

# Waste and Landfill Avoidance Report

2023 Annual Report

CMS ENERGY

NORTHSTAR<sup>™</sup>  
CLEAN ENERGY  
A CMS ENERGY COMPANY

Consumers Energy

Count on Us<sup>®</sup>

This report covers the corporation's waste and diversion rate goals, 2022 year-end waste and landfill avoidance totals and data reported to benchmarking entities.

- ✓ **2022 and 2023 Diversion Rate Improvement Goal**
- ✓ **Strategy, Major Milestones and Results**
- ✓ **2022 All Waste and Landfill Avoidance Data**
- ✓ **2022 Diversion Rate Data**
- ✓ **2022 Benchmarking Data**



## 2023 Diversion Rate Improvement Goal

We focus on waste reduction as the combined efforts of reducing waste, improving reuse, and increasing recycling. That is why the 2022 and 2023 goals focus on reducing waste generated and increasing recycling. The 2023 company goal is to increase the diversion rate (percentage of the total amount of waste recycled) to 94% from the 2022-year-end total of 93%.

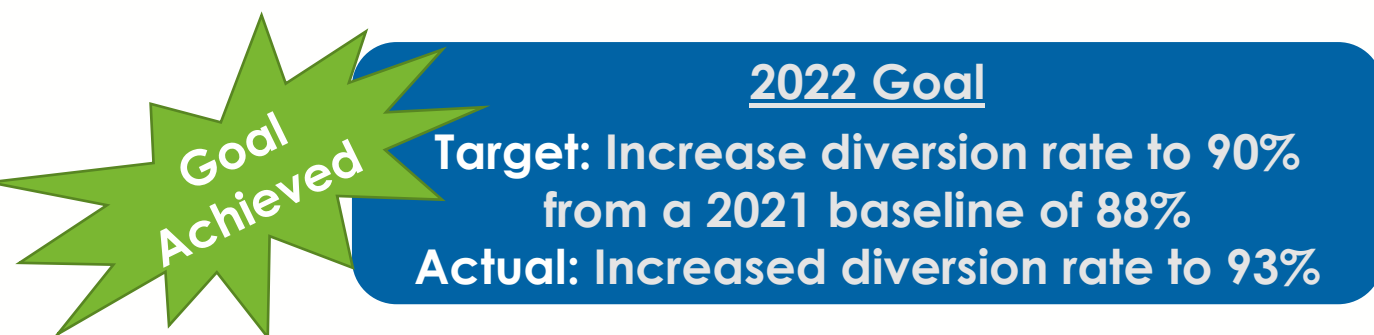
Reducing our waste reduces the number of waste pickups and the amount of time trucks are on the road picking up and disposing of waste. NorthStar Clean Energy is not included in this goal.

### 2023 Goal

**Increase diversion rate to 94% from the  
2022-year-end of 93%**

## 2022 Diversion Rate Improvement Goal

In 2022, the company set and surpassed a goal to increase the diversion rate. We achieved a 93% diversion rate, surpassing the target of 90% from the 2021 baseline of 88%.



## Our Waste Reduction Strategy

- Conserve and recycle soil and construction materials on projects that require clearing and digging.
- Engage employees to work in "Green Teams" devoted to caring for the environment.
- Fight *Phragmites*, an invasive species that threatens the health of Michigan's wetlands. We use innovative land-management tactics to keep the tall, harmful grass out of landfills once it's safely removed.
- Site evaluations to check the amount of trash we generate and assess how each facility handles waste.
- Our Investment Recovery Center collects a wide variety of materials, including rubber gloves, sleeves and other protective equipment used to safely maintain and restore power on Michigan's electric grid. The materials have potential reuse as a primary ingredient in surfaces at playgrounds and dog parks.

## Hazardous Waste Reduction

Hazardous waste generation is reduced by:

- Using best practices to safely store products and waste to minimize potential spills.
- Evaluating and implementing process changes to reduce or eliminate generation of hazardous waste.
- Segregating hazardous and nonhazardous wastes to minimize volume.
- Purchasing products that will not result in hazardous waste.
- Limiting product orders to reduce excess that becomes waste.

# Strategy and Milestones

The intent of our goal is to encourage positive culture change and focus on streams that employees can have an impact on. Figures 1 and 2 below show the change in waste stream totals from 2021 to 2022.

Figure 1

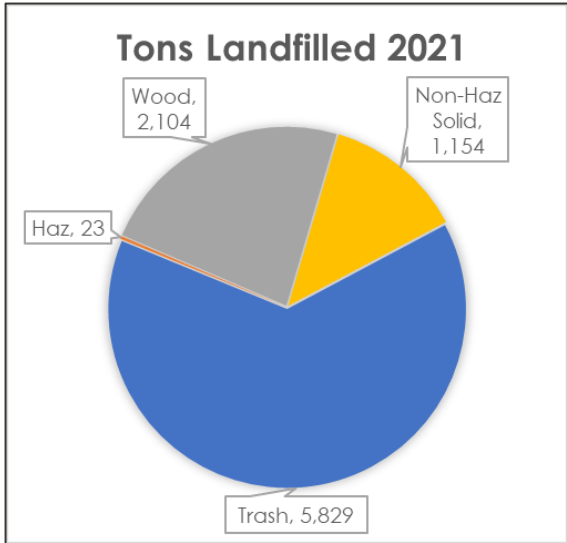


Figure 2

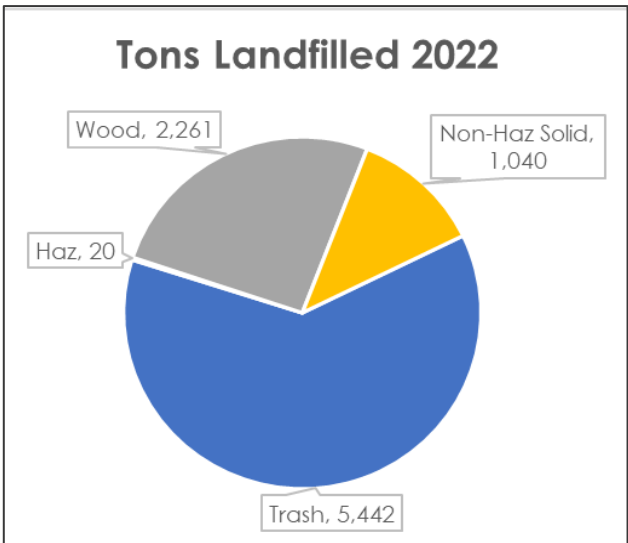


Figure 3

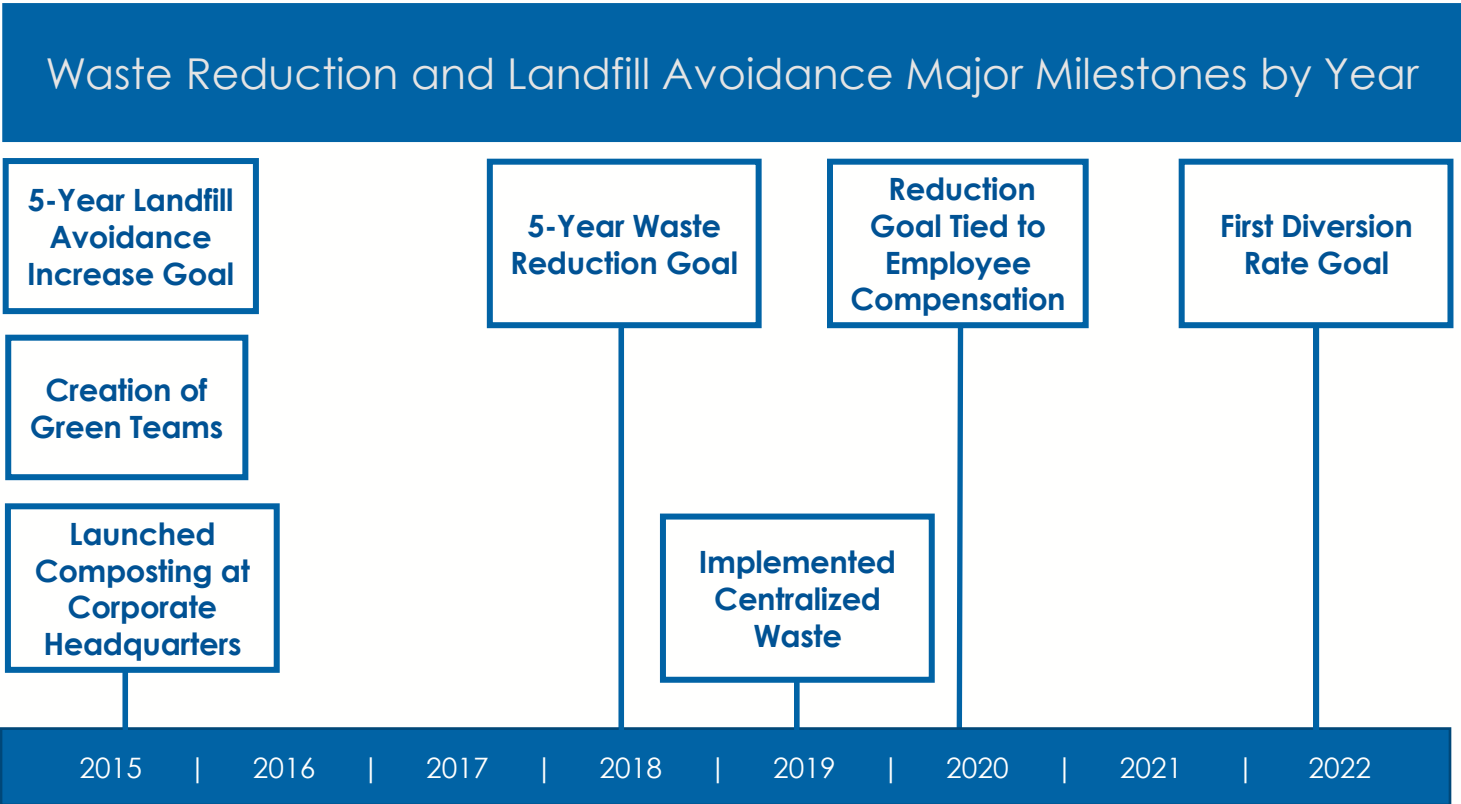


Figure 3 shows major milestones in our waste reduction journey. Our first waste goal was set in 2012 to avoid over one million cubic yards of waste to landfill. We started tracking landfill avoided waste in the early 1990s.

## Waste Reduction Goal Progress

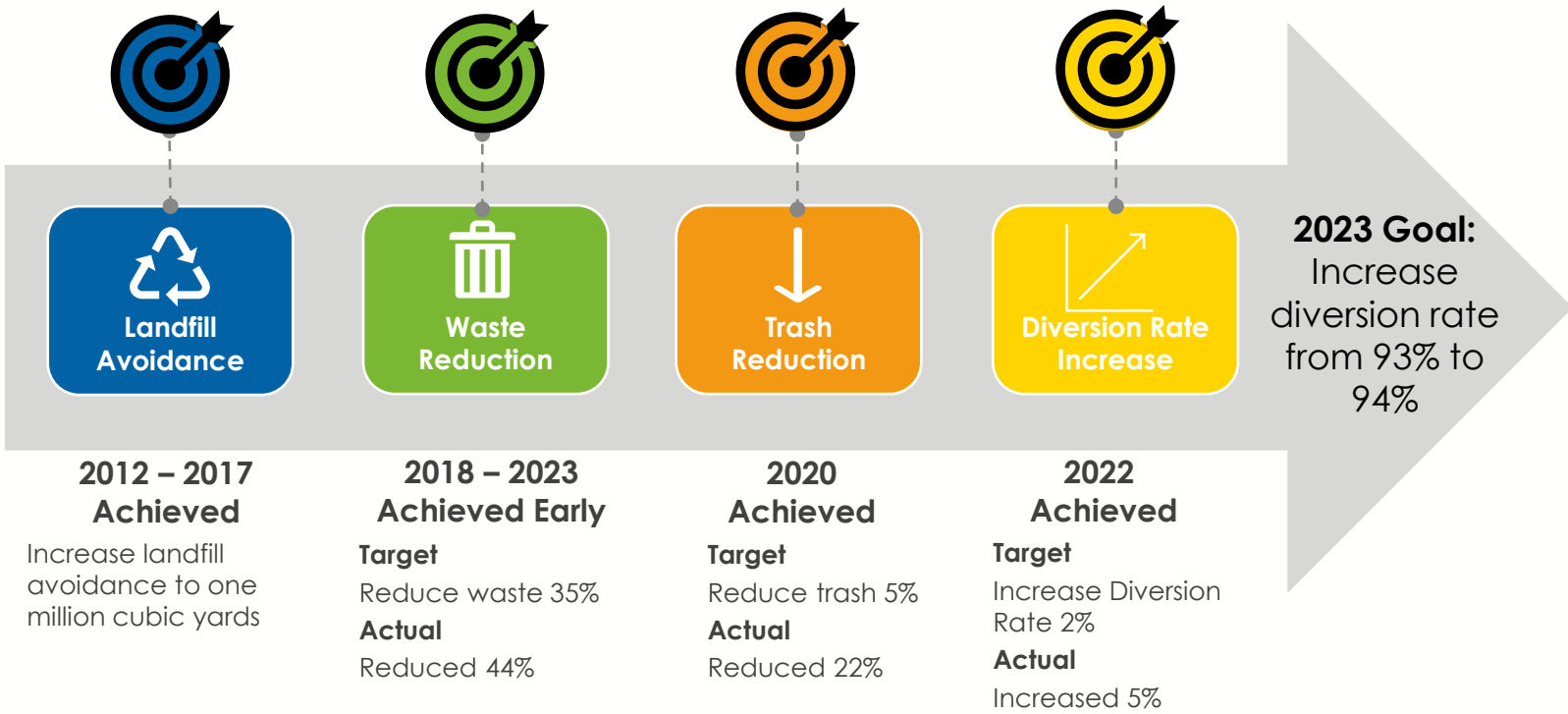
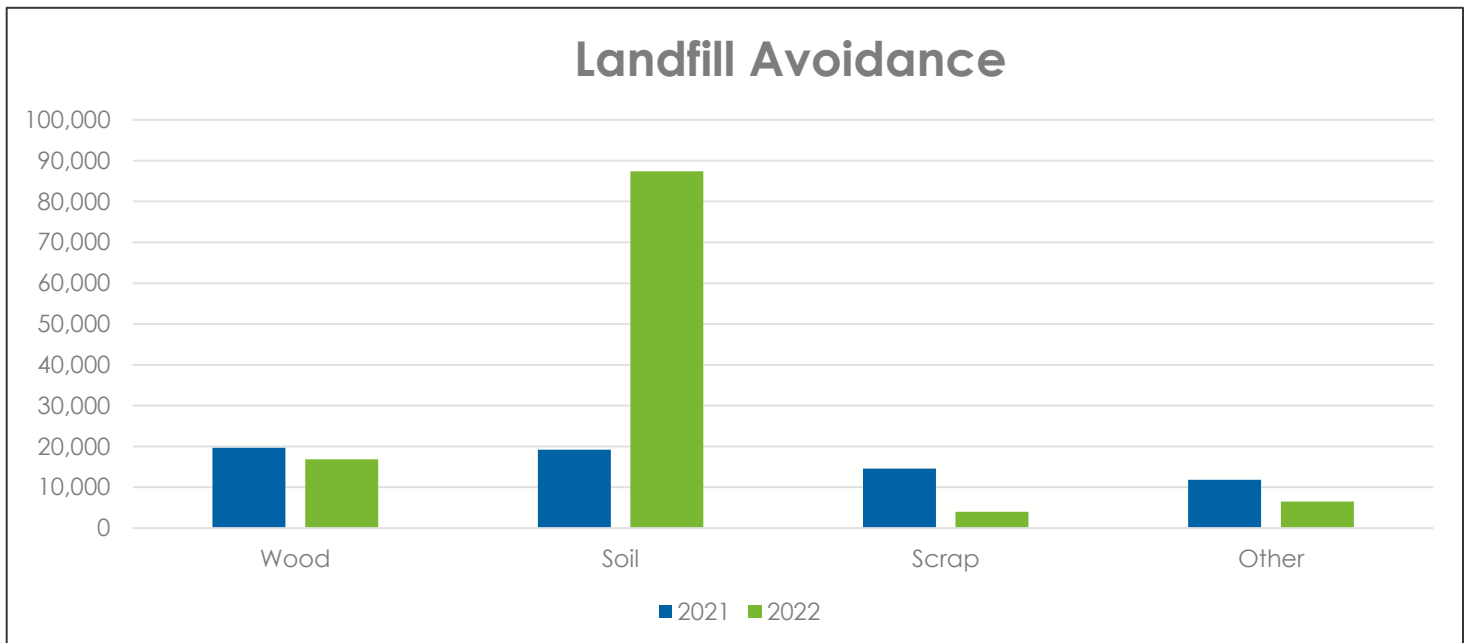


Figure 4



**Figure 4** shows an increase of nearly 50,000 tons of landfill avoidance tracked. This is a result of improved data collection, better material management and increased soil reuse efforts.

## ***Reducing Coal Combustion Residuals***

Our [Clean Energy Plan](#), which sets a pace to retire our remaining coal plants by 2025, is an industry-leading move that will significantly help us reduce [coal combustion residuals](#) (CCRs) like fly ash and bottom ash, which are produced when burning coal to produce electricity. We continue to work with the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to beneficially reuse and properly manage ash.

We are responsible for the safe collection and disposal of CCRs. CCRs are collected and placed in a disposal facility licensed and inspected by EGLE. EGLE approves and reviews engineering plans, groundwater monitoring programs, closure plans and financial assurance for each of our disposal facilities. Staff conduct daily inspections of each facility, and third-party professional engineers conduct annual inspections of all facilities for safety and stability. Additionally, EGLE makes quarterly visits to conduct compliance inspections.

Fly ash handling systems at each of our five coal generating facilities were converted to dry systems by 2009, which greatly reduced wastewater. These efforts contribute to greater environmental protection.

We are committed to handling fly and bottom ash safely, including reusing ash in concrete and other materials when possible. Upon closure of CCR disposal facilities, we receive certification from EGLE that the facility has completed requirements from the approved closure plans. A 30-year post-closure care period is then initiated and includes inspecting the final cover, maintaining the vegetation on the cover and completing noted maintenance. Groundwater monitoring programs continue during this post-closure period to ensure compliance with water quality standards.

Some of the ash landfills will be closed by removing all the ash. Then the site is monitored until it meets closure requirements, and no additional monitoring is needed.

In addition to state regulations, CCRs are regulated by the federal Resource Conservation and Recovery Act. In compliance with this act, we have provided data related to the operation and maintenance of our CCR disposal facilities on the Consumers Energy website's [CCR Rule Compliance](#) page.

## Consumers Energy

All Waste in US/Short Tons	2022
Asbestos	190.32
Hazardous Waste	19.66
Liquid Industrial ByProduct (LIB) to Landfill	10.94
LIB to Wastewater Treatment Plant (WWTP)	11,940.25
Manufactured Gas Plant Impacted Waste	23.95
Non-hazardous Solids (mostly soils and trash)	30,196.58
PCB Impacted Waste	35.25
Wood	2,261.11
Incinerated	0
Total	44,678.05

## NorthStar Clean Energy

All Waste in US/Short Tons	2022
Asbestos	0
Hazardous Waste	0.02
Liquid Industrial ByProduct (LIB) to Landfill	409.00
LIB to Wastewater Treatment Plant (WWTP)	0
Manufactured Gas Plant Impacted Waste	0
Non-hazardous Solids	138.00
PCB Impacted Waste	0
Wood	0
Incinerated	0
Total	547.02

## CMS Energy

All Waste in US/Short Tons	2022
Asbestos	190.32
Hazardous Waste	19.68
Liquid Industrial ByProduct (LIB) to Landfill	419.94
LIB to Wastewater Treatment Plant (WWTP)	11,940.25
Manufactured Gas Plant Impacted Waste	23.95
Non-hazardous Solids (mostly soils and trash)	30,334.58
PCB Impacted Waste	35.25
Wood	2,261.11
Incinerated	0
Total	45,225.07

## 2022 Landfill Avoidance Data

**INCLUDED:** Antifreeze, batteries, electronics, empty drums, fuel or other recoverable petroleum products, lighting ballasts, lighting lamps, mercury and mercury contained in equipment, oil filters, paint, returnable cans and bottles, soil, used oil, cardboard, composting, glass, paper, plastic, single stream recycling, wood products, asphalt, concrete, wood chips, smart meters, drywall, metals, toner cartridges, paper, scrap metal, rubber goods, transformers, wood reels, coal, wood pallets, appliance recycling, recycled directional drilling muds, *Phragmites* and other reused materials diverted from the landfill.

### Consumers Energy

Landfill Avoidance Totals in US/ Short Tons	2022
Appliances	3,660.86
Asphalt and Drywall	151.18
Compost	105.02
Concrete	613.23
Electrical Equipment	4024.91
Gas Meters	215.60
Mixed Recycling	932.68
Office Paper	4.78
Oil Filters	1
Other	93.18
Plastic Gas Pipe	186.99
Rubber Goods	5.00
Scrap Metal	4,015.33
Soil Reuse	87,412.61
Toner Cartridge	1.09
Wood - Recycled	16,835.08
Recoverable Petroleum Product	72.47
Universal	183.61
Used Oil	1,420.65
Grand Total	119,935.28

### NorthStar Clean Energy

Landfill Avoidance Totals in US/Short Tons	2022
Universal	0.70
Mixed Recycling	2.13
Used Oil	6.00
Scrap Metal	124.68
Other	0.28
Grand Total	133.78



## CMS Energy

Landfill Avoidance Totals in US/Short Tons	2022
Appliances	3,660.86
Asphalt and Drywall	151.18
Compost	105.02
Concrete	613.23
Electrical Equipment	4,024.91
Gas Meters	215.60
Mixed Recycling	934.76
Office Paper	4.78
Oil Filters	1.00
Other	93.46
Plastic Gas Pipe	186.99
Rubber Goods	5.00
Scrap Metal	4,140.01
Soil Reuse	87,412.61
Toner Cartridge	1.09
Wood - Recycled	16,835.08
Recoverable Petroleum Product	72.47
Universal	184.31
Used Oil	1,426.65
Grand Total	120,069.01



## INCLUDED: Ash

- From 2015 to present, any new initiatives to market ash.
- Bottom ash reuse that was determined to be beneficial reuse by the regulatory body (EGLE).
- Ash that has been diverted from disposal through preparation for reuse/recycle.
- Combustion Ash is ash generated from biomass.

### Consumers Energy

Coal Ash	US/Short Tons	Metric Tons
Landfilled	348,864	316,484
Beneficially Reused	30,194	27,392
Total Generated	379,058	343,876

### NorthStar Clean Energy

Coal Ash	US/Short Tons	Metric Tons
Landfilled	27,817.50	25,235.61
Beneficially Reused	0	0
Total Generated	27,817.50	25,235.61
Combustion (from biomass) Ash	US/Short Tons	Metric Tons
Landfilled	22,092.76	20,042.21
Beneficially Reused	8,850.50	8,029.04
Total Generated	30,943.26	28,071
Total Coal and Combustion Ash	US/Short Tons	Metric Tons
Landfilled	49,910.26	45,277.82
Beneficially Reused	8,850.50	8,029.04
Total Generated	58,760.76	53,306.86

**CMS Energy**

<b>Coal Ash</b>	<b>US/Short Tons</b>	<b>Metric Tons</b>
Landfilled	376,681.50	341,719.61
Beneficially Reused	30,194.00	27,392.00
Total Generated	406,875.50	369,111.61
<b>Combustion Ash</b>	<b>US/Short Tons</b>	<b>Metric Tons</b>
Landfilled	22,092.76	20,042.21
Beneficially Reused	8,850.50	8,029.04
Total Generated	30,943.26	28,071.25
<b>Total Coal and Combustion Ash</b>	<b>US/Short Tons</b>	<b>Metric Tons</b>
Landfilled	398,774.26	361,762.82
Beneficially Reused	39,044.50	35,421.04
Total Generated	437,818.76	404,532.65

## 2022 Diversion Rate Data

**INCLUDED:** Nonhazardous solids, permanent and temporary trash, wood, hazardous waste, sandblast material, soil, decommissioning, gas related, drum waste, utility install spoils, concrete, asphalt, hydrovac spoils, drummed liquid process waste that is sent to landfill and anything that is not specifically excluded is included.

**EXCLUDED:** Ash, manufactured gas plant waste, asbestos containing materials, PCB impacted materials, bulk liquid industrial byproduct (bulk used oil, bulk recoverable petroleum product), all contaminated soil (spills, underground storage tank impacted waste, production impacted materials, substation waste, etc.), and customer appliances recycled through the appliance recycling program.

### Consumers Energy

Waste in US/Short Tons	2022
Hazardous Waste	19.66
LIB to Landfill	15.33
Non-hazardous Solids	1,040.17
Trash	5,442.47
Wood	2,261.11
Total	8,778.73

### Consumers Energy

Landfill Avoidance Totals in US/Short Tons	2022
Asphalt and Drywall	151.18
Compost	105.02
Concrete	613.23
Electrical Equipment	4024.91
Gas Meters	215.60
Mixed Recycling	932.63
Office Paper	4.78
Oil Filters	1.00
Other	93.18
Plastic Gas Pipe	186.99
Rubber Goods	5.00
Scrap Metal	4,015.33
Soil Reuse	87,412.61
Toner Cartridge	1.00
Wood - Recycled	16,834.83
Universal	183.61
Grand Total	114,780.99

**Benchmarking data criteria varies. The data in the following sections address the specific criteria assessed by various benchmarking entities and rating agencies. The percentages and totals change in accordance with the unique parameters collected by the various benchmarking entities. For the purposes of reporting, data is provided for Consumers Energy, NorthStar Clean Energy and the parent company, CMS Energy. Reporting data specifically included in this report for CDP, CDP Climate Scope 3 Emissions, ISS, Trucost and Corporate Knights.**

### UNITS

The two types of tons used in this report are the US short ton and the metric tonne (MT). They are both a measure of mass (weight). The short ton/US ton is 2,000 pounds (lbs.) and the MT is 2,204 lbs.

## CDP

CDP (formerly the Carbon Disclosure Project) is a not-for-profit charity that runs a global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts.

Each year CDP supports thousands of companies, cities, states and regions to measure and manage their risks and opportunities on climate change, water security and deforestation.

CDP takes the information supplied in its annual reporting process and scores companies and cities based on their journey through disclosure and towards environmental leadership. Through independent scoring methodology, they measure corporate and city progress and incentivize action on climate change, forests and water security.

The Metric Value below is the amount of waste counted in our goal reduced from the previous year in the reporting year. The waste goal covers only Consumers Energy material.

**INCLUDED:** Nonhazardous solids, permanent and temporary trash, wood, hazardous waste, sandblast material, soil, decommissioning, gas related, drum waste, utility install spoils, concrete, asphalt, hydrovac spoils, drummed liquid process waste that is sent to landfill and anything that is not specifically excluded is included.

**EXCLUDED:** Ash, manufactured gas plant waste, asbestos containing materials, PCB impacted materials, bulk liquid industrial byproduct, and all contaminated soil (spills, underground storage tank impacted waste and production impacted materials, etc.).

## Consumers Energy

Description	Waste US/Short Tons
Metric Value	190
Metric Numerator	190
Metric Denominator (intensity metric only)	NA
% Change from Previous Year	2%
Direction of Change	Decreased

### Please explain:

We focus on waste reduction as the combined efforts of reducing waste, improving reuse, and increasing recycling. That is why our 2022 goal focused on reducing waste generated and increasing the amount recycled. In 2022, the company set and surpassed a goal to increase the diversion rate, which is, the percentage of the total amount of waste recycled. We achieved a 93% diversion rate, in 2022, surpassing the target of 90% from the 2021 baseline of 88%. The intent of the goal is to encourage positive culture change. Therefore, the goal parameters do not include contaminated soils because that waste has specific management requirements with limited reuse and recycling options. Reducing our waste reduces the number of waste pickups and reduces the amount of time trucks are on the road picking up and disposing of waste. NorthStar Clean Energy is not included in this goal.

**INCLUDED:** Nonhazardous solids, permanent and temporary trash, wood, hazardous waste, sandblast material, soil, decommissioning, gas related, drum waste, utility install spoils, concrete, asphalt, hydrovac spoils, drummed liquid process waste that is sent to landfill, manufactured gas plant waste, asbestos containing materials, PCB impacted materials, bulk liquid industrial byproduct, and all contaminated soil (spills, underground storage tank impacted waste and production impacted materials, etc.). Anything that is not specifically excluded is included.

**EXCLUDED:** Does not include appliances (refrigerators and freezers recycling from customers) or bottom ash. NorthStar Clean Energy ash assumes 10% of total ash is bottom ash.

## Total Emissions

Metric Tons CO <sub>2</sub> e/ Short Ton Material	
Consumers Energy	27,287.52
NorthStar Clean Energy	1,400.31
CMS Energy	28,687.83

## NorthStar Clean Energy

Metric Tons CO <sub>2</sub> e/ Short Ton Material				
Emission Source	Short Tons	Landfill	Recycle	Total Emissions <sup>1</sup>
Recycled Oil – Mineral Oil	6.00		0.02	0.12
Recycled – Mixed Metals	125.00		0.23	28.75
Landfilled – Mixed MSW	547.02	0.52		284.45
Recycled – Mixed Recyclables	3.00		0.09	0.27
Landfilled Coal Ash	27,817.50	0.02		556.35
Landfilled Combustion Ash	22,093.00	0.02		441.86
Recycled Combustion Ash	8,851.00		0.01	88.51
Total				1,400.31

## Consumers Energy

Metric Tons CO <sub>2</sub> e/ Short Ton Material					
Emission Source	Short Tons	Landfill	Recycle	Compost	Total Emissions <sup>1</sup>
Recycled - Asphalt Concrete	135		0		0
Landfilled – Concrete	242.55	0.02			4.85
Recycled – Concrete	613.23	0.01			6.13
Recycled – Corrugated Containers	.05		0.11		0.01
Landfilled – Dimensional Lumber	2,261.11	0.17			384.39
Recycled – Dimensional Lumber	16,834.83		0.09		1,515.13
Recycled Oil – Mineral Oil	1,420.65		0.02		28.41
Recycled – Mixed Metals	4,230.98		0.23		973.13
Landfilled – Mixed MSW	30,703.41	0.52			15,965.77
Composted – Mixed Organics	105.02			0.17	17.85
Recycled – Mixed Paper (primarily from offices)	4.78		0.03		0.14
Recycled – Mixed Plastics	191.99		0.22		42.24
Recycled – Mixed Recyclables	92,737.64		0.09		8,346.39
Total					27,284.44

Emission Source	Cubic Meters	WWTP	Total Emissions <sup>1</sup>
WWTP – Water Treatment	11,305.58	0.000272	3.08

<b>Consumers Energy Total Emissions</b>	<b>27,287.52</b>
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# CDP Climate Scope 3 Emissions

## CMS Energy

Metric Tons CO <sub>2</sub> e/ Short Ton Material					
Emission Source	Short Tons	Landfill	Recycle	Compost	Total Emissions <sup>1</sup>
Recycled - Asphalt Concrete	135		0		0
Landfilled – Concrete	242.55	0.02			4.85
Recycled – Concrete	613.23	0.01			6.13
Recycled – Corrugated Containers	.05		0.11		0.01
Landfilled – Dimensional Lumber	2,261.11	0.17			384.39
Recycled – Dimensional Lumber	16,834.83		0.09		1,515.13
Recycled Oil – Mineral Oil	1,420.65		0.02		28.53
Recycled – Mixed Metals	4,230.98		0.23		1001.88
Landfilled – Mixed MSW	30,703.41	0.52			16,250.22
Composted – Mixed Organics	105.02			0.17	17.85
Recycled – Mixed Paper (primarily from offices)	4.78		0.03		0.14
Recycled – Mixed Plastics	191.99		0.22		42.24
Recycled – Mixed Recyclables	92,737.64		0.09		8,346.66
Landfilled Coal Ash	27,817.50	0.02			556.35
Landfilled Combustion Ash	22,093.00	0.02			441.86
Recycled Combustion Ash	8,851.00		0.01		88.51

Emission Source	Cubic Meters	WWTP	Total Emissions <sup>1</sup>
WWTP – Water Treatment	11,305.58	0.000272	3.08

<b>CMS Energy Total Emissions</b>	<b>28,687.83</b>
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ISS is the Institutional Shareholder Services group of companies which empowers investors and companies to build for long-term and sustainable growth by providing high-quality data, analytics insight. ISS benchmarks governance risk mitigation as a shareholder value enhancing measure.

### Waste Disposed

**INCLUDED:** Asbestos, manufactured gas plant waste, nonhazardous solids, PCB ballasts, PCB solids, *Phragmites*, soil, spill material, trash and wood.

**EXCLUDED:** Ash, hazardous waste and liquids.

### Landfill Avoidance

**INCLUDED:** Rubber goods, oil filters, toner cartridges, paper savings, plastic gas pipe, compost, recoverable fuel, burned organic material, universal waste, mixed recycling, used oil, asphalt, recycled wood, concrete, scrap metal, drilling fluids and reused soil.

**EXCLUDED:** Appliances (refrigerators and freezers recycling from customers) and ash.

## Consumers Energy

	US/Short Tons
Hazardous Waste	19.66
Non-hazardous waste	148,981.31
% of non-hazardous waste recycled	78%
% of non-hazardous waste incinerated	0
% of non-hazardous waste landfilled	22%

## NorthStar Clean Energy

	US/Short Tons
Hazardous Waste	0.02
Non-hazardous waste	271.54
% of non-hazardous waste recycled	49%
% of non-hazardous waste incinerated	0
% of non-hazardous waste landfilled	51%

## CMS Energy

	US/Short Tons
Hazardous Waste	19.68
Non-hazardous waste	149,193.00
% of non-hazardous waste recycled	78%
% of non-hazardous waste incinerated	0
% of non-hazardous waste landfilled	22%

## Trucost

Trucost is part of S&P Global. Trucost assesses risks related to climate change, natural resource constraints, and broader ESG factors.

### Waste Disposed

**INCLUDED:** Asbestos, manufactured gas plant waste, nonhazardous solids, PCB ballasts, PCB solids, *Phragmites*, soil, spill material, trash and wood.

**EXCLUDED:** Ash, hazardous waste and liquids.

### Landfill Avoidance

**INCLUDED:** Rubber goods, oil filters, toner cartridges, paper savings, plastic gas pipe, compost, recoverable fuel, burned organic material, universal waste, mixed recycling, used oil, asphalt, recycled wood, concrete, scrap metal, drilling fluids and reused soil.

**EXCLUDED:** Appliances (refrigerators and freezers recycling from customers) and ash.

## CMS Energy

	US/Short Tons	Metric Tonnes
Hazardous Waste	19.68	17.85
Landfill (Non-Hazardous) to Land	32,822.46	29,769.97
Recycled/Composted (Non-Hazardous) to Land	111,894.75	101,488.54

Corporate Knights is a sustainable-economy media and research company that produces global sustainability rankings, research reports and financial ratings based on corporate sustainability performance.

## Total Waste Generated

**INCLUDED:** Landfill waste: asbestos, hazardous, manufactured gas plant wastes, nonhazardous solid, PCB, trash, wood, landfill avoidance, ash landfilled, and ash beneficially reused. Total amount of solid waste produced in tonnes (includes non-hazardous waste + hazardous waste + waste sent for incineration. In addition to solid waste, tailings, waste rock, and ash are also counted for mining and fossil fuel sectors). Ash that has been diverted from disposal through preparation for reuse/recycle.

**EXCLUDED:** Liquids

## Total Waste Recycled

**INCLUDED:** Landfill avoidance: recycle, recoverable petroleum product, universal, used oil, and ash beneficially reused.

**EXCLUDED:** Appliances (refrigerators and freezers recycling from customers).

### Consumers Energy

	US/Short Tons
Total Waste Generated	528,058.98
Total Waste Recycled	146,468.11


### NorthStar Clean Energy

	US/Short Tons
Total Waste Generated	67,883.06
Total Waste Recycled	8,984.28

### CMS Energy

	US/Short Tons
Total Waste Generated	595,942.03
Total Waste Recycled	155,452.39

The United Nations Member States provided a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

Goal	Relevant ESG Material Issue(s)	Most Relevant Targets/Performance	Examples of Impact
 <p>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</p>	Business Conduct and Ethics	<p>In 2022, Consumers Energy set and surpassed a goal to increase the diversion rate, which is, the percentage of the total amount of waste recycled. We achieved a 93% diversion rate, surpassing the target of 90% from the 2021 baseline of 88%. The intent of the goal is to encourage positive culture change. Therefore, the goal parameters do not include contaminated soils because that waste has specific management requirements with limited reuse and recycling options. Reducing our waste reduces the number of waste pickups and the amount of time trucks are on the road picking up and disposing of waste. NorthStar Clean Energy is not included in this goal.</p>	<p><a href="#">Supply Chain Policy Statement</a></p> <p><a href="#">2021 CDP Climate Report</a></p> <p><a href="#">Waste Management</a></p> <p><a href="#">CMS Energy 2021 Waste Report</a></p>