAG's 2021 CMV DOT Recordable Accident Rate improving over the 2020 rate.

Across both GSC and TAG fleets, offering support to new team members remained a focus. We have 20 Driver Training & Support Specialists (DTSS), who onboard new delivery drivers, complete quarterly safety trainings/compliance audits and participate in annual ride-alongs. Additionally, our safety course titled T.I.M.E. (**T**rack the traffic. **I**nsert a buffer. Check **M**irrors. **E**liminate Distractions) teaches drivers to keep space in front of their vehicle to allow time for defensive driving and emphasizes the importance of removing all distractions. It is important for newly hired drivers to receive hands-on safety training from the beginning. The DTSS team has helped reduce the number of preventable accidents and improved the Company's DOT CSA safety rating by championing a culture of safety.



Inclusion, Diversity and Equity

Advancing Our Culture of Inclusion, Diversity and Equity

For more than 155 years, the ingenuity, passions and talents of our people have served as the foundation for our success. Our belief that all employees deserve to feel valued and accepted for who they are and the unique perspective they bring to the workforce and workplace is crucial to our people-centered culture.

We foster a culture where differences are welcomed, appreciated and celebrated to positively impact our people and business. Reflected in our Code of Conduct and reinforced through our actions, training and mindset, fostering an inclusive culture is a moral and business imperative. We intentionally lead with inclusion to highlight our commitment to embracing and leveraging the diversity of our global workforce.

Throughout 2021, we challenged ourselves, as individuals and as a global enterprise, to advance our culture of inclusion, diversity and equity (ID&E). Our commitment to ongoing progress is part of our vision to create a culture of belonging for everyone.

Commitment from the Top

Our Chairman and Chief Executive Officer signed on to the CEO Action for Diversity & Inclusion™ commitment in 2018, joining a coalition of more than 1,400 executives pledging to take action to cultivate environments where diverse experiences and perspectives are welcomed, and where employees feel comfortable and encouraged to discuss ID&E. Leadership teams across our organization have embraced this responsibility by committing to continuous learning, engaging in open dialogue and serving as visible, vocal champions.

ID&E Strategy: Forging Ahead on Our Path to Sustainable Growth

To achieve our ID&E goals, we are following a strategy represented by building blocks designed to shape our approach for sustainable growth across the Company. While we are advancing each focus area simultaneously, each block builds on another. The entire structure is built on the foundation of a strong commitment from leadership.

The Office of Inclusion, Diversity and Equity leads our global strategy by establishing goals and developing initiatives to embed ID&E throughout our culture and business. Additionally, our groups and divisions support ID&E goals through division-specific action plans.

The following goals were established to advance ID&E within Sherwin-Williams:

Our ID&E Goals



ATTRACT AND RETAIN MORE UNDERREPRESENTED GROUPS INTO THE TALENT PIPELINE



INCREASE THE NUMBER OF UNDERREPRESENTED GROUPS IN LEADERSHIP ROLES



DRIVE EMPLOYEE ENGAGEMENT



FOSTER ECONOMIC INCLUSION FOR UNDERREPRESENTED SUPPLIERS

In 2021, we achieved meaningful progress toward each goal. Highlights include:

- Partnered with more than 60 organizations, including 16 Historically Black Colleges and Universities (HBCUs) and over 40 Hispanic-Serving Institutions (HSIs), to attract women, underrepresented racial/ethnic groups, individuals with disabilities and veterans into the talent pipeline
- Collaborated with the City of Cleveland, the City of Brecksville, community leaders and trade partners to positively impact the Northeast Ohio economy by providing workforce opportunities for the community, including awarding contracts to minority-owned, woman-owned and small businesses as part of our Building Our Future project. For more information, visit the ID&E page on buildingourfuture.com.

While we are proud of our continued progress, we recognize we are on a journey. Our ID&E strategy reflects our long-term commitment to fostering an empowering and welcoming culture.

Advancing an Equitable, Inclusive Culture

We rely on quantitative and qualitative data to ensure we are making good on our promise to foster a culture of inclusion. We regularly review our progress to evaluate current strategies and initiatives and adjust when necessary. Sherwin-Williams strives to increase underrepresented groups in leadership roles through intentional talent planning at all levels because representation matters.

In 2021, we hosted a global women's summit designed to empower, inspire and support all employees. Kerrii Anderson, a member of our Board of Directors, served as the keynote speaker in a session hosted by Heidi Petz, then leader of The Americas Group (TAG) and now the Company's President and Chief Operating Officer.

As we continue our ID&E journey, we are striving to achieve our 2025 goals:

- Increasing women in management roles to 30% by 2025, compared with a 26% baseline in 2020
- Increasing underrepresented racial/ethnic groups in U.S. management roles to 30% by 2025, compared with a 26% baseline in 2020
- Achieving and improving upon a favorable Sherwin-Williams Inclusion Index score, based on results of our global employee engagement survey

In 2022, we are focused on driving allyship and empathy through the continued rollout of Conscious Inclusion training modules, finalizing our enhanced supplier diversity strategy and elevating the visibility and prominence of our Employee Resource Groups (ERGs).

Measuring the Art and Science of Creating a Culture for Everyone

Our 2021 global employee engagement survey included a subset of questions designed to quantify our global workforce's level of agreement with statements on key dimensions of inclusion, including physiological safety, trust, belonging and diversity. The results were analyzed by a third party and reported as a favorable score for the Sherwin-Williams Inclusion Index.

While our score serves as affirmation of our efforts to foster an inclusive culture, we regard it as an opportunity for continuous improvement. As reflected in our 2025 ID&E goals, we are committed to ongoing progress as we continue our ID&E journey.

2021 Workforce Diversity Data

Total workforce

35%
UNDERREPRESENTED RACIAL/ETHNIC GROUPS (U.S.)

25%
WOMEN IN WORKFORCE (GLOBAL)

Management level

28%
UNDERREPRESENTED RACIAL/ETHNIC GROUPS IN MANAGEMENT (U.S.)

26%
WOMEN IN MANAGEMENT (GLOBAL)

ID&E Training & Education: Fostering Empathy Through Shared Understanding

Our ID&E development programming is aimed at educating and amplifying diverse voices that reflect the Company's global workforce. We have hosted Conscious Inclusion trainings with our leaders to encourage ongoing understanding of, and practical tools to mitigate, the daily impacts of unconscious bias. To date, 100% of our senior leaders have attended an ID&E learning session, and we continue to cascade training opportunities through all levels of the organization.

Our commitment to cultivating a genuine sense of belonging encompasses our interactions with all stakeholders. In 2021, we prioritized increasing awareness and understanding of our ID&E efforts within our stores. All Company-operated stores were provided signage that conveys – in multiple languages – our commitment to ensuring a safe, welcoming environment for all. In addition, we piloted employee training focused on inclusive conversations with customers.

As part of our ongoing efforts to deepen employee understanding of and engagement with ID&E, additional training modules focused on fostering a culture of inclusion and belonging, managing bias, understanding equity and inclusive allyship are being rolled out in 2022.

Heidi Petz Promoted to TAG President in 2021, Elected Company President and COO in 2022

In early 2022, Heidi Petz, a champion and visible supporter of our ID&E efforts, was elected to serve as the Company's President and Chief Operating Officer, effective March 1. The appointment marked her second significant promotion in as many years, as she was promoted to President of The Americas Group (TAG) in March 2021. She has held numerous key leadership positions since joining Sherwin-Williams through the acquisition of The Valspar Corporation in June 2017.



"Heidi is a tireless advocate for our employees, including our commitment to professional growth, engagement, and inclusion, diversity and equity," said Chairman and CEO John Morikis.

Elevating the Diverse Voices of Our People

Our close-knit culture often functions as a supportive family. We succeed together. We learn together. We grow together. This interdependent relationship is best exemplified within our Employee Resource Groups (ERGs). These employee-led networks serve as a hub for communication, professional development and community involvement activities.

ERGs are voluntary, employee-led networks organized around a shared underrepresented demographic or unique experience in the workplace. ERGs bring together employees from various groups, divisions and functional teams to foster more inclusive workplaces and create greater synergy around business objectives. In addition to building connections, employees engaged in one (or more) of the Company's ERGs are exposed to tools and mentorship opportunities that enable them to thrive and find long-term success at Sherwin-Williams.

Our ERGs are as diverse as our people and are open to everyone. ERGs represent various groups, including African American, Hispanic/Latinx, LGBTQ+, active military and veterans, multicultural and women.

As membership in our more than 200 ERG chapters continues to increase, so has their impact in cultivating a shared sense of belonging among employees across our global footprint. For example, Hispanic Organization for Leadership Advancement (HOLA), our Hispanic ERG, continues to expand its reach, with increased participation from employees in the Latin American Division of The Americas Group (TAG).

As part of ongoing efforts to champion and embed the Company's ID&E actions and initiatives across our global workforce, our EMEAI (Europe, The Middle East, Africa and India) ID&E Council and Ambassador Network hosted a week of interactive programming in April 2021. The employee-led sessions incorporated the region's most prevalent dimensions of diversity and were designed to raise awareness and promote understanding of neurodiversity, women in leadership, and mental health and wellness. Within the Asia-Pacific region, Conscious Inclusion trainings helped employees recognize their personal biases and their potential impact on creating a welcoming culture for all.

Fostering Economic Inclusion for Underrepresented Suppliers

Our efforts to foster inclusion and promote unique backgrounds, experiences and diversity of thought extend to our supply chain and partners. We are committed to providing opportunities for all qualified businesses, including minority-owned, woman-owned, LGTBQ+-owned, veteran-owned and small businesses.

We are focused on strengthening partnerships to support diverse businesses and have participated in programs to increase understanding of how to apply to join our supplier network. For example, in September 2021, we partnered with the Urban League of Cleveland to host a workshop on how to do business with Sherwin-Williams.

Our efforts to strengthen the underrepresented populations we serve in Northeast Ohio extends through the Company's Building Our Future (BOF) project, which includes construction of our new global headquarters in downtown Cleveland and the new Research and Development Center in nearby Brecksville, Ohio.

Since the BOF project was launched in 2020, Sherwin-Williams has gathered feedback from the City of Cleveland, City of Brecksville, community leaders, faith-based leaders and other key stakeholders on opportunities to engage and support underrepresented residents and suppliers.

In September 2021, the Company announced five firms that have been selected for the minority construction management role for the BOF project. All are based in Northeast Ohio and are either woman-owned or minority-owned. Four of the five firms will also provide skilled trades employees to perform activities such as carpentry, millwork and painting. As of April 2022, we have nearly 40 minority-owned, woman-owned and Cleveland-based small businesses involved in the project, with contracts in the millions of dollars. Diverse participation is expected to grow as the project progresses.

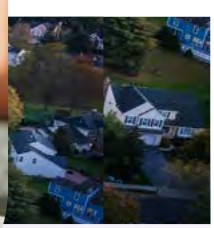
In 2022, we will advance our commitment to the BOF project through formal partnerships and collaboration with underrepresented communities in Cleveland and throughout Northeast Ohio. For more information, visit buildingourfuture.com.





FEATURE STORY





Developing a Future of Greatness with the African American Network

Sherwin-Williams continues to build a culture of Conscious Inclusion through our ERGs. The African American Network's (AAN) mission is to provide meaningful leadership and professional networking opportunities at all levels of the organization, while attracting, developing, retaining and progressing talent.

In 2021, the AAN launched a bimonthly professional development series for employees to strengthen leadership skills, share best practices and help peers meet their professional goals. In celebration of Black History Month, the series began in February and continued through November.

Yentil Rawlinson, Sherwin-Williams Vice President of Inclusion, Diversity and Equity, spoke to the value this opportunity brought to the entire organization. "One of my favorite things is that this series supports the Company goal of getting underrepresented groups into elevated roles," she said. "It helps employees build those important skills that are necessary for the next step in their careers and is such a value-add to Sherwin-Williams."

Open to all employees, each continuous learning session garnered more than 200 participants, with the largest event having nearly 400 employees in attendance. "We saw participants from all levels – from individual contributors all the way to vice presidents," Rawlinson explained. "We find that the demand is there for enterprise-wide events such as this, and some employees even partake as a group – so it brings people together."

Eric Easter, Sherwin-Williams Corporate IT Senior Business Analyst and Chairman of the Corporate AAN, reflected on what it was like to be a speaker during the *Mastering the Behavioral Interview* session. "Presenting during this series was an honor for me," he said.

There is more on the horizon for AAN and the professional development series in 2022. The group plans to build on the momentum and continue growing the events. "Our goal is to reach more people, more audiences and more learning opportunities," Rawlinson concluded. Easter shared similar sentiments about the future. "My wish is that the tools and advice we are providing the next generation of leaders are useful in their quest for greatness," he added.



FEATURE STORY

Continued Recognition of Our Welcoming Culture

We are proud to continue to receive third-party recognition for our efforts to foster an inclusive culture that strives to empower us all to bring our authentic selves to work.

Sherwin-Williams was recognized as a *Forbes*® 2021 World's Best Employer. The distinction, a first for the Company, builds on the following category-specific recognition we continue to receive annually from the publication:

- America's Best Employers for Diversity (third time)
- America's Best Employers for Women (third time)
- America's Best Employers for New Grads (third time)
- America's Best Employers for Veterans (second time)

In 2021, Sherwin-Williams also ranked 163rd in the *Fortune*® Measure Up initiative, an inaugural ranking of the most progressive companies in diversity and inclusion.

In addition, the Company earned a perfect score in the Human Rights Campaign Foundation's 2022 Corporate Equality Index, the nation's foremost benchmarking survey and report measuring corporate policies and practices related to LGBTQ+ workplace equality.





FEATURE STORY

Sherwin-Williams PrideWorks Parent Panel Promotes Allyship

The Sherwin-Williams PrideWorks Employee Resource Group (ERG) provides an environment that is specific to seeing, celebrating and advancing LGBTQ+ professional and personal growth. In 2021, Sherwin-Williams PrideWorks hosted a virtual session featuring three parents and their stories of how they support their LGBTQ+ children and their coming-out journeys. The candid conversation reinforced the importance of allyship and included resources related to understanding pronouns and guidance on how to use them to promote inclusivity.

"We hosted this panel to commemorate Transgender Awareness Week and Anti-Bullying Week," said Chris Horlacher, Sherwin-Williams Creative Director, Consumer Brands Group and President of Sherwin-Williams PrideWorks. The rising statistics for LGBTQ+ hate crimes and teen suicides drove the ERG officers to discuss how they could create an open dialogue of support within the Company.

"We asked ourselves what a good way would be to communicate the importance of empathy and acceptance in the hopes of educating people," Horlacher explained. "We wanted to try something a little different. Our parents are our strongest advocates and biggest allies – giving parents a platform to discuss and share their personal success stories in a comfortable space was the perfect teaching opportunity."

Panelists weighed in on what it meant to participate in the virtual event. "It was amazing to hear the parents' heartfelt stories – and share our own – with such an engaged audience," said John Gravante, Sherwin-Williams Vice President of Operations – Powder, Global Supply Chain.



Similar sentiments came from Bonnie Heinsohn, Sherwin-Williams Senior Director of Marketing Communications, Consumer Brands Group. "Hearing others' journeys gave me a bigger, better understanding of what others are going through – and that in turn makes me a better ally, a better advocate," she said.

More than 100 people attended the event, and the panelists answered questions about a variety of topics including obstacles, triumphs and the important role parents and family play in the lives of the LGBTQ+ community. "It was an uplifting and educational presentation, with truly commendable parents who shared honest and endearing perspectives," Horlacher concluded. "This platform helped teach the importance of empathy, compassion and inclusion through the familiar eyes of mom and dad."

Talent Acquisition and Employee Engagement

Our Integrated Talent Management Strategy

Through our integrated talent management strategy, we strive to attract, retain, develop and progress a workforce that embraces our inclusive culture and reflects our diversity efforts.

The strategy connects major milestones in the employee journey, from the first candidate touchpoint through a career path at the Company. It includes the following Centers of Expertise:

- Talent Acquisition
- Onboarding
- Performance Management
- Leadership and Management Development
- Succession and Career Progression
- Workforce Analytics and Engagement

This ecosystem is supported by our commitment to employee engagement and inclusion, diversity and equity, a strong human resources information technology governance structure and workforce initiatives.

Engaging and Empowering Our Employees

We lead with our focus on engaging and retaining our employees because highly engaged employees are tremendous assets who create exceptional experiences for our customers. Our commitment to our employees is reflected in our people-centered culture, favorable engagement scores and the continued evolution of our Total Rewards programs.



Nurturing Our Talent

We believe in careers that grow with our employees and spark new opportunities. We set high expectations for – and take care to measure and reward – the achievement of challenging goals.

Our diverse career paths are designed to enable all employees to create a career uniquely meaningful to them – we inspire our employees to "let your colors show." We encourage everyone to share their career aspirations within our development portal so that we can help them align their goals with required competencies, identify potential gaps and create an aligned development plan.

Our promote-from-within culture is supported by robust, disciplined succession plans aligned with cohort-specific development opportunities to ensure we are continuously preparing our next generation of leaders. The curriculum aligns with key leadership milestones within the Company, and includes specific programming for emerging leaders, managers preparing for a director role and more.

~20%
OF VICE PRESIDENT PROMOTIONS IN 2021 IDENTIFY AS MEMBERS OF AN UNDERREPRESENTED RACIAL/ETHNIC GROUP

27.5%
OF MANAGEMENT TRAINEES IDENTIFY AS MEMBERS OF AN UNDERREPRESENTED RACIAL/ETHNIC GROUP

1 in 3
MANAGEMENT TRAINEES IDENTIFIES AS A WOMAN

43%
OF NEWLY APPOINTED VICE PRESIDENTS OVER THE LAST TWO YEARS IDENTIFY AS WOMEN

~7,000
EMPLOYEES HAVE 20+ YEARS OF EXPERIENCE

Measuring Employee Engagement

We collaborated with a third party in 2021 to conduct our global engagement survey. Our goal was to leverage the voice of our employees and quantify our progress toward creating an inclusive culture that empowers everyone to learn, grow and achieve their career aspirations.

We convened an engagement and analytics steering committee comprised of representatives from all divisions, business functions and regions to design the survey and encourage employee participation. We earned a favorable engagement score of 77%, which serves as an affirmation of our existing efforts. The 2021 survey, which was administered by a third party, established a baseline for our overall engagement score as well as associated metrics. We are committed to using the results to drive continued progress. Going forward, we will continue our regular cadence of pulse surveys and plan to conduct the global engagement survey every two years.



2021 Engagement Survey Highlights

The following results from our global employee engagement survey reflect our efforts to foster an inclusive, supportive culture.

- **"Managers treat our employees with dignity and respect."**
  90% favorable response
- **"Sherwin's a safe place to work."**
  85% favorable response
- **"I can be myself at Sherwin-Williams."**
  80% favorable response
- **"I'd recommend Sherwin-Williams as a place to work."**
  80% favorable response

Talent Attraction Strategy Supports Company Growth

We pride ourselves on being an employer of choice. Our talent acquisition team supports our Company's growth strategy by identifying candidates with the experience and unique skills to contribute to our proud legacy.

Beginning in 2020 and continuing throughout 2021, we pivoted from traditional recruitment methods to digital solutions, with a focus on improving the candidate experience and more efficiently filling open positions. For example, we have leveraged digital technology to create a 24-hour recruitment cycle for many retail roles, allowing candidates to apply online for an available position, record a video interview and be screened for consideration by the hiring manager within a few hours. Our commitment to create a more engaging, robust candidate experience online has enabled us to better connect with prospective employees, increase our visibility and expand our potential reach.

Infusing Diversity into Our Talent Pipeline

Sherwin-Williams partners with a variety of colleges and universities, including Historically Black Colleges and Universities (HBCUs) and members of the Hispanic Association of Colleges and Universities (HACUs). In 2021, we participated in roundtables during the HACU annual conference and invested in four scholarships, which were distributed in early 2022.

We also partner with organizations like Prospanica, the Association of Hispanic Master of Business Administrations (MBAs) and Business Professionals, as well as the National Black MBA Association, to help ensure diverse candidate slates when seeking to fill a director position or above with external talent. These partnerships and our early talent training programs play a critical role in our ability to attract diverse, innovative, passionate and qualified employees with the skills and experience needed to help us today and the desire to grow and tackle future opportunities.

Rewarding Our Employees

Sherwin-Williams cares about all aspects of employee well-being, including the social, emotional, physical and financial welfare of our employees. Our Total Rewards programs are designed to offer competitive compensation, comprehensive benefits and other programs to support employees' growth – personally and professionally – and the diverse needs and well-being of our employees worldwide.

Total Rewards benefits are evaluated on an ongoing basis to help ensure we support the evolving needs of our global workforce. As part of our ongoing commitment to support employee well-being, an additional day of paid time off was announced in 2021 and rolled out in 2022 to all full-time, salaried employees in the U.S. Designated a personal day of observance, eligible employees are encouraged to use the time to recognize an occasion personally meaningful to them or to perform self-care. The guidelines are intentionally broad to accommodate and celebrate our differences.



FEATURE STORY

Transition Programs for Veterans Help Grow Our Talented Team

Hiring Our Heroes® (HOH) is a federal program that connects military community job seekers with U.S.-based businesses, providing economic benefit to veterans and their families. For Sherwin-Williams, HOH offers a pipeline to accomplished, qualified candidates with unique backgrounds and experiences to fill various positions. This helps those who have served avoid unemployment/underemployment and increases veteran representation in the U.S. workforce.

Zack Melnick, Sherwin-Williams Seattle District City Manager, has made hiring veterans a priority. Inspired by a store manager whose husband was a veteran, Melnick reached out to a transition office at one of the Army bases near the Seattle district.

"There are many transition programs, but this one seemed like the best opportunity for our Company – it's pretty amazing to watch the team learn from the veterans in terms of professionalism, leadership and personal interaction," Melnick added. "Long term, bringing individuals on board who have all those soft skills is invaluable. The perspective they have is something that can't be replaced."

Sam Armer is a veteran who completed the 13-week Sherwin-Williams corporate fellowship and then applied for an open full-time position. Now, he is Sherwin-Williams Branch Operations Manager for the Olympia-Lacey commercial store in the Seattle District.

Armer enlisted in the Army after high school and spent his early deployments in places such as Kosovo, Iraq and Afghanistan developing programs to create stability in war-torn regions. In his last deployment, Armer developed a precision targeting certification program at the Army Multi-Domain Targeting Center and achieved the Army's first full accreditation from the National Geospatial Intelligence Agency.

"At the age of 18, going to a developing region and seeing extreme poverty put things into perspective for a young adult," the veteran said. "We were helping people, and we were problem-solving. We built schools, created women's literacy programs and worked with agricultural companies to supply seeds that would grow in the local climate."

The tools and techniques he and his team developed are still being used today.

"There's a wide spectrum of veterans from different career fields, but they all have real-world experience, where the consequences of actions are really heavy," Armer said. "And I think veterans bring a lot of those skills – attention to detail, problem-solving skills, an understanding of processes and procedures, and management and leadership skills. Inspiring people is the same, whether you're talking to a soldier or talking to employees about daily safety procedures."

The experiences and skills veterans like Armer bring to our Company make us proud to once again be honored by *Forbes*® Magazine as one of America's Best Employers for Veterans for 2021. We recognize the responsibility to create a great place to work for those who have sacrificed so much. Sherwin-Williams will continue partnering with transition programs, including HOH, to fill the talent pipeline with veterans for other jobs in stores, offices and manufacturing and distribution facilities across the U.S.





Community Engagement

Our Strategy to Inspire Change

Giving back is a part of our proud Company legacy. Our community engagement efforts include an intentional focus on supporting causes and charitable organizations important to our employees and are targeted where we can have the greatest impact.

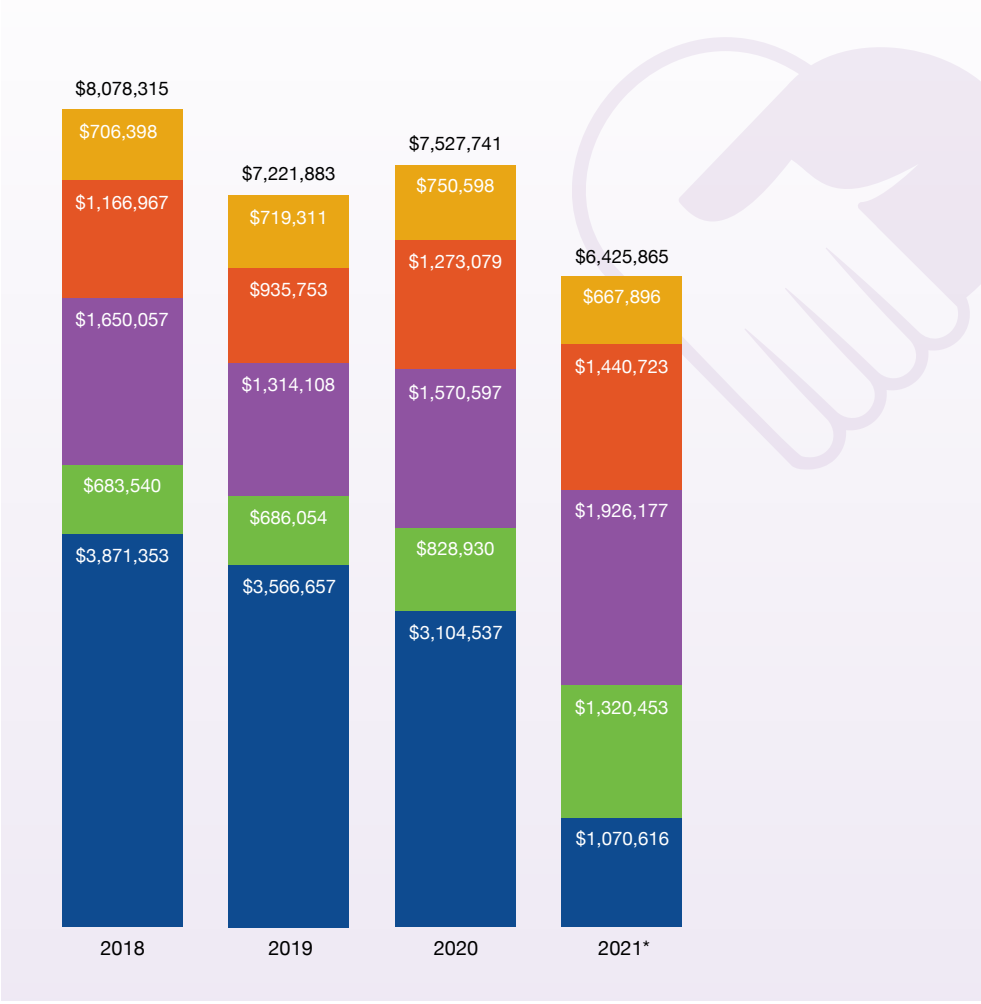
Led by The Sherwin-Williams Foundation, our charitable giving is accomplished through strategic affiliations with key community partners. We prioritize support for efforts seeking to create sustainable impact in the following focus areas:

- Access to safe and healthy housing;
- Advancing a skilled workforce that sustains inclusive, vibrant communities; and
- Beautifying and preserving assets around the world.

Amplifying and supporting causes most important to our employees remains a hallmark of our giving philosophy. The Foundation is proud to make significant investments in matching gifts, as well as provide tools to ensure our employees can easily connect with and support those causes most important to them. In 2021, we expanded this program to include all The Americas Group (TAG) division offices, empowering hundreds of additional employees to participate and maximize their impact. Sherwin-Williams also supports employee giving by covering all administrative fees associated with donations made through our online giving platform.

2021 Community Giving Data

- The Sherwin-Williams Foundation matches employee contributions to qualifying nonprofit organizations. Each year, The Foundation supports hundreds of organizations that are most important to our employees.
- Supporting the communities where we live and work has always been an important part of how we do business. Across the U.S., employees help strengthen their communities by serving on more than 120 nonprofit boards.
- In 2021, employees gave to more than 1,300 nonprofit organizations.



** 2021 operating divisions in-kind giving decreased as compared with previous years due to supply chain challenges.*



FEATURE STORY

Painting a Future of Opportunity with HomeWork Program

Paint can be a catalyst for enrichment; beautifying a home and brightening up a community are just a few examples of the impact it can have. One way that Sherwin-Williams uses paint for enrichment is through the HomeWork painter training program. This five-day training series teaches under-served individuals seeking employment how to paint in a commercial environment.

The program consists of both classroom time and real-world painting application practice. Those who complete the class earn a certificate under the U.S. Environmental Protection Agency (EPA) Renovation, Repair and Painting program. Since the HomeWork program's launch in 2004, nearly 8,000 adult students have successfully completed it, with more than 500 classes held throughout the United States by the end of 2021.

Shortly before his retirement from Sherwin-Williams in 2003, Al Blanchard, former Sherwin-Williams Director of National Accounts and Architectural Services, helped develop the program and he has remained an active force in continuing to grow its success. "The program came at a time nearly two decades ago when the painting industry was really hurting for help," Blanchard said. "We're proud to say we now have a 67% hiring rate, with many people finding jobs with local housing authorities, painting contractors and construction companies."

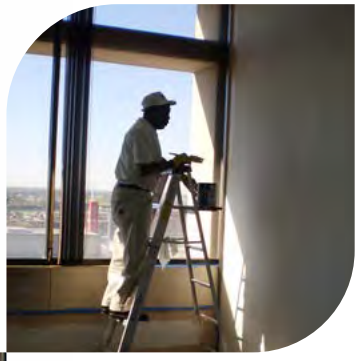
Class instructors are Sherwin-Williams retirees who teach in their spare time. "The benefit to the HomeWork students isn't just the skills they learn, but also the teamwork, self-confidence and communication skills," said Tom Norman, long-time HomeWork instructor.

The volunteer instructor reflected on a memorable student he once had in class, whose life trajectory was changed by enrolling in the program. "He had just been released from prison and wasn't feeling positive about his future," Norman said. "After attending and graduating from the HomeWork program, the student had a totally different outlook on life. I learned later that he had found a job painting and that his life had been changed for the better."

"Most of the students that enroll in the HomeWork program don't know each other at the beginning of the class; however, by the end of the five days, they develop friendships and some even find themselves working alongside each other afterward," Norman added. "The lasting impact creates a brighter future for the students and their communities."

Blanchard reflected on what is on the horizon for the painting course in 2022 and beyond. "As we begin the 19th year of our HomeWork Painter Training program, our goal is to continue to be an industry leader," he said. "Our key objective has always been to provide skills for the trainees to be placed in employment. We look forward to continuing to drive home this mission while creating employment opportunities in our communities for years to come."

SHERWIN-WILLIAMS
Home Work





Our Commitment in Action

Our local teams are empowered to provide product and talent to help preserve and beautify community assets and support neighbors throughout our footprint. Our Employee Resource Groups (ERGs) remain a driving force behind our community engagement efforts. In 2021, we shared best practices and resources to support ERGs in aligning their talents to make a positive difference, including:

- Our Chicago African American ERG organized its second-annual supply drive for the homeless by collecting toiletry donations, accounting for more than $2,500 from 20+ Sherwin-Williams stores and offices.
- The Sherwin-Williams PrideWorks ERG leveraged the Company's online giving platform and The Sherwin-Williams Foundation's matching gifts program to raise more than $5,000 for The Trevor Project, the world's largest suicide prevention and crisis intervention organization for LGBTQ+ young people.
- Our Women's Club transitioned its 5K Run and 1-Mile Walk & Roll event to a virtual format for the second consecutive year and raised more than $70,000 for Youth Challenge, a Northeast Ohio nonprofit that brings together young people with physical disabilities and teen volunteers who inspire each other through adapted sports, recreation and social growth activities.

STATESVILLE MANUFACTURING HOSTS KINDNESS CHALLENGE

In November 2021, our Statesville, North Carolina, manufacturing site completed a monthlong Acts of Kindness Challenge. The challenge, which included collecting donations of food, water and hand sanitizer as well as service, led to 941 acts of kindness in support of the site's surrounding communities. All donations were provided to Fifth Street Ministries, a nonprofit organization that serves the area's homeless, impoverished and working poor.

Supporting Our Employees When They Need It Most

When disaster strikes, we respond. Following Hurricane Ida in Louisiana in late August 2021, employees raised approximately $25,000 through the Company's Employee Relief Fund. These funds were distributed to 80 impacted colleagues.

Similarly, employees responded with monetary and food donations when the Fund was activated again in December 2021, following the destructive string of tornados that touched down in Kentucky and neighboring states.

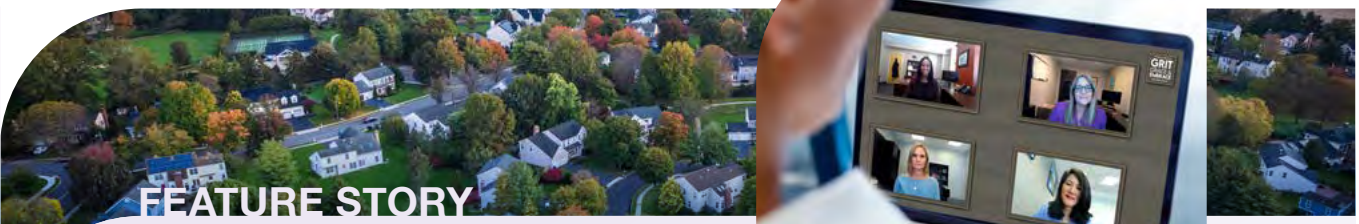
SALES REP OF THE YEAR MENTORS AT-RISK YOUTH

Loren Wilder, Sherwin-Williams Branch Manager, The Americas Group, in Decatur, Georgia, remembers the profound impact his first mentor – his high school football coach – had on his life as a homeless teen in Springfield, Massachusetts. Now, the two-time East Coast Sales Rep of the Year is driven to pay it forward, striving to have a similar impact on others.

Wilder, who has been with the Company for more than 10 years, serves as a trusted mentor to fellow employees and at-risk youth. At one point, he was volunteering with nine organizations at a time. Today, he's narrowed his engagements while still passionately supporting efforts to empower children and young people.

Active within the Company, Wilder assists with college recruiting and serves as the Employee Resource Group leader for Hispanic recruiting, an onboarding trainer for new employee training and a Safety Pod Leader. In addition, he mentors several part-time employees and store managers, assisting with interviewing skills and encouraging them to reach their goals.





FEATURE STORY

Women's Club Hosts First-Ever Global Summit

The 110-year-old Sherwin-Williams Women's Club (SWWC) took its mission global in 2021 with a virtual, worldwide Women's Summit in June. The event's theme, *Grit, Grace and Embrace,* was chosen to spark inspiration during a time of uncertainty in the world, and to embrace a common theme of empowerment. All 61,000+ employees were invited to attend three sessions over as many days, with additional networking and Q&A opportunities available to registered SWWC members.

The SWWC planning committee set meaningful goals for the event, including increasing retention and engagement of women within the organization, driving cross-divisional exposure, showcasing leadership commitment to inclusion, diversity and equity, and promoting career advancement. Topics presented during the sessions were "Bringing Your Whole Self to Work" and "Being an Ally to Women." Keynote speakers included Kerrii Anderson, former Chief Executive Officer and President of Wendy's International, Inc., who serves on the Sherwin-Williams Board of Directors, and Heidi Petz, who at the time was serving as the first female President of The Americas Group and in 2022 became the Company's first female President and Chief Operating Officer.

Dani Neumann, Sherwin-Williams Product Manager, Exterior Woodcare, Consumer Brands Group and 2021 SWWC President, spoke about the importance of offering this event on a global scale. "Extending these important messages to a global audience was a key piece of delivering on the purpose of the event," she explained. "Making this a virtual event enabled us to break down geographical barriers through the use of technology."



The event drew nearly 3,000 participants globally throughout the organization, and the content was offered in 10 different languages. "Planning an event of this magnitude required many individuals to get involved and share their unique talents and skills to bring together a seamless experience," Neumann said.

Based on the positive feedback received, the event was not only a major win for the Club, but it also delivered on its purpose and goal. "I hope that anyone who attended walked away from this experience with a better understanding of how to advocate for themselves and others, with a sense of empowerment," Neumann concluded. "Being part of the Club has empowered me to be my best self, and the members continue to inspire me with their grit, grace and ability to embrace."





FEATURE STORY

Different Countries, Same Calling: Two Employees Serve as Volunteer First Responders

In 2021, the Company witnessed two similar and equally impressive employee stories of community service emerge from opposite sides of the globe. Aaron Kavanagh, Sherwin-Williams Customer Service Supervisor, Performance Coatings Group, in Dublin, Ireland, works as an emergency first responder in his spare time, and Chris Locke, Sherwin-Williams Sales Service Representative, Consumer Brands Group, in Davidson, North Carolina, is a volunteer firefighter. Both employees have served in their respective volunteer callings for nearly five years.

Kavanagh clocks more than 1,000 hours of donated time with the Irish Red Cross each year. In Ireland, the Red Cross serves as a secondary emergency organization, working in tandem with the national ambulance service under the Department of Defense, often with the Red Cross' trained first aid volunteers arriving at the scene before an ambulance does.

"What many people do not realize is that a large number of hours and late nights are spent planning and coordinating behind the scenes," said Kavanagh, who serves in many roles with the humanitarian organization, including Emergency First Aid Responder, Cardiac First Response Instructor and Branch Treasurer. He also formerly served as a Unit Officer, where he inspired more than 20 members under his leadership and was responsible for ensuring volunteers were ready and available to respond to emergency calls.

Similarly, in the United States, Locke has held various positions throughout his time as a volunteer firefighter. "I have served in different roles within different departments. Currently, I am a captain at Sandy Bottom Fire and Rescue," he said. "What initially sparked my interest was seeing the team respond to a call at a neighbor's house. I put in an application the next week and the rest is history."

In July 2021, Locke and seven other firefighters on his team were presented with the SAVE Award by the State of North Carolina. This award is presented to firefighters who go above and beyond the call of duty to save a life; his team was specifically honored for tending to a serious mobile home fire and rescuing one of the occupants in April 2021.

For Kavanagh and Locke, helping the people in their communities motivates them to continue to serve. Kavanagh recounted some of the reasons he is so passionate about his service. "The work is very rewarding," he said. "We have seen people at their best and at their lowest – however, every call we answer helps someone, and that is why I joined the volunteer services."

Locke shared similar sentiments. "My biggest source of pride and what drives me is looking back and knowing that I have improved the lives of people in my community and that I have left it better than I found it," he concluded. "The biggest thing is finding something you're passionate about and using that to make a positive impact in your community."







Appendix

IN THIS SECTION:

SASB Index

TCFD Disclosures

Investor ESG Summary

The Sherwin-Williams Company – 2021 SASB Index

Accounting Metric

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODIFIED METRIC CODE	SHERWIN-WILLIAMS RESPONSE
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations	Quantitative	Metric tons (t) CO_2-e, Percentage (%)	RT-CH-110a.1	Scope 1 emissions were 354,397 metric tons of CO_2-e in 2021. Currently, no portion (0%) of our emissions is under emissions-limiting regulations. For further information about our emissions calculations and performance over time, please see page 20 of our 2021 Sustainability Report.
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	RT-CH-110a.2	Please see page 20 of our 2021 Sustainability Report.
Air Quality	Air emissions for the following pollutants: (1) NOx (excluding N_2O), (2) SOx, (3) volatile organic compounds (VOCs), and (4) hazardous air pollutants (HAPs)	Quantitative	Metric tons (t)	RT-CH-120a.1	(1) In 2021, we emitted 3,515 tons of NOx. (2) In 2021, we emitted 212 tons of SOx. (3) Across our manufacturing and blending facilities, 1,879 tons of VOCs were emitted in 2021. (4) Sherwin-Williams is not a significant emitter of HAPs.
Energy Management	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable, and (4) total self-generated energy	Quantitative	Gigajoules (GJ), Percentage (%)	RT-CH-130a.1	(1) In 2021, our total direct energy was 5.06 million gigajoules, our total indirect energy was 2.67 million gigajoules and total energy was 7.73 million gigajoules. (2) 47.2% of our total fuel consumption came from the electricity grid. (3) and (4) We do not currently use significant renewable or self-generated energy sources; however, we have committed to increase electricity from renewable sources to 50% of total electricity usage by 2030. For further information, please see pages 22-24 of our 2021 Sustainability Report.
Water Management	(1) Total water withdrawn, (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Thousand cubic meters (m^3), Percentage (%)	RT-CH-140a.1	2021 water data will be published in our CDP Water Response in the late summer of 2022. In 2021: (1) Total water withdrawn: 3,785,000 m^3; (2) Water Consumption (On-site in Process or Product): 1,686,920 m^3; 0.99 m^3 per metric ton of production; percentage of water sourced from regions with High or Extremely High Baseline Water Stress: 19.5%.
	Number of incidents of non-compliance associated with water quality permits, standards, and regulations	Quantitative	Number	RT-CH-140a.2	We had zero (0) incidents of non-compliance associated with water quality permits, standards and regulations in 2021.
	Description of water management risks and discussion of strategies and practices to mitigate those risks	Discussion and Analysis	n/a	RT-CH-140a.23	Please see our 2020 CDP Water Response via www.cdp.net. Our 2021 CDP Water Response will be published in late summer of 2022.
Hazardous Waste Management	Amount of hazardous waste generated, percentage recycled	Quantitative	Metric tons (t), Percentage (%)	RT-CH-150a.1	We generated 70,000 metric tons of hazardous waste in 2021. Of that, 39.6% was recycled or reused. For further information, please see pages 25-26 of our 2021 Sustainability Report.
Community Relations	Discussion of engagement processes to manage risks and opportunities associated with community interests	Discussion and Analysis	n/a	RT-CH-210a.1	Please see our GRI content index disclosures 102-42, 102-43 and 102-44.

The Sherwin-Williams Company – 2021 SASB Index, continued

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODIFIED METRIC CODE	SHERWIN-WILLIAMS RESPONSE
Workforce Health & Safety	(1) Total recordable incident rate (TRIR) and (2) fatality rate for (a) direct employees and (b) contract employees	Quantitative	Rate	RT-CH-320a.1	In 2021: 0.81 recordable case rate (total number of employees with recordable incidents per 200,000 hours worked); 0 fatalities for direct employees and contract employees. For further information, please see page 38 of our 2021 Sustainability Report.
	Description of efforts to assess, monitor, and reduce exposure of employees and contract workers to long-term (chronic) health risks	Discussion and Analysis	n/a	RT-CH-320a.2	Please see the information regarding our global EHS management system here.
Product Design for Use-phase Efficiency	Revenue from products designed for use-phase resource efficiency	Quantitative	Reporting currency	RT-CH-410a.1	We do not currently track this quantitative data given that the majority of the environmental impact of our products results from raw material extraction and not the use phase. Please see pages 30-32 of our 2021 Sustainability Report for information regarding the "sustainably advantaged products" in our portfolio.
Safety & Environmental Stewardship of Chemicals	(1) Percentage of products that contain Globally Harmonized System of Classification and Labelling of Chemicals (GHS) Category 1 and 2 Health and Environmental Hazardous Substances, (2) percentage of such products that have undergone a hazard assessment	Quantitative	Percentage (%) by revenue, Percentage (%)	RT-CH-410b.1	We are considering these metrics and they may be reported in future disclosures. Please see pages 38-39 of our 2021 Sustainability Report for further information.
	Discussion of strategy to (1) manage chemicals of concern and (2) develop alternatives with reduced human and/or environmental impact	Discussion and Analysis	n/a	RT-CH-410b.2	Please see pages 30-32 and 38 of our 2021 Sustainability Report for further information.
Genetically Modified Organisms	Percentage of products by revenue that contain genetically modified organisms (GMOs)	Quantitative	Percentage (%) by revenue	RT-CH-410c.1	None of our products contain genetically modified organisms (GMOs).
Management of the Legal & Regulatory Environment	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry	Discussion and Analysis	n/a	RT-CH-530a.1	Sherwin-Williams does not have a political action committee and does not use corporate funds to contribute to any federal, state or local candidates, political parties or other political committees. Our Government Affairs team facilitates Sherwin-Williams global participation in the public policy-making process, including with respect to issues that affect our employees, customers and business operations and objectives, as well as the paint and coatings industry in general. Please see our GRI content index disclosure 415-1.
Operational Safety, Emergency Preparedness & Response	Process Safety Incidents Count (PSIC), Process Safety Total Incident Rate (PSTIR), and Process Safety Incident Severity Rate (PSISR)	Quantitative	Number, Rate	RT-CH-540a.1	Please see pages 38-39 of our 2021 Sustainability Report for this information.
	Number of transport incidents	Quantitative	Number	RT-CH-5401.1	Please see pages 38-39 of our 2021 Sustainability Report for this information.

Activity Metric

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODIFIED METRIC CODE	SHERWIN-WILLIAMS RESPONSE
Production by reportable segment	Quantitative	Cubic meters (m^3) and/or metric tons (t)	RT-CH-000.A	Please see pages 6-13 of our 2021 Annual Report for information regarding our reportable segments.

The Sherwin-Williams Company – Task Force on Climate-related Financial Disclosures (TCFD) 2021 Report

Introduction

The Sherwin-Williams Company recognizes the importance of measuring and analyzing our carbon footprint and actively seeking ways to reduce our greenhouse gas emissions (GHG) and use our products and technology to help improve energy efficiency and reduce global carbon emissions. Sherwin-Williams has established related goals, tracks metrics and reports on its progress annually. In early 2021, we established our 2030 environmental footprint goals against a 2019 baseline.

We believe a summary of the global scope of our business is important in understanding our climate-related disclosures. Our business consists of three reportable segments:

- **The Americas Group** operates the exclusive outlets for Sherwin-Williams® branded paints, stains, supplies, equipment and floor covering in the United States, Canada and the Caribbean. The Group also manufactures and sells architectural paints, industrial coatings and related products in Latin America through Company stores, dedicated dealers and selected retailers. We have: Sherwin-Williams paint stores in the United States, Canada and the Caribbean, and in Brazil, Chile, Ecuador, Mexico and Uruguay; dedicated dealers, home centers, distributors and hardware stores in Argentina, Brazil, Chile, Ecuador, Mexico and Uruguay; and a licensee in El Salvador to serve Central America.
- **Consumer Brands Group** sells one of the industry's most recognized portfolios of branded and private-label products through retailers in North America, Europe and China. This Group has over 10,000 points of distribution with leading mass merchandisers, home centers, independent paint dealers, hardware stores, craft stores, fine art stores, automotive retailers and industrial distributors in the United States, Canada, Europe and China. The Group also operates a highly efficient global supply chain for paint, coatings and related products.
- **Performance Coatings Group** sells a broad range of coatings and finishing solutions to general industrial, industrial wood, protective and marine, automotive refinish, packaging and coil customers in more than 120 countries.

The information included in this report does not cover all information about our business and sustainability and ESG initiatives, including those relating to environmental and climate change-related risks. Please refer to other sections of our 2021 Sustainability Report, including the disclosure regarding forward-looking statements and other information, in addition to other information about our business and sustainability and ESG initiatives made available on or through our website.

The Sherwin-Williams Company – Task Force on Climate-related Financial Disclosures (TCFD) 2021 Report, continued

Governance

a. Describe the board's oversight of climate-related risks and opportunities.

b. Describe management's role in assessing and managing climate-related risks and opportunities.

Board of Directors' Oversight

Our sustainability and environmental, social and governance (ESG) framework is centered on a foundation of governance and ethics, with our governance structure designed to support broad engagement and appropriate oversight across the organization.

Our Board of Directors is responsible for overseeing the assessment and management of the Company's exposure to various risks. We have an enterprise risk management (ERM) process to identify, assess and manage the most significant risks facing us, including financial, operational, litigation, compliance, reputational and ESG risks. Management reviews significant risks with the board throughout the year, as necessary and appropriate, and conducts a formal review of the most significant risks with the board at least once per year.

Our board committees assist the board with this oversight responsibility by reviewing specific risk areas. The Audit Committee's support of the board includes overseeing the Company's ERM process and compliance with legal and regulatory requirements, including those that may be related to environmental and climate-related requirements. The Nominating and Corporate Governance Committee's support includes overseeing the Company's key environmental (including the impacts of climate change), product stewardship, health and safety, sustainability and corporate social responsibility policies and strategies. The Compensation and Management Development Committee's support includes overseeing the Company's key policies and strategies regarding the attraction, retention and development of talent, including inclusion, diversity and equity initiatives, as well as our Chief Executive Officer's annual performance evaluation, which includes a performance assessment category of ESG leadership that encompasses the development, integration and execution of ESG strategy and progress on ESG initiatives as part of the Company's overall business strategy.

Management periodically reviews our efforts and progress in these areas with the Committees, as well as the full board. Members of the Sherwin-Williams Global Sustainability team and Sustainability Steering Committee also periodically provide updates to the board regarding the Company's key ESG strategies, policies, programs and initiatives (including those relating to climate change).

Senior Management's Role

While our Board of Directors has oversight responsibility of management and various risks, the Company's management and their teams, under the direction of our Chief Executive Officer, are responsible for managing the business and day-to-day affairs of the Company. Management is responsible for identifying, assessing and managing the Company's exposure to various risks through the Company's ERM process. As part of this process, we prioritize the most significant risks and assign them to senior leaders based on their respective roles within the Company to assist with the ongoing management and monitoring of those risks. Our Senior Vice President – Finance and Chief Financial Officer provides centralized management oversight of the Sherwin-Williams ERM program.

In 2019, we formed a Sustainability Steering Committee to support an enterprise-wide approach to developing and overseeing our key ESG and sustainability strategies and policies and support alignment across the organization in addressing current and emerging trends, risks and opportunities. The Sustainability Steering Committee includes members of senior management and other senior leaders across the organization, and meets on a periodic basis to discuss the Company's key ESG strategies, policies and practices, including those relating to climate change. Members of the Sustainability Steering Committee provide periodic reports to the full board and its committees. The Sustainability Steering Committee oversees and is supported by members of the Sustainability Council, which consists of subject matter experts from across the Company responsible for leading working groups that manage various ESG and sustainability initiatives, policies and programs.

To focus on specific ESG- and sustainability-related initiatives, we have created working groups on an as-needed basis. In 2020, we formed the Climate and Footprint working group to address specific topics related to the Company's climate and environmental footprint.

The Sherwin-Williams Company – Task Force on Climate-related Financial Disclosures (TCFD) 2021 Report, continued

Strategy

a. Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term.

b. Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning.

c. Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.

Sherwin-Williams Climate Strategy

Sherwin-Williams assesses risk factors that may materially and adversely affect our business, results of operations, cash flow, liquidity or financial condition. In line with the TCFD framework, Sherwin-Williams considers two primary types of climate risks: physical risks and transition risks. We define our time horizons in the following manner:

- **Short term:** 0 to 2 years
- **Medium term:** 2 to 5 years
- **Long term:** 5 to 10 years

The following risk and opportunity categories are considered in our climate-related assessments:

RISK ASSESSMENT OVERVIEW		
Risk Categories	**Major Characteristics/Examples**	**Time Horizon**
Physical Risk Exposure: Acute	Increased frequency of severe or extreme weather events (e.g., heatwaves, drought, floods, hurricanes, wildfire, winter storms and other natural disasters)	Short, medium and long term
Physical Risk Exposure: Chronic	Long-term shifts in physical conditions (e.g., increased average temperature, sea-level rise, melting glaciers)	Long term
Transition Risk Exposure: Policy Risk	Risk of policy action to encourage or require low-carbon transition, water restrictions and land use restrictions in direct operations or upstream supply chain (through carbon taxes, for example)	Short, medium and long term
Transition Risk Exposure: Market Risk	Increased costs for key suppliers to replace certain raw materials	Short, medium and long term
Transition Risk Exposure: Reputation Risk	Increased scrutiny from investors, lenders and insurers	Short, medium and long term
Transition Risk Exposure: Technology Risk	Possible early retirement (voluntary or forced) of existing products or technologies to mitigate climate impacts	Short, medium and long term
OPPORTUNITY ASSESSMENT OVERVIEW		
Opportunity Categories	**Major Characteristics/Examples**	**Time Horizon**
Downstream Impact on Products and Services	Protective coatings that help infrastructure withstand climate extremes and extend the life of physical assets; coatings that are used in solar and wind technologies; coatings that help reduce energy consumption, including reflective coatings; coatings that improve fuel economy; packaging coatings that reduce spoilage and wasted food	Short, medium and long term
Innovation	Sustainability by Design initiative resulting in an enhanced portfolio of "sustainably advantaged products"	Medium and long term
Consumer Sentiment	Increasing preference for products that have lower environmental impact, including carbon footprint	Short, medium and long term
Geographic and Operational Flexibility	Eliminate redundancies in manufacturing capabilities; highly efficient, integrated global supply chain; strategic location of stores; ability to set up mobile stores in disaster-prone and affected areas.	Short, medium and long term

The Sherwin-Williams Company – Task Force on Climate-related Financial Disclosures (TCFD) 2021 Report, continued

Physical Risks

We leveraged the expertise of S&P Global's Trucost ESG Analytics (Trucost) to assess impacts to our facilities. Trucost analyzed the potential physical risks that may impact our operations, considering different scenarios of global warming by 2050. To evaluate the potential risks of climate change on our business, we considered three distinct climate scenarios that are commonly used in conjunction with the TCFD framework:

SCENARIO	REPRESENTATIVE CONCENTRATION PATHWAY (RCP)	DESCRIPTION
High Climate Change Scenario	RCP 8.5	Continuation of business as usual with emissions worldwide at current rates. This scenario is expected to result in warming in excess of 4°C by 2100.
Moderate Climate Change Scenario	RCP 6.5	Strong mitigation actions to reduce emissions worldwide to half of current levels by 2080. This scenario is more likely than not to result in warming in excess of 2°C by 2100.
Low Climate Change Scenario	RCP 2.6	Aggressive mitigation actions to halve emissions worldwide by 2050. This scenario is likely to result in warming of less than 2°C by 2100.

Source: TCFD and Trucost

We evaluated these risks under all three scenarios. Our environmental footprint reduction goals were based on a global warming scenario of less than 2°C, in alignment with the use of science-based targets.

For additional climate-related risk information beyond what is included in this document, see the risk factor discussion related to adverse weather conditions and natural disasters in our Annual Report on Form 10-K for the fiscal year ended December 31, 2021 (Form 10-K).

Our environmental footprint reduction goals for 2030, versus a 2019 baseline, are as follows:

1. **Reduce absolute Scope 1 and 2 greenhouse gas emissions by 30% by 2030;**
2. **Increase electricity from renewable sources to 50% of total electricity usage by 2030;**
3. **Increase operational energy efficiency by 20% by 2030; and**
4. **Reduce waste disposal intensity by 25% by 2030.**

We believe we can use the experience gained from pursuing these 2030 targets to propel us toward more ambitious goals for 2050 and beyond.

As for physical risks, the third-party assessment of our more than 5,000 manufacturing, retail, laboratory, warehouse and blending facilities determined that, in the aggregate, we are generally at low risk for adverse impacts resulting from wildfire, coldwave, heatwave, flood, sea level rise and hurricanes.

The assessment identified water stress as a moderate to high physical risk at some of our locations. However, upon further analysis, many of the Sherwin-Williams sites in the highest water stress risk areas are distribution warehouses and offices, where water use is limited (employee-related uses). We believe only a modest number of our manufacturing sites are in water-stressed areas, and we are working with these sites to assist in mitigating and monitoring water stress risk effectively.

RISK TYPE: Acute Physical
TIME HORIZON: Short, medium and long term
DESCRIPTION: As noted in the introduction to this disclosure, Sherwin-Williams has a global presence and an integrated network of manufacturing, distribution and sales locations. As our Company grows and we continue expanding our geographic footprint, we may encounter more extremes in water availability and with local climates.

The Sherwin-Williams Company – Task Force on Climate-related Financial Disclosures (TCFD) 2021 Report, continued

Generally, the coatings industry is evolving from solvent-based formulations to water-based formulations. This evolution is being driven by customer preference and regulatory changes. However, it is also increasing the demand on local fresh water sources, which could escalate into water deficiencies or shortages in some areas. Although not always possible, we attempt to locate manufacturing in areas with ample water supply.

From time to time, adverse weather conditions and natural disasters have had or may have an adverse effect on our sales, manufacture and distribution of our products. In the event adverse weather conditions or a natural disaster causes considerable damage to any one or more of our principal manufacturing or distribution facilities, we may not be able to manufacture the products needed to meet customer demand, which could have an adverse effect on our sales. The impact of these risks to our suppliers also have had or may have an adverse effect on our sales, manufacture and distribution of certain of our products.

During 2021, Winter Storm Uri and Hurricane Ida caused severe damage to certain of our suppliers' facilities in Texas and Louisiana, respectively. These natural disasters and their impacts to certain of our suppliers resulted in unprecedented industry-wide supply chain disruptions, increased raw material and other costs, and significantly hindered our ability to manufacture the products needed to fully meet customer demand. We discussed these natural disasters and their adverse impacts to our business in our disclosures throughout the year.

In the event of adverse weather conditions and natural disasters, we focus on responding to and mitigating the impacts quickly, including, but not limited to, redistributing resources within our network (people, materials, etc.) and/or providing temporary solutions (opening mobile stores in impacted areas, for example).

RISK TYPE: Chronic Physical
TIME HORIZON: Long term
DESCRIPTION: Severe weather events have the potential to disrupt operations at manufacturing, distribution and sales locations within certain regions. Our Global Supply Chain (GSC) consists of a highly efficient manufacturing and distribution system for paint, coatings and related products. GSC is integrated in such a way that the risk created by a particular location being forced out of service may be mitigated, including by shifting production to other locations, if necessary. If climate risks continue to increase, there is the potential for further disruption to more of our locations simultaneously, and for more severe consequences from each disruption. We will continue to focus on these physical risks for strategic planning purposes, with an emphasis on water stress as a predominant long-term risk.

Transition Risks

RISK TYPE: Public Policy
TIME HORIZON: Short, medium and long term
DESCRIPTION: We look at both current and emerging regulations in the markets where we operate and evaluate the potential impact of proposed rules, and other regulatory frameworks, on our business.

Increased global focus on climate change may result in the imposition of new or additional regulations or requirements applicable to, and increased financial risks for, our business and industry. The outcome of new legislation or regulation in the U.S. and other jurisdictions in which we operate may result in new or additional requirements, including to fund energy efficiency activities or renewable energy use, and fees or restrictions on certain activities or materials. Compliance with these climate change initiatives may also result in additional costs to us, including, among other things, increased production costs, additional taxes, additional investments in renewable energy use and other initiatives, reduced emission allowances or additional restrictions on production or operations.

As environmental footprinting at the product level becomes increasingly important, the possibility of carbon limits for products may occur. We have already seen examples of this for other building materials in various regions around the world. Although our innovation and R&D efforts, combined with our life cycle assessment program, are expected to assist in mitigating the adverse impact of such potential carbon limits, certain product types or product lines could be affected, requiring substantial product reformulations.

Sherwin-Williams participates in various regional and industry trade associations such as the American Coatings Association (ACA); the European Council of the Paint, Printing Ink and Artists' Colours Industry (CEPE); the Retail Industry Leaders Association (RILA); the National Association of Manufacturers (NAM); and groups such as the U.S. Green Building Council. This active involvement demonstrates our commitment to collaborate and share ideas within the industry and other groups about the connection points between public policy and our focus on technical innovation. This engagement also informs the development of our strategies for addressing current and emerging trends, risks and opportunities and complying with applicable laws and regulations relating to the environment and climate change.

The Sherwin-Williams Company – Task Force on Climate-related Financial Disclosures (TCFD) 2021 Report, continued

RISK TYPE: Market
TIME HORIZON: Short, medium and long term
DESCRIPTION: We believe our primary climate-related market risks are the potential for increased costs and insufficient availability of the raw materials we need to produce our products.

As our Company grows and we continue expanding our geographic footprint, we may encounter more extremes in water availability. Generally, as the coatings industry is evolving from solvent-based formulations to water-based formulations, there may be an increasing demand on local fresh water sources. Going forward, we will continue to monitor this closely so that we can fine-tune our consideration of the various assumptions and factors that could impact our view of climate-related market risk.

In addition, our suppliers may have exposure to climate-related risks that may disrupt our ability to acquire raw materials or result in higher prices due to shortages. Furthermore, risks of shifting consumer behavior and preferences are relevant to our business. Where possible, we strive to find ways to respond to these risks, trends and our customers' needs and requests with respect to the premium products, quality and service that they have come to expect from us, including by taking the opportunity to expand our portfolio of "sustainably advantaged products," as further described below.

In a growing number of situations, sustainability is considered a market attribute for products both at the sales and formulator levels. As end users continue to become more climate-conscious, it is important for us to keep pace with those demands. Consumers also increasingly desire products with such sustainability or "green" attributes, which can be based on their ingredients, how they are formulated and how they are used. For example, the percentage of lower-VOC or no-VOC product alternatives in our portfolio has continued to grow in recent years.

RISK TYPE: Reputation
TIME HORIZON: Short, medium and long term
DESCRIPTION: We are mindful of our stakeholders' perceptions of us. We work hard to maintain our reputation as an industry leader and continue to be recognized for our efforts and progress on our sustainability and ESG initiatives. The heightened focus on climate change has created opportunities to review our sustainability and ESG strategies and practices. Failure to reduce the Company's emissions and environmental impact or to respond to changes in consumer behaviors and preferences may result in reduced demand for our products and services. We partner and collaborate with non-governmental organizations, customers, suppliers and regulators to foster open lines of communication and aid us in being responsive to stakeholder interests. However, we are aware that maintaining and building on our initiatives is an important short-, medium- and long-term responsibility because even small missteps have the potential to create reputation risk for our business.

RISK TYPE: Technology
TIME HORIZON: Medium and long term
DESCRIPTION: Evaluation of technology is incorporated into our business operations. When selecting equipment, energy efficiency is often considered as part of the selection process. In addition, sustainability attributes, including environmental footprint, have been built into certain of our research and development (R&D) processes across much of the business to consider potential climate impacts of new raw materials, formulation technologies and/or product performance.

To help further our focus on incorporating sustainability attributes into our approach to technology and product development, in 2021, we implemented our Sustainability by Design program across the enterprise. This program embeds life cycle thinking into early stages of these processes and better enables us to expand our portfolio of "sustainably advantaged products." We define "sustainably advantaged products" as those products that achieve a level of third-party green chemistry, ecolabel or similar recognition, or can be shown to be more sustainable than what is currently the norm for the industry.

This initiative is a signature effort in our five-stage Stage-Gate process to formally incorporate sustainability attributes within our innovation and product development processes. From initial concept through commercialization, we strive to identify ways to make our products more sustainable and better performing by evaluating chemical formulations, product performance, manufacturing processes, health and safety considerations and product packaging, among other areas. In 2021, we defined five "Sustainability Attributes" for product innovation and development – Air Quality, Formula Stewardship, Resource Conservation, Circularity and Performance.

The Sherwin-Williams Company – Task Force on Climate-related Financial Disclosures (TCFD) 2021 Report, continued

Opportunities

OPPORTUNITY TYPE: Downstream Impact on Products and Services
TIME HORIZON: Short term
DESCRIPTION: The risks and impacts of climate change, and global efforts to combat climate change, have the potential to create opportunities for our business. For example, extreme weather conditions can drive demand for our protective coatings, if assets are destroyed or need repair as a result.

Our coatings are used in a wide variety of asset preservation applications – extending the useful life of bridges, buildings, heavy equipment, appliances, vehicles and boats. Without our coatings, these assets may have a shorter life span and require earlier disposal and replacement with new assets that utilize additional energy and natural resources in their production. As an example, consider the cost of carbon for manufacturing and installing a steel structure such as a bridge. The structure's life expectancy would be severely limited if installed without corrosion protection or using inadequate coating technologies. Using our products extends the life of the bridge, reducing the need to replace it following unabated weathering, corrosion or neglect. Replacement of any structure prematurely may create an increased GHG burden on the Earth, its atmosphere and society. We believe our ability to provide products that are designed to withstand extreme weather events and extend product life span enables us to contribute to carbon and waste reduction in meaningful ways all around the world.

In addition, our coatings help enable assets such as solar panels, wind turbines and marine craft to continue to operate in an efficient manner. We also make reflective coatings that reduce energy consumption and packaging coatings that reduce spoilage and food or beverage waste.

OPPORTUNITY TYPE: Innovation
TIME HORIZON: Medium and long term
DESCRIPTION: Given the increasing interest in low-carbon products, several projects are underway to help reduce carbon in products we manufacture. In early 2019, Sherwin-Williams became the first company in our industry to publish an externally validated strategy for reducing the carbon footprints of several key products, and we have specifically committed to lowering the carbon footprint of 10 of our best-selling product lines. As such, carbon performance is a key attribute that is considered early in the R&D process.

In 2021, we formally introduced our Sustainability by Design initiative, committed to implementing it across the enterprise and determined our baseline of "sustainably advantaged products."

- **Sustainability by Design**: Through this initiative, we consider sustainability attributes in innovation and product development processes within our five-stage Stage-Gate process. From initial concept through commercialization, we identify ways to make our products more sustainable and better performing by evaluating chemical formulations, product performance, manufacturing processes, health and safety considerations and product packaging, among other areas. In 2021, we defined five "Sustainability Attributes" of focus for product innovation and development – Air Quality, Formula Stewardship, Resource Conservation, Circularity and Performance.
- **"Sustainably Advantaged Products"**: As we define it, the term "sustainably advantaged product" means a product that achieves a level of third-party green chemistry, ecolabel or similar recognition, or can be shown to be more sustainable than what is currently the norm for the industry.

We are pursuing growth opportunities by developing new products and services to further preserve existing assets and create products designed to facilitate energy savings. Innovations in coatings technology have led to coatings that require less energy to apply and cure, including:

- Coatings that once required high-temperature bake cycles in the past can now cure at room temperatures because of innovative technology. These coatings reduce energy requirements by eliminating the need for high-temperature bake cycles.
- The development of high-transfer-efficiency powder coatings not only reduces spray time and the energy associated with the spray application process, but also reduces product loss, which further reduces energy use and preserves natural resources.
- Heat- and sun-reflective roof coatings and infrared-reflecting concrete coatings reduce the urban heat island effect and can reduce cooling needs in warmer climates.
- Powder coatings and other types of coating systems that deliver high performance in just one layer rather than competing coatings that may require multiple layers, which requires more energy and material to achieve similar performance.

The Sherwin-Williams Company – Task Force on Climate-related Financial Disclosures (TCFD) 2021 Report, continued

OPPORTUNITY TYPE: Consumer Sentiment
TIME HORIZON: Short, medium and long term
DESCRIPTION: Many consumers and markets are demonstrating an increasing preference for products that have lower environmental impact, including a lower carbon footprint. We believe our position to meet those needs is strengthened by our sustainability initiatives and the transparency of our actions. In addition, we offer products that are specifically designed to better protect the surfaces they cover, which may result in reduced consumption. Through the preservation of their existing assets and our products designed to facilitate energy savings, customers increasingly recognize the beneficial attributes of Sherwin-Williams products.

We believe we have a good understanding of the footprints of our products because we have invested in industry-leading capabilities in life cycle assessment (LCA) and environmental product declarations (EPDs). Many of these LCAs have been peer-reviewed, published as EPDs and are publicly available. We have EPDs for hundreds of products.

To help us optimize our product footprint, we created our Sustainability by Design program and determined our baseline of "sustainably advantaged products." Sustainability by Design is a signature effort in our five-stage Stage-Gate process to formally incorporate sustainability attributes such as life cycle thinking within our innovation and product development processes. This program enables us to evolve our products and processes to deliver and grow our "sustainably advantaged products" offering.

Opportunity Type: Geographic Flexibility
Time Horizon: Short, medium and long term
Description: Our Global Supply Chain (GSC) consists of a highly efficient manufacturing and distribution network for paint, coatings and related products. GSC is integrated in such a way that the risk created by the potential loss of operations within a location or region is mitigated. Production can be shifted to other locations if necessary.

As for the geographic reach of our store locations, we have historically located our stores in promising markets that may have exposure to physical risks from climate change. We believe that our experience operating in these environments has made us a reliable and trusted neighbor in these communities that can be counted on to deliver product to expediently assist rebuilding and recovery efforts. Although severe weather events in these areas may adversely impact our own operations, cause disruptions and reduce the demand for our products, such circumstances can be an opportunity to serve the needs of our customers in these high-growth regions. In addition, our store location density and mobile platform have helped enable us to initiate sales quickly following certain natural disasters, even if stores in the region were negatively impacted by a severe weather event.

Risk Management

a. Describe the organization's processes for identifying and assessing climate-related risks

b. Describe the organization's processes for managing climate-related risks.

c. Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.

How We Identify and Assess Climate-related Risks

While our management and their teams are responsible for assessing and managing the Company's business, day-to-day affairs and exposure to various risks, our Board of Directors has responsibility for the oversight of management and our various risks. Our board committees, with each composed entirely of independent directors, assist with this oversight responsibility by reviewing specific risk areas, including relating to the environment and the impacts of climate change and certain other ESG and sustainability risks, and making regular reports to the board.

Sherwin-Williams faces risks, uncertainties and other factors that could materially and adversely affect our business, results of operations, cash flow, liquidity or financial condition. These include such things as political instability, higher tariffs and adverse weather conditions, including wildfire, coldwave, heatwave, flood, sea level rise, hurricanes and other natural disasters. In addition, regulations related to climate change may negatively impact us or our suppliers in terms of availability and cost of raw materials, as well as sources and supply of energy. Since 2005, we have been voluntarily reporting to CDP.

For additional climate-related risk information beyond what is included in this document, see the climate-related risks discussion in our Form 10-K.

In 2021 and into early 2022, we retained the services of a third-party consultant to help us further assess the risks and opportunities associated with climate change and to help us prepare for this report and related disclosures. This was a

The Sherwin-Williams Company – Task Force on Climate-related Financial Disclosures (TCFD) 2021 Report, continued

comprehensive, data-driven assessment that evaluated a wide range of physical and transition risks at the enterprise, business unit, product and individual location level. The initial results from that assessment were used to define the risks and opportunities contained in the Strategy section of this TCFD report.

How We Manage Climate-related Risks

Sherwin-Williams is actively working to mitigate climate-related risks, including through our Scope 1 and Scope 2 GHG emissions reduction goals. In 2021, we announced 2030 environmental footprint goals against a 2019 baseline.

The 2030 environmental footprint goals are as follows:

- **Reduce absolute Scope 1 and 2 greenhouse gas emissions by 30% by 2030**
- **Increase electricity from renewable sources to 50% of total electricity usage by 2030**
- **Increase operational energy efficiency by 20% by 2030**
- **Reduce waste disposal intensity by 25% by 2030**

We have a robust life cycle assessment (LCA) program, with many of our LCAs peer-reviewed and published as Environmental Product Declarations (EPDs) and publicly available. We have EPDs for hundreds of products. The data from our LCAs and EPDs show that the raw materials in our coating products account for a majority of our total carbon footprint from “cradle to grave” and that raw materials are the largest driver of our Scope 3 emissions.

Other efforts to manage and mitigate our climate-related risks include our Scope 1 and Scope 2 GHG emissions reduction goals and our Sustainability by Design initiative.

We are also actively working with several key suppliers and customers on carbon footprint reduction initiatives. On an ongoing basis, we bring in key suppliers for sustainability discussions with senior leaders in the Company. These meetings often include presentations on topics or technical solutions specific to product carbon footprints. This has been taking place since 2018 and provides the opportunity to discuss with leadership the technical possibilities from key suppliers. It is also an opportunity for us to share our related sustainability expectations and goals. When we are addressing customer needs, sustainability is a potentially important market attribute for products both at the sales and formulator levels. As a result, customers increasingly regard Sherwin-Williams products as logical choices to help protect and preserve existing assets.

How We Integrate Climate-related Risks into the Organization’s Overall Risk Management

Our Board of Directors is responsible for overseeing the assessment and management of the Company’s exposure to various risks. We have an ERM process to identify, assess and manage the most significant risks facing us, including financial, operational, litigation, compliance, reputational and ESG risks. Management reviews significant risks with the board throughout the year, as necessary and appropriate, and conducts a formal review of the most significant risks with the board at least once per year.

Our board committees assist the board with this oversight responsibility by reviewing specific risk areas. The Audit Committee’s support of the board includes overseeing the Company’s ERM process and compliance with legal and regulatory requirements, including those relating to environmental and climate-related risks.

Management periodically reviews our efforts and progress in these areas with the Committees, as well as the full board. Management is responsible for identifying, assessing and managing the Company’s exposure to various risks through the Company’s ERM process. As part of this process, we prioritize the most significant risks and assign them to senior leaders based on their respective roles within the Company to assist with the ongoing management and monitoring of those risks. Our Senior Vice President – Finance and Chief Financial Officer provides centralized oversight of the Sherwin-Williams ERM program.

In 2019, we formed a Sustainability Steering Committee to support an enterprise-wide approach to developing and overseeing our key ESG and sustainability strategies and policies and support alignment across the organization in addressing current and emerging trends, risks and opportunities. The Sustainability Steering Committee includes members of senior management and other senior leaders across the organization and meets on a periodic basis to discuss the Company’s key ESG strategies, policies and practices, including those relating to climate change. Members of the Sustainability Steering Committee provide periodic reports to the full board and its committees. The Sustainability Steering Committee oversees and is supported by members of the Sustainability Council, which consists of subject matter experts from across the Company responsible for leading working groups that manage various ESG and sustainability initiatives, policies and programs.

To focus on specific ESG- and sustainability-related initiatives, we have created working groups on an as-needed basis. In 2020, we formed the Climate and Footprint working group to address specific topics related to the Company’s climate and environmental footprint.

The Sherwin-Williams Company – Task Force on Climate-related Financial Disclosures (TCFD) 2021 Report, continued

Metrics and Targets

a. Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.

b. Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.

c. Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

Metrics

We assess climate-related risks and opportunities using the following metrics:

- Scope 1 (Direct CO_2) Emissions (metric tons CO_2e)
- Scope 2 (Indirect CO_2) Emissions (metric tons CO_2e)
- Scope 3 Emissions (metric tons CO_2e)
- Total Energy Performance (Intensity) (gigajoules per metric ton of production)
- Total Energy Consumption (million gigajoules)

2021 Scope 1, 2 and 3 GHG Emissions

- Scope 1 (Direct CO2) Emissions: 354,397 metric tons CO2e
- Scope 2 (Indirect CO2) Emissions: 266,869 metric tons CO2e
- Scope 3 Emissions: To be disclosed in our 2021 CDP report later this year

For insight on our analysis of climate-related risks, see the Strategy section of this TCFD report.

Targets

In 2021, we aligned our climate strategy to reflect a science-based targets approach influenced by the Paris Agreement and its goal to limit global warming to well below 2.0 degrees Celsius. Our 2030 goal of reducing our absolute Scope 1 and Scope 2 emissions by 30% compared with a 2019 baseline is predicated on this objective. We determined that tracking and weighing our absolute Scope 1 and Scope 2 emissions, rather than setting an intensity-based goal, aligned best with the global need for mitigating the physical amount of GHG emitted into the atmosphere over time.

To review our current emissions data, see the Environmental Footprint section in our 2021 Sustainability Report and our 2021 Investor ESG Summary.

The Sherwin-Williams Company – 2021 Investor ESG Summary

TOPIC	METRIC	2019	2020	2021
Sustainability Reporting				
	2021 Sustainability Report	**2021 Sustainability Report**		
	2021 SASB Index	**2021 SASB Index**		
	2021 TCFD Report	**2021 TCFD Report**		
	GRI Index	**GRI Index**		
General				
Company	Total Employees	61,111	61,031	61,626
	Total Employees (Full-Time Equivalent)	54,759	54,727	51,116
	Net Sales (Millions)	$17,900.8	$18,361.7	$19,944.6
	Total Shareholder Return	See page 73 for Shareholder Returns		
	Number of Sites (includes manufacturing/distribution sites and global stores, branches and blending facilities)	5,376	5,288	5,271
Environmental				
General Environmental	ISO 14001 Certified Sites[1] – # (%)	43 (33%)	44 (36%)	43 (36%)
	Environmental Management Policy	Global Environmental, Health and Safety Policy		
Emissions and Climate Change	Scope 1 (Direct CO_2) GHG Emissions (metric tons CO_2e)	370,711	351,109	354,397
	Scope 2 (Indirect CO_2) GHG Emissions (metric tons CO_2e)	305,402	283,738	266,869
	Total CO_2 Emissions (metric tons CO_2e)	676,113	634,847	621,266
	Scope 3 Emissions from Business Travel (metric tons CO_2e)	17,479	5,222	6,197
	Emissions Reduction Goal	N/A, the Company has transitioned to an absolute emissions reduction goal as opposed to an intensity-based goal	Reduce Absolute Scope 1 and 2 by 30% by 2030 (2019 baseline)	Reduce Absolute Scope 1 and 2 by 30% by 2030 (2019 baseline)
	Science-Based Target	No	Yes	Yes
	VOC Emissions (metric tons)	1,635	1,681	1,879
	SOx Emissions (metric tons)	221	205	212
	NOx Emissions (metric tons)	3,657	3,404	3,515
	Climate Change Strategy	Yes	Yes	Yes
	CDP Climate Change Disclosure	CDP Climate Change Response		
	CDP Climate Change Score	D	C	B-

[1] This only applies to manufacturing and distribution facilities.

The Sherwin-Williams Company – 2021 Investor ESG Summary, continued

TOPIC	METRIC	2019	2020	2021
Energy	Total Direct Energy Consumption (Scope 1) (Million Gigajoules)	5.27	5.14	5.06
	Total Indirect Energy Consumption (Scope 2) (Million Gigajoules)	2.60	2.64	2.67
	Total Energy Consumption (Million Gigajoules)	7.87	7.78	7.73
	Total Direct Energy Intensity (Scope 1) (Gigajoules/metric tons produced)	1.37	1.34	1.34
	Total Indirect Energy Intensity (Scope 2) (Gigajoules/metric tons produced)	0.68	0.69	0.71
	Total Energy Intensity (Gigajoules/metric tons produced)	2.05	2.03	2.04
Renewable Energy	Renewable Energy (Million Gigajoules)*	0.00	0.01	0.00
	Renewable Energy Percent of Total (%)	0.03%	0.07%	0.06%
	Renewable Energy Goal	N/A	N/A	50% by 2030
Water	Water Withdrawn (m^3)	3,451,670	3,785,003	3,755,985
	Water Consumption in Production Facilities (m^3)	1,474,380	1,686,916	1,686,682
	Water Intensity (m^3/metric ton production)	0.89	0.99	0.99
	Water Consumed in Production Facilities and Sourced from Regions with High or Extremely High Baseline Water Stress	21.48%	19.50%	20.98%
	CDP Water Disclosure		CDP Water Response	
	CDP Water Score	C	C	C
Waste	Wastewater Discharge (m^3)	1,977,290	2,098,087	2,069,303
	Waste Reduction Goal	N/A	N/A	25% by 2030
	Waste Reduction Strategy		2021 Sustainability Report	
Social				
Workforce	Women in Workforce	24.6%	24.5%	24.5%
	Women in Management	26.3%	26.5%	26.4%
	Women in Management Goal	N/A	N/A	Increase women in management roles to 30% by 2025
	Minorities in Workforce (U.S. Only)	33.3%	34.2%	35.2%
	Minorities in Management (U.S. Only)	25.9%	26.6%	27.7%
	Minorities in Management (U.S. Only) Goal	N/A	N/A	Increase minorities in U.S. management roles to 30% by 2025
	Workforce Age Group 70+	0.8%	0.9%	0.9%
	Workforce Age Group 60-69	6.0%	6.4%	6.6%
	Workforce Age Group 50-59	15.2%	15.5%	15.7%
	Workforce Age Group 40-49	19.4%	19.6%	20.1%
	Workforce Age Group 30-39	25.8%	26.4%	26.6%
	Workforce Age Group 20-29	30.8%	30.0%	28.8%
	Workforce Age Group Under 20	2.0%	1.23%	1.3%
	Voluntary-Regrettable Turnover (for Full-Time only)	9.5%	8.0%	12.3%
	The Sherwin-Williams Company 401(k) Plan Common Stock Ownership	9.2%	8.2%	7.9%

*Renewable Energy includes onsite generation and procured renewable energy credits.

The Sherwin-Williams Company – 2021 Investor ESG Summary, continued

TOPIC	METRIC	2019	2020	2021
Inclusion, Diversity & Equity	Equal Opportunity Policy	Equal Employment Opportunity Policy		
	2021 Engagement Survey: We collaborated with a third party to conduct our global engagement survey. Our goal was to leverage the voice of our employees and quantify our progress toward creating an inclusive culture that empowers everyone to learn, grow and achieve their career aspirations. We earned a favorable engagement score of 77%, which serves as an affirmation of our existing efforts. The 2021 survey, established a baseline for our overall engagement score as well as associated metrics. We are committed to using the results to drive continued progress. Going forward, we will continue our regular cadence of pulse surveys and plan to conduct the global engagement survey every two years. The following results from our 2021 all-employee engagement survey reflect our efforts in fostering an inclusive, supportive culture. • "Managers treat our employees with dignity and respect." – 90% favorable response • "Sherwin's a safe place to work." – 85% favorable response • "I can be myself at Sherwin-Williams." – 80% favorable response • "I'd recommend Sherwin-Williams as a place to work." – 80% favorable response			
	Conscious Inclusion Education & Training equips employees with inclusive leadership behaviors and resources to improve performance, drive business growth and enhance customer experience. The sessions and resources are designed to help leaders become mindful of unconscious perspectives and provide them with practical actions they can take to create and lead more inclusive cultures.			
Occupational Health and Safety	Days Away Restricted or Transferred (DART) Rate (Total incidents per 200,000 hours worked)	1.03	0.97	0.58
	Recordable Case Rate (Total number of employees with recordable incidents per 200,000 hours worked)	1.30	1.06	0.81
	Health and Safety Policy	Global Environmental, Health and Safety Policy		
Human Rights	Human Rights Policy	Code of Conduct Human Trafficking Policy		
	Conflict Minerals Policy	Conflict Minerals Policy		
Community Engagement	Total Corporate Foundation and Other Giving	$7,221,883	$7,527,741	$6,425,865
	Community Engagement	Engagement		
Products				
Quality and Safety	Research and Development Costs (Millions)	$103,100.0	$97,100.0	$115,900.0
Sustainability by Design	With the implementation of our Sustainability by Design program, we consider sustainable attributes in product innovation and development processes. From initial concept through commercialization, we identify ways to make our products more sustainable and better performing by evaluating chemical formulations, product performance, manufacturing processes, health and safety considerations, and product packaging, among other areas. This formal process also provides flexibility to evolve with the needs of each of our businesses. Highlights from 2021 include: • Expanded Sustainability by Design across the enterprise, enhancing our capability to innovate based on sustainability attributes on a large scale • Established a baseline for "sustainably advantaged products" and developed a plan for expanding this product portfolio in the future • Advanced our position to start managing our Scope 3 emissions by enhancing the technicality and organization of our processes • Integrated our Sustainability by Design philosophy into our existing Stage-Gate process • Defined five "Sustainability Attributes" of focus for product innovation, development and categorization – Air Quality, Formula Stewardship, Resource Conservation, Circularity and Performance • Launched internal sustainability training, with a focus on how to think about sustainability to determine the attributes most important to each business and/or product line For more on our Sustainability by Design program, see our 2021 Sustainability Report beginning on page 30.			
Product Sustainability	Sustainable Programs and VOC Regulated Areas Reference Guide			

The Sherwin-Williams Company – 2021 Investor ESG Summary, continued

TOPIC	METRIC	2019	2020	2021
Supply Chain				
Supply Chain	Supplier Guidelines/Code of Conduct		Supplier Code of Conduct	
Governance				
Ethics	Business Ethics Policy		Code of Conduct	
Board of Directors	Size of the Board	11	10	11
	Independent Directors on Board – # (%)	10 (91%)	9 (90%)	10 (91%)
	Independent Lead Director	Yes	Yes	Yes
	Gender Diversity – # (%)	3 (27%)	3 (30%)	3 (27%)
	Racial/Ethnic Diversity – # (%)	2 (20%)	2 (20%)	4 (36%)
	Board Average Age	63.1	62.2	62.1
	Board Average Tenure	7	7.2	6.2
	Mandatory Retirement Age	72	72	72
	Board Meetings Held	6	7	6
	All Directors Attended ≥ 75% of Meetings	Yes	Yes	Yes
	Independent Members on the Audit Committee – # (%)	5 (100%)	4 (100%)	6 (100%)
	Audit Committee Meetings	6	8	5
	Independent Members on the Compensation & Management Development Committee – # (%)	5 (100%)	5 (100%)	4 (100%)
	Compensation & Management Development Committee Meetings	5	4	4
	Independent Members on the Nominating & Corporate Governance Committee – # (%)	4 (100%)	4 (100%)	4 (100%)
	Nominating & Corporate Governance Committee Meetings	4	2	4
	Annual Board and Committee Self-Assessments	Yes	Yes	Yes
	Orientation Program for New Directors	Yes	Yes	Yes
Shareholder Practices[2]	Equal Voting Rights (One Vote per Share)	Yes	Yes	Yes
	Annual Say on Pay Voting Support	96.9%	96.0%	93.5%
	Shares Outstanding as of December 31	276,434,517	268,676,631	261,143,805
	Equity Reserved as % of Shares Outstanding	9.0%	7.8%	7.3%
	Options Granted as % of Shares Outstanding	0.54%	0.51%	0.37%
	Fair Price Provision	Yes	Yes	Yes
	Mandatory Bid Provision	No	No	No
	Majority Voting Standard	Yes	Yes	Yes
	Classified Board	No	No	No
	Proxy Access[3]	Yes	Yes	Yes
	Shareholder Rights Plan	No	No	No
Public Policy and Political Engagement	Political Action Committee	No	No	No
	Public Policy and Political Engagement Statement		Code of Conduct	

[2] Historical share and per share information has been retroactively adjusted to reflect the Company's three-for-one stock split effected March 31, 2021.

[3] The Company's Regulations provide proxy access rights to 3 year, 3% shareholders for up to 20% of the board.

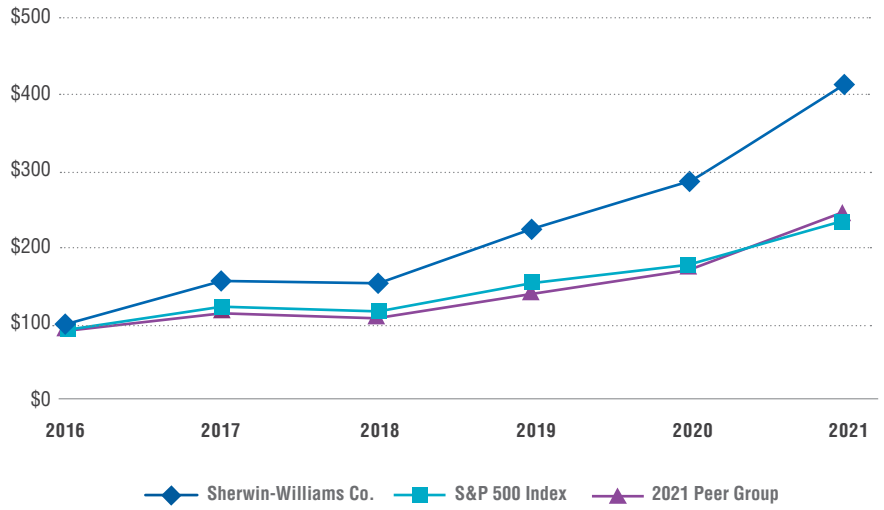
The Sherwin-Williams Company – 2021 Investor ESG Summary, continued

TOPIC	METRIC	2019	2020	2021
Governance – continued				
Compensation	Total Compensation Paid to Named Executives	$30,706,224	$31,713,250	$33,937,998
	Total Salaries Paid to Named Executives	$4,016,760	$4,109,263	$4,652,263
	All Other Compensation Paid to Named Executives	$26,460,664	$27,603,987	$29,285,735
	Total Compensation Paid to CEO	$14,854,731	$15,323,284	$15,843,760
	Total Salary and Bonus Paid to CEO	$1,333,000	$1,339,000	$1,368,231
	All Other Compensation Paid to CEO	$13,521,731	$13,984,284	$14,475,529
	Executive Compensation Policies and Practices	Compensation Discussion and Analysis (CD&A) – Page 28		
	Significant Stock Ownership Guidelines[4]	Yes	Yes	Yes
	Double-Trigger Equity Vesting Upon CIC	Yes	Yes	Yes
	Anti-Hedging and Anti-Pledging Policy	Yes	Yes	Yes
	Clawback Provision for Executive Compensation	Yes	Yes	Yes
Governance	Total Executives	11	11	11 as of 12/31/2021
	Female Executives – # (%)	2 (18%)	2 (18%)	3 (27%)
	Sustainability Disclosures Independently Verified/Assured	No	No	No
	UN Global Compact Signatory	No	No	No
	CSR/Sustainability Committee Oversight	Yes	Yes	Yes
	External Auditor	Ernst & Young LLP	Ernst & Young LLP	Ernst & Young LLP
	Audit & Audit-Related Fees Paid to Auditor	$7,280,000	$6,276,000	$6,171,000
	Non-Audit Fees Paid to Auditor	$2,286,000	$949,000	$1,023,000
	Total Auditor Fees	$9,566,000	$7,225,000	$7,194,000

[4] Each independent director is required to own shares of common stock equal in value to a minimum of 7x the annual board cash retainer and hold all shares of common stock received upon the vesting of restricted stock units until the minimum share ownership requirement is met. Each executive is required to own shares of common stock equal in value to a multiple of his/her base salary, with 6x for the CEO, 4x for the COO and 3x for other executives.

Shareholder Returns

Comparison of Cumulative Five-Year Total Return

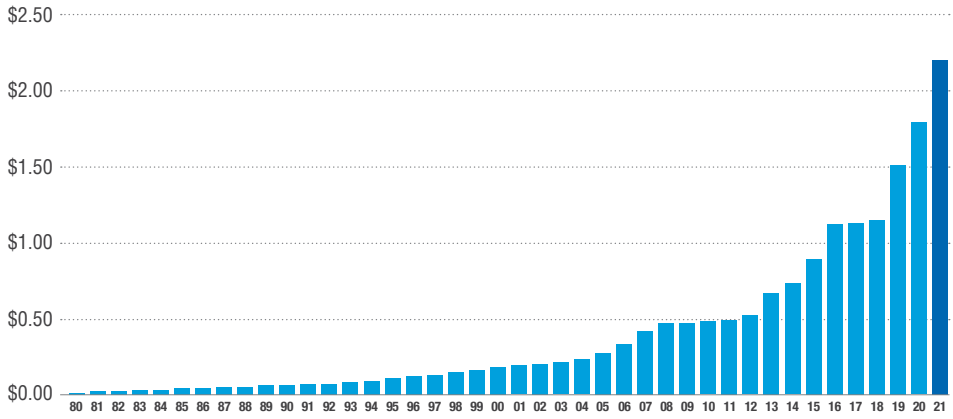


Five-Year Return

The stock performance graph at left assumes $100 was invested on December 31, 2016 in Sherwin-Williams common stock, the S&P 500 and the peer group of companies selected on a line-of-business basis. The cumulative five-year total return, including reinvestment of dividends, represents the cumulative value through December 31, 2021.

2021 peer group of companies is comprised of the following: Akzo Nobel N.V., Axalta Coating Systems Ltd., BASF SE, Genuine Parts Company, H.B. Fuller Company, Lowe's Companies, Inc., Masco Corporation, Newell Brands Inc., PPG Industries, Inc., RPM International Inc., Stanley Black & Decker, Inc. and The Home Depot, Inc.

Dividends Per Share

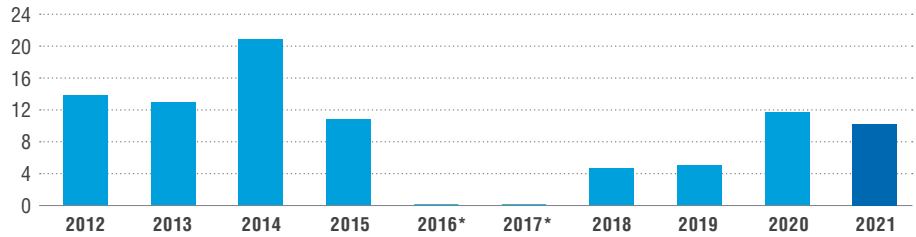


Returning Cash to Shareholders

We have consistently returned a portion of our cash generated from operations to shareholders through cash dividends and share repurchases. In 2021, the Company increased its cash dividend 22.9% to $2.20 per share, marking the 43rd consecutive year we increased our dividend.

Share repurchases are also an efficient way of returning cash to shareholders in that they return sellers' investment at market value and maximize the value of the remaining shares outstanding. In 2021, we invested $2.8 billion to buy 10.1 million shares on the open market. We temporarily suspended share repurchases in 2016 and 2017, using cash to reduce total borrowings required to finance the Valspar transaction in 2016 and reducing debt by $1 billion in 2017.

Stock Repurchase *(millions of shares)*



* No open market purchases in 2016 and 2017

311.8	309.1	296.2	283.6	283.5	284.8	285.0	280.3	275.8	267.1

Weighted Average Diluted Shares (split adjusted, in millions)

SHERWIN-WILLIAMS®

The Sherwin-Williams Company • 101 W. Prospect Avenue • Cleveland, Ohio 44115-1075 **sherwin-williams.com**

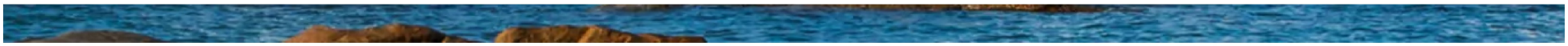
"2021 marked a significant milestone as we announced an integrated framework for our sustainability strategy built around our three ESG pillars – Environmental Footprint, Product Blueprint and Social Imprint – and centered on a strong foundation of Governance and Ethics. Within these pillars, we unveiled new goals to guide our efforts to address climate change, expand our portfolio of 'sustainably advantaged products,' and make our Company a safe, more inclusive place to work."

John G. Morikis
Chairman and Chief Executive Officer

Sika Corporation



SUSTAINABILITY



Enhancing Customer Value, Reducing Environmental Impacts, and Assuming Social Responsibility

As a global company, Sika is committed to sustainable development. The company honors its responsibilities by offering sustainable solutions for energy-efficient constructions and environmentally-friendly vehicles. It also implements numerous projects and measures aimed at boosting the Group's business, social, and ecological sustainability.

Sustainability in Region Americas





Sustainability Strategy

Sika is committed to continuously measure, improve, report and communicate sustainable value creation. “More value, less impact” refers to Sika’s commitment to maximizing the value of our solutions and contributions to all stakeholders while reducing risks and resource consumption.

Six strategic targets focus on economic performance, sustainable solutions, local communities/society, energy, water/waste, and occupational safety. Sustainability is one of Sika's key strategic pillars that is used as a competitive advantage to benefit all stakeholders.

SUSTAINABILITY STRATEGY (HTTPS://WWW.SIKA.COM/EN/ABOUT-US/SUSTAINABILITY/SIKA-SUSTAINABILITY-STRATEGY.HTML)



efficiency, durability and aesthetic appeal of buildings, infrastructure constructions, installations, and vehicles. Sika solutions are developed to help customers to make a positive environmental impact, or to address climate-related concerns.

SUSTAINABLE SOLUTIONS (HTTPS://WWW.SIKA.COM/EN/ABOUT-US/SUSTAINABILITY/SUSTAINABLE-SOLUTIONS.HTML)



Sika Sustainability Report 2021

The Sustainability Report 2021 is part of the Sika corporate reporting package, and it was prepared with reference to the Global Reporting Initiative (GRI) Standards. Before 2021, Sika drafted a Sustainability Report (as part of the Annual Report) and a separated GRI Report on a yearly basis.

SUSTAINABILITY REPORT 2021 (HTTPS://REPORTS.SIKA.COM/FILEADMIN/USER_UPLOAD/DOWNLOAD REPORT-2021-SIKA-SUSTAINABILITY-REPORT.PDF)

DOWNLOAD CENTER (HTTPS://WWW.SIKA.COM/EN/INVESTORS/REPORTS-PUBLICATIONS/FINANCIAL-REPORTS.HTML)



focusing on seven of the 17 goals. Among others, both the construction and the automotive industry highly influence these goals.

UN SUSTAINABLE DEVELOPMENT GOALS (HTTPS://WWW.SIKA.COM/EN/ABOUT-US/SUSTAINABILITY/SIKA-SUSTAINABILITY-STRATEGY/UN-SUSTAINABLE-DEVELOPMENT-GOALS.HTML)

Sustainability Highlights

Projects

See All Sustainability Projects (https://usa.sika.com/en/sustainability/sustainability-projects.html)

Find

Southwire



Our Sustainability Journey

As a family business, Southwire proudly continues building on our commitment to environmental stewardship and corporate sustainability by prioritizing stakeholder expectations, and supporting the wellbeing of our communities and the environment in which we live. To help us meet this commitment, we organize our sustainability strategy around five core tenets: Growing Green, Living Well, Giving Back, Doing Right and Building Worth.

Sustainability News





Southwire’s Huntersville Plant Recognized for the Seventh Yea Award

October 05, 2022

Southwire’s facility in Huntersville, N.C., has again been recognized for its efforts in achieving c Air Compliance Excellence (ACE) Award.

Continue reading →

Share Tweet Shar



Our Core Tenets

Our five core tenets allow us to deepen our vision and commitments by strengthening and aligning our programs, goals and governance. Driven by the highest standard of excellence, we appreciate the need for continued improvement and are proud that our results continue to build a stronger Southwire.

Growing Green

Learn More

Living Well

Learn More

Giving Back

Learn More

Doing Right

Learn More

Building Worth

Learn More

Our Vision

At Southwire, our employees are *The People Behind the Power*™ of what is possible. We seek to

discover, develop and distribute strong and sustainable solutions that exceed the expectations of our stakeholders around the world.

Our Commitment

Southwire is committed to inspire the lives we touch by developing innovative systems and solutions, exercising environmental stewardship and enhancing the well-being of our communities as *We Deliver Power...Responsibly*® through our core tenets.



Carbon Zero

Southwire set a goal to achieve 100% carbon zero energy by 2025.

Carbon Zero



Governance

Our strong governance structure drives Southwire’s culture of accountability.

Governance



Metrics at a Glance

We report a number of key metrics that help measure our sustainability performance year over year.

Metrics at a Glance

Sustainability Report Downloads

2021 Sustainability Report & GRI Index

2021 Analyst Download

Report Archives

Submit Product Idea

Subscribe to the newsletter

Submit

© 2022 Southwire Company, LLC. All Rights Reserved.

Tencate Sustainability Update

SUSTAINABILITY UPDATE

NOVEMBER
2020

The world is getting smaller, but our ideas are only getting bigger. This reality forces us to face facts. **We only have one world!** A world that we want to enjoy for a long time and therefore we have to take care of it. As manufacturer of Industrial Fabrics, we are working on sustainability within our processes and products for years already. We acknowledge the facts and want to contribute to a better world.



NEXT PAGE

TENCATE
INDUSTRIAL FABRICS

Sustainability

What is sustainability? Sustainability means meeting our own needs without compromising the ability of future generations to meet their own needs.

In addition to natural resources, we also need social and economic resources. Therefore, sustainability is made up of three pillars: the **economy**, **society**, and the **environment**. These principles are also informally used as **profit, people** and **planet**. We contribute to those principles with solutions that reduce pollution, waste, carbon footprint and increase performance, safety and wellbeing.





TENCATE INDUSTRIAL FABRICS

TENCATE
Toptex®



DURABLE AND SUSTAINABLE

Our TenCate Toptex® crop protection covers are made of continues fibers which make them unique compared to other non-wovens in the market. It increases the lifespan of our covers and at the same time helps to reduce waste. We manufacture our products in an ISO 9001 (quality system) and 14001 (environmental management system) certified facility and we are also Ecovadis certified. TenCate Toptex® is made of decay resistant polymers that can be recycled. READ MORE

TenCate Geosynthetics ISO 14001 certified

BRONZE 2020 ecovadis Sustainability Rating

TENCATE INDUSTRIAL FABRICS

TENCATE Nicolon®



COMFORTABLE AND HEALTHY

Our TenCate Nicolon® cow comfort mattresses have many advantages. Next to the improved comfort (softer layer, easier getting up and lying down, less damaged articulations), less litter is required in the boxes and the rest-area stays dry and clean. We manufacture our products in an ISO 9001 (quality system) and 14001 (environmental management system) certified facility. Our forklifts are electrical driven and the factory lighting is LED which reduces the electricity usage by half. READ MORE

TenCate Geosynthetics ISO 14001 certified

Tnemec Company

SUSTAINABILITY

COATINGS FOR SUSTAINABLE BUILDING

Tnemec offers high-performance coating systems built to protect your sustainable structures. These coatings can match the performance of high-solvent products but comply with local air district VOC requirements and several environmental programs, such as the LEED v4.1 rating system.

We manufacture an array of low VOC coatings, including epoxies, polyurethanes, fluoropolymers and zinc-rich primers with less than 100 grams per liter VOCs. For more help with LEED v4.1 – or other environmental programs – download our Sustainable Programs Guide below, or reach out to your local coatings consultant for specification assistance. Get the protection you need while remaining environmentally conscious.

Click here for product-specific sustainability information sheets. To view a full list of all our sustainable coatings, click here.

FROM OUR TEAM

> *"Tnemec Company has always been dedicated to researching and developing innovative technologies to protect our customers in corrosive environments."*
>
> RÉMI BRIAND, Vice-President of Research & Development

Tyler Pipe



Environment & Sustainability

Protecting the Environment for Generations to Come.

> At McWane, protecting the environment and the health and safety of our employees is one of our highest priorities. Our environmental, health and safety management system is designed to provide an organized and consistent approach to achieving this objective and assuring continuous improvement.
>
> *— Jeet Radia, Senior Vice President Environment, Safety & Human Resources*

We take our commitment to the environment seriously. Our approach to environmental and safety issues starts with a clear vision from our leaders, supported by strong policies that place the environment and safety at the core of the business and through a substantial investment in state-of-the-art environmental technologies and modern infrastructure.

McWane addresses the unique environmental and safety challenges faced by our industry with a comprehensive **Environmental, Health and Safety (EHS) management system** based on the principles of the **International Organization of Standardization** (ISO) 14001 standard, **Occupational Health and Safety Administration** (OSHA) 18001 and OSHA Management Guidelines. **ISO 14001** is an internationally recognized specification for environmental management systems. Our EHS management system allows us to manufacture our products in an environmentally-compliant and -friendly way and to provide communities with a foundation for life with clean, safe and dependable drinking water.

Watts 2022 Sustainability Report







WATTS®

2022

SUSTAINABILITY REPORT





Table of Contents

03 Chief Executive Officer Message

04 Chief Sustainability Officer Message

05 Corporate Profile

07 ESG Strategy

15 Footprint

29 Handprint

43 Social Responsibility

55 Corporate Governance

64 About this Report

65 Appendix



Right: National Backflow Prevention Day in the U.S., an official event created by Watts to highlight the importance of backflow prevention, educate the public about this life-saving technology, and recognize water-quality professionals responsible for installing and maintaining backflow preventers

Please consider the environment before printing this report.



A Message From Our Chief Executive Officer

> **“We believe that a safer world is a more sustainable world.”**

The year 2022 was a record-breaking one, with impressive milestones for Watts. We realized double-digit top-line organic growth and meaningful operating margin expansion for the year, despite significant inflation and supply chain disruptions. We launched innovative new products, using the latest advances in technology to solve water-related challenges. We endorsed the CEO Water Mandate, expanding our commitment to water stewardship and sustainable business practices.

We continued to deliver value to our customers through our sustainability “triple play”: safety and regulation, energy efficiency, and water conservation. We see tremendous opportunity to enhance these efficiency and safety benefits by transforming traditional mechanical products into smart and connected solutions. Using IoT technology and cloud computing, we are giving customers new monitoring and control capabilities.

The growth of smart and connected enabled products is an important part of our strategy and key to our future growth. We ended the year with approximately 19% of total sales generated by these solutions, with 20 new products introduced. We committed more than half of our $59 million in research and development spending to expand these offerings and enhance their functionality and security. We are well on our way to achieving our goal of 25% of revenue derived through smart and connected enabled products by the end of 2023.

Our commitment to sustainability extends into every aspect of our business through our environmental, social, and governance (ESG) strategy. Reviewed by our board in 2021, it guides our work to reduce our environmental footprint, expand upon the positive environmental attributes of our products, enrich and engage our communities and people, and adhere to the highest ethical business practices. In 2022, we realized benefits in each of these areas, achieving a particularly noteworthy milestone – ESG research and data company Sustainalytics reported a 24% improvement in our ESG score in 2022, promoting Watts to the low-risk category. The Watts MSCI score was maintained at “AA”, and for the fourth consecutive year, Watts was named one of America’s most responsible companies by Newsweek. These are additional indicators that our investments in sustainability continue to drive positive results.

We are a people-first organization. We know that the complex set of water challenges around the world such as access, scarcity, pollution, and safety require the most capable and committed workforce in the world, with diverse perspectives and approaches. That’s why we continue to invest in strategies to cultivate a diverse, equitable, and inclusive culture with competitive benefits and career development and recognition opportunities.

A little more than a year ago, our Global Leadership Team and board of directors approved a diversity, equity, and inclusion (DEI) strategic plan that set a clear vision and defined the actions required to help us realize it. We have integrated inclusion principles into our performance-management system and developed new training programs to raise awareness and give people the tools to be successful working in diverse teams. While there’s much more work to be done, our strategic plan provides a solid foundation to cultivate a workforce for the future.

As we reflect on 2022, we believe Watts is well positioned to make even greater strides in the years ahead. Our mission has never been more urgent, and we believe our people are prepared to take on the challenges we’ll face in 2023. We have a strong foundation in our innovative products, resilient business model, and world-class workforce.

We are an enterprise guided by the principle that the success of our business, customers, people, communities, and the planet are inextricably linked. Together with our employees, customers, shareholders, and partners around the globe, we can drive the change needed for a safer and more sustainable world.

Sincerely,



Robert J. Pagano, Jr.
CEO, President, and Chairperson of the Board



A Message From Our Chief Sustainability Officer

Sustainability has been our “true north” since the founding of Watts in 1874. That year, we introduced a pressure regulator for steam boilers, a breakthrough in safety technology that has protected workplaces and homes for nearly 150 years. Today, that same spirit of innovation and stewardship continues to inspire the more than 4,500 employees of Watts around the globe.

In recent years, under the leadership of our board and management teams, we have been intentional in defining how we advance sustainability across the entire business. Today we are guided by a comprehensive ESG strategy that formalizes our commitment to socially-responsible business practices.

This annual publication is the seventh of its kind, and each year we strive to make progress in sharpening our approach and achieving greater transparency. This sustainability report describes the actions we have taken to operationalize our ESG policy and embed its principles into our culture. It provides rich data and insights into how we measure impact against performance targets, and aligns with standards set forth by the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB). Finally, it reaffirms our commitment to the United Nations Global Compact and CEO Water Mandate, through which we have pledged to develop an annual “Communication on Progress” on implementation of its elements.

In the pages ahead, you will see that the four pillars of our sustainability strategy, **Footprint**, **Handprint**, **Social Responsibility**, and **Governance** provide an engaging and accessible framework for sharing progress.

- Our **Footprint** defines the impact of our operations both globally and in the local communities where we operate. In 2022, we reached a significant milestone in achieving verification by The Water Council’s WAVE Water Stewardship program. WAVE exclusively grants this verification to companies that both meet its rigorous standards of assessing enterprise-wide water-related risk, and take action to mitigate their water-related impact on the environment.
- Our **Handprint** is the impact our products deliver through water and energy conservation, cost savings, and safety enhancements to our customers. In just one product category – pressure-reducing valves – we estimate our customers avoid wasting more than 19 billion gallons of water globally per year.
- **Social Responsibility** is our commitment to making people and communities safe, healthy, and strong. It includes efforts in occupational health and safety, workforce development, and community engagement. In addition to volunteer contributions and corporate grants, we took several actions driven by insights captured in our global employee engagement survey. One highlight in 2022 was the launch of global, multi-year leadership and inclusivity training for all employees.
- **Corporate Governance** is our approach to operating responsibly and striving to adhere to the highest ethical standards. It’s how we earn trust with our stakeholders and ensure we conduct ourselves in accordance with our mission, vision, and values. In 2022, we completed a global survey of our compliance program with our approximately 2,400 computer-connected employees and are proud to report that our employees overwhelmingly responded that they believe the company and its management abide by our Code of Conduct and Values. In 2022, we also grew the total number of suppliers participating in sustainability audits by 14% over 2021, and suppliers representing more than 94% of our 2022 global annual spend certified their conformance to our Supplier ESG Standards.

While this report is an important milestone in capturing progress to date in implementing our ESG strategy, it is also an opportunity to look ahead. We look forward to extending our innovative smart and connected enabled technology to even more of our product lines to focus on our customers’ sustainability needs. We plan to take what we learned through our WAVE Stewardship Verification and further expand that work to reduce water consumption across our operations, and advance global water stewardship across the communities and watersheds where we operate. Finally, we will continue to grow the progress we made in building the diverse and talented workforce we need for the future.

I am extremely proud of our progress and continuing evolution as a global leader in sustainability. This success is powered by our extraordinary employees, customers, investors, communities, and partners. We are grateful for the full range of stakeholders that join us every day in our journey toward a safer and more sustainable future.

Sincerely,



Kenneth R. Lepage
General Counsel and Chief Sustainability Officer

Corporate Profile

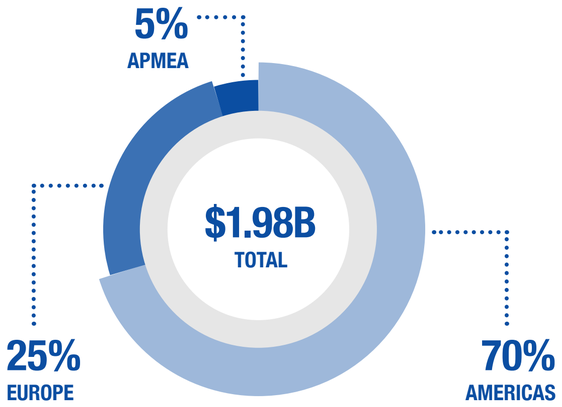
ABOUT WATTS WATER TECHNOLOGIES, INC.

Watts Water Technologies, Inc., through its family of companies ("Watts"), is a leading provider of solutions designed to promote safety, energy efficiency, and water conservation in the commercial, industrial, and residential markets of the Americas and Europe, and Asia-Pacific, the Middle East, and Africa (APMEA). For nearly 150 years, Watts has designed and produced valve systems that safeguard and regulate water systems, energy efficient heating and hydronic systems, drainage systems, and water filtration technology that helps purify and conserve water.

Headquartered in North Andover, Massachusetts, USA, Watts Water Technologies, Inc. was incorporated in Delaware in 1985 as the parent company of Watts Regulator Co. and trades on the New York Stock Exchange (NYSE) under the stock symbol WTS.

REVENUE

We report on our annual net sales for each of the three geographic segments in which we operate our business globally. The regional net sales percentages and the total are for the year ended December 31, 2022.



SOME OF OUR BRANDS

AERCO A WATTS Brand
BLÜCHER A WATTS Brand
Dormont A WATTS Brand
FEBCO A WATTS Brand
LEAKDEFENSE A WATTS Brand
PVI A WATTS Brand
SOCLA A WATTS Brand
THEDETECTIONGROUP A WATTS Brand
WATTS

MISSION

- To improve comfort, safety, and quality of life for people around the world through our expertise in a wide range of water technologies.
- To be the best in the eyes of our employees, customers, and shareholders.

VISION

- To be the global leader in providing innovative, high-quality products, systems, and solutions for the conveyance, conservation, control, and safe use of water through a focus on customers, innovation, and continuous improvement.

VALUES

Integrity and Respect: Doing the right thing in the right way, always

Accountability: Focusing on results; do what you say you're going to do

Continuous Improvement and Innovation: Maintaining a customer focus; improving every day

Transparency: Demonstrating candor and openly sharing information

Corporate Profile*

21% SPECIALTY

- High-efficiency boilers and water heaters, water-filtration and conditioning products, specialty under-the-floor and tile-heating products, drainage systems for the food-service industry, and leak detection

60% WHOLESALERS

- Wholesale distributors for commercial and residential applications



15% ORIGINAL EQUIPMENT MANUFACTURERS (OEMS)

- Americas: Water-heater manufacturers and equipment and water-systems manufacturers needing flow control devices and other products
- Europe: Boiler manufacturers and radiant-system manufacturers
- APMEA: Water-heater, air-conditioning, and appliance manufacturers

4% DIY CHAINS

- Valves and our water-quality products

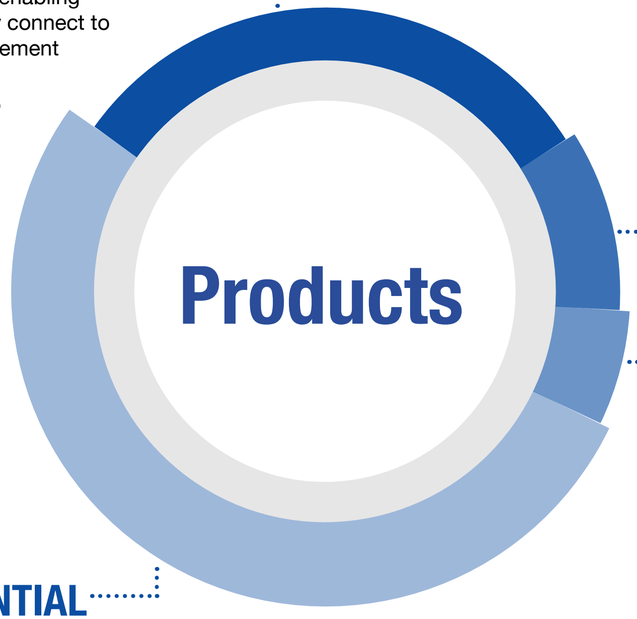
** The percentages are based on total net sales for the year ended December 31, 2022.*

31% HVAC AND GAS PRODUCTS

- Commercial high-efficiency boilers, water heaters, and custom heating solutions
- Hydronic and electric heating systems for under-floor radiant applications
- Custom heat and hot water solutions, hydronic pump groups for boiler manufacturers, and alternative energy control packages
- Flexible stainless-steel connectors for natural and liquid propane gas in commercial food service and residential applications
- Most of our HVAC products feature advanced controls enabling customers to easily connect to the building management system for better monitoring, control, and operation

10% DRAINAGE AND WATER REUSE

- Drainage products, including connected roof-drain systems
- Engineered rainwater harvesting solutions for commercial, industrial, marine, and residential applications



52% RESIDENTIAL AND COMMERCIAL FLOW

- Backflow preventers, water-pressure regulators, temperature and pressure-relief valves and thermostatic mixing valves, and leak-detection products
- Many of our flow-control and protection products are now smart and connected enabled products, warning of leaks and floods with alerts to building management systems and/or personal devices, giving our customers greater insight into their water management and the ability to shut off the water supply to avoid waste and mitigate damages

7% WATER QUALITY

- Point-of-use and point-of-entry water filtration, monitoring, conditioning, and scale prevention systems for commercial, marine, and residential applications



FOOTPRINT TO HANDPRINT

Actively managing our footprint and generating savings across operations, while increasing the environmental and social value of our products and services to society

- Complete 5-year (2018-2023) eco-efficiency goals ahead of plan
- Commit to new reduction targets in scope 1 & 2 carbon emissions in 2024
- Better quantifying our products' handprint benefits through life cycle assessment modeling

WATTS SITES TO COMMUNITIES

Ensuring our ESG commitments extend to the customers and communities where we operate

- Increasing accountability of our suppliers and their adherence to ESG principles
- Pursuing local water-stewardship engagements

BUSINESS STRATEGY INFULENCED BY RISKS AND OPPORTUNITIES

Engraining sustainability into our strategic initiatives to drive our ESG principles across the business

- Employees and Sites: increased employee engagement and strengthened ERGs
- Analyzed production, logistics, and distribution to maximize our customer reach
- Increased sales from smart and connected enabled products – enabling our customers to achieve their environmental objectives

SUSTAINABILITY INTEGRATED AT EVERY LEVEL

Demonstrating our commitment to sustainability as an integral part of conducting business

- Making our products and operations more resilient to pollution, extreme climate events, and the increasing scarcity of water
- Reinforcing our mature ethics and compliance program through annual global Code of Conduct training to all employees, consultants, and contractors
- Enhanced transparency, commitments, and reporting requirements – UNGC, WAVE, CEO Water Mandate, third-party environmental data validation

Pillars of Our ESG Strategy

Our ESG strategy is focused on continuous improvement as we evolve to ensure sustainability is integrated at every level of our business.

FOOTPRINT

Watts is taking responsibility for reducing our water, energy, carbon, and waste footprints across our operations. We seek to meaningfully participate in the global effort to combat climate change by reducing our impact on the environment while working to prevent water-related hazards, such as water pollution, scarcity, and flooding.

HANDPRINT

We are creating innovative products and smart solutions to protect, control, and conserve critical resources, and helping to educate our customers to support them in reducing their footprint through use of our products.

SOCIAL RESPONSIBILITY

We are enhancing social value by contributing to safe, healthy, and strong communities. We enrich, engage, and protect our employees and the communities in which we operate. We embrace diversity, equity, and inclusion as core business and engagement strategies.

CORPORATE GOVERNANCE

We are earning the trust of our stakeholders by operating responsibly and adhering to high ethical standards. Our corporate governance principles provide an essential framework to ensure we conduct ourselves in accordance with our mission, vision, and values in the work we do every day.



Evolving Our Sustainability Strategy

2014

- Began reporting on environmental data
- Launched monthly operating reviews

2016

- Published first annual Sustainability Report

2018

- Set and disclosed environmental/ eco-efficiency targets
- Began engaging ratings agencies

ISS ESG

2019

- Engaged Schneider Electric to track resource consumption
- Established dedicated corporate-sustainability staff

2020

- Launched global Diversity, Equity, and Inclusion initiatives
- Began reporting against global ESG standards and frameworks GRI, UNSDG
- Performed business continuity analysis
- Achieved third-party independent verification for environmental data

GRI

2021

- Appointed first Chief Sustainability Officer
- CEO joined Board of The Water Council
- Developed EHSS policy
- Promoted to AA rating by MSCI
- Named to ISS Top 15% peer group
- Launched Employee Resource Groups
- Completed materiality assessment
- Began evolving focus from Footprint to Handprint
- Disclosed against SASB

SASB

2022

- Became first company to be WAVE Verified
- Issued Human Rights Policy
- Joined UN Global Compact
- Became CEO Water Mandate Signatory
- Established dedicated Handprint staff
- Began evolving focus from Sites to Communities
- Held ESG leadership training and bootcamps

CEO WATER MANDATE

Present

- Named to Newsweek's Most Responsible Companies for fourth year in a row
- Promoted to Sustainalytics "low risk" rating



SUSTAINALYTICS

Material Topics

In 2021, we completed a materiality assessment to inform our ESG strategy and priority actions. This assessment helped us identify and evaluate the ESG topics that have the most significant impact on our business and our stakeholders. It also identified ESG-related risks and opportunities for us to evaluate as we execute our growth strategy and societal trends that may impact our ability to meet stakeholder expectations. You can learn more about the assessment in the Appendix.

Following the assessment, we identified several key focus areas for immediate attention and resources. Efforts in these areas are well underway and are detailed throughout this report, with highlights on progress on some of our top material topics below:

Employee Attraction, Development, and Retention:

- Continued to conduct virtual and on-campus recruiting events driving female and underrepresented minority hiring
- Deepened partnerships with six colleges and universities, which we began in 2021, including with four Historically Black Colleges and Universities (HBCUs)
- Deployed an employee-benefits survey, gaining valuable insight into our strengths and opportunities. Resulting actions included adding a low-cost HSA medical plan and updating our wellness program.

Diversity, Equity, and Inclusion (DEI):

- Developed our Diverse Slate Policy
- Implemented inclusion and recruiting strategies for 12 U.S. sites
- Established mission, vision, purpose, and objectives for all six of our employee resource groups
- Conducted internal, leader-led panel and keynote discussions on a variety of DEI topics
- Partnered with the NeuroLeadership Institute (NLI) to kick-off our phased leadership and inclusivity training for senior leaders

Occupational Health and Safety:

- Focused on elimination of hazards and engaging our employees on reporting of near-misses and safety observations to help us achieve record safety performance with a total recordable incident rate of 1.12 and lost time rate of 0.52, improvements of 13% and 7% YOY respectively.
- To support continued improvement, conducted machine-guarding assessments across nine sites in the Americas and Europe and implemented standardized safety training across 11 operating sites in the Americas.

Energy and Emissions:

- Decreased energy use and emissions by identifying and realizing opportunities for increased efficiency and reducing consumption in each of our locations.
- Completed the fourth year of our five-year plan well ahead of previously set targets, including:
  - Reduced our emissions intensity by 49% in 2022, far surpassing goal of 12%.
  - Reduced GHG emissions by 35% as compared to 2018.

Sustainable Innovation and Digital Transformation:

- Advanced efforts of embedding sustainability into product development to help improve our customers' ability to achieve their sustainability goals, as well as minimizing our impact on the environment.
- Enhanced several of our products with smart and connected technology to enable customers to better understand and control their water usage. In 2022, over 19% of our revenue came from such products.

Climate Change Risk and Resilience:

- Supported a cleaner grid and accelerated utility-level decarbonization by purchasing over 7,000 metric tons of CO_2 equivalent ($MTCO_2e$) certified wind RECs in 2022. This represents 43% of our market-based emissions for North America where we have the largest share of our global emissions.

Water Stewardship:

- Became first company to be verified by The Water Council's WAVE program and have our practices and results independently verified.
- Became a signatory of the CEO Water Mandate in 2022.

Human Rights:

- Issued a formal Human Rights Policy outlining our commitment to promoting human rights within Watts' labor force. The policy states that Watts will not willingly or knowingly assist in any violation of human rights, benefit from human-rights abuses, or remain silent when human-rights violations are being committed. It applies globally to all Watts directors, officers, and employees throughout all regions, including subsidiaries and supply-chain partners globally.

Contributing to the UN Sustainable Development Goals

The United Nations (UN) Sustainable Development Goals (SDGs) provide the best-shared definitions of our global challenges and serve as a framework to determine where we can make the greatest impact. Watts is focused on addressing key impacts and opportunities to minimize the environmental footprint of our global operations while improving the health, wellness, and safety of our employees and customers, and protecting the communities where we operate. Our strategy is aligned with the SDGs, and we believe we can most meaningfully contribute to the following seven goals.



Gender Equality, SDG 5: We are committed to finding meaningful ways to be a more diverse, equitable, and inclusive business. We seek to break down barriers in the workplace through measures that ensure we attract and retain diverse individuals, including across gender and race. In 2022, we established diversity goals at 12 of our U.S. sites, and virtual and in-person campus recruitment activities for females and underrepresented minorities. Our Women of Watts employee resource group promotes and cultivates a more inclusive environment.



Clean Water & Sanitation, SDG 6: We believe access to clean water is a fundamental human right, yet billions of people around the world experience water insecurity and water stress daily. Our products play an essential role in protecting and conserving water resources and the people who use and rely on them. We are committed to reducing the amount of water we use and discharge to manufacture our products, ensuring our business practices protect the water quality and supply in the communities where we operate, and developing innovative products and services that solve longstanding water-conservation challenges. While water risk is a global issue, solutions must be local. We are building awareness at the site level on watershed risk and implementing plans to promote water stewardship at our sites. In 2022, we provided clean, safe drinking water to over 10,000 people.



Decent Work & Economic Growth, SDG 8: Promoting inclusive economic growth and development enables us to better serve our customers and communities, and we strive to provide our employees with meaningful career-growth opportunities and a positive and safe work environment. In 2022, we employed approximately 4,600 people across 24 countries. Our commitment extends beyond our company walls through educational partnerships and charitable donations. In 2022 we issued a formal Human Rights Policy outlining our commitment to promoting human rights within our labor force. The policy applies not only to our employees but also to our supply chain partners.



Industry, Innovation & Infrastructure, SDG 9: For nearly 50 years, our backflow prevention valves have set the standard for backflow prevention for municipal water infrastructure, homes, and buildings. Backflow, or the reversal of the normal flow of water in a system, poses a threat to municipal water systems, and our backflow prevention valves help ensure that contaminated water does not reenter the potable water supply, saving millions of gallons of potable water from contamination each year. Through connecting our products with smart technology, we are able to alert building management of a leak or flood early on, which allows for early intervention, either manually or remotely. In 2022, approximately 37% of our revenue was generated from clean-tech products.



APMEA colleagues wear 'Pink for a Day' to support breast cancer research and advocacy during Breast Cancer Awareness Month



Watts partners with Planet Water Foundation to bring clean water to water-stressed communities

Responsible Consumption & Production, SDG 12: We are committed to minimizing the environmental impacts of our operations by reducing our energy and water consumption, greenhouse emissions, and hazardous and non-hazardous waste generated at our sites. We also know that adopting circular approaches to materials management in our production processes is critical, so we are identifying opportunities and investing in solutions to accelerate our transition to the circular economy and finding ways to divert waste from landfills. Our approach to waste reduction also includes eliminating single-use plastics and using reusable, recyclable, or compostable content in our packaging.

Climate Action, SDG 13: We know this decade is critical to mitigating the worst impacts of climate change, and we are committed to doing our part to build a low-carbon economy. Our strategy is rooted in existing UN frameworks and climate science. We aim to reduce energy consumption and carbon emissions at our facilities and offset emissions through renewable-energy credits, while developing new technologies within our product portfolio, and changing the way we serve our customers to advance environmental and societal objectives. We supported grid decarbonization by purchasing wind reusable-energy credits to offset 24% our global carbon emissions.

Life Below Water, SDG 14: Our oceans and seas are precious natural resources that are home to much of the world's biodiversity, and a source of livelihood for more than 3 billion people around the world. Our Ballast Water Management Systems provide accurate measurement of the total residual oxidant of ballast water, desalination, or wastewater discharge generated onboard marine shipping vessels. Through the use of our ballast Water Management Systems, 2 billion gallons of transferred ballast water are analyzed per year. The International Maritime Organization (IMO), a UN Special Agency, saw a need for this technology. We're helping to preserve biodiversity by preventing serious ecological, economic, and health problems from occurring due to invasive marine species being carried in a ship's ballast water from their native environment to a new geographic area.

More information about our contributions to the SDGs can be found in the Appendix.



Right: Our Ballast Water Management Systems help protect marine biodiversity by allowing users to analyze the ballast water, thus preventing carrying invasive marine species to new geographic areas, which can cause serious health and ecological damage

ESG Governance

In May 2022, our board of directors amended the charter of our Nominating and Corporate Governance Committee to rename it as the Governance and Sustainability Committee and to assign it primary responsibility for the oversight of our ESG efforts and strategy. The Governance and Sustainability Committee reviews the company's ESG performance and strategic plans at its regularly scheduled quarterly meetings and receives additional updates from our chief sustainability officer as needed.

At the management level, our general counsel and chief sustainability officer, who reports directly to our chief executive officer, has general oversight responsibility for all sustainability matters. Our general counsel and chief sustainability officer also chairs our global Sustainability Steering Committee, which is made up of senior company leaders and is responsible for formulating our sustainability strategy and overseeing the execution of our environmental, social, and governance initiatives.

During 2022, our chief sustainability officer presented to the Governance and Sustainability Committee on a number of ESG topics, including progress reports on ESG initiatives, our performance toward meeting our publicly stated environmental goals, our decision to join the U.N. Global Compact, new regulatory requirements relating to ESG disclosures, and results from our participation in The Water Council's water-stewardship accelerator program. We also reviewed areas of material risk to Watts with our board, including risks related to climate change, and actions we are taking to mitigate those risks.



Right: Watts leadership in a panel discussion on ESG topics at the Watts Connect Conference

Stakeholder Engagement

For nearly 150 years, our company has built a reputation for protecting and sustaining the world's water supply through our broad portfolio of water products and solutions. Global stakeholders of a diverse range play an integral role in the growth and success of our business today, as well as our commitment to create sustainable, long-term value in the future. To that end, we regularly engage and interact with key stakeholder groups in a variety of ways, as described in the adjacent table.

Since 2021, our CEO Robert J. Pagano, Jr., has been a member of the board of directors of The Water Council, a global hub dedicated to solving critical water challenges by driving innovation in freshwater technology and advancing water stewardship.

	KEY TOPICS	METHODS OF ENGAGEMENT
EMPLOYEES	• Employee attraction, development, and retention • Ethics, integrity, and transparency • Occupational health and safety • Product responsibility, safety, and quality • Human rights • Data security and privacy • Diversity, equity, and inclusion • Governance and accountability	• Annual performance-management process • Branded social media channels • Career development programs • Code of Business Conduct • Collective-bargaining agreements • Company policies and procedures • Connect intranet • Connect weekly email newsletter • Employee engagement committees • Employee handbooks • Employee recognition programs • Employee resource groups • Engagement surveys/pulse checks/focus groups • Ethics hotline and posters • Executive site visits • Learning management system/LinkedIn Learning • Monthly operating reviews • Onboarding (for new hires) • Other local/regional town halls • Quarterly CEO video • Quarterly connect meetings • Strategic talent review • Training • Total rewards programs • Unions/works councils • Volunteer opportunities • Work-life balance initiatives
CUSTOMERS	• Product responsibility, safety, and quality • Ethics, integrity, and transparency • Occupational health and safety • Environmental compliance • Human rights • Sustainable innovation and digital transformation • Sustainable sourcing • Governance and accountability • Recycling and waste	• Branded social-media channels • Continuous Education Unit (CEU) courses • Direct engagement via sales teams • Direct marketing, live events, webinars • External website for Watts and its family of brands • In-person training at Watts Works Learning Centers • Trade shows and other live events • Voice-of-customer surveys/focus groups • Watts Works online learning
STAKEHOLDERS AND DEBT HOLDERS	• Diversity, equity, and inclusion • Employee attraction, development, and retention • Governance and accountability • Occupational health and safety • Climate change risk and resilience • Product responsibility, safety, and quality • Environmental compliance	• Annual Report/10-K • Annual shareholders meeting • Annual sustainability report • Company filings with the U.S. SEC • Investor meetings and conferences • Investor-relations website • Quarterly-earnings conference calls • Quarterly-earnings release • Other press releases
SUPPLIERS	• Governance and accountability • Ethics, integrity, and transparency • Sustainable sourcing • Human rights • Occupational health and safety • Employee attraction, development, and retention • Diversity, equity, and inclusion • Energy and emissions • Water stewardship • Recycling and waste	• Code of Business Conduct • Direct engagement with sourcing, global commodity leaders, buyers, and supplier quality-engineering teams • Harrington quality management system • Kaizen events • Site visits • Supplier Code of Conduct • Supplier quality manual • Terms and conditions on purchase orders • ESG standards certification • Dunn and Bradstreet and NSF, ESG assessment
COMMUNITY	• Community engagement and giving back • Data security and privacy • Ethics, integrity, and transparency • Recycling and waste • Human rights, and occupational health and safety • Diversity, equity, and inclusion • Climate change risk and resilience • Talent pipelines	• Company website • Educational partnerships • Local outreach via donations and volunteerism • Planet Water partnership • Scholarships • Social media • Early in Career programs • Student internships
REGULATORY AUTHORITIES	• Governance and accountability • Ethics, integrity, and transparency • Occupational health and safety • Water stewardship • Energy and emissions • Recycling and waste • Product responsibility, safety, and quality • Human rights	• Direct engagement • ISO audits and permit application • Codes and standards body membership and participation
BOARD OF DIRECTORS	• Occupational health and safety • Product responsibility, safety, and quality • Diversity, equity, and inclusion • Employee attraction, development, and retention • Ethics, integrity, and transparency • Emergency preparedness and response • Sustainable innovation and digital transformation • Environmental compliance • Governance and accountability • Energy and emissions • Data security and privacy • Water stewardship • Community engagement and giving back • Recycling and waste • Climate change risk and resilience • Human rights • Sustainable sourcing • Public policy and advocacy	• Quarterly board meetings • Quarterly and ad hoc committee meetings • Annual meeting • Mid-quarter CEO board letter

Footprint



Footprint

At Watts, our reputation for quality, safety, and reliability is known worldwide from the extensive portfolio of differentiated technologies we provide to meet the needs of our customers. As respectful environmental stewards, we engage in business practices that reflect our values and advance our efforts to promote an economically, socially, and environmentally sustainable future. We are committed to minimizing the impact of our global operations and supply chain on the environment, protecting the communities where we operate, and delivering innovative products and services that support our customers in doing the same.

Since 2014, Watts has centrally collected and managed our energy and water consumption, waste generation, utility costs, and carbon emissions for all major sites. To ensure accuracy, we use a cloud-based data collection and analysis platform to help track resource consumption, and to collect, review, and process site invoices. Watts employees across Facilities, Operations, EHS, Finance, Supply Chain and every other function can have real-time access to site-specific and enterprise-wide data to help monitor our environmental performance. Our Environmental Data is available in the Appendix.

The scope of our environmental reporting covers 39 facilities globally, including office buildings, manufacturing sites, distribution centers, and warehouses. The facilities listed here are within our operational boundaries for environmental performance in 2022 and represent 94% of our global workforce.

Each year, in accordance with our management approach, our sites adopt eco-efficiency targets and identify suitable efficiency and conservation projects to achieve them. During our global monthly operating review process, we monitor our sites' key performance indicators (KPIs) against set targets to identify and address anomalies and identify and prioritize additional reduction opportunities.

Globally, the greatest drivers of our water consumption are product testing, process water, drinking water, and sanitation. The greatest drivers of natural gas consumption and Scope 1 emissions are winter space heating and process heating. Manufacturing and machining processes such as furnaces, cutting, forging, molding, etc., are our largest drivers of electric consumption.

SITE

Andover, MA	
Blauvelt, NY	
Burlington, ON, Canada	
Calgary, AB, Canada	
Export, PA	
Fort Myers, FL	
Fort Worth, TX	
Franklin, NH	
Franklin, NH	
Groveport, OH	
Nogales, Mexico	
North Andover, MA	
Reno, NV	
San Antonio, TX	
Spindale, NC	
St. Pauls, NC	
Vernon, BC, Canada	
Woodland, CA	
Biassono, Italy	
Dattenberg, Germany	
Eerbeek, Netherlands	
Gardolo, Italy	
Hautvillers, France	
Laundau, Germany	
Mery, France*	
Moirans, France	
Monastir, Tunisia	
Plovdiv, Bulgaria	
Rosieres, France	
Sorgues, France	
St. Neots, UK	
Vildbjerg, Denmark	
Virey-le-Grand, France	
Wingene, Belgium	
Auckland, New Zealand	
Dubai, UAE	
Ningbo, China	
Ningbo, China	
Shanghai, China	

** divested Mery facility in 2022*

Office
Manufacturing
Distribution Center
Headquarters

ISO 9001
ISO 14001
ISO 45001

Footprint

Reducing our water, energy, carbon, and waste footprints

WATER

47%

Absolute Reduction since 2014

62%

Goal: 12%

Intensity Reduction*

**baseline year 2018*

First company to complete The Water Council's WAVE: Water Stewardship Verified program

Signed the CEO Water Mandate

ENERGY

51%

Absolute Emissions Reduction since 2014

57%

Goal: 12%

Intensity Reduction*

**baseline year 2018; market-based emissions"*

Certified renewable energy credits (RECs) reduced carbon emissions by 24%, addressing carbon emissions of electricity consumed through 2024

2 sites install onsite solar, generating over 500,000 kWh of electricity

WASTE

12%

Goal: 12%

Intensity Reduction*

**baseline year 2018*

IN 2022

- Decommissioned lead-foundry
- Reporting non-hazardous stats

RECYCLING IN 2022

METAL SCRAPS
3,446,329 Kg

PLASTIC REGRIND
85,695 Kg

ELECTRONIC WASTE
8,591 Kg

ALL

Tracking environmental data since 2014

50%

of global manufacturing footprint certified to ISO 14001 standards

First goal period 2018-2023 – set 3% YOY eco-efficiency goals

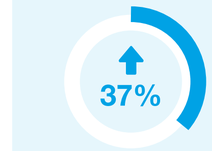
Third-party environmental data verification since 2020

Environment, Health, and Safety Management

Operating sustainably is good business. Our Environment, Health and Safety, and Sustainability Policy sets the standard for operational excellence at Watts. Our environmental management system is a key component of this global integration, providing the framework from which we deliver best-in-class performance, while ensuring our facilities operate safely, efficiently, and responsibly. We take a strategic, risk-based approach to proactively manage our environmental risk and footprint. We anchor these practices in Lean manufacturing principles and methodologies and serve to drive continuous improvement and accountability.

The Environment, Health, Safety, and Sustainability Steering Committee meets quarterly with the CEO and other Global Leadership Team members. Together, they are charged with spearheading the EHS and ESG programs at Watts, which encompass all geographies, brands, and employees. Led by our CEO and executive management team, committee members review the company's EHS and sustainability performance, and discuss trends and issues, key business drivers, progress on goals and targets, and actions for continued improvement.

In 2022, we completed 46 internal and external audits at 19 of our operating sites, focusing on EHS-related compliance and management system effectiveness, representing an increase of 37%. These audits are part of our overall EHS Management System, with audits conducted annually and assigned based on regulatory obligation, management system (ISO) obligation, relative risk, and global sampling. For details of types and frequency of audits across all locations of operations, please refer to the table in the Appendix.



Increased EHS audits by 37%

Meaningful engagement with our employees, contractors, and utility vendors has always been important to increase awareness and drive actions. To drive engagement and site-driven sustainability projects, we developed a monthly global operating and review system to track and manage our sustainability performance across these categories, including progress against site projects and associated savings. Teams share project ideas with other sites that may benefit from similar improvements. Our senior vice president of global operations and the Sustainability team are responsible for overseeing the reduction of resource intensities across all major manufacturing and distribution sites on a routine basis, as well as establishing annual reduction targets.

ISO CERTIFICATION

In 2022, 13 sites successfully completed surveillance audits for the ISO 14001 standards by undergoing a rigorous process that externally validates our efforts to enhance environmental performance and ensure compliance. Our ISO 14001-certified sites represent 50% of our global population, an increase of 23% since 2020. The pursuit of this certification provides an external framework to measure continuous maturation of our environmental management and is inclusive of our overall global system You can learn more about the certification of our occupational health and safety (OHS) management system in the Occupational Health and Safety section of this report.



Water Stewardship

We believe access to clean, safe, and affordable water is a fundamental human right. Water and climate are intricately linked, and an imminent global water crisis threatens the availability, quality, and quantity of water for basic human needs. We are committed to being part of the solution — by reducing the amount of water we use and discharge to manufacture our products, ensuring our business practices protect the water quality and supply in the communities where we operate, and developing effective and innovative products and services that solve longstanding water-conservation challenges. We formalized this commitment through our Corporate Environment, Health, Safety, and Sustainability Policy, published on our website in 2022.

We continue to increase the accuracy and immediacy of our total water usage data so we can take action to reduce it. Our data collection process utilizes a monthly, automatic bill collection system for all utilities across 39 Watts sites. Armed with information provided through monitoring solutions and applications, cross-functional teams come together regularly to increase awareness of our water intensity and execute reduction strategies.

Understanding Water as a Shared Resource

In 2022, Watts became the first company to successfully complete verification for The Water Council's WAVE: Water Stewardship Verified program, indicating we have assessed water-related risk across our enterprise, identified the highest water-related impacts using credible water-related data, and implemented best practices in improving water-stewardship performance. As part of the WAVE process, in 2021 we prioritized eight sites with the highest water risk, identified the watersheds in which the sites operate, conducted a water balance to learn more about their water inputs and outputs, and engaged stakeholders within the surrounding communities. In 2022, we expanded this work to a total of 16 Watts sites, representing 82% of our global water consumption.

As a result of this work, we are taking action locally and globally to reduce water consumption, increase reuse, improve water quality, reduce negative upstream and downstream impacts, and engage our local communities in water-stewardship activities. Examples include expanded water metering, continued community engagement, and site-specific projects.



26% of sites, which include our top water-use sites, have smart water metering

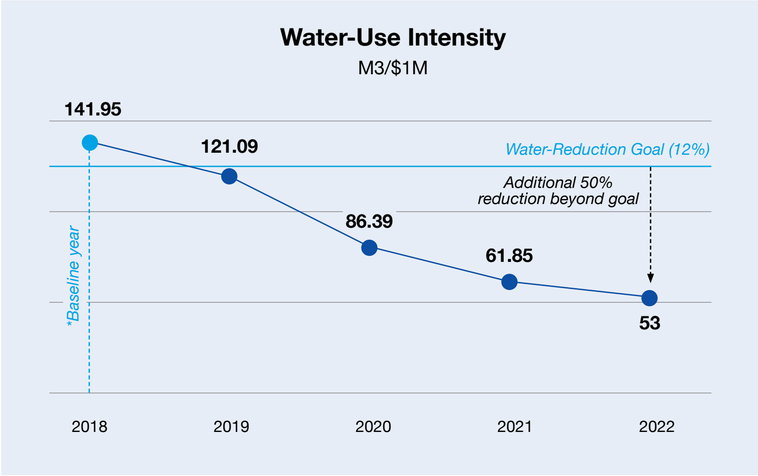


16 sites participating in The Water Council's Corporate Water Stewardship Accelerator Program, representing 82% of our total water usage

PROGRESS AGAINST OUR COMMITMENTS

We have committed to reduce our water intensity by 3% annually against a 2018 baseline. In 2022, we achieved an annual water-intensity reduction of 11%, and since 2018, have reduced our water intensity by 62% (versus 12% goal).

One of the key features of WAVE is the independent verification of water-stewardship claims. Our water-stewardship work was independently verified by SCS Global Services, an international leader in third-party certification of sustainability claims. For more information regarding our 2022 water consumption data, please visit the Appendix.



WATER STEWARDSHIP: OUR GUIDING PRINCIPLES

- Alignment with global water-stewardship standards and implementation of best practices, particularly among our high water-use facilities and facilities in water-stressed regions
- Respect for water-related rights and a guarantee of appropriate access to safe water, as well as sanitation and hygiene throughout our operations
- Acknowledgement of water as a local and shared resource — acknowledging the numerous impacts of the amount of water withdrawn and consumed, and the quality of discharges from our manufacturing operations on the functioning of local ecosystems
- Striving to ensure that all Watts facilities meet national and local requirements for the return of clean and safe wastewater back into public water sources
- Open and transparent engagement with stakeholders, including support for and coordination with public-sector agencies in the implementation of water- and sanitation-related plans and policies
- Continuous improvement and progress against core elements of stewardship with respect to direct operations, watershed management, community engagement, and transparency

LOCAL ACTION DRIVING IMPACT

In 2021, we began a journey to more intentionally consider the impact of our water usage beyond the walls of our sites and into local communities. Through our participation in The Water Council's WAVE: Water Stewardship Accelerator Program, we began this work with eight Watts sites, selected based on their water-scarcity risk. A second cohort of eight sites kicked off in 2022 and were selected using additional criteria such as water demand. Now 82% of our water usage is covered by sites that have participated in WAVE. Over the past two years, teams at all sites have worked to gain a full understanding of water usage and challenges facing local watersheds, as well as identify actions for reductions and opportunities to engage with other local stakeholders.

2022 COHORT HIGHLIGHTS

Vernon, Canada

ACHIEVED

21.47%
water-use reduction

679,190 liters
Total water-use reduction

Our Vernon facility is located in the Okanagan region of British Columbia, Canada, an area known nationally as a leader on water issues. It has one of the lowest water-availably rates per person, and many water-dependent industries. Several groups are actively engaged in bringing awareness and support to water conservation-efforts in the area, including local and regional government, First Nations – the local water treatment facility – and local farms, vineyards, and businesses. After experiencing high temperatures and wildfires in 2021, the area benefitted from cooler temperatures and precipitation in 2022. For these reasons, Watts employees in Vernon are particularly attuned to challenges facing the local water supply and continue to join local volunteer efforts focused on wetland restoration.



Vernon team volunteers on World Water Day

In 2022, the Vernon team recognized that more water was being used in its research and development processes, and a secondary water meter was connected to better understand usage increases and inform decision making. The team also worked to reduce evaporative-cooling needs through roof flooding by installing additional insulation. Future projects currently under consideration include the installation of a rooftop cooling unit to further reduce the need for evaporative-cooling and work with the building owner to identify alternative landscaping solutions.

St. Neots, United Kingdom

Water monitoring through our monthly operations review allowed the site to notice an unusual increase in total water consumption. As a result, the site team went on a “water-leak hunt” and discovered several leaks. These were repaired within the same week.



St. Neots Design team

Our St. Neots site is home to a distribution center and manufacturing facility located in Cambridge, a dry region of the United Kingdom. Increases in population and construction activities are anticipated over the next 20 years in this area of significant importance for the country’s biodiversity. The two local watersheds, Great Ouse lower and Graham water reservoir, see low rainfall and poor ground-water level capture. Our team learned more about these challenges facing the local watershed through its participation in the accelerator program in 2022, while also gaining a fuller understanding of the site’s water usage. Water at the site is used solely for sanitation and landscaping. The team plans to install a smart water system to avoid future leaks and has also engaged local community colleges to train future plumbers and installers on the use of Watts water-conservation products.

Sorgues, France

Our Sorgues facility is located in a watershed that has been heavily affected by drought, with ongoing local restrictions in place, including temporary-use bans. Sustainability and water stewardship have been integrated into daily operations, and employee engagement and empowerment – from leadership to floor associates – drove water-use reductions in 2022. Employees understand the role they can play in supporting local conservation efforts.

ACHIEVED

5.62%
water-use reduction

37,334 liters
Total water-use reduction

2021 COHORT UPDATES

Blauvelt, New York, USA

- Achieved 52.32% water-use reduction in 2022
- Total water-use reduction: 12.84 million liters
- Local watershed: 70% of water derived from 60 drilled wells, and 30% from Lake Deforest and Letch Worth Reservoir

Site-wide smart metering at our state-of-the-art AERCO manufacturing facility continues to provide accurate and real-time monitoring of water consumption, resulting in significant usage reductions.

Monastir, Tunisia

- Achieved 20.81% water-use reduction in 2022
- Total water-use reduction: 821,000 liters
- Local watershed: Medjerda River

Greater awareness among site employees has helped our Monastir facility build on 2021 successes, gaining further usage reduction for sanitation purposes.

Ningbo, China

- Achieved 16.35% water-use reduction in 2022
- Total water-use reduction: 1.59 million liters
- Local watershed: Yangtze River and surrounding reservoirs

The team at our Ningbo site has continued to build on progress made in 2021 with several site improvements to reduce water usage, including the installation of water tanks to collect and reuse test water, refurbished plumbing, and implementation of new testing methods.



ENGAGING ALL COLLEAGUES IN WATER STEWARDSHIP

Our water-stewardship performance has been fueled by an increased awareness among colleagues across the company. The topic has become a common thread in internal communications efforts that reach all our colleagues, regardless of their role, and is ingrained in operations through our monthly operating review process.



An indicator of increased awareness and engagement among employees is the total number of Quick Kaizens focused on water stewardship and the total number of employees engaged – both measures increased by 35% in 2022.

Preserving Our Local Watershed in Massachusetts

Rivers are the main source of ocean plastic and other pollution as they carry waste from land to ocean. Over two days in August and September, a group of Watts volunteers demonstrated how our community stewardship efforts can be just as impactful as our Footprint. In partnership with local nonprofit Clean River Project, colleagues from our Andover and North Andover, MA, USA sites removed nearly two tons of trash from the Merrimack River. The Merrimack is a 117-mile-long river in the northeastern United States. It rises at the confluence of the Pemigewasset and Winnipesaukee rivers in Franklin, New Hampshire, flows southward into Massachusetts, and then flows northeast until it empties into the Gulf of Maine at Newburyport. It serves as the local watershed to three Watts sites, and our flagship manufacturing site in Franklin, NH, USA is the largest water consumer in the upper Merrimack, where the local municipality's stated goal is to clean up the river.



Watts volunteers, including CEO Bob Pagano, used hand grabbers, shovels, and rakes to remove items including discarded tires, construction debris, and plastic refuse from the Merrimack River in 2022. Larger items recovered included a manhole cover, a metal bed frame, and a catch-and-release animal trap.

Left: Funding from Watts supported the Clean River Project in extracting two cars from the Merrimack River in 2022: a 1971 Plymouth Fury and a 1976 Buick Regal, both containing hazardous materials that would threaten the health of the drinking water supply. The two extractions represented the Clean River Project's 85th and 86th vehicle removals, respectively. Car extractions require extensive preparation, sonar and diving capabilities, and lifting and towing services.

Quick Kaizens are incremental continuous improvement efforts that allow all employees at Watts to "fix what bugs them." You can read more about Quick Kaizens in the One Watts Performance System section.



Community garden brings colleagues together, with water conservation at the forefront

A team of employees at our Moirans, France manufacturing facility are providing colleagues with access to organic food while furthering the company's commitment to water stewardship. The group built their own garden with compost to fertilize as needed, harvesting a wide range of seasonal vegetables, fruits, aromatics, and flowers. Knowing they did not want to increase the site's overall water consumption to tend the garden, two colleagues designed an innovative watering system that uses air conditioning condensate collected in a tank as the garden's water source, saving 50 liters of water daily. They have also improved the biodiversity of their local site by building bird feeders, and bird and insect nests.

Preventing water loss during product testing

In Auckland, New Zealand, colleagues at our Apex Valves manufacturing and distribution site implemented a new solution to detect and prevent water leaks associated with a product quality test conducted at the facility. Implementation of a sensor now stops the test and shuts down the water supply if a leak is detected. A second sensor monitors for system leaks. The change has resulted in a safer workplace, reduction in leaks and water loss, and improved productivity for the facility, which can now run the test overnight as a result of the added detection technology.

Local contributions to enterprise goals

The team at our Nogales, Mexico contract manufacturing Maquiladora partner knew that an increased production of hazardous waste associated with a parts-cleaning process would impact the site's total water usage. To reduce water usage and wastewater disposed, they identified and installed a new filter that separates coolant and water, allowing water to be reused in the cleaning process. The filter reduced the water usage related to the cleaning process by more than 18,000 liters in 2022. You can read more about the positive impact this action had on the site's hazardous waste in the Waste Reduction Facility Highlights.

Left: Watts volunteers cleaning the Merrimack River in 2022

Energy and Emissions

We recognize the increasing urgency to avert the worst effects of climate change through rapid decarbonization and greater climate resiliency. Our energy policy is rooted in existing UN frameworks and climate science as we commit to:

- Reducing our energy consumption and carbon emissions across all facilities.
- Offsetting emissions through the purchase of renewable energy credits (RECs).
- Developing new technologies within our product portfolio.
- Changing the way we serve our customers to advance environmental and societal objectives.

To accelerate this work, we have committed to reducing our GHG emissions intensity by 3% annually against a 2018 baseline. In 2022, we ramped up the integration of sustainability and conservation at every level of the organization – from leadership to floor associates. We continued to target our highest emitting activities to implement efficient solutions and adopt an emissions-reduction mindset.

Through implementation of efficient solutions, installation of renewables at our facilities in Ningbo, China and Plovdiv, Bulgaria, and the purchase of RECs to cover 100% of our electrical demand at seven of our largest manufacturing and distribution sites in the US, we continued to drive emissions reductions in 2022. Since 2018, Watts has reduced its GHG intensity by 33% (location-based) against our stated 12% reduction goal. We improved our tracking and carbon-accounting mechanisms and have begun to track and report both our location-based and market-based carbon emissions.[1] Doing so allows us to capture both the work we are doing in reducing our emissions as well as our investment in RECs. As of this year, we have a achieved a 45% market-based GHG reduction since 2018, and 51% since 2014. Our annual intensity reduction in 2022 compared to 2021 was 31% (market-based).



Both the economic recovery after the COVID-19 pandemic and the ongoing war in Ukraine have contributed to energy-supply concerns and increased energy costs. Renewables are now projected to lead the power generation mix by up to 80% in 2050.

Source: Global Energy Perspective, McKinsey

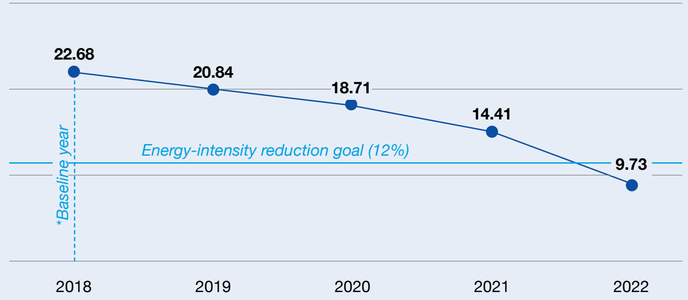
GHG Intensity Reduction



**baseline year 2018; market-based emissions"*

GHG Scope 1 & 2 Market-Based Intensity Trend

MTCO2e/$1M



In 2022, our energy and emissions data, emissions calculations methodology, corporate inventory management, and GHG reporting procedures relating to energy and utility data collection were reviewed and verified by a third party. Please visit the Appendix for more information.

[1] A location-based method reflects the average emissions intensity of grids on which energy consumption occurs (using mostly grid-average emission factor data). A market-based method reflects emissions from electricity that companies have purposefully chosen. (Source: Greenhouse Gas Protocol)

HEAR IT, TAG IT, SEE IT, FIX IT!

Air leaks occur in industrial settings, or any area where high-pressure air is used. A system of pipes or tubes pushes air from a compressor to a machine or tooling device. Leaks in these systems happen for several reasons such as sealing, vibration, or repetitive use. The more leaks there are in the system, the harder the compressor must work, powering on and off more frequently and therefore wasting energy and increasing emissions.

We launched an air-leak detection program to encourage all employees across the company to help identify compressed-air leaks and tag the assets with our own Watts-branded tags. This represents a significant improvement toward the best practice of crowdsourcing air leaks – getting every Watts employee to participate in energy savings. This also alleviates the burden on Facilities and Maintenance teams, allowing them to spend more time fixing the leaks. Since launching this program in August 2022, 12 of our manufacturing sites have implemented the air-leak tagging program.



Watts employees help save the environment by identifying and tagging air leaks

2022 FACILITY HIGHLIGHTS

Sorgues, France

In 2022, this site implemented a range of measures to reduce its heating demand through natural gas. Some of the measures included efficient thermostat programming and management, nighttime regulation of heating, installation of destratification fans to improve air circulation in warehouses, and ongoing engagement and discussion with staff. Overall, the site reduced their natural gas consumption by 22%, or 18,729 cubic metes, by the end of 2022. They also achieved a reduction in electricity consumption by about 19% through actions taken in 2021 and 2022, such as replacement of old neon lamps with efficient LED lamps throughout the facility, and optimization of equipment power usage (e.g., forklift charging during low demand periods), among others.

Hautvillers, France

Achieved an 11%, or ~220,000 kWh, reduction in electric consumption and a 23%, or ~ 180,000 kWh, reduction in natural gas consumption through our implementation of efficient setpoints and controls, replacement of inefficient radiators, LED upgrades, shutting down one of two ovens in the foundry, and ongoing engagement across the site. They continue their energy consumption improvement drive through the detection and repair of several compressed air leaks since the start of 2023.



EV charging station in the Watts St. Neots, UK Facility



St. Neots, UK

Achieved an 18% reduction in natural gas and 10% reduction in electric usage, equivalent to 50,000 kWh in total energy reduction through an optimized office floor layout, increased frequency of preventive maintenance for heating units, upgraded sensors and controls, and increased awareness and education of employees.

Ningbo, China

Achieved a 45%, or 1.4 million kWh, reduction in electric usage due to the combination of a 0.6 MW solar array installation, replacement of more than 200 lights with high-efficiency LEDs (which also vastly improved illumination), commissioning of a compressor-air usage study resulting in the installation of a more efficient air compressor, consistent detection and repairs of compressed-air leaks, and continuous improvements in the HVAC system.

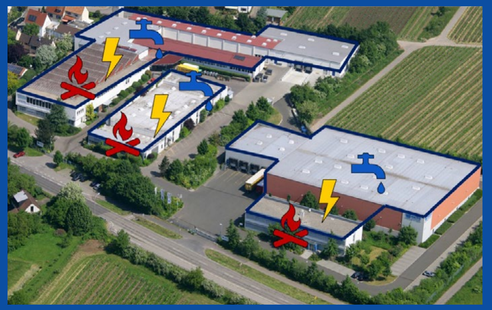
Plovdiv, Bulgaria

In 2022, Plovdiv installed a 60kW rooftop solar PV system, which contributed to reducing electrical demand by 10%, or ~100,000 kWh over the August to December period of 2022. Other measures contributing to the decrease were large-scale LED installations throughout the production and warehouse areas and upgrades to their product-printing equipment. Since March 2023, the site has now doubled the solar system's capacity to a 120-kW system, and by the end of 2024 the system will be further expanded to a total of 150 kW.

QUICK KAIZENS IN ACTION: ENERGY CONSERVATION

Landau, Germany

A day-long sustainability-focused discussion across all departments included a workshop that got site personnel brainstorming new ways to conserve energy. By the end of 2022, the site was able to reduce total energy consumption by 10% through various measures – including automating blinds, turning bathroom boilers off when the site is closed, and removing inefficient electric fan heaters.



The Landau team mapped actual consumption in each area of its facilities and planned efficiency improvements to reduce consumption.

Our smart and connected enabled products increase energy efficiency and conservation for our customers while reducing emissions. You can learn more in the Handprint section of this report.

Waste Reduction

We recognize the need to protect our land, waterways, and communities by reducing the amount of waste generated by our operations. Seventeen of our 39 facilities generate waste classified as hazardous, with the remainder generating solid waste, recycling (paper, cardboard, plastic), electronic recycling, and metal-chips recycling. We comply with all local and national regulations and track manifests for hazardous and non-hazardous industrial waste.

In addition to targeted hazardous-waste reduction efforts, our approach to waste-reduction includes:

- Driving innovation and investing in new solutions to accelerate our transition to a circular economy
- Diverting waste streams from landfills by eliminating single-use plastics, and recycling paper and plastic
- Ensuring packaging material consists of reusable, recyclable, or compostable content

Worldwide municipal solid waste is expected to increase by ~70% to 3.4 billion metric tons, most of which is expected to end up in landfills.

Source: Global Waste Generation, Statista

In 2022, we continued to track solid waste, scrap metal, and other recycling streams, working closely with our facilities and waste contractors to understand the source and management of our waste, and to standardize data collection across sites. This work required significant collaboration across our global operations; our corporate Sustainability team partnered with site teams to identify opportunities for improvement through process changes.

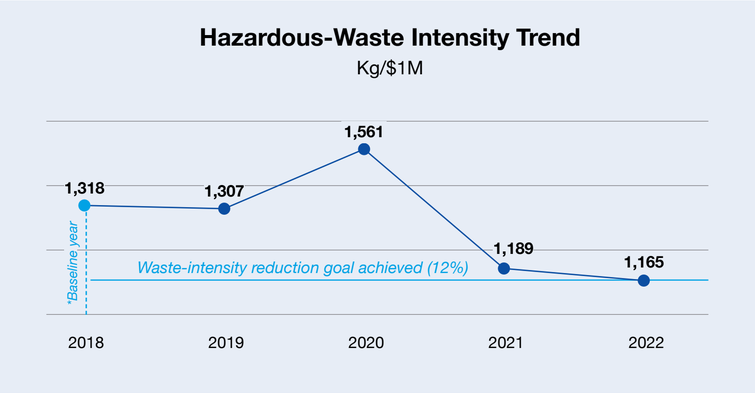
A deeper understanding of our waste generation and more frequent collaboration at the site level has generated substantial interest and engagement among colleagues throughout our operations. Employee-driven waste-reduction initiatives focus on waste delineation, re-zoning, and waste-stream elimination, thereby reducing our overall waste outputs and increasing recycling and reuse. We continue to replace single-use paper and plastic items with reusable items and install direct-line water refill stations to avoid disposing of plastic water bottles.

Tracking all forms of waste, reducing the overall quantity generated, and diverting from landfills using circular models is a complex challenge. To accelerate our efforts, we previously committed to reducing our hazardous-waste intensity by 3% annually against a 2018 baseline. By the end of 2022, we had reduced our hazardous-waste intensity by 12%.

The overall amount of hazardous waste we generated globally in 2022 increased 7.2% to 2,307,093 kg primarily driven by the Franklin, NH, USA foundry decommissioning project. This one-time project generated 278,000 kg of lead-contaminated waste, representing 12.1% of the hazardous waste generated globally during the reporting period. The European region had a YOY decrease of 3.1%, our APMEA region had a YOY decrease of 56%, and our Americas region had a YOY increase of 118%. Excluding the decommissioning-project waste, the organization reduced hazardous waste generation by 5.7%, including a 29.7% reduction in the Americas region.

For our U.S. operations, toxic waste reported under EPA's Toxic Release Inventory Reporting program decreased in 2021, the latest reporting year available, by 21.9% compared to 2018. This decrease was heavily driven by the reduction in lead-containing products. Lead reporting decreased by 94% compared to 2018.

In addition to our continued work with factories to reduce waste, the combination of reduced production at some of our largest facilities in Europe and APMEA, as well as closures and a move to offshore machining processes at some facilities, led to a 47% yearly decline in recycling of metal scraps and chips, and 70% decline in plastic-regrind recycling numbers. We have increased the recycling of our electronic waste by 9% compared to 2021. For more information on hazardous waste and recycling data see the Appendix.



In 2022, our hazardous-waste data, calculations methodology, corporate inventory management, and hazardous-waste reporting procedures were reviewed and verified by a third party. Please see the Appendix for more information.

2022 FACILITY HIGHLIGHTS

Franklin, New Hampshire, USA

We decommissioned our leaded-product foundry to focus on our lead-free products. The equipment from the leaded-product foundry was sold or recycled. As a result of this one-time decommissioning, the site was able to recycle 237 metric tons of steel and generated 278 metric tons of incremental hazardous waste in 2022.

Excluding the hazardous waste generated from the decommissioning project, the site reduced other hazardous waste by 53% through a combination of a full year of benefits for their oil-recycling project and oil-rag segregation and reclassification.

Ningbo, China

The majority of hazardous waste generated at this site is an oily emulsion of cutting fluid and copper powder. Main actions to reduce waste generation included adding leakproof collection trays to capture and reuse cutting fluid, switching from wet to dry processing equipment to reduce cooling and cutting-fluid usage, and continuous communication and training around best practices. Combined, these solutions resulted in a 40% reduction in hazardous waste compared to 2021.

Biassono, Italy

Achieved a reduction of approximately 3,000 kilograms of hazardous waste compared to 2021. The reduction was driven through routine monitoring and evaluation of waste delineation, monthly operating reviews, data analysis, periodic training, and employee engagement to raise awareness and increase adoption of best practices.

Fort Worth, Texas, USA

Excluding the one-time waste generated as a result of the Franklin, NH, USA foundry decommissioning, the largest hazardous waste stream generated in the Americas region is associated with our passivation/pickling operations at our facility in Fort Worth, Texas, USA. Our Fort Worth facility has been piloting a metals-removal system for in-process passivation tanks with favorable results. This technology is now operating in the Fort Worth site and will be evaluated next for the passivation/pickling operations at our Vildbjerg, Denmark site. The objective of this technology is to systematically remove excess metals from the process tanks via filtration technology to extend the life of the baths, and ultimately reduce hazardous-waste generation.

Watts reporting showed a reduction of toxic metals and other materials under EPA's TRI reporting of 21.9% compared to 2018. Please refer to this table in the Appendix for more details.



Waste delineation at the Franklin, NH, USA facility

QUICK KAIZENS IN ACTION: WASTE REDUCTION

Blauvelt, New York, USA

Aerosol cans were being disposed as hazardous waste, which was costly due to special handling needed. The team purchased and installed an aerosol-can disposal machine that compacted and emptied the cans, not only making them non-hazardous but also reducing total weight and allowing for recycling. This action helped the site eliminate expensive fees associated with disposing of the cans.

Nogales, Mexico

During the cleaning of parts-cleaning tanks, water with coolant needed to be disposed of as hazardous waste, which would have resulted in the site missing its annual sustainability targets. At the beginning of 2022, the EHS manager purchased a filter to separate the coolant and water and reuse both in the parts-cleaning process. You can read more about the positive impact this action has on the site's water performance in the Water Stewardship section.

St. Neots, United Kingdom

Items were shipped from this facility using plastic packing materials, which were costly to purchase and difficult to recycle. The site began to corrugate and reuse cardboard, originally being disposed as recyclable waste stream, as the new packing material. This avoided both the cost to purchase plastic packing material and the cost to dispose of cardboard.



St. Neots implements circular use of cardboard

Quick Kaizens are incremental continuous improvement efforts that allow all employees at Watts to "fix what bugs them." You can read more about Quick Kaizens and the One Watts Performance System here.

Handprint



Handprint

Water is a precious and scarce resource that sustains people, communities, and economies throughout the world. While vital to good health and well-being, water can also threaten people's health and safety when not managed properly.

At Watts, we believe our products and solutions have an essential role to play in protecting shared water resources and the people who use and rely on them. For nearly 150 years, we have developed and designed products, components, and systems that solve the world's greatest water-safety challenges, conserve water, and improve energy efficiency. We design our products to benefit users and help their sustainability efforts based on this "triple play" of sustainability: Safety and Regulation, Water Conservation, and Energy Efficiency.

Our goal is to be a solutions partner, not merely a components supplier. We deliver superior customer value by transforming our traditional mechanical products into smart and connected solutions. We have introduced new products that connect our customers with smart systems, providing data to optimize performance, and conserve critical resources by increasing operability, efficiency, and safety. We have made substantial progress in the development of smart and connected enabled products and expect to derive 25% of our revenue from these products by the end of 2023.



Handprint

Creating innovative products and smart solutions to protect, control, and conserve critical resources.

Our “triple play” of sustainability: **Safety and Regulation**, **Water Conservation**, and **Energy Efficiency**

SAFETY AND REGULATION

Products that help protect the health and safety of inhabitants of homes and commercial buildings

~74%

of Watts gross product revenue*

Product spotlight: *Big Bubba® BB-S101 Whole Home Filtration System filters-out certain metal contaminants, PFOA/PFAS, chlorine and cysts from water at its point-of-entry into a home*

WATER CONSERVATION

Products that help our customers conserve water, alerting them to leaks and floods and helping prevent contamination and water loss in the municipal water supply

~37%

of Watts gross product revenue*

Product spotlight: *Watts Pressure-Reducing Valves avoid the use of 19B+ gallons of water globally per year*

ENERGY EFFICIENCY

Products that help our customers improve the efficiency and sustainability of their buildings, reducing energy utilization while still maintaining comfort and safety

~24%

of Watts gross product revenue*

Product spotlight: *In 2022, our AERCO high-efficiency gas-fired boilers and water heaters helped our customers avoid approximately104,000 Metric Tons of CO2*

PRODUCT SUSTAINABILITY

Began implementing product Life Cycle Assessments in 2022

1M+ repair kits sold to extend useful life of Watts products

80% reduction in use of plastics and chemicals for protective packaging since 2017

CUSTOMER EDUCATION



51% increase in Watts Works learning sessions in 2022

** Products may fit into multiple categories*

Safety & Regulation

Dating back to the industrial revolution, our products have kept water, water-system equipment, and the people operating our water systems, safe. Preventing the over-pressurization of hot-water vessels to prevent explosion was our earliest focus; today, water contamination and scalding are among the greatest risks we aim to address.

Water can become contaminated in the source water as well as in its distribution system after water treatment has already occurred. Additionally, the growth of pathogens continues to be a pervasive health threat to drinking water, particularly for populations most vulnerable to illness.

Temperature regulation is equally important to safety, as even small increases in water temperature can lead to scalding at faucets in homes and buildings. Scalding leads to over 100,000 emergency room visits per year in the U.S. One study published in the Journal of Burn Care Research found that hot water temperatures were unsafe in 41% of inspected urban homes.

Connected Backflow

Backflow happens when a potable water supply is commingled with used water, industrial fluids, or other contaminants. Every year, millions in the U.S. are affected by backflow through water-supply shutdowns, boil-water orders and even illness or injury. It is a significant safety risk to water supplies, property, and the environment. The most common cause of backflow is when hydraulic pressure is disrupted in a plumbing system reversing normal flow, forcing non-potable water into the clean water supply.

Modern building and industrial codes require backflow prevention valves that automatically discharge contaminated water or shutdown supply when backflow is detected. Discharges can flow at a rate as high as 500 gallons per minute and can last for hours or even days, wasting water and potentially causing property and environmental damage.



Increasing the Speed of Knowledge to Conserve and Protect Water

Watts has been a leader in backflow prevention since the 1970s, saving many millions of gallons of potable water, but early detection of backflow events remained a challenge. For decades, facilities' operators have been searching for solutions to reduce the risk of backflow and prevent adverse events.

Watts Connected Backflow changes the game in system monitoring, delivering robust new capabilities in early detection, diagnostics, and system optimization. It uses the latest advances in IoT technology to capture and stream performance data directly to building-management systems around the clock with real-time alerts. The system can also connect to other IoT enabled equipment such as leak sensors, providing greater visibility into early indicators of backflow risk.

The concept behind Connected Backflow is "Speed of Knowledge." When operators have more information sooner, they can triage, diagnose, and address risk earlier, before a backflow event occurs. Real-time information means they are no longer limited to just one or two annual inspections – they get year-round performance data to inform optimization and maintenance.

The Future of Sustainability is Smart and Connected

Watts smart and connected technology will continue to drive big advances in performance and sustainability across solutions like digital mixing valves, boilers, floor warming, thermostats, and more. Because the technology is designed to capture data over time, it holds the promise to deliver new predictive capabilities beyond system protection and prevention. Future smart and connected systems will show operators where problems are likely to occur and when risks may be elevated. Predictive capabilities can pave the way for even more pre-emptive action for system optimization, protection, and prevention.

Our products being smart and connected translates to safer, more-efficient, and cost-effective use of water. There is no better demonstration of our vision of sustainability.

EXAMPLES OF OUR PRODUCTS AT WORK

Sentry 2.5 Backflow Performance Monitoring System



Challenge: Backflow prevention valves save water and mitigate disease and injury risks by preventing used water or other contaminants from re-entering the potable water supply. But since they were introduced in the 1970's, operators have been limited to one or two annual inspections to maintain this critical safety equipment. Typically, a water system must be shut down during inspections, making more frequent inspections too costly and impractical, and thus raising the risk of failure and contamination of potable water.

Solution: Watts Sentry 2.5 Backflow Performance Monitoring System continuously monitors backflow valve performance. The system streams performance data from a backflow device directly to a customer's building-management system and delivers real-time alerts if critical limits are exceeded. The system streams data around the clock, giving backflow-system operators powerful new tools to monitor and optimize equipment to conserve and protect drinking water.

Lead-Free Under Sink Guardian, Hot Water Purge

Challenge: Managing the supply and temperature of hot water is a year-round challenge for Facilities teams in settings like hospitals, colleges, hotels, and office buildings. Temperature fluctuation is common in plumbing systems and can be caused by seasonality, system-pressure fluctuations, and hot-water heater malfunctions. Unmitigated temperature changes pose significant safety risks such as scalding and contamination by waterborne bacteria including Legionella.

Solution: Watts Lead-Free Under Sink Guardian with Hot Water Purge (LFUSG-HWP) helps ensure that hot water temperatures at faucets remain consistent and minimize risk of scalding. It gives system operators capabilities to individually sanitize faucets for an entire building loop at regular intervals (when paired with Powers IntelliStation) to mitigate waterborne-pathogen growth. This is especially important in buildings with variable occupancy such as schools, dormitories, hotels, colleges, or those with vulnerable occupants such as hospitals and skilled-nursing facilities.



Big Bubba BB-S101



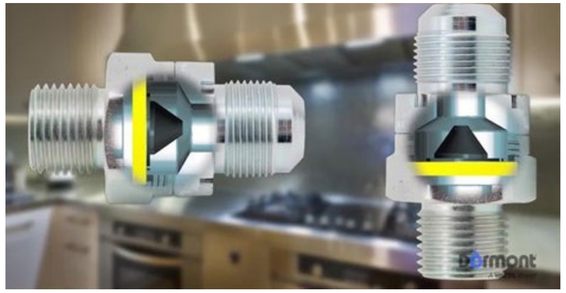
Challenge: Many service lines that supply homes with potable water contain parts such as pipes or solder that may contain metal contaminants. Running a tap for 10-15 seconds can reduce such contaminants in drinking water, but also wastes water and energy, and does not entirely eliminate contaminants. Other contaminants like perfluoro octane sulfonate and perfluoro octanoic acid (PFOS and PFOA) that are used in consumer products can be found in wells that supply drinking water.

Solution: The Big Bubba® BB-S101 Whole-Home Filtration System filters out certain metal contaminants, PFOA/PFAS, chlorine, and cysts from water at its point-of-entry into a home. The system filters up to 84,000 gallons of safe drinking water, avoiding the need for single-use plastic water bottles. The system comes standard with a Water Quality Monitor that automatically alerts users via text message or email when a filter needs replacement, helping to ensure that clean, filtered water is always available. The system is IAPMO and NSF certified, meeting the highest standards of quality and performance.

SmartSense Excess Flow and Thermal Shutoff Valve

Challenge: Gas-line ruptures and disconnections are potentially catastrophic safety hazards. They can be difficult to detect and may go unnoticed for extended periods, raising the risk of fires and explosion. Structure fires can also cause gas lines to fail and explode, increasing risk to life, property, and first responders.

Solution: SmartSense detects gas-line ruptures, disconnection, and even fire. When a threat is detected, SmartSense's excess-flow limiter restricts gas flow, limiting harmful build-up of gas within the home. Its fire-safe shutoff uses a thermal ring that expands to stop the flow of gas at extremely high temperatures and when the valve reaches (350o-425oF). It also features a premium antimicrobial coating to inhibit bacteria growth, improve corrosion and UV protection, and enhance flame and smoke resistance.



AT WEST FRIENDSHIP, FIRE AND ICE “ARE DEALT WITH ACCORDINGLY”

West Friendship Volunteer Fire Department in Howard County, MD, USA was having issues with snow accumulation around its fire station, which led to response delays and potential safety hazards for their firefighters and vehicles.

The solution was a dual system to address exterior snow melt, and an interior radiant-heat system to increase energy efficiency. These systems use 32,000 linear feet of Watts EPDM synthetic-rubber Onix tubing and manifolds. Pre-engineered, pre-packaged HydroNex system panels control the interior radiant heating, and a larger, custom-built HydroSkid package controls the exterior snow-melting system.

Now, the snow-melt system controls snow accumulation around their station so they can respond quickly and safely, and the interior radiant heating makes heating the station more energy efficient.





Conserving Water

Experts project that the world will face a 40% global water deficit by 2030. While water supply is increasingly threatened, freshwater use has increased over 600% since 1960, and continues to grow (Source: UN World Water Development Report, World Resources Institute). The world depends on reliable access to clean water, and through our products, we work to conserve this precious resource. Every day, Watts solutions help customers prevent unnecessary water loss in residential, commercial, industrial, and municipal water systems.

EXAMPLES OF OUR PRODUCTS AT WORK

Kingpin Hinge Arm

Challenge: When livestock drink from watering troughs, they can damage the level-detection arm, which is the mechanism that shuts off the valve supplying water to the trough. The arm is typically damaged where the arm and valve connect. Once the arm is broken, the valve will remain open until either remedial action is taken or the water supply is exhausted. This leads to significant water waste and risk of dehydration in the herd. In fact, farmers in New Zealand lose an estimated 2 million liters of water annually due to valve damage caused by livestock.

Solution: Watts Kingpin Hinge Arm protects the cotter-pin connection by inserting a durable hinge and self-centering mechanism at the valve end of the arm. This allows the arm to absorb the impact from the livestock, which reduces the pressure that is on the connection point with the valve and greatly decreases the chance of damage. The Kingpin Hinge Arm can be retrofitted into existing valves and floats for optimal valve performance. The installation of a Kingpin Hinge Arm reduces the need for valve replacements, protects livestock, and helps prevent water loss that can even lead to flooding.



Pressure-Reducing Valves (PRVs)



Challenge: Excess water pressure in residential settings wastes water, damages appliances, and needlessly raises utility bills. Elevated water pressure causes additional wear and tear on appliances, limiting lifespan and increasing maintenance costs. It can increase household water usage by as much as 30% through waste, and increases energy bills because hot water is wasted as well.

Solution: According to the U.S. Environmental Protection Agency, the average home can save over 11,000 gallons of water a year by reducing incoming water pressure from 80 psi to 50 psi with a pressure-reducing valve (PRV). In fact, it's estimated that Watts pressure-reducing valves avoid the use of over 19 billion gallons of water globally per year, saving water, energy, and costly wear and tear on home appliances.

OneFlow



Challenge: Calcium-scale build-up in plumbing systems increases energy costs and can lead to expensive repairs to hot-water heaters, boilers, and other equipment vulnerable to scale build-up from hard water. But conventional anti-scale systems use water softeners that require backwash and discharge of water that contains salt and chemicals that break down build-up.

Solution: OneFlow® Anti-scale Solution prevents and breaks down scale build-up without the need to backwash or discharge water. A salt-free and chemical-free solution, it uses less water than conventional water softeners, and doesn't require electricity. OneFlow® is an environmentally safe solution that helped customers avoid using more than 138 million gallons of water, 12 million lbs. of salt, and three million kWh of electricity in 2022 alone.

BLÜCHER HygienicPro®



Challenge: Drainage systems in factory floors with insufficient flow can waste water and create hazards through pooling and cross contamination. Insufficient drainage flow can allow humidity and waste to collect on factory floors, creating hygiene and food-safety challenges. Under these conditions, the contaminated sewer system and the clean production area may come into contact, causing additional risk. Conventional drainage systems often lack the capacity to collect waste from processing activities and offer limited access to clean and maintain them.

Solution: BLÜCHER HygienicPro® drains offer high capacity and efficient flow, are easy to clean, and help mitigate bacterial growth while limiting water volumes. They also reduce production downtime needed to maintain and clean the system. In flow comparison tests, HygienicPro drains use 96.5% less water than conventional channels. In 2022, HygenicPro customers avoided the use of 23,150 liters of water.

DETECTING LEAKS WHERE THEY CAN DO THE MOST DAMAGE

Watts leak-detection systems minimize potable-water loss and mitigate costly water damage and insurance claims. Our systems are used in residential, commercial, and industrial applications to detect leaks within a plumbing system. They use wireless leak sensors, shutoff valves, and apps for remote monitoring around the clock. Our Trident® wireless leak-detection system is the only platform to receive FM approval.



The Detection Group provides real-time alerts to managers of commercial property



Sentinel Hydrosolutions Leak-Defense Systems® alert and stop leaks throughout a residence



IntelliFlow alerts homeowners of washing-machine leaks and stops them at the source

WATTS LEAK DEFENSE SYSTEM® HELPS PREVENT CATASTROPHIC LEAKS AT SOLA SALON LOCATIONS

Sola Salons is a growing national chain with 17 locations in greater San Diego. Over the years, several of these locations have suffered water damage from after-hours plumbing leaks. Four of these incidents alone resulted in hundreds of thousands of dollars in property damage and wasted water. They needed a better way to protect against these costly and destructive leaks.

The Watts Leak Defense team provided a system that could be adapted to the unique hours and plumbing systems at each location. The Leak Defense System® is a water-flow monitoring and alarm system that detects leaking water in a plumbing system.

During hours when a salon is closed, the Leak Defense System operates in “unoccupied” mode. When excess water flows during these hours, the system automatically shuts the water off and sends a text message or email alert to building managers or other designated recipients.

To date, the Leak Defense System has prevented catastrophic leaks at the 17 Sola Salon locations. They also plan to install the systems at more of their 600 locations nationwide.



The Detection Group’s Trident solution alerts Facilities teams and saves corporate HQ from major flood on a Sunday morning

TRIDENT SYSTEM FOILS LEAK AT NORTH ANDOVER, MA, USA, HEADQUARTERS

The Detection Group’s Trident Solution saved at least $50,000 in damages during a typically quiet Sunday morning at the Watts corporate headquarters in North Andover, MA, USA when a water hose in the building’s irrigation room suddenly disconnected. As soon as the break happened, water started flowing out—first into the irrigation room and then into a nearby shipping and receiving hallway. With no one around, it was on its way towards wreaking havoc on the carpeted space of the ground-floor offices, cubicles, and meeting rooms.

However, a Trident system from The Detection Group (TDG) had been installed more than a year earlier to stand guard against just such an emergency, and at 7 a.m., Facilities team members received a call from The Detection Group system alerting them of the emergency.

The Facilities team responded quickly to stop the leak and then got to work cleaning up the pooled water.

“In the end, we had almost zero damage from the headquarters leak; we just had to replace a carpet in an office,” said one of our Facility/Maintenance specialists. “The entire ground floor could have been flooded if we hadn’t gotten the call from the TDG system, and in preventing this, the TDG system has already paid for itself.”

Improving Energy Efficiency

Heating and cooling air and water is a major source of greenhouse gas emissions. Heating and cooling account for 27% of CO2 emissions in commercial settings, and 38% in residential settings. Water heating alone represents about 15% of CO2 emissions in the residential sector, according to the International Energy Agency's Annual Energy Outlook 2018.

Watts products are consciously designed to reduce their environmental impact and deliver cost savings for our customers.

EXAMPLES OF OUR PRODUCTS AT WORK

PVI Centurion



Challenge: Non-condensing commercial water heaters waste energy by using unnecessarily high levels of gas.

Solution: PVI's Centurion gas-fired water heaters provide precise temperature control ±4°F and up to 99% thermal efficiency. Incorporating advanced combustion controls, Centurion features patented O2 trim technology that self-corrects to maintain precise air-to-fuel ratios. Proper oxygen levels ensure the unit is operating at peak efficiency and significantly reducing carbon emissions.

It's estimated that Centurion will save 2,324 metric tons of CO2 emissions compared to traditional non-condensing commercial water heaters, or the equivalent emissions from 505 cars, in 2023.

AERCO SmartPlate EV

Challenge: Local and national building codes have an increased focus on reducing or eliminating inefficient, gas-fired water heaters.

Solution: AERCO's SmartPlate EV® is a high-efficiency indirect water heater that heats twice as much water as a typical gas-fired water heater, in a much smaller footprint. This translates to a significantly smaller environmental impact by using less energy, and fewer materials are used because they do not require gas piping or venting. The SmartPlate EV reduces the overall gas-fired footprint in commercial buildings by approximately 25% by eliminating the need for a gas-fired water-heating plant. When combined with a condensing boiler with dual returns, like AERCO's Benchmark Platinum, it can increase boiler efficiency by up to an additional 6%.



Aegis Heat Pump

Challenge: Commercial domestic-water electric heat pumps are a great solution to maximize energy savings. Typically the refrigerants a heat pump uses to move heat from one set of coils to another are harmful to the atmosphere (high global warming potential (GWP)) and flammable.

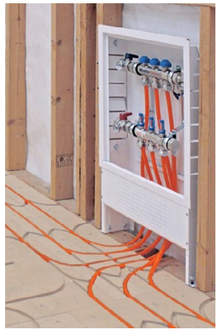
Solution: The Aegis Heat Pump is a highly efficient electric heat-pump water heater that uses a natural refrigerant (CO2) to produce domestic hot water. CO2's official refrigerant code is R744 and is non-toxic, non-flammable, has an Ozone Depletion Potential (ODP) of zero, and a low GWP.



The Aegis Heat Pump saves an estimated 3,435 tons of CO2 annually.

Stainless Steel Radiant-Heat Manifolds

Challenge: Heating a house can be energy intensive and expensive with a big environmental impact. Consumers everywhere, especially those in the European region, are looking for ways to decrease high energy costs and be more sustainable.



Solution: Watts Stainless Steel Radiant-Heat Manifolds for underfloor heating can help reduce energy usage when used in conjunction with standard heating methods. Underfloor heating concentrates the heat at the living level, regardless of ceiling height. Using radiant floor heating also allows for a lower temperature heat input to achieve a comfortable temperature. The German Heating Industry Association estimates that with radiant floor heating, room temperature can be reduced by 2°C and provide the same comfort level.

BENCHMARK PLATINUM OVERACHIEVES AT EFFICIENCY

Since 2006, Saskatoon Public Schools in Saskatchewan, Canada have made AERCO their manufacturer of choice for high-efficiency boilers in retrofits and new construction. In every installation of these fully modulating and condensing boilers, the school district realized performance and cost-savings that were above expectations. Naturally, when one of their schools, Henry Kelsey School, recently needed to update its heating system, they knew the best solution was AERCO.

They determined that two AERCO Benchmark® Platinum 1000 hot-water boilers would provide the best replacement solution for the existing steam boiler. In the first year of operation, the Benchmark Platinum 1000 boilers exceeded all expectations with a 30% reduction in fuel consumption. When maintenance costs of the AERCO were considered in cost-savings calculations, the new high-efficiency system achieved yearly operational savings of 40%.



Sustainable Innovation

Watts is committed to efforts to embed sustainability into all our products — both in their function, and in the way we manufacture and package them. In 2022, we continued to invest in our capacity to incorporate sustainability at the development stage of all new products by incorporating a sustainability assessment into our Stage-Gate process, used for all new product development. This creates new opportunities for our customers to increase their own sustainability through our products.

In 2022, more than 19% of our revenue is from smart and connected enabled products, which connect our customers with smart control systems for optimal performance, and conserve critical resources by increasing operability, efficiency, and safety. We aim to have 25% of our revenue come from these products by end of 2023, and we are on our way to achieving it.



We also generate 37% of our revenue from clean-tech products that support water infrastructure and distribution, water-resource management and efficiency, and green-certified engineering and construction.

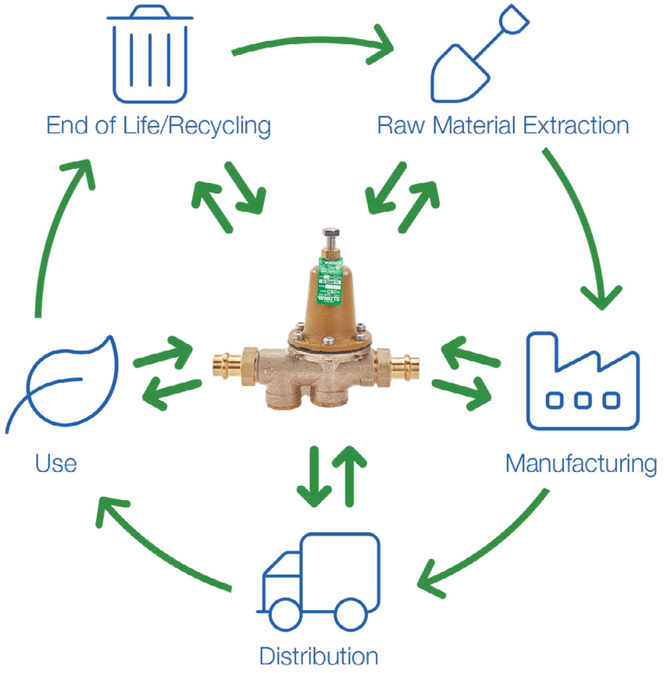
LIFE CYCLE ASSESSMENTS AT WATTS

At Watts we're focused on understanding the environmental impact of our product portfolio throughout the entire life cycle, so we can continuously work to make every product we produce more sustainable. We're well-along in the development of our Life Cycle Assessment (LCA) capabilities, which will be a powerful tool in this effort. An LCA is a scientific method of quantifying the environmental impact of a product throughout its life cycle.

We've developed our LCA methodology in accordance with ISO 14040 and ISO 14044 guidelines and have used it to perform our first LCA on our pressure-reducing valve (PRV) product family. Two products were chosen to represent the direct-action PRV line to get the most coverage from this LCA. We considered the environmental impact of our PRVs at five stages of the products' lifecycle: raw materials, manufacturing, distribution, use, and end-of-life.

After modeling the energy and material inputs, as well as the emission and waste outputs at each stage of the PRVs' lifecycle, the environmental impact was then assessed based on six impact assessment categories: human health, ecosystems, resources, cumulative energy demand, climate change, and water use. This approach provides a holistic assessment of sustainability and guides decision making in impact mitigation. The results from this LCA are being used to guide PRV design and manufacturing improvements and inform new product development.

With our first LCA on PRVs now complete, we've reaffirmed our commitment to expanding our LCA capabilities over the next year. We've joined the American Center for Lifecycle Assessment (ACLCA) Industry Committee to further help us develop a best-in-class LCA program.



DESIGNING FOR EXTENDED PRODUCT LIFE

We have a long history of designing our products for long life. This allows us to get the most out of the raw materials used, and provide our customers with products that last longer and need replacement and disposal less frequently. We design products for a long life using specialized processes and approaches.

During the new product development process, we choose materials that are durable, meet all technical requirements (including the Industry Service Life Expectation) and adhere to all codes and regulations. In addition to using durable materials to maximize service life, we have also developed coatings that help combat corrosion and microbial growth, which can quickly degrade a material. Our ArmorTek technology is a leading example, with its patent-pending three-pronged approach to corrosion protection.

For components like gaskets and springs that require less durable materials, we offer a wide variety of repair kits. This ensures that if a component fails, it can be easily replaced without having to replace the entire product. In 2022, we sold over a million repair kits, keeping our products in service for as long as possible.

Another way we keep products in use for as long as possible is by designing them for reuse and avoiding disposables. Many of our products are designed to be cleaned and reused, such as Mueller Steam Specialty strainers and Watts Big Bubba's cleanable filtration cartridges.

We work to make our products out of recyclable materials to ensure that when they do reach their end of life, the materials get a useful second life. We also try to incorporate recycled content into our products to help drive demand for recycled materials, which boosts the recycling infrastructure. Our BLÜCHER products, manufactured in Denmark, contain steel that is 65-85% recycled. This reduces the carbon footprint of the raw material by up to 50%, as the extraction and transport are much less energy intensive. The product is also infinitely recyclable at its end of life and can be melted down and reused without being downcycled.





St. Neots eliminates plastic by shredding and reusing cardboard as the new packing material

SUSTAINABLE PACKAGING

Since 2017, our global Sourcing team has conducted comprehensive reviews of our packaging practices at Watts, which has helped reduce our use of plastics and chemicals for protective packaging by more than 80%. In 2022, over 90% of all packaging boxes shipped to customers in the Americas were made with a high percentage of post-consumer recycled content and crates from low-grade non-consumer wood.

OUR APPROACH TO SUSTAINABLE PACKAGING:

- Promote sustainable packaging material content
- Minimize total material content and reduce the final weight of packaged products
- Design for transportation efficiency
- Design for accessibility (assembly and lifecycle service access)
- Provide consumer information on environmental sustainability

Best-in-Class Training

Our strong belief in providing training and education to contractors, plumbers, distributors, engineers, employees, and building owners dates back to the early 20th century, when our water-safety educational campaign informed plumbing inspectors about the critical roles both temperature and pressure regulation play in preventing water heater explosions.

Today, our global Watts Works Learning Program is focused on customer support and protection and reflects customized investments intended to promote safe product use, extend product longevity, and instill confidence in our customers. We believe educating our customers about our products, as well as water safety, conservation, and efficiency, is foundational to minimizing any negative impacts our customers, consumers, and employees make on our water supply.

ENGAGEMENT AND ACCESSIBILITY FOR ALL

Our training strategy hinges on a four-part blended learning model, creatively designed to adapt to our customers' diverse preferences and schedules. Whether in-person or virtual, each session is interactive and engaging, yet succinct and focused.

When the pandemic made in-person learning impossible, it did not stop our efforts. Instead, we designed creative solutions to bring the learning to our customers. In 2022, more than 177,000 Watts Works learning sessions were completed around the world, a 51% increase over the prior year.



ONLINE LEARNING PROGRAM

- eLearning courses, available now in 18 countries and 10 languages, feature concise three-to-seven-minute modules and assessments to confirm knowledge retention
- Our Watts Works online training program allows Watts to deliver on-demand product and applications-based training to customers while reducing gasoline and paper consumption associated with traditional in-person training
- **2022 highlight:** program expanded to include 171 new modules and 50 updated modules



LUNCH & LEARN

- Small group, one-hour trainings conducted either onsite with customers or virtually by sales team members at Watts
- **2022 highlight:** launched seven new programs while delivering over 43,000 training sessions to customers
- We have 30 Continuing Education CEU courses available through both ASPE (American Society of Plumbing Engineers) and AIA (American Institute of Architects)



VIRTUAL INSTRUCTOR-LED TRAINING

- Live, virtual, interactive instructor-led, 45-minute training sessions with subject-matter experts focused on specific product challenges
- **2022 highlight:** continued to obtain feedback from our target audiences on this new capability and developing course curriculum



INSTRUCTOR-LED TRAINING

- In-person training held in a Watts Works Learning Center focused on hands-on learning and product demonstration in our live wet lab
- **2022 highlight:** continued to invest in Learning Center sites with the opening of our latest centers in Fort Worth, Texas and Eerbeek, Netherlands

Social Responsibility



Social Responsibility

We are proud to be an agent for making people and communities safer, healthier, and stronger. At Watts, enriching and protecting our people and finding meaningful ways to be more diverse, equitable, and inclusive are core to our business strategy. Our people-first approach extends globally through our corporate giving and community engagement initiatives.

Our company thrives because of employees who bring diverse backgrounds, talents, and ideas to Watts. In an intensely-competitive talent landscape, we continued to set ourselves apart in 2022 by providing our employees with meaningful career growth opportunities, a positive and safe work environment, and affirmation that they are heard, valued, and respected. We also designed and invested in programs to expand diversity, equity, and inclusion (DEI) initiatives; and develop talent across our business.

Right: Watts hosted a local first-responders festivity in our North Andover, MA, USA headquarters to thank them for their service to our community



Social Responsibility

Enriching, engaging, and protecting our employees and the communities where we operate

HEALTH & SAFETY

Zero recordable injuries achieved at 14 operating and distribution sites

ISO 45001 Certification

- Achieved for our global Occupational Health and Safety program
- Certified sites represented 22% of our global population

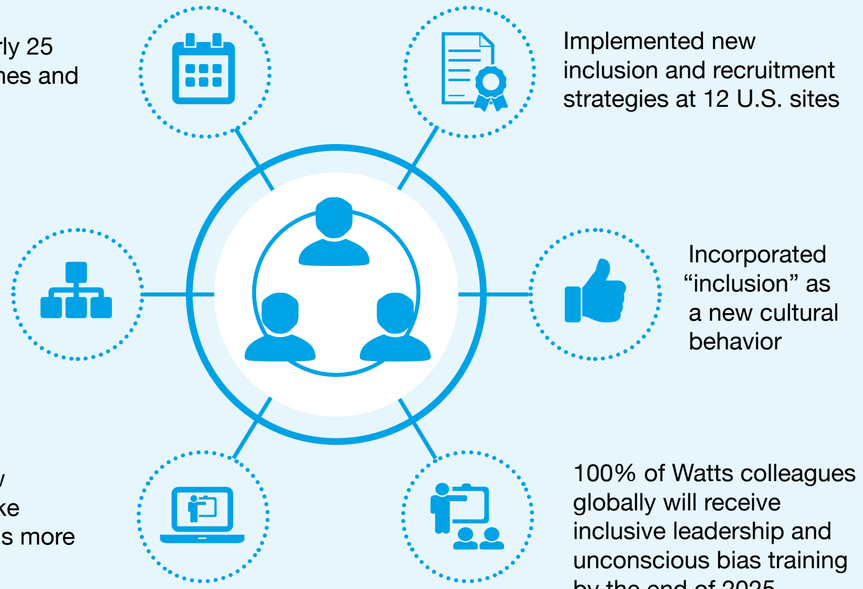
10,000
units of safety training delivered

ENRICHING COMMUNITIES

Provided clean, safe drinking water for

10,800+
people

DIVERSITY, EQUITY, AND INCLUSION



Celebrated nearly 25 cultural milestones and events

Implemented new inclusion and recruitment strategies at 12 U.S. sites

Grew the reach and influence of our six Employee Resource Groups

Incorporated "inclusion" as a new cultural behavior

Launched a new microsite to make benefits offerings more accessible

100% of Watts colleagues globally will receive inclusive leadership and unconscious bias training by the end of 2025

ENGAGING & INVESTING IN EMPLOYEES

22,400+
hours of employee training

3,300+
employees trained on Quick Kaizens, to "fix what bugs them"

9,800+
Quick Kaizen submissions, a 30% YOY increase

50
employees awarded $76K+ through Inventor Recognition program

Occupational Health and Safety (OHS)

At Watts, we believe that occupational injuries and illnesses are preventable. We recognize healthy and safe working conditions as a human right and commit to protecting the health and safety of all employees working at our facilities around the world. This commitment extends to contractors, visitors, customers, suppliers, and all other business partners.

Our enterprise-wide OHS management system promotes operational excellence and enables Watts to build exceptional products in facilities that operate safely, ethically, and responsibly. Its key elements include worker participation and consultation, risk assessments, training, written procedures, internal and external auditing, and a framework for measuring program maturity and identifying opportunities for continuous improvement. In early 2022, our global OHS system achieved ISO 45001 certification, the international standard for occupational health and safety, and a testament to our strong commitment to protect employees and visitors from work-related accidents and diseases. Our contracted manufacturing Maquiladora partner in Nogales, Mexico, also received this certification for the first time. Our ISO 45001 certified sites represent 22% of our global population.

A CULTURE OF SAFETY

We aspire to be a zero-incident workplace, and in 2022, 14 of our operating and distribution sites maintained zero recordable injuries. Our Zero Incidents, Employee Engagement, Risk Reduction, and Operational Excellence (Z.E.R.O.) approach to drive a culture of safety at Watts empowers our people with the knowledge, tools, and resources they need to effectively identify hazards, mitigate risks, and explore improvements. This approach includes:

- **Safety Committees:** These committees generate opportunities to reduce risk and support the mitigation of those risks.
- **Job Hazard Analyses:** These analyses identify job-related hazards through a systematic risk assessment process.
- **Safety Stand-Downs:** These stand-downs bring employees and site leaders together to discuss safety performance and related issues, and identify opportunities for improvement.
- **Early Reporting:** Reporting early empowers employees at all levels to provide input into Safety Observations (“I think this is unsafe”) and Near Misses (“An event occurred, but nobody was hurt”). In 2022, employees submitted more than 5,400 near-miss reports and 15,000 safety observations.
- **Safety Training:** This training promotes a safe and healthy workplace. In 2022, we delivered more than 10,000 units of safety training to our employees on a variety of topics, including emergency preparedness, accident prevention, and tool and equipment safety.
- In 2022 we conducted machine-guarding assessments across nine of our sites (three in the Americas and six in Europe) and implemented standardized safety training and digital tracking across 11 operating sites in the Americas.

Injury reductions in 2022 were driven by multiple factors, including workstation optimization, increased investment in automation, cross-functional engagement, professional development, and increased best-practice sharing across the globe. Twelve of our operating and distribution sites achieved injury reductions of 25% or greater with 14 sites having zero recordable injuries.

SAFETY PERFORMANCE

	Total Recordable Incident Rate (TRIR) Recordable Incidents per 200,000 Hours Worked	Lost Time Incident Rate (LTR) Lost Time Incident per 200,000 Hours Worked
2018	1.98	0.64
2019	1.97	1.01
2020	1.51	0.68
2021	1.28	0.56
2022	1.12	0.52

Each site presents its EHS performance as part of our Monthly Operating Reviews. Our standard metrics for safety include seven KPIs: total recordable incident rate (TRIR), lost time incident rate (LTIR), near-miss reporting, safety observations reporting, risk-reduction scores, EHS framework score, and finding-closure rate. Twenty-one operating and distribution sites reduced their year-over-year lost time incident rates or had zero incidents, including 10 sites with reductions greater than 25%.

VACCINATION CLINICS

We sponsored clinics and partnerships with local pharmacies and occupational doctors to encourage those on our sites, and their families, to get immunized against influenza, COVID, shingles, and more.

Diversity, Equity, and Inclusion (DEI)

At Watts, we embrace and celebrate the individual identities of all our employees. We work to ensure that every individual receives fair treatment and equal access, and feels valued and supported by our culture and workplace environment. This commitment touches every aspect of our business and is embedded at each level of our talent process, from recruitment and onboarding, to development and retention.

Throughout 2022, we continued to execute against an 18-month plan designed to enhance our DEI strategy and lay the foundation for effective program management. Our chief human resources officer presented progress to our board of directors in November 2022, and in the summer of 2023 will present the board with a comprehensive, longer-term strategic plan for approval.

As a reflection of our commitment to embed DEI throughout our business, **in 2022 we revised our strategic pillars and incorporated "inclusion" as a new cultural behavior**. These changes cascaded to our performance management process, which assesses all Watts employees on their demonstration of cultural behaviors and sets our expectation of accountability and inclusion at all levels. In 2022, managers received training on how to assess performance and set goals related to inclusion.

DEI PERFORMANCE HIGHLIGHTS IN 2022

TALENT ACQUISITION

We continue to work toward greater balance in representation of women and historically underrepresented groups at all levels of our organization. To advance this work, our talent-acquisition and DEI teams continued to establish partnerships with institutions, professional networks and search firms, attend career fairs, and collaborate with our Employee Resource Groups.

- We provided inclusive recruitment training to talent acquisition partners and hiring managers in 2022.
- We expanded our recruitment pipeline through the adoption of a diverse-slate policy that fosters outreach to all candidates, including those from historically underrepresented groups and women. It also requires that a group of five interviewers include, at minimum, one woman and/or one individual from a historically underrepresented group. Our Talent Acquisition team will partner with hiring managers in 2023 to support implementation and provide additional training on the policy.
- We focused on 12 U.S. sites for directed implementation of the inclusion and recruiting pipeline efforts above.



Build-a-hand team exercise

TALENT MANAGEMENT

After candidates choose to pursue a career with Watts, we work diligently to retain them, including through our talent-assessment process. This includes candidates from historically underrepresented groups and women. In 2022, we expanded our strategic talent-review process to include such emerging diverse talent, helping to identify opportunities for growth and development for high-potential colleagues.



Watts at Florida A&M University Career Fair

TALENT DEVELOPMENT

- By the end of 2025, all Watts colleagues globally will receive training on inclusive-leadership behaviors and unconscious bias through a partnership with the NeuroLeadership Institute (NLI). The training first rolled out to our executive leadership group, vice presidents and directors, in the U.S. in October 2022. We plan to complete the training for all U.S. colleagues in 2023 before expanding to APMEA and Europe. According to NLI, 82% of managers who completed the “Decide” training module mitigate bias at least once a week, and 97% of managers who completed the “Include” module applied learnings to be more inclusive at least once a week.
- Select members of our Employee Resource Groups had the opportunity to participate in external trainings and conferences, such as the Cornell School of Industrial and Labor Relations’ Modern Chief Diversity Officer program.

TOTAL REWARDS

- In June 2022, we completed a survey that solicited employee feedback on our benefit offerings in the U.S. We were able to analyze responses and identify opportunities for plan changes that could better support historically underrepresented groups and women. Across the board, we heard from employees that affordability is a key factor in selecting coverage, and in 2023 introduced a lower cost HSA medical plan. We have partnered with Mercer, an international consulting firm, to help us develop a three- to five-year strategy that focuses on enhancing our benefits based on the diverse needs of our population. This includes looking at our data by gender, age, ethnicity, region, and other factors to develop a well-rounded benefits program. Further enhancements to address health disparities among different groups are being considered as part of our multi-year benefits strategy.
- A new benefits microsite, launched in 2022, is helping all employees better understand and access their benefits. We translated all content to Spanish in 2022 and will introduce additional languages in 2023.



DRIVING ENGAGEMENT IN DEI THROUGH OUR EMPLOYEE RESOURCE GROUPS

In 2022, we supported each of our six Employee Resource Groups (ERGs) in establishing their mission, vision, purpose, and objectives. Throughout the year, ERGs led impactful discussions, organized cultural celebrations, and created awareness of how Watts can continue to foster a welcoming and inclusive environment for every employee. We also supported our ERGs in building memberships through communications and marketing.

BLACK MATTERS AT WATTS

Mission: Focused on building programs, allocating resources, and partnering with select external organizations to drive meaningful change.

PRIDE MATTERS AT WATTS

Mission: To WELCOME members of the LGBTQ+ community into the Watts family; to CELEBRATE the diversity and talent across the Watts LGBTQ+ and Ally employees; and to EDUCATE the Watts family about LGBTQ+ issues and concerns towards building a mutually inclusive, affirming, and productive work environment.

VET MATTERS AT WATTS

Mission: Vet Matters is a network of veteran and veteran family members who strive to continue serving. We are a diverse, talented organization dedicated to empowering veteran employees, supporting the company's diversity initiatives, and providing service to our military community.

LATIN AMERICAN AT WATTS

Mission: Develop a network of employees to promote cultural diversity and professional development of its members, thereby creating a supportive environment for all employees, including those from the Latin American community, and contributing to the success of the company's mission.

TECH MATTERS AT WATTS

Mission: Lead in DEI best practices by building a diverse and inclusive culture in innovation, research and development, and engineering.

WOMEN OF WATTS

Mission: Promote and cultivate a more inclusive environment at Watts that champions and encourages the growth, development, and success of all employees, including women, at all levels. By holding leadership accountable and raising awareness of obstacles, recommending and implementing solutions, and building relationships and allies, we intend to create an organization where women and all employees can flourish, have influence, and are valued for their authentic selves.

CELEBRATING CULTURAL MILESTONES IN 2022

We joined our ERGs in celebrating nearly 25 cultural milestones and events throughout 2022.

- Our Pride Matters at Watts ERG held a panel discussion on topics such as the personal journey of coming out, what allyship looks like, and how to support colleagues at work.
- Our Women of Watts ERG led a pilot mentorship program in 2022, as well as panel discussions on work-life balance, leadership qualities of women, and career journeys of Watts leaders.



The Latin American at Watts ERG sponsored a Cinco de Mayo cultural awareness celebration in Fort Myers, FL, USA and Fort Worth, TX, USA, where colleagues enjoyed a variety of traditional foods and celebrated Latinx culture.

Talent Retention and Development

We implemented a number of measures to further distinguish Watts as an employer of choice and took several actions in 2022, including conducting a compensation market analysis, piloting flexible working arrangements, enhancing our focus on DEI, implementing recognition programs, and sharing tools to support employee development.

2022 HIGHLIGHTS

Compensation and Incentives: We regularly analyze wages to retain employees and stay competitive in the labor market. Internal pay-equity review is embedded into our hiring and promotion processes. In 2023, we will conduct a complete benchmark of all our roles to ensure we are market-competitive in our hiring and retention practices. As part of this project, we will conduct a review of our internal pay equity and will make appropriate adjustments.

Work/Life Balance: In a continued effort to reduce employee overtime at production facilities, we continue to explore diversified recruiting efforts, including focusing on our U.S. internship program and expanding our partnerships with tech schools, recruitment agencies, and a number of professional networks. We have also begun to evaluate the possibility of certain roles being fully remote and continue to hire for hybrid or remote positions.

Employee Development: In the U.S., we conducted supervisor training and launched a global, multi-year leadership and inclusivity training in partnership with the NeuroLeadership Institute.

Recognition and Appreciation: Our 2022 Connect Leadership Awards recognized individuals' and teams' accomplishments in helping Watts achieve strategic goals.

Engagement: An employee pulse survey conducted in 2022 helped us gain insights on progress on the topics of highest importance to our colleagues – in relation to both their personal desire to continue working at Watts and in achieving our business objectives. We also invested in vibrant social programming for employees, including celebrations for holidays and company-related milestones, volunteer events, and fitness competitions.

TRAINING AND DEVELOPMENT

We invest in our employees by providing opportunities that support them in enhancing their skills, competencies, and overall professional development. We offer a variety of in-person and virtual learning and development programs that, at all levels and regions, are designed to build and retain a strong global workforce. In 2022, learning and development initiatives included the launch of global leadership and inclusivity training, new supervisor training, and training on feedback and career development, as well as increased broad-scale coaching opportunities. We encourage all managers and employees to include training and development goals as part of our annual performance-management process. We evaluate the effectiveness of our learning and development programs via feedback mechanisms (e.g., surveys, focus groups, etc.) and leverage this data to inform recommendations for future improvements. Last year, we offered 22,400 hours of online and in-person training on professional development topics.

EMPLOYEE RECOGNITION

We believe in recognizing teams and individual employees for their contributions – especially, those who go above and beyond their assigned duties. Our "Way to Go" Program recognizes exceptional team efforts that help to advance the Watts mission and embody our values, and our inventor recognition program recognizes an "invention," patented or not, that advances the business and/or research and development efforts at Watts. Any employee can participate and receive a monetary award for invention disclosures, patent applications, and issued patents. We also provide recognition and awards for trade secrets and prolific inventors.

In 2022, 50 employees received a total of more than $76,000 as part of the company's Inventor Recognition and Award program. Since the inception of the program in 2017, 640 awards have been distributed, totaling more than $410,000.

INTERNSHIP PROGRAM

Our student internship program aims to recruit, develop, and retain the next generation of top talent and future leaders at Watts. In 2022, 49 interns from across the U.S. participated in a variety of training and development activities as part of a 10-week summer program. At the end of their internship, participants presented their learnings and experiences to the leadership teams.

Co-Ops and apprentices participate in key projects over a period of six to eight months to gain real-world experience and are paired with a mentor for guidance and support.

STRATEGIC TALENT REVIEW

Our approach to workforce planning provides a systematic framework that enables us to understand the current state of our global talent pool matched against current and future business needs, and how we can solve for the gaps that may exist. Our Strategic Talent Review (STR) process assesses employee performance/potential, retention risk and impact, succession planning for key positions, and actions to facilitate employee development. This comprehensive approach to talent and succession allows us to have a deep understanding of our talent pool and their development needs, consider the company's future growth, and identify new positions that need to be filled to advance future business improvement and retain our current and future leaders. Our board of directors discusses succession planning at the executive level annually and periodically receives updates on significant developments.

In 2022, the STR process allowed us to identify talent and successors throughout the organization, using a consistent approach globally. Select businesses meet quarterly to discuss key talent and development actions. These conversations ensure shared accountability for identifying and executing the development and experiences needed to ensure our talented employees are progressing in their careers with Watts.

TALENT MANAGEMENT SCORECARD

Talent management scorecards are produced monthly and presented to the Global Leadership Team for review. The scorecards highlight progress made on goals and HR program initiatives across the function globally. They also provide an at-a-glance view of key metrics that are essential to attracting, retaining, and developing a diverse global workforce, including headcount, turnover, open positions by location globally, time-to-fill metrics, in addition to the performance of our compensation and benefits programs.

PERFORMANCE MANAGEMENT

In support of our efforts to sustain an engaged workforce and high-performance culture, we are committed to empowering teams to realize their true potential. While we encourage managers and their employees to have ongoing conversations throughout the year, our performance-management process drives our ability to execute our global strategy. Managers and employees collaboratively establish goals for the employee based on the cascaded goals of their leaders during the goal-setting phase of the annual performance-management process. As year-end activities of this annual process begin, we ask employees to complete a self-assessment of their performance on their annual goals and culture behaviors, followed by a similar assessment by their manager. The outcome of this conversation can influence decisions on compensation and incentive rewards for the employee.

100% **In 2022, 100% of eligible employees in Watts APMEA and Europe, and 99.78% of eligible employees in the Americas completed the performance-review process.**



Watts provided potential talent with an overview of the company during a recruiting event at Virginia Commonwealth University.



Watts representatives shared information about our Employee Resource Groups at a North Carolina A&T recruiting event.

One Watts Performance System

We believe in a culture of continuous improvement and reaching higher levels of performance in everything that we do. Our Business Performance System is a key differentiator that separates good companies from the truly great ones. We power our One Watts Performance System (OWPS) through a collection of tools, processes, and behaviors that feed our continuous growth and potential, as well as fuel our future performance and success. Designed with our customer as the focal point, the OWPS serves as the foundation for all our operations.

Our onboarding process includes training on the basics of OWPS to simplify, standardize, and improve our work every day.

We also evaluated the maturity of OWPS by assessing and scoring the Lean Business Maturity of our processes against best-in-class companies. It identified our business strengths and opportunities around strategy, processes, and culture. Designed to establish a baseline and roadmap for improvement, the business assessment united leaders not only from Operations, but from all business enterprise departments to benchmark the maturity of our processes and helped us prioritize the main opportunities to grow.

The assessments also promoted a better understanding of the OWPS Lean tools and processes available to increase business success. This is our DNA and how we act: with integrity, accountability, continuous improvement, and transparency.

KAIZEN EVENTS AND GLOBAL REPORT-OUTS

We design Kaizen Events to drive meaningful improvements in critical areas that impact our customers and the efficiency of our operations. Driven by various Lean methodologies, these cross-functional, multi-day improvement sessions enable a structured approach to problem-solving. Six months following the conclusion of a Kaizen Event, we conduct a Global Kaizen Report-Out where Kaizen teams share the results and lessons learned to inspire other sites to drive continuous improvement within their facilities and operations. Leaders across the organization, including the Global Leadership Team, join report-outs and leverage learnings globally.

In 2022, 100 Kaizen Events linked to key-performance-indicator needs in the areas of safety, quality, delivery, cost, and growth were completed. Nine Global Kaizen Report-Outs and three Global Spotlights were held to share lessons learned.

Quick Kaizens

Quick Kaizens are smaller-scale, incremental continuous improvement efforts that allow all employees at Watts to “fix what bugs them.” The Quick Kaizen Hub is a mobile-friendly, fully automated online portal that centralizes the company’s improvement activities. Multiple filtering capabilities allow for submissions to be tracked, searched, and benchmarked with ease. Each month, our Continuous Improvement team announces the best submissions received and the site that submitted the most improvements. Winners receive a branded ‘wasteologist’ shirt and global recognition through various internal communication channels.

In 2022, Watts employees submitted 9,898 Quick Kaizens to the Hub (a 30% YOY increase), with more than half of all Quick Kaizens completed from areas outside of Operations such as Customer Service, IT, and Accounting. The Quick Kaizen application has demonstrated the high engagement of our employees in improving their environment and workplace.

Blue Belt and Green Belt

Blue Belt is a special designation for our employees who have mastered the art of the Quick Kaizens. After training to learn how to detect and eliminate waste, an employee who logs three Quick Kaizens receives a Blue Belt certificate.

As of 2022, 3,371 employees have been trained to “fix what bugs them” and 1,738 have been awarded a Blue Belt certificate. We also launched a global Green Belt wave consisting of a cross function, two-week course that provided the tools to help leaders develop critical projects at Watts.

Productivity Projects Pipeline

Throughout the year, we identify projects to drive productivity at Watts. These large-scale continuous improvement initiatives focus on identifying and generating cost savings in plant productivity, working capital, operational excellence, and organic growth. We use a cloud-based project-management system to capture, track, and monitor the progress of all activities. To drive accountability, we review annual productivity targets monthly at the site level, and across divisions, functions, and platforms – and, ultimately, with our Global Leadership Team.

In 2022, our teams executed 396 productivity projects generating millions of dollars in savings.



Vildbjerg, Denmark team conducted a Kaizen event that significantly improved flow and material handling

In 2022, Watts employees submitted 9,898 Quick Kaizens to our Quick Kaizen Hub, an automated online portal that centralizes improvement efforts. In 2022, 1,929 employees participated in Quick Kaizens. As of 2022, 1,738 employees have been awarded a Blue Belt certificate for participating in three or more Quick Kaizens.

Community Impact

We strive to make a positive economic and social impact on our global community. During 2022, we supported those in need through donations to nonprofit charitable organizations and through our employees' volunteer efforts. While the initiatives below are just a snapshot of our impact, they exemplify the Watts spirit of employee engagement.

COMMUNITY INVOLVEMENT



In recognition of first responders, Watts invited local police and fire departments to the North Andover, MA, USA facility

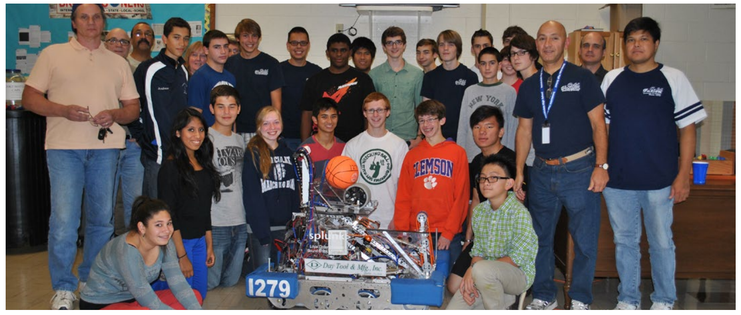
Supporting First Responders – The team from North Andover, MA, USA hosted local police and fire fighters for a festive afternoon to thank them for their service to the community. The event was catered by 3rd Alarm Wood Fired Pizza, a restored 1968 Mack pizza truck run by firefighters. First responders and their families enjoyed pizza, wings, and socializing with neighbors.

Taking Action for Community Health – Employees in Shanghai, China mobilized to support their neighbors during last year's COVID-19 lockdowns. They volunteered their time and lent their expertise to support the public health response to the pandemic. They helped organize testing and data collection, sanitation and waste disposal, and helped coordinate an online health clinic providing virtual care and mental health support.

EDUCATIONAL PARTNERSHIPS

Investing in Next Generation of Diverse Talent – Watts invested more than $240,000 through partnerships with six colleges and universities to provide low-income students with financial support and career development opportunities. The partnerships included four Historically Black Colleges and Universities: Hampton University, Prairie View A&M, Florida A&M, and North Carolina A&T, as well as Virginia Commonwealth and Ohio State University. Watts will also provide opportunities for internships and entry-level positions for students at the six schools.

Promoting STEM through Robotics – For more than 18 years, a Watts colleague from Blauvelt, NY, USA has served as a volunteer mentor for high school students competing at the Robotics Challenge sponsored by For Inspiration and Recognition of Science and Technology (FIRST). FIRST is an organization dedicated to educating future science, technology, engineering, and mathematics (STEM) professionals.



Blauvelt, NY, USA colleagues volunteer at a robotics challenge through a partnership with For Inspiration and Recognition of Science and Technology (FIRST)

FUNDRAISING, SPONSORSHIPS, AND DONATIONS

Support for Ukraine – Colleagues at our Sorgues, France facility assembled and sent care packages to people impacted by the conflict in Ukraine. They included food, sanitary products, and critical medical supplies such as face masks and gloves.

Celebrating Young People in the Trades – The Watts Auckland, New Zealand facility was a major sponsor of Plumbing World's Young Plumber of the Year competition, where early-in-career professionals participate in competitions to win the National Young Plumber of the Year Award.



Veronika Kreitner, the first ever female recipient since the competition began in 2017, shown with Plumbing World's General Manager Rob Kidd.

Matching our Employees' Generosity – To recognize the generosity of our colleagues around the world, Watts matched employee contributions to support people impacted by the conflict in Ukraine. Watts donated a total of $50,000 to the International Red Cross to provide critical supplies such as water, food, first aid, and medicine.

Global Engagements

Our ongoing partnership with the Planet Water Foundation supports the organization's work to bring clean water to the world's most impoverished communities through the installation of community-based water filtration systems, as well as implementation of Water-Health and Hygiene Education programs. Throughout 2022, Watts continued its partnership with Planet Water Foundation, installing six AquaTowers across five countries and positively impacting up to 10,800 people.

- During World Water Day in March, Watts sponsored the installation of two integrated water systems for residents in Indonesia and Mexico.
- As part of Planet Water Foundation's Global Handwashing Day initiatives in October, Watts sponsored four additional AquaTowers, bringing clean drinking water to four vulnerable communities in Cambodia, India, Mexico, and the Philippines.
- Each project provided schools with AquaSan mobile surface disinfection systems to promote good water hygiene practices in the schools' latrines, as well as a water health and hygiene education program for community members.

Right: Watts partnered with Planet Water Foundation to erect AquaTower water filtration systems at primary schools, providing children and their families with easy access to clean, safe drinking water and handwashing facilities



Corporate Governance



Corporate Governance

At Watts, we earn the trust of our stakeholders through strong corporate governance and adherence to high ethical standards. We are committed to operating our business ethically, responsibly, and sustainably, in order to create long-term value and opportunities for future growth. Our corporate governance principles provide an essential framework to ensure we conduct ourselves in accordance with our mission, vision, and values in the work we do every day.

GOVERNANCE AND ACCOUNTABILITY

Our board of directors continually works to improve the high ethical standards we promote and practice at Watts. The board has adopted our Corporate Governance Guidelines to assist and guide each of its nine members in serving in their director roles and carrying out the responsibilities within their charge.

In 2022, our board met six times and each committee of the board met at least four times, with certain additional meetings as needed throughout the year. Each director attended at least 75% of the meetings of the board and all committees of the board on which the director served. In addition, 100% of the board's membership attended the 2022 Annual Meeting of Stockholders, in person or by telephone conference call.

We believe our board should be composed of directors who have the collective experience, qualifications, attributes, and skills required to make informed decisions, provide effective oversight, assess management's performance, and evaluate our strategic direction. Our board understands the important role diversity among its members has on our long-term success. In recognition of this, all board member search-processes include a requirement to identify and present a substantial number of qualified women and candidates from historically underrepresented groups for the board's consideration.



Learn more about our board composition, responsibilities, and performance in our 2023 Proxy Statement.

Corporate Governance

Earning the trust of our stakeholders by operating responsibly and adhering to the highest ethical standards

WATTS BOARD OF DIRECTORS

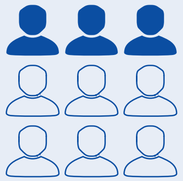
9
Total Members

62
Average Age

8 YEARS
Average Tenure



7/9 Independent Directors



3/9 Diverse Directors



6/9 Directors With Experience in ESG Matters

Committee Meeting Participation:
Audit (5), Governance and Sustainability (formerly Nominating and Corporate Governance) (4), Compensation (6)

ETHICS AND COMPLIANCE

- **Implemented formal Human Rights Policy**
- **Completed global survey of our compliance program**
- **Code of Conduct published in 15 different languages**

95%+
95%+ of responding employees know how to report issues or concerns

99%
99% of employees acknowledged adherence to the Code

RESPONSIBLE SUPPLY CHAIN



18% increase in suppliers audited, representing 29% of our global supplier footprint



89 sustainability-focused supplier assessments completed



94% of our global suppliers, by spend, have confirmed **conformance to our Supplier ESG Standards**



2 sites were recognized with **EcoVadis' Silver Sustainability Rating**

Learn more about our board composition, responsibilities, and performance in our 2023 Proxy Statement.

Ethics, Integrity, and Transparency

We are committed to acting with integrity in every facet of our operations, and strive to meet and exceed applicable laws, regulations, and standards. We require all Watts directors, officers, and employees (including part-time employees and contractors) throughout all regions, which includes all subsidiaries globally, to adhere to our Code of Business Conduct, a guide for applying our values to everyday actions and all business dealings, including with employees, suppliers, and other partners. When we follow our Code in our decisions and interactions, it allows us to Do the Right Thing, Always.

In 2022, as part of the company's continuing efforts to distinguish itself as a responsible corporate citizen, we implemented a formal Human Rights Policy outlining our commitment to promoting human rights within our labor force, including through support of and adherence to the United Nations Global Compact and the Universal Declaration of Human Rights. The policy states that we will not willingly or knowingly assist in any violation of human rights, benefit from human rights abuses, or remain silent when human rights violations are being committed. It applies globally to all Watts directors, officers, and employees (including part-time employees and contractors) throughout all regions, which includes all subsidiaries globally and supply chain partners. The policy also encourages the reporting of any concerns regarding human rights using the processes outlined in the Watts Code of Conduct, including the Watts Hotline.

In 2022, we completed a global survey of our compliance program with our approximately 2,400 computer-connected employees to further measure the understanding and acceptance of our compliance requirements. We are proud to report that our employees overwhelmingly indicated that they believe the company and its management abide by our Code of Conduct and Values, they know how and where to report issues and concerns, and recognize that the company takes appropriate actions when company policies are violated.

Published in 15 different languages to reflect our global footprint, the Code is accessible via the company's intranet and public website. Our global Compliance team regularly authors and distributes information through internal communications channels to promote awareness of the Code and timely related topics.

In addition to annual training, we require all employees to acknowledge the Code and its requirements, and encourage them to raise questions and speak up if they observe conduct that violates it. Each year, we refresh our training by selecting different areas of focus, which in 2022 included harassment and discrimination prevention, product safety and quality, fair competition, insider trading, and sustainability principles. In 2023, training will focus on similar and additional Code topics, including human rights-related topics.

We also provide additional ethics and compliance training, both online and in person throughout the year, using a targeted approach that identifies positions, functions, and regions with a higher risk of potential incidents as well as in response to global trends and developments, and our own Hotline data. In 2022, we conducted targeted training to finance, sales, sourcing, and select third parties on anti-corruption policies, business courtesies, third-party due diligence, and import/export. We also require select management and functional areas, including all employees at the director level and above, to complete an annual Conflict of Interest Certification and Disclosure, stating they have read, understand, and will comply with our Conflict of Interest Policy.



99%

In 2022, we met our goal to have 99% of employees (including part-time employees, consultants, and contractors), both direct and indirect, complete our Code of Business Conduct training and acknowledge their adherence to the Code. Our 99% goal remains for 2023.

DUE DILIGENCE REVIEWS

Before entering into new business relationships with third parties acting on our behalf, we conduct risk-based due diligence utilizing a multi-factor questionnaire, anti-corruption law notification, certification of compliance with such laws, and a continuous international-denied-parties search review. Based on questionnaire responses — in addition to automated risk ranking through our third-party due diligence tool (utilizing, among other factors, the Transparency International Corruption Perception Index) — we determine whether to further supplement the review with risk-based open-source investigations. Open-source investigations identify and explore red flags, including business expertise, time in business, name variations, ownership, sanctions, embargoes, politically-exposed persons, entities, and persons on government watchlists, and any related events bearing on integrity.

The Compliance team in each region then determines whether to approve going forward with the relationship or recommend further review and approval. Using our centralized third-party due diligence tool, we maintain relevant documentation and records in a global database of due diligence status, results, and approvals to facilitate ongoing monitoring and auditing of these third-party relationships. Approved parties must enter into contracts that include, among other terms, provisions governing payment and compliance with anti-corruption, and import and export laws. We require all third parties to complete a certification agreeing to comply with all applicable anti-corruption laws.

We renew due diligence reviews for third parties every two years, but we conduct ongoing denied-party-list searches for all parties throughout the year, including using multiple denied-party-list tools and tools that reach ownership interests. Due diligence policies and procedures are documented and are part of regular training and review for select new hires and positions at Watts. This process permits us to identify and address higher-risk third parties.

RISK ASSESSMENTS

Management, including the Compliance function and our Internal Audit team, conduct annual risk assessments to evaluate corruption and bribery-related risk. Utilizing multiple factors, risks, and business developments, these assessments determine areas of focus for audits and site visits, during which we review select compliance processes for evidence of fraud, corruption, or deficiencies, such as compliance with the U.S. Foreign Corrupt Practices Act. The Internal Audit function performed multiple site audits across each region focusing on internal controls and compliance with policies. We also conduct routine audits of various policies and programs that compose our global compliance program, including bi-annual review of our third-party due diligence program and quarterly business courtesies reviews to ensure compliance with our policies.

MANAGEMENT OVERSIGHT

The Ethics and Compliance Steering Committee is a cross-functional team made up of business leaders in executive management and internal audit, including the CEO, chief financial officer, general counsel, chief human resources officer, chief accounting officer, director of internal audit, and chief compliance officer (CCO). This group conducts regular meetings to monitor compliance matters, business ethics, and corruption issues, as well as ethics hotline reporting, and other compliance and business ethics developments for review and action.

The CCO, who reports to the general counsel and chief sustainability officer, is responsible for management and oversight of the ethics and compliance program. The CCO and Compliance team regularly monitor trends from reported hotline matters and legal, regulatory, and industry developments to update any necessary program and policy enhancements. Each quarter, the CCO reports to the board of directors and the Audit Committee, which share oversight for the Ethics and Compliance Program, regarding additional compliance and business ethics developments, investigations, ethics hotline reports, and review status.

ANTI-CORRUPTION POLICIES

Our Anti-corruption Policy is available in 14 languages and sets forth our zero-tolerance approach to bribery and corruption. Applicable to all Watts employees (including part-time employees, contractors, and consultants) and subsidiaries globally, suppliers, and any third parties acting on our behalf, it prohibits the use of bribes, kickbacks, and other corrupt payments, including facilitation payments. Our Global Business Courtesy Guidelines, which are available in 10 languages and detail the threshold levels at which employees must obtain approval for the receipt or gift of a business courtesy and the process for doing so, support our Anti-Corruption Policy. We apply various maximum thresholds based on the corruption risk profile of the country in which the business courtesy is being given or received to reflect different norms across our global footprint. All business courtesies involving any government officials anywhere must be submitted for preapproval.

No incidents of corruption were confirmed at Watts in 2022, nor were any legal actions regarding corruption brought against the company.

GOVERNMENT CONTRACTING

We are committed to conducting business with federal, state, and local governments in accordance with the letter and spirit of the law, high standards of ethical business conduct, and in accordance with our values.

The Government Contracts Supplement — an extension of our Code of Business Conduct — serves as a resource for all employees who perform work under government contracts and subcontracts, or communicate with government entities in the U.S. Employees involved in this type of work are expected to understand and comply with the requirements and policies in this supplement, as well as the requirements of the contracts on which they work, and according to the following core principles: We are honest, fair and open in our communications and dealings with the government and its agencies; We comply fully with the requirements of our government contracts; We ensure that our employees understand the requirements of the contracts on which they are working; We make certain that all statements, disclosures, invoices, certifications, and other representations made to the government are accurate, current, and complete; and we take appropriate action and report suspicions of fraud or deception.

REPORTING CONCERNS

We regularly inform employees of the multiple avenues available to them to report ethics-related concerns, including to their manager/supervisor, HR, Internal Audit, Legal, Compliance, and our ethics hotline, which is an independent, third-party, multilingual resource available 24 hours a day, seven days a week, that allows employees to report anonymously and confidentially. Each country has its own dedicated in-country telephone number, which provides multilingual support, including initial receipt of the report in the native language from which the reporter is calling. Each of the numbers is listed on the Watts website and contact and access information is also provided in postings at each facility.



Following our global ethics hotline audit and refresher training in 2021, our 2022 global compliance survey indicated that over 95% of responding employees know how to report issues or concerns.

The deputy general counsel/CCO reviews all ethics hotline matters and assigns them to an investigator. Primarily conducted by Human Resources and the Legal department, investigations on these matters promptly take place by conducting interviews and collecting documentation in order to assess the validity of the report, with a goal of completing all investigations within 45 days of receipt. After the investigation is completed, the investigator reviews and documents the results and proposed actions, which in the case of a substantiated matter could include verbal and written coaching, verbal and written warnings, suspensions, or termination, which the Legal department reviews before closing the matter. We report all matters on a quarterly basis to the Ethics and Compliance Steering Committee, and the Audit Committee of the board of directors. In addition, the chair of the Audit Committee has full access to the ethics hotline and receives notifications of any matters submitted through the ethics hotline. All allegations of retaliation and whistleblower protection for reporting matters or participating in an investigation are directed to, and addressed independently by, the Legal department.

Each year, we review the number of ethics hotline reports against an annual benchmarking report produced by Navex Global, a recognized leader in risk and compliance management software and the independent operator of our ethics hotline.



In 2022, the number of reports received by our ethics hotline was demonstrative of a healthy and effective hotline according to the Navex Global benchmark.

NO RETALIATION – WHISTLEBLOWER PROTECTION POLICY

We encourage our employees to raise concerns about compliance, ethics, or business conduct without fear of negative consequences. Our Code of Conduct specifically prohibits retaliation against anyone who reports a concern or participates in an investigation in good faith, even if the allegation ultimately is not substantiated. As stated in our Code, such behavior violates company policy and is not tolerated at Watts. Anyone, regardless of position or tenure, found to have engaged in retaliatory conduct against someone who has raised a business or ethical conduct matter or participated in an investigation in good faith, will be subject to disciplinary action, up to and including termination. The Legal department receives and independently addresses all allegations of retaliation and whistleblower protection for reporting matters or participating in an investigation.

Privacy and Cybersecurity

At Watts, we believe that protecting the security, integrity, and confidentiality of our stakeholders' data and privacy is critical to building and maintaining their trust. In addition to protecting the confidentiality and integrity of information, maintaining a robust cybersecurity program is also a foundational component of our business continuity strategy.

Our Privacy Policy informs users — of our website, mobile and desktop applications, and connected devices and services — about the data we collect from them and how we use it. We strive to give users choices that allow them to control the information they provide to us, such as opting out of promotional emails, disabling cookies in their internet browser settings, and optional product registration. We also take measures to protect consumer privacy by aggregating data and anonymizing personal information.

We designed our global cybersecurity program in an effort to effectively prevent, detect, and respond to cybersecurity threats, and preserve the security and integrity of our information technology systems. Overseen by our information security officer, who reports to our chief information officer, our cybersecurity program aligns with the National Institute of Standards and Technology (NIST) Cybersecurity Framework, a voluntary framework of guidance and best practices used widely across industries. We also partner with leading cybersecurity companies to assess and regularly test our security controls, incorporating feedback into our strategy, policies, and practices. We provide mandatory quarterly security training to all employees to further protect Watts and its employees against evolving cybersecurity risks.

OVERSIGHT AND ACCOUNTABILITY

The board of directors and Audit Committee receive regular updates from management on its approach to cybersecurity, as well as reports from the chief information officer and information security officer on our business and product security programs, risk management and risk profile, and the status of programs to strengthen the company's cybersecurity posture. Per its charter, the Audit Committee has review and oversight responsibility of information security issues and receives updates from the chief information officer at least twice per year. Our Cybersecurity Council, comprised of senior leaders, reviews and assesses security risks and issues from a business and technology perspective across all organizations within Watts.



Responsible Supply Chain

Our supply chain partners play an integral role in helping us deliver value to our customers, providing critical materials and services that support the production of finished goods throughout our global operations. We commit to take steps toward preventing and mitigating social and environmental impacts in our supply chain, as well as partnering with suppliers that share our values and high standards of ethical business conduct.

In 2022, we continued to face a diverse range of supply chain challenges that disrupted both the production and flow of materials across our supply chain and logistic platforms. Over the past two years, we continued to lessen our dependence on sole sources and prioritize sourcing locally, while maintaining our commitment to having one of the most reliable and sustainable supply chains in the industry.

In 2022, two of our sites – Sorgues, France and Vildjberg, Denmark – completed EcoVadis sustainability assessments of their operations. Both sites were recognized with EcoVadis' Silver Sustainability Rating by the organization, a global leader in sustainability ratings, with a methodology framework that assesses organizations' policies, actions, and reporting related to the environment, labor and human rights, ethics, and sustainable procurement. The assessments resulted in a prioritized list of actions for the sites to further strengthen their sustainability programs. Beginning in 2023, Watts will expand participation as a global supplier on the EcoVadis platform to allow our customers to better assess our sustainability performance. In addition, we are targeting a select group of our top suppliers to join the EcoVadis platform to gain further insight into our own supply chain's sustainability performance. Our goal is to evaluate the EcoVadis platform as a potential tool as we look to increase our transparency, help our suppliers track and improve their performance, and enhance our existing ESG assessment process.

With our standard procurement terms and conditions, we require Watts suppliers to comply with our standards for business conduct, product quality, and sustainability as outlined in our Supplier Quality Manual (available in six languages), our Code of Business Conduct and our Supplier ESG Standards. These requirements also include compliance with all applicable international human rights standards, as specified by local laws and regulations, and are integrated into our standard procurement terms and conditions. Our suppliers are also required under our standard procurement terms and conditions to comply with our Anti-corruption Policy, our Global Anti-Human Trafficking Policy and our Conflict Minerals Policy, and are expected to require these same standards of their own suppliers.

In 2022, two of our sites were recognized with EcoVadis' Silver Sustainability Rating

We strive to ensure that the business practices of our suppliers and sub-contractors:

- Safeguard human life by providing safe working conditions for all employees, customers, and contractors.
- Respect the protection of international human rights as specified by local laws, including laws prohibiting discrimination, child labor, forced labor, and human trafficking. This includes laws such as the UK Modern Slavery Act, the California Transparency in Supply Chains Act of 2010, and alignment with our Supplier ESG Standards and the international frameworks embodied in those standards, such as the ILO's 1998 Declaration on Fundamental Principles and Rights at Work.
- Promote ethical standards through compliance with anti-corruption laws, and by identifying and addressing potential conflicts of interest with customers and suppliers.
- Protect the environment by limiting the use of natural resources and engaging in sustainable business practices that minimize the environmental impact of their operations.
- Keep the supply chain intact by complying with all applicable national, regional, state, and local laws and regulations governing the environment, as well as health and safety, in the countries in which they operate.

Our vice president of global sourcing, together with our Sourcing and Procurement teams, is responsible for oversight of our responsible supply chain program, and the selection of reputable and qualified sources. Whenever possible, we work with local suppliers, meaning that the buying entity and the supplier are located in the same country.

QUALITY AUDITS

Through our Supplier Quality Audit Program, we work with our suppliers on quality corrective action plans to remediate issues of non-compliance and re-audits to check on improvements. We track nonconformances through the corrective action process in our quality management system. Watts team members have been trained and certified to perform training on current requirements, self-assessment programs, non-compliance reporting, corrective action plans, and all available supplier resources on our website. We also measure suppliers for performance via monthly scorecards issued by Watts and compared to similar operations within the same manufacturing methods to align with best practices.

826 **In 2022, we performed quality audits on 826 suppliers, which represents 29% of our global supplier footprint. We added 125 new suppliers to the program this year, an increase of 18% over 2021.**

SUSTAINABILITY ASSESSMENTS

Within our Supplier Quality Audit Program, we conducted 89 sustainability-focused assessments of suppliers in 2022. In 2021, we partnered with NSF International Strategic Relations to assist Watts employees with these ESG assessments of select key strategic suppliers, and we expanded the ESG assessment program in 2022 to include 14% more suppliers than in 2021. These assessments allow us to more deeply survey our ESG performance among our suppliers, including workplace conditions, respect for human rights, supply chain mapping of conflict minerals, and the use of substances of concern. We also require all new suppliers to complete an onboarding ESG self-assessment, which allows us to continually update and enhance our insight into ESG practices in our supply chain.

In 2022, we met our goal of reviewing suppliers representing approximately 30% of our global annual spend using the Dun & Bradstreet (D&B) ESG Rating Service. The service is a web-based ratings platform that assesses the ESG operations of suppliers across 70 key topics, including through peer benchmarking and using leading sustainability frameworks such as Sustainability Accounting Standards Board (SASB), Global Reporting Initiative (GRI), United Nations' Sustainable Development Goals (UN SDGs), Task Force on Climate-related Financial Disclosures (TCFD), and United Nations Principles for Responsible Investment (UN PRI). Through our expanded use of this tool, we gained increased insight into our suppliers' sustainability practices, including that suppliers making up one-sixth of the global spend we assessed already have advanced ESG systems in place. In 2023 we aim to include suppliers representing an additional 10% of our global annual spend in this assessment process, reaching approximately 40% of our global spend.

In 2023, we are targeting covering suppliers representing approximately 40% of our global annual spend with our Dun & Bradstreet ESG sustainability assessments.

In 2022 we published our Supplier ESG Standards and began requiring our suppliers to acknowledge and certify their conformance with our Code of Business Conduct and with these Supplier ESG Standards. We aligned the standards with the ten principles of the U.N. Global Compact, the U.N. Guiding Principles on Business and Human Rights, and the ILO's 1998 Declaration on Fundamental Principles and Rights at Work. More than 65% of our suppliers —representing 94% of our 2022 global annual spend — have confirmed their conformance to these Supplier ESG Standards. We also require new suppliers to certify conformance with our Code of Business Conduct and with these Supplier ESG Standards.

More than 65% of our suppliers — representing 94% of our 2022 global annual spend — have confirmed their conformance to these Supplier ESG Standards.

SUPPLIER DIVERSITY

In early 2023, partnering with D&B Supplier Diversity and Socio-Economic Solutions, we conducted a review of the diversity of our sourcing spend. D&B provided socio-economic and other diversity indicators using its database comprised of publicly available information and third-party certified data. The initial assessment shows that at least 1.7% of our direct global spend is with suppliers owned by veterans, racial and ethnic minorities, women, and other socially or economically disadvantaged individuals. For the next annual review, we will look to expand our understanding of various European supplier diversity laws, certifications, and reporting methodologies, in an effort to expand the diversity of our supply chain, with a goal of increasing our confirmed spend with diverse suppliers to 10% of our global annual spend in 2023.

CONFLICT MINERALS

The most common raw materials found in our products are bronze, brass, cast iron, stainless steel, steel, and plastic. Many of our products also contain tin, tantalum, tungsten, and gold (3TG), which are sometimes referred to as "conflict minerals." At Watts, we are committed to ensuring compliance with our reporting and disclosure obligations regarding conflict minerals in our products to the U.S. Securities and Exchange Commission (SEC), as required under the Dodd-Frank Act. We also comply with all applicable trade laws and regulations and expect the same from our suppliers.

We require our suppliers to comply with our Conflict Minerals Policy, which includes disclosing the use of conflict minerals, exercising due diligence on the source and chain of custody of these metals, and implementing corrective action if we identify a reasonable risk of violation. Since 2021, we have partnered with Assent Compliance, Inc., a global leading supply chain compliance partner, to enhance our analysis of the scope of our 3TG supply base and to deploy our 3TG supplier surveys. These survey results are issued yearly in our Conflict Minerals Report, available on the Supplier page of our website.

PUBLIC POLICY & ADVOCACY

We are committed to engaging with policymakers and sharing industry knowledge to advance our mission of improving the comfort, safety, and quality of life for people around the world through our expertise in water technologies. This includes partnering with a variety of industry organizations globally. For more details, please refer to our Membership of Organizations list.

Our advocacy on water safety dates back to the 1930s when Watts was recognized as the national leader in industry education. This advocacy has continued throughout our company's history. For more details, please refer to Keeping Generations of People and Water Safe.

POLITICAL CONTRIBUTIONS

Watts does not make contributions to political organizations, causes, candidates, or campaigns. As such, the company made no political contributions in 2022. However, we encourage our employees to become involved in civic affairs and to participate in political activities, provided they:

- Do so on an individual basis, on their own time, and at their own expense.
- Make clear that when speaking on public issues, any comments or statements made are their own and not of Watts.
- Never make a political contribution with the intent to influence the award or retention of any Watts business or contract.

About this Report

This Sustainability Report is the seventh annual publication of its kind for Watts Water Technologies, Inc. It highlights our commitment to sustainability and provides information about the progress we are making to promote a sustainable and prosperous future through responsible business practices across environmental, social, and governance dimensions. The disclosures we provide in each section of this report underwent extensive internal quality checks and are factual to the best of our knowledge at the time of reporting. As is standard practice at Watts, our 2022 Sustainability Report was formally reviewed by our:

- Global Sustainability Task Force
- Global Leadership Team
- Environment, Health, Safety, and Sustainability Steering Committee
- ESG Disclosure Committee
- General counsel and chief sustainability officer

The scope of our environmental reporting covers 39 facilities globally, including office buildings, manufacturing sites, distribution centers, and warehouses. The facilities listed here are within our operational boundaries for environmental performance in 2022 and represent 94% of our global workforce.

Additionally, we are proud to include a set of general disclosures with key data points and information with reference to the 2021 Global Reporting Initiative (GRI) Standards, as well as the Sustainability Accounting Standards Board (SASB). In many cases we have enhanced existing disclosures and have also disclosed new information in this year's report and appendix.

Additional information about our ESG performance is available in our 2022 Annual Report, Form 10-K, 2023 Proxy Statement, and on our company website. We welcome your feedback so we can continue to improve our ESG reporting and provide the most relevant information to our stakeholders. Please direct any questions or comments to sustainability@wattswater.com.

Appendix
Table of Contents

66 GRI Index

87 SASB Index

89 SDG Index

90 CEO Water Mandate

91 Keeping Generations of People and Water Safe

92 Materiality Assessment

93 Material Topic Definitions

94 Membership of Organizations

98 Environmental Data

103 Diversity Profile

105 Verification Statements

GRI Index

Statement of use	Watts Water Technologies, Inc. has reported the information cited in this GRI content index for the period January 1, 2022, to December 31, 2022 with reference to the GRI Standards.
GRI 1 used	GRI 1: Foundation 2021
Applicable GRI Sector Standard(s)	None

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
GRI 2: General Disclosures 2021		
GRI 2-1	Organizational details	Watts Water Technologies, Inc. Watts was incorporated in Delaware in 1985 and trades on the New York Stock Exchange (NYSE) under the stock symbol WTS. The company is headquartered in 815 Chestnut Street, North Andover, MA 01845, USA, and operates in the Americas, Europe, and Asia-Pacific, Middle East, and Africa (APMEA).
GRI 2-2	Entities included in the organization's sustainability reporting	The 2022 Sustainability Report covers Watts Water Technologies, Inc. and its consolidated subsidiaries. The scope of our environmental reporting covers 39 facilities globally, including office buildings, manufacturing sites, distribution centers, and warehouses. The facilities listed here are within our operational boundaries for environmental performance in 2022 and represent 94% of our global workforce. Please see a full list of the sites included in the Footprint section.
GRI 2-3	Reporting period, frequency and contact point	01.01.2022 - 12.31.2022 Annual Published: May XX 2023 Questions or comments should be directed to: sustainability@wattswater.com
GRI 2-4	Restatements of information	No restatements of information within the 2022 Sustainability Report with respect to our previous report.
GRI 2-5	External assurance	No third-party external assurance of the 2022 Sustainability Report has taken place. Verification Statement of environmental data can be found in the 2022 Sustainability Report Appendix.
GRI 2-6	Activities, value chain and other business relationships	Watts Water Technologies, Inc., through its family of companies, is a leading provider of solutions designed to promote safety, energy efficiency, and water conservation in the commercial, industrial, and residential markets of the Americas, Europe, and APMEA. For nearly 150 years, Watts has designed and produced valve systems that safeguard and regulate water systems, energy efficient heating and hydronic systems, drainage systems, and water filtration technology that helps purify and conserve water. Markets: Americas, Europe, and Asia-Pacific, Middle East, and Africa Customers: Wholesalers, Specialty, Original Equipment Manufacturers (OEMs), and DIY Chains We report on our annual net sales for each of the three geographic segments in which we operate our business globally, as well as by product line, and customers and markets: Total Net Sales: $1,980.0M USD Americas: 70% Europe: 25% APMEA: 5%

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
		Our supply partners play an integral role in helping us deliver value to our customers, providing critical materials and services that support the production of finished goods throughout our global operations. We commit to preventing and mitigating social and environmental impacts in our supply chain, as well as partnering with suppliers that share our values and high standards of ethical business conduct. In 2022, we continued to face a diverse range of supply chain challenges that disrupted both the production and flow of materials across our supply chain and logistic platforms. Over the past two years, we continued to lessen our dependence on sole sources and prioritize sourcing locally, while maintaining our commitment to having one of the most reliable and sustainable supply chains in the industry. For more information, see the Corporate Profile and Responsible Supply Chain sections of the 2022 Sustainability Report, and *Item 1* of our 2022 Form 10-K.
GRI 2-7	Employees	Diversity Profile, 2022 Sustainability Report Appendix
GRI 2-9	Governance structure and composition	**Board of Directors:** Christopher L. Conway Michael J. Dubose David A. Dunbar Louise K. Goeser W. Craig Kissel Joseph T. Noonan Robert J. Pagano, Jr. Merilee Raines Joseph W. Reitmeier **Watts Board of Directors** Total Members: 9 Average Age: 62 Average Tenure: 8 years Independent Directors: 7 Diverse Directors: 3/9 Directors with Experience in ESG matters: 6/9 Committee Meeting Participation: Audit (5), Governance and Sustainability (formerly Nominating and Corporate Governance) (4), Compensation (6) In May 2022, our board of directors amended the charter of our Nominating and Corporate Governance Committee to rename it as the Governance and Sustainability Committee and to assign it primary responsibility for the oversight of our ESG efforts and strategy. The Governance and Sustainability Committee reviews the company's ESG performance and strategic plans at its regularly scheduled quarterly meetings and receives additional updates from our chief sustainability officer as needed. For more information regarding governance structure, roles and composition of the board, see the Corporate Governance and ESG Governance sections of the 2022 Sustainability Report. Also see pp. 12-15 of the 2022 Form 10-K, our 2023 Proxy Statement, and our Board of Directors page.

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
GRI 2-10	Nomination and selection of the highest governance body	We believe that our board should be composed of directors who, as a group, have the experience, qualifications, attributes, and skills that are collectively required to make informed board decisions and provide effective board oversight. The composite skills of the board members and the ability and willingness of individual board members to complement each other and to rely on each other's knowledge and expertise should produce informed board members who are not afraid to disagree, and who can intelligently assess management's performance and evaluate our strategic direction. In considering whether to recommend any candidate for nomination to the board, including candidates recommended by stockholders, the Governance and Sustainability Committee must be satisfied that the recommended nominee has, at a minimum: • the highest personal and professional integrity • sound business and strategic judgment • the ability to devote sufficient time and energy to the board • the ability and willingness to challenge management while refraining from assuming management's role In addition, the nominee must not serve on more than two public company boards in addition to our board. The Governance and Sustainability Committee will consider for nomination to the board candidates recommended by stockholders, and may consider potential candidates suggested by current directors, company officers, employees, third-party search firms and others. We include more information on our processes and skills considered for board members in the *Director Independence*, *Director Candidates* and *Criteria and Diversity* sections on pp. 15, 20-23 of the 2023 Proxy Statement.
GRI 2-11	Chair of the highest governance body	Robert J. Pagano, Jr. has been the chief executive officer of the company since May 2014. In February 2022, our board determined that combining roles of the CEO and chairperson of the board is the most effective leadership structure for the board at this time, and unanimously elected Robert J. Pagano, Jr. as chairperson. In conjunction with electing Mr. Pagano as chairperson of the board, the board established the role of lead independent director, and the independent members of the board unanimously elected W. Craig Kissel for the role effective February 7, 2022. The lead independent director's responsibilities include acting as a liaison between the independent directors and the chairperson and CEO, providing advice and guidance to the CEO, advising the CEO of the board's information needs, and helping to set the agenda items for board meetings. For more information, please see p.12 of the 2022 Form 10-K, our Board of Directors page, and the *Board Leadership* Structure section on p. 15 of our 2023 Proxy Statement.
GRI 2-12	Role of the highest governance body in overseeing the management of impacts	Our board of directors continually works to improve the high ethical standards we promote and practice every day at Watts. Such approaches include periodic reviews of our corporate policies and practices, and leveraging guidance provided by the U.S. Security and Exchange Commission (SEC) and New York Stock Exchange (NYSE). The board has adopted our Corporate Governance Guidelines to assist and guide each of its 9 members in serving in their director roles, and carrying out the many responsibilities within their charge, including, but not limited to: • Monitoring overall company performance, and the integrity of our financial controls and legal compliance procedures • Appointing executive officers, and overseeing succession planning and our executive officers' performance and compensation • Supervising the development of operating, financial and other corporate plans, strategies, and objectives • Overseeing our approach to sustainability and corporate social responsibility • Reviewing and approving the company's annual business plan, capital expenditures budget, and other key financial and business objectives • Overseeing processes and strategies for identifying, assessing, managing, and mitigating operational, financial, legal, regulatory, strategic, and reputational risk • Evaluating the board's own performance, as well as the effectiveness of its three standing governance committees, annually Sustainable business practices and products are essential to creating financial and non-financial value for our stakeholders. We believe that embedding sustainability into our products, operations, and governance benefits our company and its diverse external stakeholders, including customers, investors, and non-governmental organizations (NGOs). We completed a materiality assessment in September 2021 to inform our future strategy and action. This assessment helped us identify, evaluate, and stratify numerous ESG topics that impact our business and its stakeholders, including ESG-related risks and opportunities as we execute on our growth strategy, as well as societal trends that may impact our ability to create long-term value and respond to external stakeholder demands and expectations. Management and our Internal Audit team conduct annual risk assessments to evaluate risks at all Watts locations and operations globally. Our teams use the Enterprise Risk Management (ERM) process and annual risk assessments to assess and enhance the program and identify areas of focus for audits and site visits.

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
		The Audit Committee, chaired by Director Merilee Raines, holds one regularly scheduled meeting each quarter and schedules additional meetings as often as necessary to perform its duties and responsibilities which include, but are not limited to: • Overseeing the integrity of financial statements • Evaluating compliance with legal and regulatory requirements • Managing systems of internal control over financial reporting • Overseeing internal audit function • Evaluating and/or reviewing the performance of internal audit function • Overseeing the effectiveness of internal control structure • Reviewing management's assessment and management of risk • Managing qualification, independence, and performance of independent auditor • Evaluating management's approach to cybersecurity assessment and risk mitigation • Forming "whistle-blowing" procedures For more information, see the Governance and Accountability, Stakeholder Engagement, and the Materiality Appendix sections of the 2022 Sustainability Report, and the *Corporate Governance* section on pp. 11-24 of the 2023 Proxy Statement.
GRI 2-13	Delegation of responsibility for managing impacts	Our board, primarily through its Governance and Sustainability Committee, provides oversight of the company's approach to sustainability and corporate social responsibility. In addition, our Compensation Committee oversees the company's approach to diversity, equity, and inclusion as well as talent development. The board and its committees regularly discuss with management our approach to sustainability, including risks and opportunities, and implications for the company's strategy. Our board of directors has overall authority and responsibility for our sustainability efforts. In addition to general board oversight, our Governance and Sustainability Committee is primarily responsible for oversight of governance matters, the Compensation Committee is responsible for oversight of human capital issues, and the Audit Committee is responsible for oversight of our corporate ethics and compliance program. In May 2022, our board of directors amended the charter of our Nominating and Corporate Governance Committee to rename it the Governance and Sustainability Committee, and to assign it primary responsibility for the oversight of our environmental, social, and governance (ESG) efforts and strategy. The Governance and Sustainability Committee reviews the company's ESG performance and strategic plans four times a year at its regularly scheduled quarterly meetings and receives additional updates from the company's chief sustainability officer as needed. At the management level, our general counsel and chief sustainability officer, who reports directly to our chief executive officer, has general oversight responsibility for all sustainability matters. Our general counsel and chief sustainability officer also chairs our global Sustainability Steering Committee, which is made up of senior company leaders and is responsible for formulating our sustainability strategy and overseeing the execution of our environmental, social, and governance initiatives. For more information, see the ESG Governance section of the 2022 Sustainability Report, and the *Corporate Governance* section on pp. 11-24 of our 2023 Proxy Statement.
GRI 2-15	Conflicts of interest	Our Conflicts of Interest Policy is publicly available on our website. We also require select management and functional areas, including all employees at the director level and above, to complete an annual Conflict of Interest certification and disclosure, stating they have read, understand, and will comply with our Conflict of Interest Policy. Our board has also adopted a written Related Persons Transaction Policy which requires review of transactions with related persons. This policy covers, but is not limited to, the related party transactions and relationships required to be disclosed under SEC rules. For more information see the Ethics, Integrity, and Transparency section of the 2022 Sustainability Report and pp. 23-24 of the 2023 Proxy Statement.
GRI 2-16	Communication of critical concerns	Our board welcomes the submission of any comments or concerns from stockholders and any interested parties. Communications should be in writing and addressed to our corporate secretary at our principal executive offices and marked to the attention of the board or any of its committees, the lead independent director, individual directors, or non-management or independent directors as a group. All relevant and appropriate correspondence will be forwarded to the intended recipient(s). Please see the *Communications with the Board* section on p. 17 of the 2023 Proxy Statement.

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
GRI 2-17	Collective knowledge of the highest governance body	For information on the expertise present in our board of directors, please see pp. 22 of the 2023 Proxy Statement.
GRI 2-18	Evaluation of the performance of the highest governance body	Our board of directors evaluates the board's own performance, as well as the effectiveness of its three standing governance committees, annually. For more information see p. 15 and 19 of the 2023 Proxy Statement and our Corporate Governance Standards.
GRI 2-19	Remuneration policies	Executive officer compensation information is available in the Compensation Discussion and Analysis section on pp. 29-43, and board compensation information in the Director Compensation section on pp. 9-11 of the 2023 Proxy Statement.
GRI 2-20	Process to determine remuneration	Executive officer compensation information is available in the Compensation Discussion and Analysis section on pp. 29-43, and board compensation information is available in the Director Compensation section on pp. 9-11 of the 2023 Proxy Statement. The company conducts annual shareholder advisory votes on named executive officer compensation, as described in Proposal 2, pp. 59-60 of the 2023 Proxy Statement.
GRI 2-21	Annual total compensation ratio	The median of the annual total compensation of all employees of the company (other than our chief executive officer) was $48,091; and the annual total compensation of our chief executive officer was $7,076,495. Based on this information, for 2022 the ratio of the annual total compensation of our chief executive officer to the median of the annual total compensation of all employees was approximately 147 to 1. CEO pay increased 0.8% from 2021 to 2022, while the median employee compensation increased by 3.6% in the same period. This reflects a ratio of 0.22 to 1 in yearly increase in compensation for the CEO vs. all employees. For more information, please see the Pay Ratio Disclosure section on p. 58 of the 2023 Proxy Statement.
GRI 2-22	Statement on sustainable development strategy	A Message from Our Chief Executive Officer, 2022 Sustainability Report
GRI 2-23	Policy commitments	We believe that good corporate governance and an environment of high ethical standards are important for us to achieve business success and to create value for our stockholders. Our board is committed to high governance standards and continually works to improve them. We periodically review our corporate governance policies and practices and compare them to those suggested by various authorities on corporate governance and employed by other public companies, and consider changes to our corporate governance policies and practices in light of such guidance and interpretations. We have adopted a Code of Business Conduct applicable to all officers, employees, and board members worldwide that serves as the foundation for our ethics and compliance program, and drives policy development, training initiatives, and reinforcement of our values throughout the global organization. In 2022, we implemented a formal Human Rights Policy stating our commitment to identifying, preventing, and addressing actual or potential human rights issues within our scope of control and influence, including through its support of and adherence to the United Nations Global Compact and the Universal Declaration of Human Rights. Our Human Rights Policy applies to all its subsidiaries and supply chain partners. The Code of Conduct is approved by our board, while other policies buttressing our Code, including the Human Rights Policy, are approved by executive and senior management. We provide annual training on the Code of Conduct and provide additional ethics and compliance training, both online and in person, throughout the year using a targeted approach that identifies positions, functions, and regions with a higher risk of potential incidents and in response to global trends and developments, and our own hotline data. Please see more information on how these policies are communicated to employees, business, and other parties in the Ethics, Integrity, and Transparency, and Responsible Supply Chain sections of the 2022 Sustainability Report.
GRI 2-24	Embedding policy commitments	Our board of director's Governance and Sustainability Committee provides oversight of the company's approach to sustainability. The integration of specific ESG policy commitments into our strategies and operational procedures is overseen by various cross-functional teams. For more on our specific policies, please see our policies disclosure on GRI 2-23 of the 2022 Sustainability Report Appendix, and the Environmental Health, and Safety Management, Water Stewardship, Diversity, Equity, and Inclusion, Ethics, Integrity, and Transparency, and Responsible Supply Chain sections of the 2022 Sustainability Report. More information can be found on p. 11 of the 2022 Form 10-K.

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
GRI 2-26	Mechanisms for seeking advice and raising concerns	We regularly inform employees of the multiple avenues available to them to report ethics-related concerns, including to their manager/supervisor, HR, Internal Audit, Legal, Compliance, and our ethics hotline, which is an independent, third-party, multilingual resource available 24 hours a day, seven days a week, that allows employees to report anonymously and confidentially. Each country has its own dedicated in-country telephone number, which provides multilingual support, including initial receipt of the report in the native language from which the reporter is calling. Each of the numbers is listed on the Watts website and contact and access information is also provided in postings at each facility. Following our global ethics hotline audit and refresher training in 2021, our 2022 global compliance survey indicated that over 95% of responding employees know how to report issues or concerns. The deputy general counsel/chief compliance officer (CCO) reviews all ethics hotline matters and assigns them to an investigator. Primarily conducted by Human Resources and the Legal department, investigations on these matters promptly take place by conducting interviews and collecting documentation in order to assess the validity of the report, with a goal of completing all investigations within 45 days of receipt. Each year, we review the number of ethics hotline reports against an annual benchmarking report produced by Navex Global, a recognized leader in risk and compliance management software and the independent operator of our ethics hotline. In 2022, the number of reports received by our ethics hotline was demonstrative of a healthy and effective hotline according to the Navex Global benchmark. For a comprehensive overview, please see the Ethics, Integrity, and Transparency section of the 2022 Sustainability Report.
GRI 2-28	Membership associations	To advance its mission, Watts partners with a variety of industry organizations and associations around the world, participating in several as a member, on committees, and/or providing additional funding beyond traditional membership dues. Since 2021, our CEO Robert J. Pagano, Jr., has been a member of the board of directors of The Water Council, a global hub dedicated to solving critical water challenges by driving innovation in freshwater technology and advancing water stewardship. See our full list of Membership of Organizations in the 2022 Sustainability Report Appendix.
GRI 2-29	Approach to stakeholder engagement	A diverse range of global stakeholders plays an integral role in the growth and success of our business today, as well as our commitment to create sustainable, long-term value in the future. To that end, we regularly engage and interact with key stakeholder groups in a variety of ways. For more information on our stakeholder engagement approach and activities, please see the Stakeholder Engagement section of the 2022 Sustainability Report.
GRI 2-30	Collective bargaining agreements	**Collective Bargaining** Our commitment to protecting human rights also applies to freedom of association and collective bargaining. We believe such activities facilitate dialogue and play an invaluable role in building trust, inclusivity, and transparency in the workplace. In compliance with International Labor Organization standards, it is our policy to ensure our employees have the right to form or join associations of their own choice concerning the relationship between the employer and the employees, and to bargain collectively. We do not issue disciplinary or discriminatory actions against employees who choose to peacefully and lawfully organize or join an association. As well, employees are prohibited from using intimidation tactics of any kind to obstruct other employees' right to freely associate, and/or right to organize or not. **Communication of Rights** At the local level and where applicable, we work to ensure our employees are aware of and understand their collective bargaining rights. These rights may be communicated to employees in different ways based on local labor laws, regulations, and/or practices. Employees at Watts may receive information about their collective bargaining rights: • During the onboarding process • Via internal company channels (e.g., company policies, rules and regulations, information boards, etc.) • Directly from their trade union or work council representative **Grievance Procedures** Where applicable, grievance procedures for collective bargaining rights may be provided to employees via any of the methods stated above. While individual grievance cases may be handled differently based on local labor laws, regulations, and/or practices, they are usually resolved within a few days. Employees receive updates on their individual grievance cases from the trade union or works council representing them. Resolved cases are routed to the appropriate management team at Watts. Cases requiring further escalation are reported to our Global Leadership Team. In 2022, Watts had approximately 1,721 employees worldwide who were represented by unions, collective bargaining agreements, or works councils. That is approximately 37% of our total workforce. Working conditions and terms of employment for those not covered by collective bargaining agreements are directed by local laws.

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
GRI 3: Material Topics 2021		
GRI 3-1	Process to determine material topics	To address the principle of materiality, Watts undertook a process of identifying its key material topics that have the greatest financial, environmental, and social impact on its business, as well as those topics regarded as highly important by its key internal and external stakeholder groups. To identify our key focus areas, Watts has selected and prioritized material topics using a materiality matrix. Through communication and engagement with all our key stakeholder groups, we have identified the material topics that are of highest relevance to them. In parallel, the material topics identified by other organizations have been taken into account through a benchmarking study focusing on sustainability reporting of peer companies in the Industrial and Building Water Product Manufacturing sector that use the principle of materiality to identify their highest priority topics. Upon completion of the above exercise, topics considered as material for Watts were included in our annual Sustainability Report. See more information on the Materiality Assessment section in the 2022 Sustainability Report Appendix and 2022 updates on material topics in the Material Topics section of the 2022 Sustainability Report.
GRI 3-2	List of material topics	Material Topic Definitions, 2022 Sustainability Report Appendix.
GRI 205: Anti-corruption 2016		
GRI 3-3	Management of material topics	Our global compliance program is managed and administered by the global Compliance team at Watts, and supported by our board of directors and Global Leadership Team. Led by our CCO with support from designated compliance professionals from around the world, the program promotes ethical practices and compliance. To mitigate international and any industry-specific risks, we employ multiple tools to drive ethics and compliance through our global compliance organization, including our Code of Business Conduct and the following compliance procedures: compliance training on the Code of Business Conduct and anti-corruption; third-party due diligence reviews and denied-party monitoring; risk assessments; gifts and entertainment, business courtesy and anti-corruption policies, specifically prohibiting facilitation payments; and hotline and issue escalation. We also conduct routine audits of various policies and programs that compose our global compliance program, including: • Bi-annual due diligence review • Quarterly business courtesies review • Ethics hotline viability and availability • Compliance-focused site visits utilizing detailed checklists designated specifically for compliance policy and process review, sampling, and training Employees are encouraged to report any violations to the Legal department or through our hotline, so that they can be investigated and properly resolved. Management, including the Compliance function and our Internal Audit team, conduct annual risk assessments to evaluate corruption and bribery-related risks. Before entering into new business relationships with third parties acting on our behalf, we conduct risk-based due diligence utilizing a multi-factor questionnaire, anti-corruption law notification, and certification of compliance with such laws, and a continuous international-denied-parties search review. Based on questionnaire responses — in addition to automated risk ranking through our third-party due diligence tool (utilizing, among other factors, the Transparency International Corruption Perception Index) — we determine whether to further supplement the review with risk-based open-source investigations. The Compliance team in each region then determines whether to approve going forward with the relationship or recommend further review and approval. Management, including the Compliance function and our Internal Audit team, conduct annual risk assessments to evaluate corruption and bribery-related risks. Utilizing multiple factors, risks, and business developments, these assessments determine areas of focus for audits and site visits, during which select compliance processes are reviewed for evidence of fraud, corruption, or deficiencies, such as compliance with the U.S. Foreign Corrupt Practices Act, U.K. Bribery Act, and other anti-bribery laws, rules, and regulations – even if it is contrary to local customs and practices. For more information and to see our Anti-corruption policies, see the Ethics, Integrity, and Transparency section of the 2022 Sustainability Report.
GRI 205-1	Operations assessed for risks related to corruption	Ethics, Integrity, and Transparency, 2022 Sustainability Report GRI 205: Anti-corruption, GRI 3-3 Management Approach, 2022 Sustainability Report Appendix

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
GRI 205-2	Communication and training about anti-corruption policies and procedures	To promote awareness and understanding of our Code - published in 15 languages - and the importance of operating ethically, we provide annual Code training and our global Compliance team regularly authors informative articles and distributes information through internal communications channels to promote awareness of the Code and timely related topics. In 2022, we completed a global survey of our compliance program to further measure the understanding and acceptance of our compliance requirements. We are proud to report that our employees overwhelmingly indicated that they believe the company and its management abide by our Code of Conduct and Values, they know how and where to report issues and concerns, and they recognize that the company takes appropriate actions when company policies are violated. For more information, please see the Ethics, Integrity, and Transparency section of the 2022 Sustainability Report.
GRI 205-3	Confirmed incidents of corruption and actions taken	No incidents of corruption were confirmed at Watts in 2022, nor were any legal actions regarding corruption brought against the company. For more information, please see the Anti-corruption Policies section of the 2022 Sustainability Report.
GRI 206: Anti-competitive Behavior 2016		
GRI 3-3	Management of material topics	We are committed to acting with integrity in every facet of our operations and strive to meet – and often exceed – applicable laws, regulations, and standards. We require all Watts directors, officers, and employees (including part-time employees and contractors) throughout all regions, which includes all subsidiaries globally, to adhere to our Code of Business Conduct. For more information on our global compliance program, please see the Ethics, Integrity, and Transparency section of the 2022 Sustainability Report.
GRI 206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	No legal actions regarding anti-competitive behavior or corruption were brought against the company in 2022.
GRI 301: Materials 2016		
GRI 3-3	Management of material topics	The most common raw materials found in our products are bronze, brass, cast iron, stainless steel, steel, and plastic. Many of our products also contain tin, tantalum, tungsten, and gold (3TG), which are sometimes referred to as “conflict minerals.” At Watts, we are committed to ensuring compliance with our reporting and disclosure obligations regarding conflict minerals in our products to the U.S. Securities and Exchange Commission (SEC), as required under the Dodd-Frank Act. We also comply with all applicable trade laws and regulations and expect the same from our suppliers. We require our suppliers to comply with our Conflict Minerals Policy, which includes disclosing the use of conflict minerals, exercising due diligence on the source and chain of custody of these metals, and implementing corrective action if we identify a reasonable risk of violation. Since 2021, we have partnered with Assent Compliance, Inc., a global leading supply chain compliance partner, to enhance our analysis of the scope of our 3TG supply base and to deploy our 3TG supplier surveys. For more information on our management of this topic, please see the Conflict Minerals section of the 2022 Sustainability Report. We also know that adopting circular approaches to materials management in our production processes is critical, so we are identifying opportunities and investing in solutions to accelerate our transition to the circular economy and finding ways to divert waste from landfills. We have a history of designing our products for long life, to ensure we are getting the most out of the raw materials that we are using, and so our customers do not have to replace or dispose of products before necessary. For more information on our efforts to quantify and extend product life, please see the Sustainable Innovation section for the 2022 Sustainability Report.
GRI 301-2	Recycled input materials used	We work to make our products out of recyclable materials to ensure that when they do reach their end of life, the materials get a useful second life. We also try to incorporate recycled content into our products to help drive demand for recycled materials, which boosts the recycling infrastructure. Our BLÜCHER products manufactured in Denmark contain steel which consists of 65-85% recycled steel. For more information, see the Sustainable Innovation section for the 2022 Sustainability Report.
GRI 301-3	Reclaimed products and their packaging materials	In 2022, over 90% of all packaging boxes shipped to customers in the Americas were made with a high percentage of post-consumer recycled content and crates from low-grade non-consumer wood. For more information, please see the Sustainable Packaging section of the 2022 Sustainability Report.

<table>
<tr><th>GRI STANDARDS</th><th>DISCLOSURE TITLE</th><th>WATTS RESPONSE</th></tr>
<tr><td colspan="3">GRI 302: Energy 2016</td></tr>
<tr><td>GRI 3-3</td><td>Management of material topics</td><td>We are committed to mitigating the impact on the environment through continuous improvement of our manufacturing and business operations. To achieve this, we comply with all applicable laws, regulations, and standards related to energy efficiency, emissions, energy use, and consumption. We routinely engage with facilities and other personnel to enhance data collection, track key performance metrics, and identify and implement projects to meet our eco-efficiency reduction goals.

For more information, please see the Energy and Emissions section of the 2022 Sustainability Report.</td></tr>
<tr><td>GRI 302-1</td><td>Energy consumption within the organization</td><td>
<table>
<tr><th>ENERGY CONSUMPTION</th><th>2022</th></tr>
<tr><td>ELECTRICITY (kWh)</td><td>61,486,848</td></tr>
<tr><td>From renewable energy credits (RECs)</td><td>26,562,408</td></tr>
<tr><td>NATURAL GAS (M3)</td><td>5,511,643</td></tr>
<tr><td>PROPANE* (Liter)</td><td>198,464</td></tr>
<tr><td>DIESEL** (Liter)</td><td>19,733</td></tr>
<tr><td>DIESEL & GASOLINE - FLEET (Liter)</td><td>126,609</td></tr>
<tr><td>ACETYLENE (M3)</td><td>15</td></tr>
<tr><td>PROPYLENE (Liter)</td><td>17,783</td></tr>
<tr><td>TOTAL ENERGY (MWh)</td><td>121,872.74</td></tr>
<tr><td>ENERGY ECO-EFFICIENCY (MWh/$1M)</td><td>61.56</td></tr>
</table>
*Includes forklift usage
**Includes fuel oil

Please see the Environmental Data section of the 2022 Sustainability Report Appendix for historical environmental data.</td></tr>
<tr><td>GRI 302-3</td><td>Energy intensity</td><td>61.56 MWh/$1M

Please see the Environmental Data section of the 2022 Sustainability Report Appendix for historical environmental data.</td></tr>
<tr><td>GRI 302-4</td><td>Reduction of energy consumption</td><td>Energy consumption reduced from 2021 to 2022 by 7,645 MWh. We aim to reduce energy consumption and carbon emissions at our facilities and offset emissions through renewable energy credits. Targeted programs aimed at reducing energy consumption include:
• Diversification of energy mix including on-site renewable energy generation where feasible
• Implementation of a global production energy-hunt program as well as air-leak detection and repair program
• Temperature controls during heating seasons
• Employee engagement and ongoing dialogue on energy conservation</td></tr>
<tr><td>GRI 302-5</td><td>Reductions in energy requirements of products and services</td><td>We strive to design products to reduce their environmental impact and provide cost-savings for our end-user customers.

For more information, please see the Improving Energy Efficiency section of the 2022 Sustainability Report.</td></tr>
<tr><td colspan="3">GRI 303: Water and Effluents 2018</td></tr>
<tr><td>GRI 3-3</td><td>Management of material topics</td><td>We believe access to clean, safe, and affordable water is a fundamental human right. Water and climate are intricately linked, and an imminent global water crisis threatens the availability, quality, and quantity of water for basic human needs. We are committed to being part of the solution — by reducing the amount of water we use and discharge to manufacture our products, ensuring our business practices protect the water quality and supply in the communities where we operate, and developing effective and innovative products and services that solve longstanding water conservation challenges. We formalized this commitment through our Corporate Environment, Health, Safety, and Sustainability Policy, published on our website in 2022.</td></tr>
</table>

<table>
<tr><th>GRI STANDARDS</th><th>DISCLOSURE TITLE</th><th>WATTS RESPONSE</th></tr>
<tr><td></td><td></td><td>We continue to increase the accuracy and immediacy of our total water usage data so we can take action to reduce it. Our data collection process utilizes a monthly, automatic bill collection system for all utilities across 39 Watts sites. Armed with information provided through monitoring solutions and applications, cross-functional teams come together regularly to increase awareness of our water intensity and execute reduction strategies.

For more information on goals and yearly progress, see the Water Stewardship section of the 2022 Sustainability Report.</td></tr>
<tr><td>GRI 303-1</td><td>Interactions with water as a shared resource</td><td>In 2022, Watts became the first company to successfully complete verification for The Water Council’s WAVE: Water Stewardship Verified program, indicating we have assessed water-related risk across our enterprise, identified the highest water-related impacts using credible water-related data, and implemented best practices in improving water stewardship performance. As part of the WAVE process, in 2021 we prioritized eight sites with the highest water risk, identified the watersheds in which the sites operate, conducted a water balance to learn more about their water inputs and outputs, and engaged stakeholders within the surrounding communities. In 2022, we expanded this work to another eight sites (total of 16 Watts sites), representing 82% of our global water consumption.

As a result of this work, we are taking action locally and globally to reduce water consumption, increase reuse, improve water quality, reduce negative upstream and downstream impacts, and engage our local communities on water stewardship activities. Examples include expanded water metering, continued community engagement, and site-specific projects.

Please see the Water Stewardship section of the 2022 Sustainability Report for more information and the Environmental Data section of the 2022 Sustainability Report Appendix for historical environmental data.</td></tr>
<tr><td>GRI 303-2</td><td>Management of water discharge-related impacts</td><td>Our water stewardship guiding principles include the acknowledgement of water as a local and shared resource — acknowledging the numerous impacts of the amount of water withdrawn and consumed, and the quality of discharges from our manufacturing operations on the functioning of local ecosystems. We’re ensuring that all Watts facilities meet national and local requirements for the return of clean and safe wastewater back into public water sources. We also understand that we have a role to play as stewards by reducing the amount of water we use and discharge to manufacture our products, ensuring our business practices protect the water quality and supply in the communities where we operate, and developing effective and innovative products and services that solve longstanding water conservation challenges.

For more information, please see the Water Stewardship section of the 2022 Sustainability Report.</td></tr>
<tr><td>GRI 303-3</td><td>Water withdrawal</td><td>105,000,652 liters

Please see the Environmental Data section of the 2022 Sustainability Report Appendix for historical environmental data.</td></tr>
<tr><td>GRI 303-4</td><td>Water discharge</td><td>105,000,652 liters

Please see the Environmental Data section of the 2022 Sustainability Report Appendix for historical environmental data.</td></tr>
<tr><td>GRI 303-5</td><td>Water consumption</td><td><table><tr><th>WATER CONSUMPTION (L)</th><th>2022</th></tr><tr><td>N. AMERICA</td><td>67,239,779</td></tr><tr><td>EUROPE</td><td>27,307,591</td></tr><tr><td>APMEA</td><td>10,453,282</td></tr><tr><td>TOTAL WATER CONSUMPTION</td><td>105,000,652</td></tr><tr><td>WATER-USE INTENSITY (M3/$M)</td><td>53.04</td></tr></table>
A comprehensive overview of our water withdrawal throughout the years, as well as information on data collection, reporting, and review for water savings and future targets can be found in the Water Stewardship section of the 2022 Sustainability Report.</td></tr>
<tr><td colspan="3">GRI 305: Emissions 2016</td></tr>
<tr><td>GRI 3-3</td><td>Management of material topics</td><td>We recognize the increasing urgency to avert the worst effects of climate change through rapid decarbonization and greater climate resiliency. Our energy policy is rooted in existing UN frameworks and climate science. We have committed to reducing our GHG emissions intensity by 3% annually against a 2018 baseline. We routinely engage with facilities and other personnel to enhance data collection, track key performance metrics, and identify and implement projects to meet our reduction goals.

For more information, please see the Energy and Emissions section of the 2022 Sustainability Report.</td></tr>
</table>

<table>
<tr><th>GRI STANDARDS</th><th>DISCLOSURE TITLE</th><th>WATTS RESPONSE</th></tr>
<tr><td>GRI 305-1</td><td>Direct (Scope 1) GHG emissions</td><td>
<table>
<tr><th colspan="2">2022 SCOPE 1 GHG EMISSIONS</th></tr>
<tr><td colspan="2">Natural Gas, Diesel, Propane, Acetylene, Propylene (MTCO2e)</td></tr>
<tr><td>N. AMERICA</td><td>7,917</td></tr>
<tr><td>EUROPE</td><td>3,102</td></tr>
<tr><td>APMEA</td><td>5.73</td></tr>
<tr><td colspan="2">Company Cars (MTCO2e)</td></tr>
<tr><td>EUROPE*</td><td>305.125</td></tr>
<tr><td>TOTAL SCOPE 1 EMISSIONS</td><td>11,330</td></tr>
</table>
*Sites: Biassono, Dattenberg, Eerbeek, Gardolo, Hautvillers, Landau, Moirans, Monastir, Sorgues, St. Neots, Vildbjerg, Virey
For more information, please see the Energy and Emissions section of the 2022 Sustainability Report and the Environmental Data section of the 2022 Sustainability Report Appendix.
</td></tr>
<tr><td>GRI 305-2</td><td>Energy indirect (Scope 2) GHG emissions</td><td>
<table>
<tr><th colspan="3">2022 SCOPE 2 GHG EMISSIONS (MTCO2E)</th></tr>
<tr><td>Energy Location Based (MTCO2e)</td><td>Market-Based</td><td>Location-Based</td></tr>
<tr><td>N. AMERICA</td><td>10,665</td><td>11,158</td></tr>
<tr><td>EUROPE</td><td>3,760</td><td>3,949</td></tr>
<tr><td>APMEA</td><td>1,175</td><td>1,175</td></tr>
<tr><td>RECs</td><td>-7,374</td><td></td></tr>
<tr><td>TOTAL SCOPE 2 EMISSIONS</td><td>8,226</td><td>16,282</td></tr>
</table>
For more information, please see the Energy and Emissions section of the 2022 Sustainability Report and the Environmental Data section of the 2022 Sustainability Report Appendix.
</td></tr>
<tr><td>GRI 305-3</td><td>Other indirect (Scope 3) GHG emissions</td><td>
<table>
<tr><th colspan="2">2022 SCOPE 3 GHG EMISSIONS</th></tr>
<tr><td colspan="2">Business Air Travel (MTCO2e)</td></tr>
<tr><td>N. AMERICA</td><td>3,053</td></tr>
<tr><td>EUROPE</td><td>100</td></tr>
<tr><td>TOTAL SCOPE 3 EMISSIONS</td><td>3,153</td></tr>
</table>
For more information, please see the Energy and Emissions section of the 2022 Sustainability Report and the Environmental Data section of the 2022 Sustainability Report Appendix.
</td></tr>
<tr><td>GRI 305-4</td><td>GHG emissions intensity</td><td>
<table>
<tr><th>MARKET-BASED</th><th>2021</th><th>2022</th><th>Y-O-Y REDUCTION</th></tr>
<tr><td>WATTS GLOBAL SCOPE 1+2 GHG EMISSIONS INTENSITY (MTCO2e/$M)</td><td>14.42</td><td>9.73</td><td>-32%</td></tr>
</table>
For more information, please see the Energy and Emissions section of the 2022 Sustainability Report and the Environmental Data section of the 2022 Sustainability Report Appendix.
</td></tr>
<tr><td>GRI 305-5</td><td>Reduction of GHG emissions</td><td>
<table>
<tr><th>MARKET-BASED</th><th>2021</th><th>2022</th><th>Y-O-Y REDUCTION</th></tr>
<tr><td>WATTS GLOBAL SCOPE 1+2 TOTAL GHG EMISSIONS (MTCO2e)</td><td>26,073</td><td>19,251</td><td>-26%</td></tr>
</table>
For more information, please see the Energy and Emissions section of the 2022 Sustainability Report and the Environmental Data section of the 2022 Sustainability Report Appendix.
</td></tr>
</table>

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
GRI 306: Waste 2020		
GRI 3-3	Management of material topics	At Watts, we recognize the need to protect our land, waterways, and the community by reducing the amount of waste generated by our manufacturing and business operations. We recognize the environmental and economic benefits of a circular approach to materials management in our production processes and identifying opportunities to delineate, recycle, and reduce our waste footprint. Since 2014, Watts sites have been tracking their waste streams on an annual basis. Upon selecting 2018 as the baseline year for hazardous-waste intensity-reduction targets, we significantly advanced our data collection process by implementing automatic bill collection. A deeper understanding of our waste generation and more frequent collaboration at the site level has generated substantial interest and engagement among colleagues throughout our operations. Employee-driven waste initiatives focus on waste delineation, re-zoning, and waste-stream elimination, thereby reducing our overall waste outputs and increasing recycling and reuse. For more information, please see the Waste Reduction section of the 2022 Sustainability Report.
GRI 306-1	Waste generation and significant waste-related impacts	In 2022, we continued to track solid waste, scrap metal, and other recycling streams, working closely with our facilities and waste contractors to understand the source and management of our waste, and to standardize data collection across sites. This work required significant collaboration across our global operations; our corporate Sustainability team partnered with site teams to identify opportunities for improvement through process changes. A deeper understanding of our waste generation and more frequent collaboration at the site level has generated substantial interest and engagement among colleagues throughout our operations. Employee-driven waste reduction initiatives focus on waste delineation, re-zoning, and waste-stream elimination, thereby reducing our overall waste outputs and increasing recycling and reuse. We continue to replace single-use paper and plastic items with reusable items and install direct-line water refill stations to avoid disposing of plastic water bottles. Tracking all forms of waste, reducing the overall quantity generated, and diverting from landfills using circular models is a complex challenge. To accelerate our efforts, we previously committed to reducing our hazardous-waste intensity by 3% annually against a 2018 baseline. By the end of 2022, we had reduced our hazardous-waste intensity by 12%. Our annual intensity reduction in 2022, compared to 2021, was 2%. The Franklin, NH, USA lead-product foundry decommissioning project resulted in an incremental hazardous-waste generation of ~12% (278 MT). This project is now completed, and no further hazardous-waste generation will result. For more information, please see the Waste Reduction section of the 2022 Sustainability Report.
GRI 306-2	Management of significant waste-related impacts	In 2022, our hazardous-waste data, calculations methodology, corporate inventory management, and hazardous-waste reporting procedures were reviewed and verified by a third party. Watts has a number of projects underway, including replacement of a commonly used coolant with one that will increase tooling and machine life. For more information, please see the Environmental Data and Verification Statement sections of the 2022 Sustainability Report Appendix.
GRI 306-3	Waste generated	Watts discloses and has data verified for its yearly total waste generated and other environmental data via invoices, site records, vendor manifests, and compliance reporting. In 2022, the amount of hazardous waste generated was 2,307,093 kg. For the facilities where data is available, 2,083,461 kg. of non-hazardous waste generation was reported. For more information, please see the Environmental Data and Verification Statement sections of the 2022 Sustainability Report Appendix.
GRI 306-4	Waste diverted from disposal	Watts has a strong metal-recycling program at our manufacturing facilities. In 2022, the Franklin, NH, USA leaded-product foundry decommissioning was completed. This included the disposal of 278 metric tons of lead-contaminated hazardous waste and the recycling of 237 metric tons of steel. See below for our total recycling and reuse: **RECYCLING AND REUSE** / **2020** / **2021** / **2022** Metal Scraps and Chips Recycling (kg) / 5,609,820 / 7,325,843 / 3,446,329 Plastic Regrind Reuse (kg) / 105,041 / 122,320 / 85,695 Global Electronic Waste Recycling* (kg) / 3,507 / 7,888 / 8,591 * We began tracking electronic waste data in 2020, and our first full-year baseline data developed is for the year 2021 For more information, please see the Waste Reduction section of the 2022 Sustainability Report.

<table>
<tr><th>GRI STANDARDS</th><th>DISCLOSURE TITLE</th><th>WATTS RESPONSE</th></tr>
<tr><td>GRI 306-5</td><td>Waste directed to disposal</td><td>Hazardous waste across the Americas region was primarily generated by three sites, Franklin, NH, USA, Fort Worth, TX, USA, and our contracted manufacturing Maquiladora partner in Nogales, Mexico. The total hazardous waste across these three sites represented 410 metric tons. All hazardous waste was shipped off-site to licensed treatment or disposal facilities. The Franklin foundry decommissioning project represented 68% of the hazardous waste. Excluding this one-time project, the Franklin site reduced hazardous waste by 54% and the Americas region reduced overall hazardous waste by 29.8%

<table>
<tr><th>DISPOSAL TIME</th><th>WEIGHT (MT)</th><th>PERCENT OF TOTAL WASTE</th></tr>
<tr><td>Landfill</td><td>342</td><td>83%</td></tr>
<tr><td>Stabilization-Landfill</td><td>21</td><td>5%</td></tr>
<tr><td>Other-Treatment</td><td>15</td><td>4%</td></tr>
<tr><td>Other-Physical Treatment</td><td>14</td><td>3%</td></tr>
<tr><td>Incineration-Energy Recovery</td><td>9</td><td>2%</td></tr>
<tr><td>Incineration</td><td>9</td><td>2%</td></tr>
<tr><td>TOTAL*</td><td>410</td><td>100%</td></tr>
</table>

* The one-time Franklin decommissioning project represents 68% of hazardous waste across the Americas region. Excluding the decommissioning project, the Franklin site had a 54% reduction in hazardous waste YOY, and the region had a 29.8% reduction YOY.

For more information, please see the Waste Reduction section of the 2022 Sustainability Report.</td></tr>
<tr><td colspan="3">GRI 308: Supplier Environmental Assessment 2016</td></tr>
<tr><td>GRI 3-3</td><td>Management of material topics</td><td>Our supply partners play an integral role in helping us deliver value to our customers, providing critical materials and services that support the production of finished goods throughout our global operations. We commit to preventing and mitigating social and environmental impacts in our supply chain, as well as partnering with suppliers that share our values and high standards of ethical business conduct.

In 2022 we published our Supplier ESG Standards and began requiring our suppliers to acknowledge and certify their conformance with our Code of Business Conduct and with these Supplier ESG Standards. We aligned the standards with the ten principles of the U.N. Global Compact, the U.N. Guiding Principles on Business and Human Rights, and the ILO's 1998 Declaration on Fundamental Principles and Rights at Work. More than 65% of our suppliers —representing 94% of our 2022 global annual spend — have confirmed their conformance to these Supplier ESG Standards. We also require new suppliers to certify conformance with our Code of Business Conduct and with these Supplier ESG Standards.

For more information see the Responsible Supply Chain section of the 2022 Sustainability Report.</td></tr>
<tr><td>GRI 308-1</td><td>New suppliers that were screened using environmental criteria</td><td>Within our Supplier Quality Audit Program, we conducted 89 sustainability-focused assessments of suppliers in 2022, designed to monitor key social and environmental performance indicators in our supply chain in the areas of health and safety, human and labor rights, social responsibility, and conflict minerals. More than 65% of our suppliers —representing 94% of our 2022 global annual spend — have confirmed their conformance to these Supplier ESG Standards. This represents 14% more suppliers participating than in 2021. We also require all new suppliers to complete an onboarding ESG self-assessment, which allows us to continually update and enhance our insight into ESG practices in our supply chain.

In 2022, we met our goal of reviewing suppliers representing approximately 30% of our global annual spend using the Dun & Bradstreet (D&B) ESG Rating Service. We are also targeting an additional 10% of our global annual spend, reaching approximately 40% of our global annual spend, with the D&B ESG Rating Service next year.

For more information see the Responsible Supply Chain section of the 2022 Sustainability Report.</td></tr>
</table>

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
GRI 401: Employment 2016		
GRI 3-3	Management of material topics	We implemented a number of measures to further distinguish Watts as an employer of choice and took several actions, including conducting a compensation market analysis, piloting flexible working arrangements, enhancing our focus on DEI, implementing recognition programs, and sharing tools to support employee development. For more information, please see the Talent Retention and Development section in the 2022 Sustainability Report.
GRI 401-1	New employee hires and employee turnover	In 2022, we added 856 new hires to our global workforce and our voluntary turnover rate was 13.52%.
GRI 401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	We provide our full-time employees with a comprehensive benefits package through a mix of plans designed to support their individual and/or family's health and wellness needs. We offer a standard benefits package in the United States to our eligible employees. In other countries where we operate, government-sponsored programs provide for the health, disability, retirement, parental leave, and unemployment benefits for our employees as a matter of legislative or national practice in support of their social system. In addition to these government-sponsored programs, we provide supplemental coverage or benefits in certain countries where we have large employee populations, which may include: • Medical care • Pharmacy program • Dental care • Vision care • Life insurance • Supplemental life insurance • Short-term and long-term disability coverage • Dependent-care spending accounts • Pre-tax healthcare spending and savings accounts • Voluntary accident and critical illness coverage • Employee wellness program • Business travel and accident insurance • Relocation programs • Employee discounts • Fitness and tuition reimbursement • Performance bonus We comply with applicable local laws regarding benefits and pay for part-time, temporary, and full-time employees.
GRI 401-3	Parental leave	While Watts does not have an official parental leave company policy, there are several states in the U.S. that offer family leave, including California, Colorado, Connecticut, Delaware, Massachusetts, Maryland, New Jersey, New York, Oregon, Rhode Island, Washington state and Washington D.C. Of the Watts employee population in 2022 in those locations, 159 females and 417 males were eligible for family leave. In 2022, three females and 15 males took parental leave; one of the males began leave in November 2021 and returned in January 2022. All 18 employees who took leave in 2022 returned to work after their leave, a 100% return to work rate. One year after the leave, three females and 11 males are still employed at Watts, reflecting a 100% retention rate after one year for females, and 73% retention rate after one year for males who took leave during 2022.
GRI 403: Occupational Health & Safety 2018		
GRI 3-3	Management of material topics	At Watts, we believe that occupational injuries and illnesses are preventable. We recognize healthy and safe working conditions as a human right and commit to protecting the health and safety of all employees working at our facilities around the world. This commitment extends to contractors, visitors, customers, suppliers, and all other business partners. Our enterprise-wide OHS management system promotes operational excellence and enables Watts to build exceptional products in facilities that operate safely, ethically, and responsibly. Its key elements include worker participation and consultation, risk assessments, training, written procedures, internal and external auditing, and a framework for measuring program maturity and identifying opportunities for continuous improvement. Our safety rules apply to all third parties performing activities at our locations, including suppliers, contingent workers, contractors, vendors, visitors, and all other non-Watts employees. For example, contractors are required to follow our safety practices when working on our sites if they do not have equivalent or more stringent practices. For more information, please see the Occupational Health and Safety (OHS) section of the 2022 Sustainability Report.

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
GRI 403-1	Occupational health and safety management system	Our enterprise-wide OHS management system promotes operational excellence and enables Watts to build exceptional products in facilities that operate safely, ethically, and responsibly. Its key elements include worker participation and consultation, risk assessments, training, written procedures, internal and external auditing, and a framework for measuring program maturity and identifying opportunities for continuous improvement. In early 2022, our global OHS system achieved ISO 45001 certification, the international standard for occupational health and safety, and a testament to our strong commitment to protect employees and visitors from work-related accidents and diseases. Our contracted manufacturing Maquiladora partner in Nogales, Mexico, also received this certification for the first time. Our ISO 45001 certified sites represent 22% of our global population. Individual operating sites prioritize these risk assessments and provide a monthly update of progress toward top risks during the monthly operating review. Operating sites also have a target risk-reduction goal established annually to continue to reduce overall workplace hazards and mitigate risks. Watts has multiple opportunities for workers to report workplace hazards including meeting with their supervisors, safety committees, near-miss and safety observation programs, and through our ethics hotline. Our near-miss and safety observation programs include tracking open items to closure through our EHS software, Gensuite. For more information, please see the Occupational Health and Safety (OHS) section of the 2022 Sustainability Report.
GRI 403-2	Hazard identification, risk assessment, and incident investigation	We aspire to be a zero-incident workplace, and in 2022, 14 of our operating and distribution sites continued to report zero recordable injuries. Our Zero incidents, Employee engagement, Risk reduction, and Operational excellence (Z.E.R.O.) approach to drive a culture of safety at Watts, empowers employees with the knowledge, tools, and resources they need to effectively identify hazards, mitigate risks, and explore improvements. Watts sets an expectation that all employees report workplace hazards proactively to reduce the opportunity for future injuries. “STOP WORK” is included in our OHS training for new employee orientation as well as annual refresher training. Included in the OHS system is our incident investigation standard, which assigns responsibility for investigating injuries and determining root cause, corrective, and preventive actions. Workers, supervisors, and EHS professionals are involved in these investigations. Injury reductions in 2022 were driven by multiple factors, including workstation optimization, increased investment in automation, cross-functional engagement professional development, and increased best-practice sharing across the globe. Twelve of our operating and distribution sites achieved injury reductions of 25% or greater with 14 sites have zero recordable injuries. Each site presents its environmental, health, and safety (EHS) performance as part of our Monthly Operating Reviews. Our standard metrics for safety include seven KPIs: total recordable incident rate (TRIR), lost time incident rate (LTIR), near-miss reporting, safety observations reporting, risk-reduction scores, EHS framework score, and finding-closure rate. Twenty-one operating and distribution sites reduced their year-over-year lost time incident rates or had zero incidents, including ten sites with reductions greater than 25%. For more information, please see the Occupational Health and Safety (OHS) section of the 2022 Sustainability Report.
GRI 403-3	Occupational health services	Watts provides occupational health services in various methods. We have an occupational health professional on staff in our largest site who provides direct occupational health services to on-site employees, as well as supports the balance of the sites globally regarding ergonomics and injury evaluations and triage. The occupational health professional also interfaces with our outside occupational health clinics in assessing care and transitional return to work. In the cases of Mexico and our largest site in France, we also have occupational medical professionals on staff as required by country regulations. All employees have access to outside medical services, and where we have input influence over the clinics, we seek occupation-specific clinics. Work-related medical records are either maintained by Human Resources or the Environmental, Health, and Safety organization. These organizations follow country-specific requirements for the confidentiality of medical records and worker access to these records. In cases of non-work-related medical records, these records are maintained solely by the Human Resource organization. The occupational health services are focused on quality of care for work-related matters, and also administer transitional return-to-work programs, where allowed by country specific requirements (e.g., Canada, US, and Germany). In addition, proactive stretching programs are in place across many U.S.-based sites to encourage prevention of injury. Wellness programs include vaccination clinics, wellness clinics, and stretching programs. Health screenings, which were impacted by the COVID-19 pandemic, have been reintroduced in 2022. For more information, please see the Occupational Health and Safety (OHS) section of the 2022 Sustainability Report.

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
GRI 403-4	Worker participation, consultation, and communication on occupational health and safety	Worker participation and consultation is incorporated into our OHS system. Workers participate in developing risk assessments (job hazard analysis), training programs, safety committees, and Lean/continuous improvement programs. Workers are also expected to participate in our early reporting programs including near-miss and safety observations reporting and, where allowed, offered token recognitions to both reporting and providing solutions. These recognitions vary around the world and often include awarding points to workers so that they may order company logo gifts such as tee shirts, hats, and electronic items (e.g., headphones). Worker participation and consultation is specifically stated in our standard procedure for incident investigation and risk assessment, encouraging direct input into solutions including redesign of workstations, alternative tools, improved PPE, and additional training. The modifications emphasize the hierarchy of control to drive at corrective and preventive actions that provide long-term benefits in occupational health and safety. Worker disciplinary actions are focused on intentional behaviors that violate specific safety rules (e.g., intentional bypass of a machine guard or operating a fork truck without proper training). Watts has a safety-critical policy that employees are trained on at new-hire orientation and annually to emphasize the importance of following company safety rules. Workers are expected to STOP WORK when they feel they are in an unsafe situation or are asked to conduct a task that they are not trained to do. Workers are not disciplined for proactively reporting unsafe conditions or acts. Watts has historically held employee safety stand-downs annually to encourage employee participation and awareness around trending injury concerns. The safety stand-down approach varies by site, but generally includes training, outside guests, and discussion of injury trends. For more information, please see the Occupational Health and Safety (OHS) section of the 2022 Sustainability Report.
GRI 403-5	Worker training on occupational health and safety	Our OHS system requires training for all employees in accordance with country-specific regulations as well as specific job duties. Each site assesses both compliance obligations as well as other specific training topics that are applicable to workers' job duties. Each site prepares a training plan and executes the plan over the year. Training is delivered in the local language and, where additional language assistance is needed, training is delivered to accommodate. Training plans include the frequency of training and vary by site. For example, more complex training may be broken down into shorter segments to enhance its effectiveness. Select trainings require testing (e.g., forklift) while others are validated by demonstration (e.g., lockout/tagout) or exercises (e.g., emergency response drill). Training is delivered through competent trainers that may require specialized training (e.g., forklift) or competency through education or experience (e.g., internal safety professional or third party). Training is delivered during company working hours. If workers need to be sent off-site for specialized training, the workers are compensated. For more information, please see the Occupational Health and Safety (OHS) section of the 2022 Sustainability Report.
GRI 403-6	Promotion of worker health	Watts provides our employees with a comprehensive benefits package through the mix of plans designed to support their individual and/or family's health and wellness needs. We offer a standard package in the United States to our eligible employees. In other countries where we operate, government-sponsored programs provide for the health, disability, retirement, parental leave, and unemployment benefits for our employees as a matter of legislation or national practices in support of their social system. In addition to these government sponsored programs, we provide supplementation coverage of benefits in certain countries where we have large employee populations, which may include: • Medical care • Pharmacy program • Dental care • Vision care • Life insurance • Supplemental life insurance • Short-term and long-term disability coverage • Dependent-care spending accounts • Pre-tax healthcare spending and savings accounts • Voluntary accident and critical illness coverage • Retirement savings (401K) plans with generous employer-matching funds • Employee wellness programs • Paid time off • Business travel and accident insurance • Relocation programs • Employee discounts • Fitness and tuition reimbursement • Performance bonus For temporary workers, benefits are covered by their respective employer. However, for on-site wellness activities, temporary workers are welcome to participate (e.g., vaccination clinics).

<table>
<tr><th>GRI STANDARDS</th><th>DISCLOSURE TITLE</th><th>WATTS RESPONSE</th></tr>
<tr><td>GRI 403-7</td><td>Prevention and mitigation of occupational health and safety impacts directly linked by business relationships</td><td>Our enterprise-wide OHS management system promotes operational excellence and enables Watts to build exceptional products in facilities that operate safely, ethically, and responsibly.

We aspire to be a zero-incident workplace, and worker participation and consultation is incorporated into our OHS system. Workers participate in developing risk assessments (job-hazard analysis), training programs, safety committees, and Lean/continuous improvement programs. Our OHS system requires training for all employees in accordance with country-specific regulations as well as specific job duties. Each site assesses both compliance obligations as well as other specific training topics that are applicable to workers' job duties.

The majority of our sales comes from products that have been approved under regulatory standards incorporated into national, state, and municipal plumbing, heating, building, and fire prevention codes all around the world. We manufacture quality products that are safe, reliable, and code compliant. We maintain stringent quality control and testing procedures at our manufacturing facilities in accordance with superior quality standards, and strict performance criteria outlined in local, national, and international codes and standards. Our manufacturing facilities undergo routine audits for process and quality control procedures, ensuring that both our processes and products have consistent quality control throughout the product life cycle. We conduct product testing – and periodic re-testing for re-certification — in accordance with standard compliance methodologies.

The full list of independent testing and certification organizations can be found in the Appendix of the 2022 Sustainability Report. For more information, please see the Occupational Health and Safety (OHS) section of the 2022 Sustainability Report.</td></tr>
<tr><td>GRI 403-8</td><td>Workers covered by an occupational health and safety management system</td><td>All workers across the organization, including temporary workers, are subject to the OHS system. For example, temporary workers participate in the new-hire orientation along with new Watts employees. Watts doesn't distinguish between workers when implementing the OHS system and if temporary workers become employees, they become integrated into the annual training obligations.

Our enterprise-wide OHS management system promotes operational excellence and enables Watts to build exceptional products in facilities that operate safely, ethically, and responsibly. Its key elements include worker participation and consultation, risk assessments, training, written procedures, internal and external auditing, and a framework for measuring program maturity and identifying opportunities for continuous improvement. In early 2022, our global OHS system achieved ISO 45001 certification, the international standard for occupational health and safety, and a testament to our strong commitment to protect employees and visitors from work-related accidents and diseases. Our contracted manufacturing Maquiladora partner in Nogales, Mexico, also received this certification for the first time. Our ISO 45001 certified sites represent 22% of our global population.

For more information, please see the Occupational Health and Safety (OHS) section of the 2022 Sustainability Report.</td></tr>
<tr><td>GRI 403-9</td><td>Work-related injuries</td><td>
<table>
<tr><th colspan="4">FATALITIES</th></tr>
<tr><th>Year</th><th>Number</th><th>Rate</th><th>Hours</th></tr>
<tr><td>2022</td><td>0</td><td>0.00</td><td>9,656,944</td></tr>
<tr><td>2021</td><td>0</td><td>0.00</td><td>9,652,990</td></tr>
<tr><td>2020</td><td>0</td><td>0.00</td><td>8,865,719</td></tr>
<tr><td>2019</td><td>0</td><td>0.00</td><td>9,539,222</td></tr>
</table>
<table>
<tr><th colspan="4">HIGH-CONSEQUENCE (LOST TIMES ONLY)</th></tr>
<tr><th>Year</th><th>Number</th><th>Rate</th><th>Hours</th></tr>
<tr><td>2022</td><td>25</td><td>0.52</td><td>9,656,944</td></tr>
<tr><td>2021</td><td>25</td><td>0.52</td><td>9,652,990</td></tr>
<tr><td>2020</td><td>29</td><td>0.65</td><td>8,865,719</td></tr>
<tr><td>2019</td><td>48</td><td>1.01</td><td>9,539,222</td></tr>
</table>
<table>
<tr><th colspan="4">RECORDABLE ONLY (NO LOST TIME)</th></tr>
<tr><th>Year</th><th>Number</th><th>Rate</th><th>Hours</th></tr>
<tr><td>2022</td><td>28</td><td>0.58</td><td>9,656,944</td></tr>
<tr><td>2021</td><td>34</td><td>0.70</td><td>9,652,990</td></tr>
<tr><td>2020</td><td>36</td><td>0.81</td><td>8,865,719</td></tr>
<tr><td>2019</td><td>45</td><td>0.94</td><td>9,539,222</td></tr>
</table>

Rates are based on 200,000 hours worked and include both employees and temporary workers combined (no distinction for the global organization).

Hazards are identified through multiple means including conducting workstation risk assessments, employee near-miss and safety observations reporting, workplace first aids, and injuries. Primary type of injury is lacerations, which account for 20% of total recordable incidents. Lost time injuries are driven by lacerations.

Efforts to mitigate injuries consider the hierarchy of controls and include:
• Increase automation or new tooling
• Existing workstation redesign
• New workstation design
• Job rotations
• Routine stretching programs
• Physical assessments (e.g., worker practices, positioning, PPE)
• Workstation assessments – e.g., minor modifications to operating practices (e.g. position worker closer to workstation to reduce reach; modify tools; modification of PPE)</td></tr>
</table>

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
GRI 403-10	Work-related ill health	

FATALITIES			
Year	Number	Rate	Hours
2022	0	0.00	9,656,944
2021	0	0.00	9,652,990
2020	0	0.00	8,865,719
2019	0	0.00	9,539,222

HIGH-CONSEQUENCE (LOST TIMES ONLY)			
Year	Number	Rate	Hours
2022	0	0.00	9,656,944
2021	2	0.04	9,652,990
2020	1	0.02	8,865,719
2019	0	0.00	9,539,222

RECORDABLE ONLY (NO LOST TIME)			
Year	Number	Rate	Hours
2022	1	0.02	9,656,944
2021	1	0.02	9,652,990
2020	1	0.02	8,865,719
2019	1	0.02	9,539,222

Rates are based on 200,000 hours worked and include both employees and temporary workers combined (no distinction) for the global organization.

Primary type of work related ill health is hearing loss which account for 100% of total recordable incidents (1 case). No lost time cases were driven by illness.
Hazards are identified through multiple means including occupational noise exposure assessments, workstation risk assessments, employee near miss and safety observation reporting, and workplace first aids.

Efforts to mitigate work-related ill health consider the hierarchy of controls and include:

- Increase automation or introduce new tooling (e.g. remove worker from noise exposure)
- Existing workstation redesign
- New workstation design
- Job rotations
- Physical assessments (e.g. worker practices, positioning, PPE)
- Workstation assessments – e.g. minor modifications to operating practices (e.g. position worker closer to workstation to reduce reach; modify tools; modification of PPE)

GRI 404: Training and Education 2016

GRI 3-3 — Management of material topics

We invest in our employees by providing opportunities that support them in enhancing their skills, competencies, and overall professional development. We offer a variety of in-person and virtual learning and development programs that, at all levels and regions, are designed to build and retain a strong global workforce. In 2022, learning and development initiatives included the launch of global leadership and inclusivity training, new supervisor training, and training on feedback and career development, as well as increased broad-scale coaching opportunities. We encourage all managers and employees to include training and development goals as part of our annual performance management process. We evaluate the effectiveness of our learning and development programs via feedback mechanisms (e.g., surveys, focus groups, etc.) and leverage this data to inform recommendations for future improvements.

Career Development Programs

- On-demand Virtual Learning – Due to the shift to remote work during the pandemic, we saw a significant spike in on-demand eLearning offerings, which employees accessed via our enterprise Learning Management System (LMS) and LinkedIn Learning.
- 360° Assessments – These evaluations provide executive leaders with feedback and tools to help them continually develop in their careers and improve their effectiveness.
- Coaching - Coaching opportunities offered to employees in partnership with BetterUp as well as other select coaching companies allow for employees to work with an external expert on leadership development attributes.

For more information regarding the management approach, career development programs, performance reviews, and KPIs, see the Diversity, Equity, and Inclusion and Talent Retention and Development sections of the 2022 Sustainability Report.

GRI 404-1 — Average hours of training per year per employee

In 2022, Watts employees in the Americas, Europe, and APMEA completed over 22,400 hours of online and in-person training combined – averaging a little under five hours of training completed per employee in these regions.

2022 TRAINING HOURS BY GENDER	2022 TOTAL NUMBER OF EMPLOYEE TRAINING HOURS	2022 AVERAGE HOURS OF TRAINING COMPLETED PER EMPLOYEE
Americas, Europe & APMEA		
Male	14,015	5.04
Female	8,291	5.19
Unspecified	107	0.58
TOTAL	**22,413**	**4.92**

The 2022 data includes employees from Europe, APMEA, and Americas regions. Our Europe team has increased tracking of their employee training, making the data available for disclosure in 2022.

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE

<table>
<tr><td></td><td></td><td>
<table>
<tr><th>TRAINING HOURS BY EMPLOYEE LEVEL</th><th>2021</th><th>2022</th></tr>
<tr><td colspan="3">Americas & APMEA</td></tr>
<tr><td>Senior Level</td><td>313.5</td><td>515</td></tr>
<tr><td>Middle Level</td><td>996</td><td>2,611</td></tr>
<tr><td>Entry Level</td><td>2,281</td><td>7,039</td></tr>
<tr><td>TOTAL</td><td>3,590.5</td><td>10,165</td></tr>
</table>
Training data by employee level includes Americas and APMEA regions only as the data is not tracked in Europe.
</td></tr>
<tr><td>GRI 404-2</td><td>Programs for upgrading employee skills and transition-assistance programs</td><td>
Employment Security
We strive for our employees to feel secure in their jobs at Watts and are committed to responsible workforce restructuring practices. We recognize the impact these actions can have on our colleagues, and will only take such steps when deemed necessary to enhance the value and performance of our company. As part of its oversight responsibilities, our board of directors approves all major restructuring programs. When conducting restructuring activities, Watts adheres to local employment laws and statutes, and ensures our employees are treated fairly. We take measures to assist affected employees in their transition, which may include:

Severance pay, which considers employee years of service
Job placement service
Other forms of transition assistance (e.g., training, retraining, counseling, etc.)

For information on programs upgrading employee skills, see the Talent Retention and Development section of the 2022 Sustainability Report
</td></tr>
<tr><td>GRI 404-3</td><td>Percentage of employees receiving regular performance and career development reviews</td><td>
In 2022, almost 100% of our eligible employees received a review, due to increased outreach and communications to internal stakeholders about process completion, and additional training offered to both employees and managers (globally) about the performance review process.
<table>
<tr><th colspan="4">PERCENTAGE OF EMPLOYEES WITH A COMPLETED 2022 PERFORMANCE MANAGEMENT BY REGION</th></tr>
<tr><td>Region</td><td>2020</td><td>2021</td><td>2022</td></tr>
<tr><td>Americas</td><td>97%</td><td>98.82%</td><td>99.78%</td></tr>
<tr><td>Europe</td><td>97%</td><td>97.01%</td><td>100%</td></tr>
<tr><td>APMEA</td><td>99%</td><td>100%</td><td>100%</td></tr>
</table>
For more information, see the Performance Management section of the 2022 Sustainability Report.
</td></tr>
<tr><td colspan="3">GRI 405: Diversity and Equal Opportunity 2016</td></tr>
<tr><td>GRI 3-3</td><td>Management of material topics</td><td>
At Watts, we embrace and celebrate the individual identities of all our employees. We work to ensure that every individual receives fair treatment and equal access, and feels valued and supported by our culture and workplace environment. This commitment touches every aspect of our business and is embedded at each level of our talent process, from recruitment and onboarding, to development and retention.

Throughout 2022, we continued to execute against an 18-month plan designed to enhance our DEI strategy and lay the foundations for effective program management. Our chief human resources officer presented progress to our board of directors in November 2022, and in the summer of 2023 will present the board with a comprehensive, longer-term strategic plan for approval.

As a reflection of our commitment to embed DEI throughout our business, in 2022 we revised our strategic pillars and incorporated “inclusion” as a new cultural behavior. These changes cascaded to our performance-management process, which assesses all Watts employees on their demonstration of cultural behaviors and sets our expectation of accountability and inclusion at all levels. In 2022, managers received training on how to assess performance and set goals related to inclusion.
</td></tr>
</table>

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
		As an equal opportunity employer, we will recruit, hire, compensate, train, promote, and terminate individuals in accordance with all applicable laws and regulations, and without regard to a person's race, color, religion, age, gender, national origin, citizenship status, marital status, sexual orientation, disability, veteran status, or other protected status. We do not tolerate acts of discrimination, harassment, or bullying at Watts. As embedded in our values, all Watts employees shall treat each other with respect, dignity, and common courtesy, and avoid any behavior that compromises trust, quality of the work environment, or the integrity of decision making. For more information, please see the Diversity, Equity, and Inclusion section of the 2022 Sustainability Report and pp. 20-23 of the 2023 Proxy Statement.
GRI 405-1	Diversity of governance bodies and employees	Corporate Governance, 2022 Sustainability Report Diversity Profile, 2022 Sustainability Report Appendix
GRI 405-2	Ratio of basic salary and remuneration of women to men	We regularly analyze wages to retain employees and stay competitive in the labor market. Internal pay-equity review is embedded into our hiring and promotion processes. In 2023, we will conduct a complete benchmark of all our roles to ensure we are market competitive in our hiring and retention practices. As part of this project, we will conduct a review of our internal pay equity and will make appropriate adjustments. For more information, please see the Diversity, Equity, and Inclusion section of the 2022 Sustainability Report.
GRI 413: Local Communities 2016		
GRI 3-3	Management of material topics	Giving back to the community is important to all of us at Watts. As a responsible corporate citizen, we aim to bring positive change to the communities where we live and work, as well as the industry in which we do business. We believe in building strong, resilient communities, and are committed to promoting social good at the corporate level, as well as regionally and locally through our strategic partnerships, charitable giving, and fundraising and volunteer activities. For more information see the Community Impact and Global Engagements sections of the 2022 Sustainability Report.
GRI 413-1	Operations with local community engagement, impact assessments, and development programs	Community Impact and Global Engagements, 2022 Sustainability Report
GRI 414: Supplier Social Assessment 2016		
GRI 3-3	Management of material topics	Expectations of suppliers across various areas of ethics and integrity, as well as social and environmental responsibility, are covered in our Human Rights Policy, our Supplier Quality Manual, and the Watts Code of Business Conduct. Our standard terms and conditions require supplier compliance with the Supplier Quality Manual and the Watts Code of Business Conduct, including agreement to our Anti-corruption Policy. In addition, in 2022 we published our Supplier ESG Standards, which are informed by the ten principles of the United Nations Global Compact initiative, the United Nations Guiding Principles on Business and Human Rights, and the International Labor Organization (ILO)'s 1998 Declaration on Fundamental Principles and Rights at Work. Approximately 65% of our suppliers, representing over 94% of our annual spend, have confirmed their conformance to these ESG standards. Concerns or violations of our standards regarding our supply chain or supplier quality may be reported at any time through our ethics hotline. Together with the Legal department, the team regularly monitors key social and environmental performance indicators in our supply chain to ensure compliance with our standards, including in areas of health and safety, human and labor rights, social responsibility, and conflict minerals. For more information see the Responsible Supply Chain section of the 2022 Sustainability Report.
GRI 414-1	New suppliers that were screened using social criteria	Within our Supplier Quality Audit Program, we conducted 89 sustainability-focused assessments of suppliers in 2022 designed to monitor key social and environmental performance indicators in our supply chain in the areas of health and safety, human and labor rights, social responsibility, and conflict minerals. More than 65% of our suppliers —representing 94% of our 2022 global annual spend — have confirmed their conformance to our Supplier ESG Standards. We also require all new suppliers to complete an onboarding ESG self-assessment, which allows us to continually update and enhance our insight into ESG practices in our supply chain.

GRI STANDARDS	DISCLOSURE TITLE	WATTS RESPONSE
		In 2022, we met our goal of reviewing suppliers representing approximately 30% of our global annual spend using the Dun & Bradstreet (D&B) ESG Rating Service. We are also targeting an additional 10% of our global annual spend, reaching approximately 40% of our global annual spend, with the D&B ESG Rating Service next year. For more information see the Responsible Supply Chain section of the 2022 Sustainability Report.
GRI 416: Customer Health and Safety 2016		
GRI 3-3	Management of material topics	For nearly 150 years, Watts has developed products, components, and systems that have improved comfort, safety, and quality of life around the world. Our equitable, efficient, and environmentally sustainable product designs, acquisition strategy, and widespread advocacy for the safe and efficient conveyance of water center upon keeping people, equipment, and water safe while protecting the planet. We are committed to manufacturing products, systems, and solutions in safe workplaces that are environmentally responsible. We participate in and contribute to local and government initiatives around the world that improve the quality of life in communities where we live and work.
GRI 416-1	Assessment of the health and safety impacts of product and service categories	The majority of our sales comes from products that have been approved under regulatory standards incorporated into national, state, and municipal plumbing, heating, building, and fire prevention codes all around the world. We develop our products and enhance our existing products under a supervised stage-gate process that includes design for safety, testing at multiple stages before launch, and steering committee oversight to ensure we have safe, reliable products go to market. We also invest heavily in training our customers on safe use and installation of products. We manufacture quality products that are safe, reliable, and code compliant. We maintain stringent quality assurance and testing procedures at our manufacturing facilities in accordance with superior quality standards, and strict performance criteria outlined in local, national, and international codes and standards. We have a global quality framework to identify and address product safety incidents promptly. Our manufacturing facilities undergo routine audits for process and quality-control procedures, ensuring that both our processes and products have consistent quality throughout the product life cycle. We conduct product testing and periodic re-testing for re-certification — in accordance with standard compliance methodologies. For more information, please see the Safety & Regulation and Best-in-Class Training sections of the 2022 Sustainability Report.
GRI 417: Marketing and Labeling 2016		
GRI 3-3	Management of material topics	We strive to create transparency and a superior buying experience for our customers. We believe in providing information about our products and services that is accessible and helps our customers make informed purchase decisions. Watts only uses substantiated claims in its advertising, marketing, and sales materials. We take care to include product use instructions and warnings that are clear and easy for the end-user to understand. Our packaging includes clear information about the product, including size, description, model number, and if it is “lead-free.” Many product labels also include QR codes, which allow customers to quickly access information and resources from their mobile devices. Labels for products traditionally sold in the retail market in North America include translations in both Spanish and French, creating more equal access for our diverse audience of customers. We engage in responsible sales and marketing practices that are fair, transparent, and help to promote economic efficiency and sustainable growth. At Watts, we believe in promoting our services honestly and educating our customers about the appropriate use of our products. We expect our employees to be clear, accurate, and truthful when representing the quality, features, and/or potential hazards of our products. All our marketing materials go through a standard review process with our Legal department prior to the release of facts or comparisons of our products alongside our competitors. Also, we compete on the merits of our products and services and make no attempts to restrain or limit competition. We strictly adhere to “antitrust” laws in the U.S. and “competition” laws in countries in which we operate our business. At Watts, we operate within the boundaries of fair competition and antitrust laws, and we are committed to delivering value to our customers and suppliers by rejecting conduct that undermines fair, stable, and open markets.
GRI 417-3	Incidents of non-compliance concerning marketing communications	There were no incidents of non-compliance concerning marketing communications in 2022.

Emergency Preparedness and Response was identified as a material topic for Watts, but is not covered by the GRI Topic Standards. Reporting against this topic is included in the Occupational Health and Safety (OHS) section of the 2022 Sustainability Report.

SASB Index

SASB TOPIC	DISCLOSURE CODE	SASB METRIC	
Energy Management	RT-EE-130a.1	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable	Total energy consumed: 438,620 GJ Percentage grid electricity: 221,455 GJ (50%) Percentage renewable: 95,625 GJ (22%) of our total energy is attributed to wind renewable energy credits (RECS)
Hazardous Waste Management	RT-EE-150a.1	Amount of hazardous waste generated, percentage recycled	Amount of hazardous waste generated: 2,307,093 kg. Percentage recycled: Data as requested is not available at this time. Watts has a strong metal-recycling program at our manufacturing facilities. In 2022, we recycled 3,446 t of metal scraps and chips and 8.6 t of electronic waste, and reused 85.70 t of plastic regrinds, globally.
	RT-EE-150a.2	Number and aggregate quantity of reportable spills, quantity recovered	Watts did not sustain any reportable spills in 2022.
Product Safety	RT-EE-250a.1	Number of recalls issued, total units recalled	Watts issued no product recalls in 2022.
	RT-EE-250a.2	Total amount of monetary losses as a result of legal proceedings associated with product safety	Watts had no monetary losses as a result of legal proceedings associated with product safety in 2022.
Product Lifecycle Management	RT-EE-410a.1	Percentage of products by revenue that contain IEC 62474 declarable substances	Data is not available.
	RT-EE-410a.2	Percentage of eligible products, by revenue, that meet ENERGY STAR® criteria	Watts does not report this information as requested by the standard. We actively pursue Energy Star certification on those products that qualify. For example, in 2022, 12% of our heat and hot water systems revenue was from AHRI Energy Star Rated products.
	RT-EE-410a.3	Revenue from renewable energy-related and energy efficiency-related products	Although we do not report total revenue from energy-related and energy efficiency-related products, Watts has a 150-year history of developing and designing products, components, and systems that solve the world's greatest water-safety challenges, conserve water, and improve energy efficiency. In 2022, 25% of our revenue was from products that help our customers improve the efficiency and sustainability of their buildings with finite control of the thermostat, reducing fluctuations in heating, and making water flow more efficient. For more information, see the Handprint section of our 2022 Sustainability Report.

SASB TOPIC	DISCLOSURE CODE	SASB METRIC	
Materials Sourcing	RT-EE-440a.1	Description of the management of risks associated with the use of critical materials	Watts is committed to ensuring compliance with reporting and disclosure obligations regarding conflict minerals in our products to the U.S. Securities and Exchange Commission (SEC) as required under the Dodd-Frank Act. We comply with all applicable trade laws and regulations and expect the same from our suppliers. For more information on how we manage raw materials, please see the Responsible Supply Chain, Community Impact, and Global Engagements sections of our 2022 Sustainability Report, as well as GRI 301: Materials, GRI 413: Local Communities, and our Conflict Minerals Policy.
Business Ethics	RT-EE-510a.1	Description of policies and practices for prevention of: (1) corruption and bribery and (2) anti-competitive behavior	We are committed to acting with integrity in every facet of our operations and strive to meet – and often exceed – applicable laws, regulations, and standards. For information on our global compliance program and compliance procedures, including training, third-party due diligence, risk assessments, gifts and entertainment, business courtesy, and anti-corruption and anti-competitive behavior policies, see the Ethics, Integrity, and Transparency section, GRI 205: Anti-corruption and GRI 206: Anti-competitive behavior of our 2022 Sustainability Report.
	RT-EE-510a.2	Total amount of monetary losses as a result of legal proceedings associated with bribery or corruption	No incidents of corruption were confirmed at Watts in 2022, nor were any legal actions regarding corruption brought against the company.
	RT-EE-510a.3	Total amount of monetary losses as a result of legal proceedings associated with anti-competitive behavior regulations	No incidents associated with anti-competitive behavior were confirmed at Watts in 2022, nor were any legal actions regarding anti-competitive behavior brought against the company.
Activity Metric	RT-EE-000.A	Number of units produced by product category	Information on our revenue and products, customers, and markets is available on the Corporate Profile section of this report. For additional information about our company, please see our 2022 Form 10-K.
	RT-EE-000.B	Number of employees	In 2022, Watts employed a total of 4,596 people.

SDG Index

Beyond the examples provided in the section on how Watts is contributing to the UN Sustainable Development Goals, you can find more information on how our work contributes to the SDGs in the following sections of our report:

ALIGNED SDG GOAL	TARGETS	OUR IMPACT: HOW WE ARE CONTRIBUTING
SDG 5: Gender Equality – Achieve gender equality and empower all women and girls	• Target 5.1 • Target 5.5 • Target 5.c	• Diversity, Equity, and Inclusion • Diversity Profile
SDG 6: Clean Water and Sanitation – Ensure availability and sustainable management of water and sanitation for all	• Target 6.1 • Target 6.3 • Target 6.4 • Target 6.b	• Footprint • Environment, Health, and Safety Management • Water Stewardship • Waste Reduction • Handprint • Safety & Regulation • Conserving Water • Global Engagements • Responsible Supply Chain • Keeping Generations of People and Water Safe
SDG 8: Decent Work and Economic Growth – Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all	• Target 8.2 • Target 8.8	• Occupational Health and Safety • Diversity, Equity, and Inclusion • Talent Retention and Development • Ethics, Integrity, and Transparency • Responsible Supply Chain
SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation	• Target 9.1 • Target 9.4	• Energy and Emissions • Handprint • Safety & Regulation • Conserving Water • Improving Energy Efficiency • Sustainable Innovation • Privacy and Cybersecurity • Keeping Generations of People and Water Safe
SDG 12: Sustainable Consumption and Production – Ensure sustainable consumption and production patterns	• Target 12.2 • Target 12.5 • Target 12.6	• Our ESG Strategy • Footprint • Environment, Health, and Safety Management • Water Stewardship • Energy and Emissions • Waste Reduction • Sustainable Innovation • About this Report • Environmental Data
SDG 13: Climate Action – Take urgent action to combat climate change and its impacts	• Target 13.1 • Target 13.2	• Footprint • Water Stewardship • Energy and Emissions • Conserving Water • Improving Energy Efficiency
SDG 14: Life Below Water – Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	• Target 14.1 • Target 14.2	• Contributing to the UN Sustainable Development Goals • Water Stewardship • Waste Reduction

CEO Water Mandate

As a signatory of the mandate, Watts has committed to continuous improvement in the following six core areas of water stewardship practice:

PRINCIPLES	OUR IMPACT: HOW WE ARE CONTRIBUTING		GRI
1. Direct Operations	• Our ESG Strategy • Footprint • Environment, Health, and Safety Management • Water Stewardship • Energy and Emissions • Waste Reduction	• Keeping Generations of People and Water Safe • Environmental Data • Environmental, Health, Safety, & Sustainability Policy • 2022 Form 10-K, pp. 9-10 • 2023 Proxy Statement, pp. 11-23	GRI 2-23 & 2-24 GRI 303: Water and Effluents
2. Supply Chain and Watershed Management	• Contributing to the UN Sustainable Development Goals • Stakeholder Engagement • Footprint	• Water Stewardship • Sustainability Assessments, Responsible Supply Chain • Membership of Organizations	GRI 308: Supplier Environmental Assessment
3. Collective Action	• Stakeholder Engagement • Membership of Organizations • Global Engagements • Keeping Generations of People and Water Safe		GRI 2-28 & 2-29
4. Public Policy	• Public Policy & Advocacy • Membership of Organizations • Keeping Generations of People and Water Safe		GRI 2-28
5. Community Engagement	• Stakeholder Engagement • Community Impact • Keeping Generations of People and Water Safe		GRI 413: Local Communities
6. Transparency	• Ethics, Integrity, and Transparency • Stakeholder Engagement • About this Report • Environmental, Health, Safety, & Sustainability Policy		GRI 2-3

Keeping Generations of People and Water Safe



For nearly 150 years, Watts has developed products, components, and systems that have improved comfort, safety, and quality of life around the world. Our equitable, efficient, and environmentally sustainable product designs, acquisition strategy, and widespread advocacy for the safe and efficient conveyance of water center upon keeping people, equipment, and water safe while protecting the planet.

A RICH HISTORY OF SUSTAINABILITY

1874



Joseph E. Watts, a machinist, founded Watts Regulator Co. His company built and supplied products to Lawrence, MA textile mills to regulate water, steam, air pressure, and temperature, which was essential for the operation of water-heating systems, cylindrical dryers, bleaching and dye vats, and hydraulic presses which required water or steam flow at low pressure. A first-of-its-kind regulator device provided steam-pressure relief ensuring the safety of workers around hot water systems.

LATE 1920s

Watts developed the combination temperature and pressure relief valve (T&P valve), a device that solved significant safety problems with hot-water supply tank systems in homes and buildings. Hot water supply tanks and heaters had long been recognized as potentially dangerous to home and building occupants, as the buildup of excess heat inside a tank could lead to explosion.



1970s



Watts entered the backflow market, developing new backflow prevention products for buildings and municipal waterworks to prevent backflow-related contamination of drinking water systems. In addition to creating smaller, less expensive backflow prevention valves, Watts embarked on an educational campaign on the public hazards of backflow and how to prevent it aimed at municipalities. Watts also conducted training sessions for plumbers and plumbing inspectors on proper use of backflow prevention devices. Educational and advocacy efforts resulted in the creation of the first backflow plumbing codes.

Backflow, or the reversal of the normal flow of water in a system, can occur when a supply of potable water becomes connected to a line that contains contaminated water not suitable for drinking. Backflow imperils individuals drinking contaminated water and, when detected, can lead to large volumes of contaminated water being discharged and wasted.

2014

Watts acquired AERCO, a manufacturer of high-efficiency commercial condensing boilers and water heaters. Up to that point, Watts offered many components of water-heating systems, but not the boilers or heaters themselves. This made Watts products a one-stop shop for commercial customers.

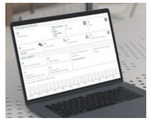
2016

Watts acquired PVI, a manufacturer of high-efficiency commercial water heaters for new construction and building retrofits

Watts opened Watts Works Learning Center in North Andover, MA, a modern, state-of-the-art space devoted to customer training

Watts formed a partnership with Planet Water on social responsibility initiatives, which has since provided clean water to tens of thousands of people in Cambodia, China, Columbia, India, Indonesia, Mexico, Philippines, Thailand, and Puerto Rico.

2019



Watts unveiled new product innovations featuring smart and connected technology, enabling facility managers to remotely monitor, access, and control products.

LATE 1800s

Watts steam and pressure regulators spread to virtually every manufacturing concern in the Merrimack Valley, and later, manufacturers throughout the U.S., Canada, and Europe.

1920s

Watts diversified into making regulators for general heating, home plumbing, and power plants. Watts regulators could control any temperature or pressure of any fluid for any purpose, now including oil as well as steam and water.

1930s

Watts advocated for better water heater safety nationally through an educational campaign about the dangers of hot-water heater explosions. Watts led a series of educational demonstrations meant to inform plumbers and plumbing inspectors about the critical role of both temperature and pressure regulation in preventing explosions. This campaign helped spur national safety standards to specify T&P valves on hot-water heaters.

1999

Watts refocused on water solutions and spun off its industrial oil and gas valve business under a different entity called CIRCOR

2001

Watts entered the water filtration market and deepened its commitment to water conservation with the acquisition of Premier, acquiring the patented Premier Zero Waste (ZRO-4) under-sink reverse osmosis drinking water system.

2003

Watts Industries changed name to Watts Water Technologies to highlight its focus on the water market

2013



Watts opened a 30,000 sq. foot lead-free foundry to produce lead-free products. Today, the majority of Watts products used to provide water for human consumption in the Americas are made here.

2010-2018

Watts led an effort to lobby the U.S. Environmental Protection Agency for more stringent lead-free plumbing product requirements and labeling standards

2018

Watts idled its lead foundry operation in Franklin, NH, USA to focus on its lead-free foundry operation.

2021



Watts identified water-leak detection in residential and commerical buildings as a major customer pain point. Watts acquired The Detection Group and Sentinel Hydrosolutions as our entry point and to address this customer issue.

Watts finalized the decision to decommission its idled lead foundry operations in Franklin, NH, USA effective in December 2021 with plans to complete decommissioning within 12 months.

Watts was named one of Americas Most Responsible Companies by Newsweek for the third year in a row.

Materiality Assessment

In September 2021, we completed a materiality assessment to inform our ESG strategy and actions. This assessment helped us identify and evaluate the ESG topics that have the most significant impact on our business and our stakeholders. The assessment identified ESG-related risks and opportunities for us to evaluate as we execute our growth strategy and societal trends that may impact our ability to meet stakeholder expectations.

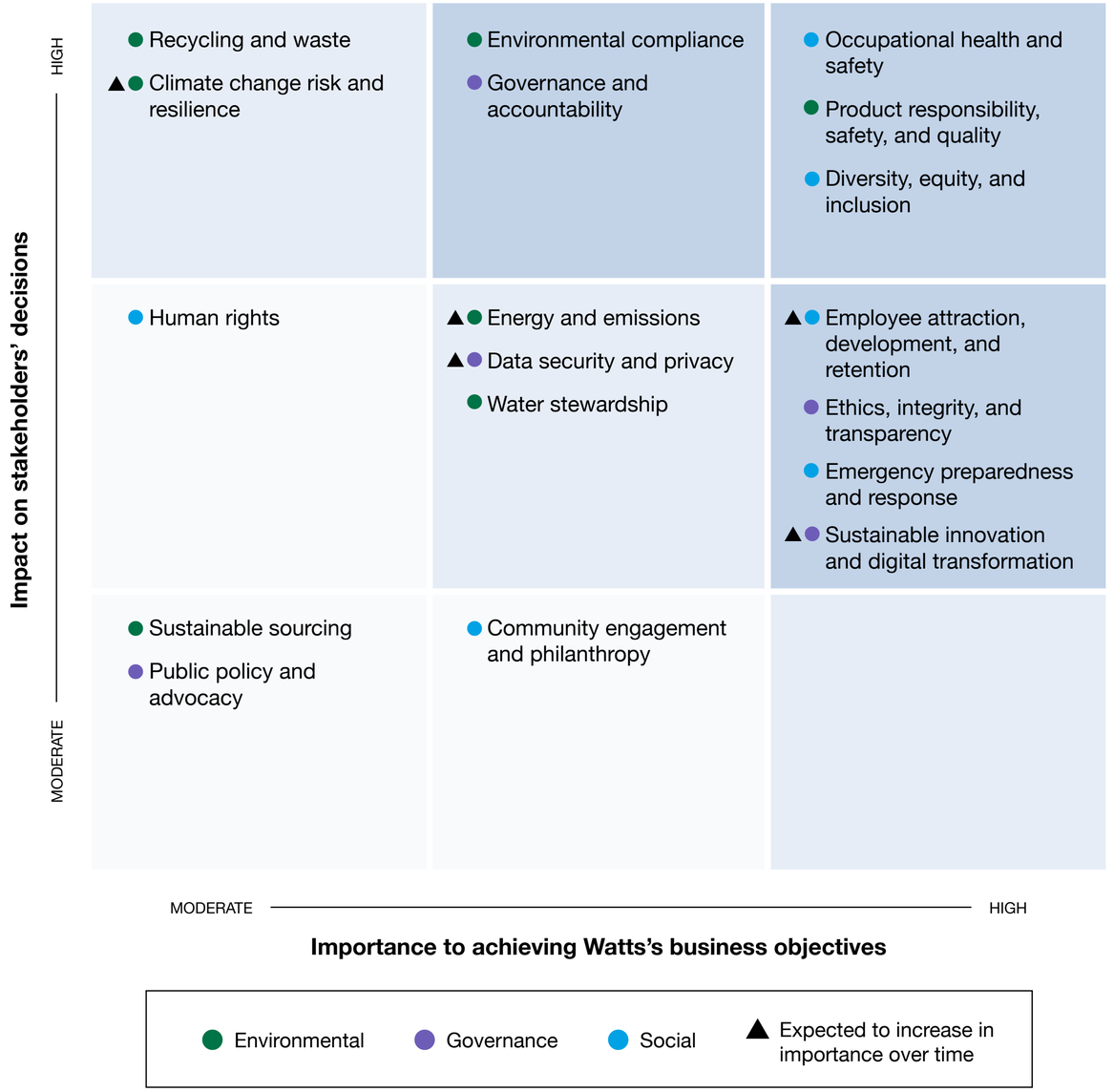
ASSESSMENT PROCESS

Conducted in partnership with a third-party consultant, and in accordance with the Global Reporting Initiative (GRI) standards, our assessment collected and analyzed data from a variety of sources. Key steps included:

- A benchmarking exercise to highlight ESG focus areas among peer companies, ESG ratings agencies, and in industry-specific ESG reporting standards and frameworks.
- Collection of key internal and external stakeholder input to gather insights to support ESG topic prioritization aligned to business objectives. This phase included interviews with management, customers, investors, and NGOs, as well as an employee survey, completed by 82% of Watts employees.
- Analysis and consolidation of the data into an initial materiality matrix prioritizing ESG topics, based on impact on stakeholder decisions and importance to our business objectives.
- Alignment on prioritization of topics with the Watts Global Leadership Teams as a basis to adjust and finalize strategic priorities.

FINDINGS

Our 2021 Sustainability Report reflects the ESG topics of the greatest material importance included in the resulting materiality matrix:



Material Topic Definitions

TOPIC	DEFINITION
Environmental topic definitions	
Climate change risk and resilience	Forecasting and adapting to the risks posed by climate change, including severe weather events and increased scarcity of natural resources. Evaluating potential opportunities to mitigate climate impacts and increase resilience against risks.
Energy and emissions	Managing the energy consumption and greenhouse gas emissions of our operations and value chain by increasing energy efficiency and adopting more renewable energy sources.
Environmental compliance	Complying with all relevant environmental legislation while managing operations that generate water, waste, air pollutants, or hazardous waste, and any environmental liabilities associated with pollution, contamination, and the emission of toxic or carcinogenic substances.
Product responsibility, safety, and quality	Supporting the safe use of products and minimizing negative environmental impacts through all lifecycle stages. Minimizing risks to employees and customers by assessing health and safety impacts of products through auditing, marketing, labeling, and compliance checks.
Recycling and waste	Limiting the waste generated as a result of our operations, including employing appropriate programs to reduce waste and maximize recycling and reuse of materials.
Sustainable sourcing	Facilitating supply chain resiliency by tracking and evaluating supplier performance in local operating communities across social, environmental, ethics, and risk dimensions.
Water stewardship	Managing water as a shared community resource by monitoring our water use and wastewater discharge-related impacts. Implementing efforts to reduce consumption, especially in water-stressed areas.
Social topic definitions	
Community engagement and philanthropy	Fostering relationships with our communities through employee volunteering, corporate giving, and strategic relationships with non-profit organizations.
Diversity, equity, and inclusion	Maintaining a culture that recognizes, appreciates, and creates opportunities for diverse representation of people in the workforce (e.g., gender pay equity, diversity at every level of the organization, and business resource groups). Fostering a culture that is inclusive, authentic, and free of discrimination to build a sense of belonging among Watts employees. Aligning our policies and training to support inclusivity.
Emergency preparedness and response	Developing a plan of action to minimize the risk of potential emergencies in the workplace and having processes in place to minimize impacts of emergencies.
Employee attraction, development, and retention	Committing to and investing in employees by attracting, developing, and retaining a skilled workforce, including providing opportunities that enable skill development and professional growth.
Human rights	Identifying and managing the social risks (e.g., human rights violations) present in our supply chain. Affirming our commitment to the basic rights and freedoms of all peoples.
Occupational health and safety	Protecting the health and safety of employees and contractors while at work. Fostering a positive safety culture that places a high level of importance on shared safety beliefs, values, and attitudes.

TOPIC	DEFINITION
Governance topic definitions	
Data security and privacy	Safeguarding data to protect the security, integrity, and confidentiality of our customer, supplier, and employee data, as well as using collected data responsibly and securely.
Ethics, integrity, and transparency	Operating with integrity and complying with relevant regulations and the highest standards of ethical and lawful conduct, including anti-bribery and corruption practices and whistleblower protections.
Governance and accountability	Adhering to established governance principles by providing risk management activities, ethical and environmental compliance, freedom of association and collective bargaining, and a management structure that allows for appropriate oversight, transparency, and fair executive compensation. Providing adequate governance and accountability for managing ESG strategy and performance.
Public policy and advocacy	Engaging with policymakers and providing industry knowledge and experience that informs the development of relevant environmental and social policies and regulations.
Sustainable innovation and digital transformation	Investing in the development of technologies that enable process optimization and digitization, and create competitive advantage.

Membership of Organizations

MEMBERSHIP OF ORGANIZATIONS	REGION	MEMBER	COMMITTEE PARTICIPATION	FUNDING BEYOND MEMBERSHIP DUES	FUNDING AMOUNT
24x7 Exchange	Americas	Yes	No	No	N/A
3-A Sanitary Standards, Inc.	Americas and Europe	No	Yes	No	N/A
AFCOM	Americas	Yes	No	No	N/A
Aicarr (Italian Association for HVAC, Heating)	Europe	Yes	No	No	N/A
AIG (Australian Industry Group)	Americas	Yes	No	No	N/A
Air-Conditioning, Heating & Refrigeration Institute	Americas	Yes	Yes	No	N/A
American Backflow Prevention Association	Americas	Yes	No	No	N/A
American Centers for Life Cycle Assessment	Americas	Yes	Yes	No	N/A
American Fire Sprinkler Association	Americas	Yes	No	No	N/A
American Rainwater Catchment Systems Association	Americas	No	Yes	No	N/A
American Society for Testing and Materials	Americas	Yes	Yes	No	N/A
American Society of Heating, Refrigerating, and Air-Conditioning Engineers	Americas	Yes	Yes	No	N/A
American Society of Mechanical Engineers	Americas	Yes	Yes	No	N/A
American Society of Plumbing Engineers	Americas	Yes	No	Yes	~$48,000
American Society of Sanitary Engineering	Americas	Yes	Yes	No	N/A
American Supply Association	Americas	Yes	Yes	Yes	~ $15,000
American Water Works Association	Americas	Yes	Yes	No	N/A
Angaisa (National Association for Plumbing)	Europe	Yes	No	No	N/A
Anima (Italian Mechanical Association for Industry)	Europe	Yes	No	No	N/A
ASA (Aqua Italia: Fluid Solutions Association)	Europe	Yes	No	No	N/A
Assotermica (Italian Thermotecnic Association)	Europe	Yes	No	No	N/A
ATTB (Associate Thermische Technieken België)	Europe	Yes	No	No	N/A
Australian Backflow Association	Americas	Yes	No	No	N/A
Backflow Prevention Group, Water System Branch, China Engineering and Consulting Association (CEDA)	APMEA	Yes	No	No	N/A
BDH (Federation of German Heating Industry)	Europe	Yes	No	No	N/A
BFV (Bundesverband Flächenheizungen und Flächenkühlungen e.V.)	Europe	Yes	No	No	N/A
BPAA (Backflow Prevention Association Australia)	APMEA	Yes	Yes	Yes	$11,000 (Business Strategic Partner)
Canadian Institute of Plumbing & Heating	Americas	Yes	No	No	N/A
Canadian Standards Association	Americas	No	Yes	No	N/A

MEMBERSHIP OF ORGANIZATIONS	REGION	MEMBER	COMMITTEE PARTICIPATION	FUNDING BEYOND MEMBERSHIP DUES	FUNDING AMOUNT
China Data Center Committee	APMEA	Yes	No	No	N/A
China Valve Industry Association	APMEA	Yes	No	No	N/A
Confindustria Monza e Brianza (Italian Association of Industry)	Europe	Yes	No	No	N/A
Confindustria Trento (Industry for Trento region)	Europe	Yes	No	No	N/A
Council of Industry	Americas	Yes	No	No	N/A
CTI (Italian ThermoTechnical Association)	Europe	Yes	No	No	N/A
DDA (Dutch Data Center Association)	Europe	Yes	No	No	N/A
DIN (German Standard Comitte)	Europe	Yes	Yes	No	N/A
Distretto Trentino Tecnologico (Area Trento District for Technology)	Europe	Yes	No	No	N/A
DSIV Deutscher Schüttgut-Industrie-Verband	Europe	Yes	No	No	N/A
EL 20 Standards Committee	APMEA	No	Yes	No	N/A
EVOLIS	Europe	Yes	No	No	N/A
GCCP (Genie Climatique Couverture-Plomberie)	Europe	Yes	No	No	N/A
Green Data Center Technology Committee	APMEA	Yes	No	No	N/A
International Association of Plumbing and Mechanical Officials	Americas	Yes	Yes	Yes	~$2,500
International Code Council	Americas	Yes	Yes	No	N/A
Irrigation Association	Americas	No	Yes	No	N/A
Manufacturers Alliance for Productivity and Innovation	Americas	Yes	No	No	N/A
Master Plumbers Association	APMEA	Yes	No	No	N/A
Mechanical Contractors Association	Americas	Yes	No	No	N/A
National Fire Protection Association	Americas	Yes	No	No	N/A
National Fire Sprinkler Association	Americas	Yes	Yes	No	N/A
Ningbo Beilun Green Power Association (BLGPA)	APMEA	Yes	No	No	N/A
NSF International (National Sanitary Foundation)	Americas	No	Yes	No	N/A
ODE (Heating Networks Flanders)	Europe	Yes	No	No	N/A
Opentherm Association	Europe	Yes	No	No	N/A
Plastic Pipe Institute	Americas	Yes	Yes	No	N/A
Plumbing and Drainage Institute	Americas	No	Yes	No	N/A
PPIG (Plumbing Products Industry Group)	APMEA	Yes	No	No	N/A
Rockland Business Association	APMEA	Yes	No	No	N/A
Rosebank Business Association (NZ)	APMEA	Yes	No	No	N/A
Syndicat ACR (ancien MTA concept)	Europe	Yes	No	No	N/A
The Australian Industry Group	APMEA	Yes	No	No	N/A

MEMBERSHIP OF ORGANIZATIONS	REGION	MEMBER	COMMITTEE PARTICIPATION	FUNDING BEYOND MEMBERSHIP DUES	FUNDING AMOUNT
The Water Council (TWC) (Global)	Americas	Yes	No	No	N/A
TMP (Technical Association for Plastic Material)	Europe	Yes	No	No	N/A
U.S. Green Building Council	Americas	Yes	Yes	No	N/A
UNCP-FFB (Federation Francaise du Batiment)	Europe	Yes	No	No	N/A
Underwriters Laboratories	Americas	No	Yes	No	N/A
UNI (Italian Standard Unification)	Europe	Yes	No	No	N/A
Uniclima	Europe	Yes	No	No	N/A
United States Green Building Council	Americas	Yes	No	No	N/A
USC Foundation for Cross-Connection Control and Hydraulic Research	Americas	No	Yes	No	N/A
VDMA - Machinery and Plant Engineering Association	Europe	Yes	Yes	No	N/A
VIZ - Verband der Installations-Zulieferbetriebe	Europe	Yes	No	No	N/A
Water & Sewer Distributors of America	Americas	No	Yes	No	N/A
Water Quality Association	Americas	Yes	No	No	N/A
WBT (Werkgroep Beveiligingstoestellen) - consultative institution for KIWA	Europe	Yes	No	No	N/A
Western Regional Backflow Conference	Americas	No	Yes	No	N/A
WS026 Australian Standards Committee	APMEA	No	Yes	No	N/A

Environmental Data

WATER	2014	2015	2016	2017	2018	2019	2020	2021	2022
Withdrawals: Municipal Supply (Liters)	**201,586,525**	**184,394,341**	**200,065,018**	**198,634,913**	**222,138,840**	**193,812,312**	**130,334,449**	**111,903,727**	**105,000,652**
Consumption (Liters)									
APAC	38,902,000	37,823,510	44,143,000	54,124,000	80,650,162	34,444,473	10,673,627	11,646,713	10,453,282
EUROPE	44,805,180	40,990,760	43,137,540	45,974,842	43,250,378	41,960,837	42,126,405	29,727,807	27,307,591
N. AMERICA	117,879,345	105,580,071	112,784,478	98,536,071	98,238,300	116,406,941	77,534,417	70,529,207	67,239,779
Discharges: Municipal Treatment (Liters)	**201,586,525**	**184,394,341**	**200,065,018**	**198,634,913**	**222,138,840**	**193,812,312**	**130,334,449**	**111,903,727**	**105,000,652**
WATER ECO-EFFICIENCY (M3/$M)	**133.17**	**125.63**	**143.07**	**136.36**	**141.95**	**121.09**	**86.39**	**61.85**	**53.04**

ENERGY CONSUMPTION	2014	2015	2016	2017	2018	2019	2020	2021	2022
ELECTRICITY (kWh)	**78,888,704**	**75,679,370**	**71,583,480**	**72,681,696**	**67,933,680**	**62,568,448**	**61,309,093**	**65,085,079**	**61,486,848**
From RECs									*26,562,408*
NATURAL GAS (M3)	5,729,747	6,454,121	6,716,075	6,368,092	5,697,142	5,546,331	5,753,167	5,839,721	5,511,643
PROPANE (Liter)	132,452	204,171	203,614	196,826	160,095	123,110	133,562	169,793	198,464
DIESEL (Liter)	81,745	74,710	50,281	63,548	52,160	30,303	18,554	32,408	19,733
DIESEL & GASOLINE - FLEET (Liter)									126,609
ACETYLENE (M3)	2,946	4,300	2,889	402	311	113	13	36	15
PROPYLENE (Liter)	**89**	**0**	**7,735**	**10,847**	**9,780**	**15,357**	**11,844**	**23,619**	**17,783**
TOTAL ENERGY (MWH)	**141,600**	**146,600**	**145,000**	**142,500**	**130,200**	**127,647**	**123,593**	**129,856**	**121,873**
ENERGY ECO-EFFICIENCY (MWH/$1M)	**93.55**	**99.88**	**103.69**	**97.82**	**83.20**	**79.75**	**81.93**	**71.78**	**61.56**

TOTAL HAZARDOUS WASTE WEIGHT BY REGION (KG)

	2014 (KG)	2015 (KG)	2016 (KG)	2017 (KG)	2018 (KG)	2019 (KG)	2020 (KG)	2021 (KG)	2022 (KG)
APAC	0	0	2,780	5,770	16,690	17,100	18,600	12,000	5,280
EUROPE	1,558,425	1,488,420	1,260,119	1,563,147	1,878,784	1,933,648	2,214,848	1,950,894	1,890,974
N. AMERICA	372,316	313,835	198,142	162,725	167,407	151,351	121,422	188,541	410,839
TOTAL (KG)	**1,930,741**	**1,802,255**	**1,461,041**	**1,731,642**	**2,062,881**	**2,102,099**	**2,354,870**	**2,151.435**	**2,307,093**
HAZARDOUS WASTE ECO-EFFICIENCY (KG/$M)	**1,276**	**1,228**	**1,045**	**1,189**	**1,318**	**1,307**	**1,561**	**1,189**	**1,165**

TOTAL WASTE (KG)

	2014 (KG)	2015 (KG)	2016 (KG)	2017 (KG)	2018 (KG)	2019 (KG)	2020 (KG)	2021 (KG)	2022 (KG)
Hazardous Waste	1,930,741	1,802,255	1,461,041	1,731,642	2,062,881	2,102,099	2,354,870	2,151.435	2,307,093
Non-Hazardous Waste									2,083,461
Metal Scraps and Chips Recycling							5,609,820	7,325,843	3,446,329
Plastic Regrind Reuse							105,041	122,320	85,695
Global Electronic Waste Recycling							3,507	7,888	8,591

EPA TOXIC RELEASE INVENTORY REPORTING - US SITES ONLY (KG)

	2018 (KG)	2019 (KG)	2020 (KG)	2021 (KG)	REDUCTION*
Total Toxics Reported	1,468,281	1,195,157	1,114,393	1,147,297	**22%**
Total Toxics Recycled	1,441,142	1,144,009	1,079,051	1,062,732	

**Watts reporting showed a reduction of toxic metals and other materials under EPA's TRI reporting of 21.9% compared to 2018.*

GHG EMISSIONS	2014	2015	2016	2017	2018	2019	2020	2021	2022
SCOPE 1: Natural Gas, Diesel, Propane, Acetylene, Propylene (MTCO2e)									
N. AMERICA	8,168	9,598	10,092	9,241	8,045	7,629	7,855	7,667	7,917
EUROPE	3,134	3,203	3,191	3,369	3,208	3,262	3,465	3,965	3,102
APMEA	3	3	3	3	3.14	1.27	26.31	31	6
SCOPE 1: Company Cars (MTCO2e)									
EUROPE **Sites: Biassono, Dattenberg, Hautvillers, Landau, Moirans, Sorgues, St. Neots, Vildbjerg, Virey*								182	305.125
TOTAL SCOPE 1 EMISSIONS								**11,845**	**11,330**
SCOPE 2: Electricity Location Based (MTCO2e)									
N. AMERICA	20,040	18,477	16,419	16,719	15,353	13,589	10,488	10,993	11,158
EUROPE	6,529	6,323	6,604	6,686	6,461	6,680	4,628	4,495	3,950
APMEA	1,884	1,890	2,147	2,280	2,416	2,307	1,768	1,995	1,175
TOTAL SCOPE 2 LOCATION-BASED GHG EMISSIONS (MTCO2E)								**17,483**	**16,282**
SCOPE 2: GHG Emissions (Market-based; MTCO2e)									
N. AMERICA								14,184	10,665
EUROPE								4,223	3,761
APMEA								1,995	1,175
RECs								-6,174	-7,374
Total Scope 2 Market-based GHG Emissions (MTCO2e)								**14,228**	**8,227**
SCOPE 3: Business Air Travel Emissions (MTCO2e)									
N. AMERICA	2,241	3,056	4,263	4,417	5,397	5,065	1,049	1,044	3,053
EUROPE						185	21	5	100
TOTAL BUSINESS AIR TRAVEL EMISSIONS								**1,049**	**3,153**

ANNUAL COMPLIANCE PROCEDURES

	NPDES (Storm Water)	POTW (Public Owned Treatment Works)/ CATEGORICAL	TRI (Toxic Release Inventory)/ EPCRA (Emergency Planning and Community Right To Know Act)	Tier II/EPCRA	State Air Permits - includes VOC (Volatile Organic Compounds) and more	RCRA (Resource Conservation and Recovery Act)
A15 - Export	X			X		
A23 - FT Myers	X					
A12 - Nogales						
A18 - San Antonio	X			X	X	
A10 - St Paul's	X		X	X		
V - Vernon						
DR02 - Spindale	X					
A05 - Woodland	X	X	X	X	X	X
A01 - Franklin	X	X	X	X	X	X
D01 - Franklin						
D05 - Sparks	X			X		
D20 - Groveport						
Blauvelt	X	X	X	X	X	
Ft. Worth	X	X	X	X	X	X
Ningbo						
Apex						

ENVIRONMENT, HEALTH, AND SAFETY AUDITS

No.	Plant	Country	Region	Audit Scope[1]	Audit Type	Annual[2]
1	Burlington	Canada	Americas	General Safety	Internal	
2	Vernon	Canada	Americas	General Safety	Internal	
3	Nogales	Mexico	Americas	ISO14001 - Surveillance	External	Yes
4	Nogales	Mexico	Americas	ISO45001 - Surveillance	External	Yes
5	Export	USA	Americas	Guarding	Internal	
6	Fort Myers	USA	Americas	ISO14001 - Surveillance	External	Yes
7	Fort Worth	USA	Americas	General Safety	Internal	
8	Franklin	USA	Americas	ISO14001 - Surveillance	External	Yes
9	Groveport	USA	Americas	General Safety	Internal	
10	No. Andover	USA	Americas	ISO14001 - Surveillance	External	Yes
11	No. Andover	USA	Americas	ISO45001 - Surveillance	External	Yes
12	San Antonio	USA	Americas	General EHS	Internal	
13	St. Pauls	USA	Americas	Air Compliance	External	
14	St. Pauls	USA	Americas	General Safety	Internal	
15	St. Pauls	USA	Americas	Guarding	External	
16	St. Pauls	USA	Americas	ISO14001 - Surveillance	External	Yes
17	St. Pauls	USA	Americas	Stormwater Compliance	External	
18	Woodland	USA	Americas	General Safety	Internal	
19	Woodland	USA	Americas	Guarding	External	
20	Ningbo	China	APMEA	ISO14001 - Surveillance	External	Yes
21	Ningbo	China	APMEA	ISO45001 - Surveillance	External	Yes
22	Plovdiv	Bulgaria	Europe	ISO14001 - Surveillance	External	Yes
23	Plovdiv	Bulgaria	Europe	ISO45001 - Surveillance	External	Yes
24	Vildbjerg	Denmark	Europe	General Safety	Internal	
25	Vildbjerg	Denmark	Europe	ISO14001 - Surveillance	External	Yes
26	Vildbjerg	Denmark	Europe	Guarding	External	
27	St. Neots	England	Europe	ISO14001 - Surveillance	External	Yes
28	St. Neots	England	Europe	ISO45001 - Surveillance	External	Yes
29	Hauvillers	France	Europe	General Safety	Internal	
30	Hauvillers	France	Europe	Guarding	External	
31	Hauvillers	France	Europe	Regulatory Applicability	External	Yes
32	Moirans	France	Europe	Guarding	External	
33	Moirans	France	Europe	Regulatory Applicability	External	Yes
34	Rosieres	France	Europe	General Safety	Internal	
35	Rosieres	France	Europe	ISO14001 - Surveillance	External	Yes
36	Rosieres	France	Europe	Regulatory Applicability	External	Yes
37	Sorgues	France	Europe	Guarding	External	
38	Sorgues	France	Europe	ISO14001 - Surveillance	External	Yes
39	Sorgues	France	Europe	Regulatory Applicability	External	Yes
40	Virey	France	Europe	General Safety	Internal	
41	Virey	France	Europe	Guarding	External	
42	Virey	France	Europe	ISO14001 - Surveillance	External	Yes
43	Virey	France	Europe	ISO45001 - Surveillance	External	Yes
44	Virey	France	Europe	Regulatory Applicability	External	Yes
45	Landau	Germany	Europe	ISO14001 - Surveillance	External	Yes
46	Monastir	Tunisia	Europe	General Safety	Internal	

[1] Audits scopes and schedules are updated annually and are based on multiple criteria including (1) regulatory obligations, (2) management sytem (ISO) obligations, (3) company risk-based assessments, and (4) a reprentative sampling of the global portfolio.

[2] These audits are required annually in accordance with country-specific compliance requirements or other organizational obligations.

Total Audits in 2022	46
No. of Internal	13
No. of External	33
ISO14001	13
ISO45001	6
Safety	25
Environmental	15
Multimedia	6
Annual Audits	24

Diversity Profile

GLOBAL

GENDER	ENTIRE COMPANY	INDIVIDUAL CONTRIBUTOR	MANAGEMENT	EXECUTIVE
Female	36.82%	38.93%	22.85%	21.21%
Male	63.14%	61.02%	77.15%	78.79%
Other	0.04%	0.5%	0%	0%

U.S.

GENDER

GENDER	ENTIRE COMPANY	INDIVIDUAL CONTRIBUTOR	MANAGEMENT
Female	28.36%	29.52%	22.94%
Male	71.59%	70.42%	77.06%
Other	0.05%	0.06%	0%

U.S. ONLY - MILITARY VETS BY CLASSIFICATION

	ENTIRE COMPANY	INDIVIDUAL CONTRIBUTOR	MANAGEMENT
Retired	1.77%	1.77%	1.77%
Newly Separated	0.94%	0.95%	0.88%
Inactive Reserve	0.78%	0.63%	1.47%
Special Disabled	0.36%	0.44%	0%
Vietnam Era	0.16%	0.19%	0%
Active Reserve	0.1%	0%	0.59%
No Military Service	5.25%	5.18%	5.59%
Not Indicated	90.64%	90.84%	89.71%

ALL U.S. EMPLOYEES ETHNICITY BREAKDOWN

ETHNICITY	ENTIRE COMPANY	INDIVIDUAL CONTRIBUTOR	MANAGEMENT
American Indian/Alaskan Native	1.66%	1.96%	0.29%
Asian	4.63%	4.15%	6.76%
Black/African American	9.83%	11.00%	6.47%
Hispanic/Latino	16.29%	17.38%	11.18%
Native Hawaiian or Other Pacific Islander	0.21%	0.13%	0.59%
Two or more races	1.14%	1.26%	0.59%
White	63.22%	61.06%	73.24%
Other	3.01%	3.24%	3.24%

Headcount by Country

COUNTRY	COUNT OF EMPLOYEE ID
Australia	25
Belgium	47
Bulgaria	231
Canada	162
China	180
Denmark	314
Finland	5
France	666
Germany	227
Italy	234
Korea, Republic of	1
Mexico	15
Netherlands	15
New Zealand	46
Norway	8
Poland	15
Russian Federation	1
Spain	15
Sweden	22
Tunisia	381
United Arab Emirates	21
United Kingdom	43
United States of America	1,922
Grand Total	**4,596**

Contract Type by Gender

	COUNT OF EMPLOYEE ID
Full time	**4,503**
Male	2,876
Female	1,625
(blank)	2
Part time	**93**
Male	26
Female	67
Grand Total	**4,596**

Contract Type by Region

	COUNT OF EMPLOYEE ID
Regular	**4,536**
Americas	2,083
Europe	2,194
APMEA	259
Temporary	**60**
Americas	23
Europe	37
APMEA	0
Grand Total	**4,596**

Region by Contract Type and Gender

	COUNT OF EMPLOYEE ID
Americas	**2,106**
Regular	**2,083**
Male	1,499
Female	583
Unspecified	1
Temporary	**23**
Male	17
Female	6
APMEA	**259**
Regular	**259**
Male	148
Female	111
Temporary	**0**
Female	0
Europe	**2,231**
Regular	**2,194**
Male	1,220
Female	973
Unspecified	1
Temporary	**37**
Male	18
Female	19
(blank)	0

Percent of Headcount by Region

REGION	COUNT OF EMPLOYEE ID
Americas	45.8%
Europe	48.6%
APMEA	5.6%
Grand Total	**100.00%**

Verification Statement
GHG Emissions, Water & Hazardous Waste Inventory

Watts Water Technologies Inc.

815 Chestnut Street, North Andover, MA 01845, USA

Verification Criteria:	Company sustainability report with environmental data disclosure against GRI Disclosure Guidance 102-56 World Resources Institute and World Business Council for Sustainable Development, "The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard," March 2004, revised May 2013 ISO 14065:2013 "Requirements for Greenhouse Gas Validation and Verification Bodies for use in Accreditation or Other Forms of Recognition"
Footprint Period:	2022 (01 January – 31 December inclusive)

Scope of Verification

The verification covers the period 01 January to 31 December 2022 inclusive associated with Watts Water Technologies Inc. global operations. Where assumptions have been made then these have been documented for transparency. The verification was conducted to a limited level of assurance and concludes that the inventory is materially correct.

Data and calculations selected for verification were based upon a risk assessment approach. The verification also included 'boundaries' completeness checks. Data in spreadsheets were also examined and specific sampling of data was conducted giving consideration to raw data sources. Emission factors were found to be based on best available information and were from robust and recognised sources.

The reporter utilizes Schneider Electric's "Resource Advisor", a web based data management system designed to store utility consumption information and invoices. The reporter primarily uses invoices as the source data but also tracks utility consumption using own reads which can be used as an alternative to invoices as source data if required. Individual installations are given responsibility to enter data / invoices / own reads into the "Resource Advisor" platform. Robust checks are implemented centrally to ensure the quality of the data is good. Lucideon was provided with guest access to Resource Advisor to enable invoice sampling and interrogation of the inventory. Emission factors are applied to the source data within "Resource Advisor" to calculate inventory emissions where applicable. The emission factors used were assessed to be from robust and recognized sources in all cases. While water and hazardous waste are not associated with emissions the same approach was applied to data collection within "Resource Advisor" and the key outputs are litres (water) and kg (hazardous waste).

Verifiers Opinion

Based on the evidence provided and the samples selected for verification, it is the opinion of Lucideon that the Watts Water Technologies Inc. inventory covering the period 01 January 2022 to 31 December 2022 is materially correct, is a fair representation of the inventory data and was compiled in conformance with the verification criteria described above. The data and information supporting the inventory were historical in nature. The following qualifications apply:

- The verification boundary is defined in the table below. All other source streams are outside the verification boundary.
- Sites where utilities are included in the rent are only included in the inventory if available. Applies to Ningbo DC, Shanghai, Calgary, Amsterdam, Eerbeek & Wingene.
- "Business Travel – Air" emissions are those captured through a third-party travel booking company. Some bookings (assessed to be negligible) may occur outside this system and are not captured by the third-party travel booking company

Wherever this verification opinion is displayed both pages shall be made available

Verification Statement
GHG Emissions, Water & Hazardous Waste Inventory

LUCIDEON

Final verified inventory:

SCOPE	Subscope	Activity Data	tCO2e (LocationBased)	tCO2e (Market Based)
1	Acetylene	15.42 m3	0.06	0.06
1	Diesel	19,733 litres	53.66	53.66
1	Fuel Oil	10,036 litres	27.36	27.36
1	Propane	198,464 litres	301.32	301.32
1	Propane Mobile	3,703 litres	5.62	5.62
1	Propylene	17,783 litres	29.08	29.08
1	Natural Gas	5,511,643 m3	10,607.62	10,607.62
1	Fleet*	126,609 litres	305.13	305.13
	Scope 1 Totals		**11,329.84**	**11,329.84**
2	Electric Power	61,486,848 kWh	16,281.68	15,599.84
2	RECs**	26,562,408 kWh		- 7,373.61
2	Fleet* (Electric Vehicles)	5269 kWh	1.60	1.60
	Scope 2 Totals		**16,283.28**	**8,227.83**
3	Business Travel - Air	17,581,093 km	3,152.11	3,152.11
	Scope 3 Totals		**3,152.11**	**3,152.11**

All	**Total**		**30,765.22**	**22,709.77**

Other	Water Consumption (litres)	105,000,652
Other	Hazardous Waste (kg)***	2,307,093
Other	On-site Renewables (PV) (kWh)****	552,859

* covers the sites with a complete fleet inventory for 2022: The data for Sorgues covers both Hautvillers and Sorgues which form Watts Industries France. The data for Biassono covers both Biassono and Gardolo which form Watts Italia. This inventory contains EV Scope 2 data for Eerbeek only.

** covers sites where contractual instruments were used in 2022: Franklin, Export, Franklin - DC , Blauvelt, D20, North Andover & Ft Worth.

*** covers site where hazardous waste was produced. Vildbjerg, Franklin, Biassono, Landau, Ft. Worth, Hautvillers, Mery, Nogales, Rosieres, Virey, Ningbo, Gardolo, Plovdiv, Sorgues, Moirans, Woodland, St Pauls. Other sites do not produce hazardous waste.

**** Ningbo & Plovdiv sites (PV solar consumed on site)

Andrew Shepherd
Lead Verifier
27 April 2023

John Ingham
Independent Reviewer
1st May 2023

Lucideon CICS Limited
Queens Road, Penkhull
Stoke-on-Trent
Staffordshire ST4 7LQ, UK

T +44 (0)1782 411008
support@lucideon.com
www.lucideon.com
Reg. England 1871628

Wheatland Tube Company

Wheatland Tube
A DIVISION OF ZEKELMAN INDUSTRIES

January 6, 2022

Ref: LEED – Leadership in Energy and Environmental Design

To whom it may concern:

This letter is a follow up to your inquiry concerning the amount of recycled material in Wheatland's pipe and conduit products.

The pipe and conduit products manufactured by Wheatland Tube Company are produced from approximately 25% to 85% recycled steel. The amount can vary depending on the steel vendor. If you must use one number and not a range, use 66%. Of the 66% recycled steel approximately 30% is pre-consumer (or post-industrial) and 70 % is post-consumer depending on fluctuating scrap prices. The American Iron and Steel Institute (AISI) website states: "Steel's recycling rate of 66% is far higher than that of any other material capturing twice as much tonnage as all other materials combined."

Wheatland has five manufacturing facilities in the following locations: Wheatland, Pennsylvania; Warren, Ohio; Cambridge, Ohio, Chicago, Illinois and Long Beach, CA.

If I can be of any further assistance, please do not hesitate to contact me.

Sincerely,



Michael S. Ryan
Technical Services Manager

RoLanka - The W
supplier of GeoNa

RoLanka – The World's leading supplier of GeoNatural™ products for erosion and sediment control

RoLanka is an environmentally concerned company that supplies high quality, economical and environmentally friendly products for sediment control, soil bioengineering, erosion control, wetland restoration, streambank & shoreline restoration and horticultural applications. The natural by-product, coir (coconut fiber) is the basis for most RoLanka products.

Our technical expertise combined with direct access to abundant coir resources allows us to provide well-engineered, environmentally-safe and economically-priced coir products for various applications in environmental restorations. A healthy environment supports a healthy human population.

products at patent pending status in the USA and in other countries. Although we offer some traditional coir products, our main emphasis is on providing technically advanced coir products for civil engineering and horticultural communities. By doing this we also assist the coir industry in developing countries. Our products are reasonably priced with a view to enhance environmentally friendly restoration activities. We are proud to be the world's leading supplier of technically advanced natural products to the global market. RoLanka is a registered minority business enterprise in the State of Georgia.

Officials of RoLanka:

Lanka Santha, M.S., P.E.
C.E.O.

Lanka holds a M.S. degree in Civil Engineering from Texas A&M University. He has over 35 years of experience in construction, design and research in the Civil Engineering field. He is a registered professional engineer in the State of Georgia. He worked for Georgia DOT Materials and Research office for 15 years. His interests include the application of soil bioengineering techniques to solve civil engineering problems. He is also interested in the research and development of new and improved erosion & sediment control and soil bioengineering products. Lanka has several publications in the field of erosion control and transportation. He has a several patents in the US and Sri Lanka. He is a member of International Erosion Control Association (IECA) and ASTM (D18 & D35 committees) which are responsible for developing standards for erosion control products.

e-mail: lanka@rolanka.com

Calista Rohini Santha, Ph.D.
President

Calista holds a Ph.D. degree in Wildlife and Fisheries Sciences from Texas A&M University, College Station, Texas. Her M.Sc. degree in Aquaculture is from Asian Institute of

effective erosion and sediment control practices.

e-mail: rohini@rolanka.com

RoLanka International, Inc. is in Stockbridge, GA (Henry county). A woman owned business.

Our mission is to supply high quality products at affordable prices with excellent customer service while we educate the public about advantages and disadvantages of each product as we help get each job done right, the first time. The best way to save our natural resources for all.

Largest Inventory of quality coir products in North America



Highlights

DOT DBE Certified

© 2022 · Your Website. Theme by HB-Themes.