

Waste and Landfill Avoidance Report

2022 Annual Report

CMS ENERGY

CMS ENERGY

Enterprises™

Consumers Energy

Count on Us®

This report covers the corporation's waste and diversion rate goals, 2021 year-end waste and landfill avoidance totals and data reported to benchmarking entities.

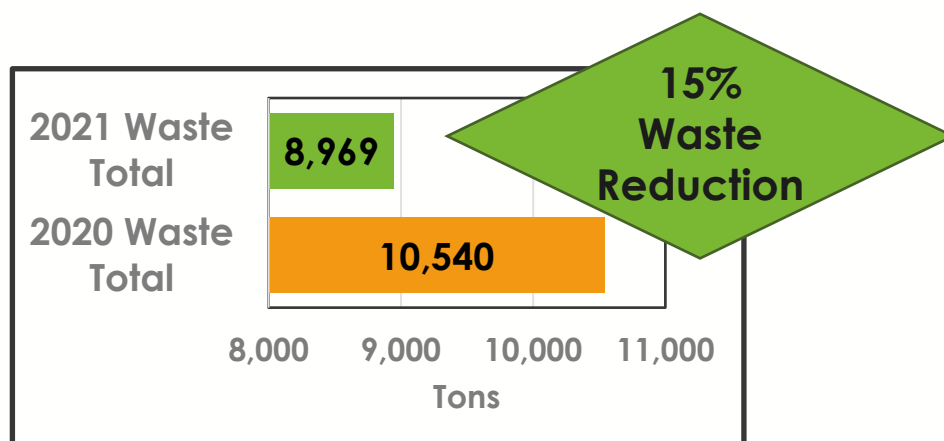
- ✓ **2021 Waste Reduction Goal**
- ✓ **Diversion Rate Improvement Goal**
- ✓ **Strategy and Major Milestones**
- ✓ **2021 Data**
- ✓ **2021 Benchmarking Data**



2021 Waste Reduction Goal

In 2021, we set and surpassed our 2021 goal to reduce the volume of waste going to landfills 10% from a 2020 baseline. We achieved this by reducing waste nearly 15% for a total reduction of 1,571 tons. This goal was built upon the previous five-year goal to reduce waste 35% set in 2018.

We also refined our goal to reduce waste streams that could be eliminated with recycling or waste reduction. The updated goal parameters no longer include contaminated soils because that waste has specific management requirements with limited reuse and recycling options.



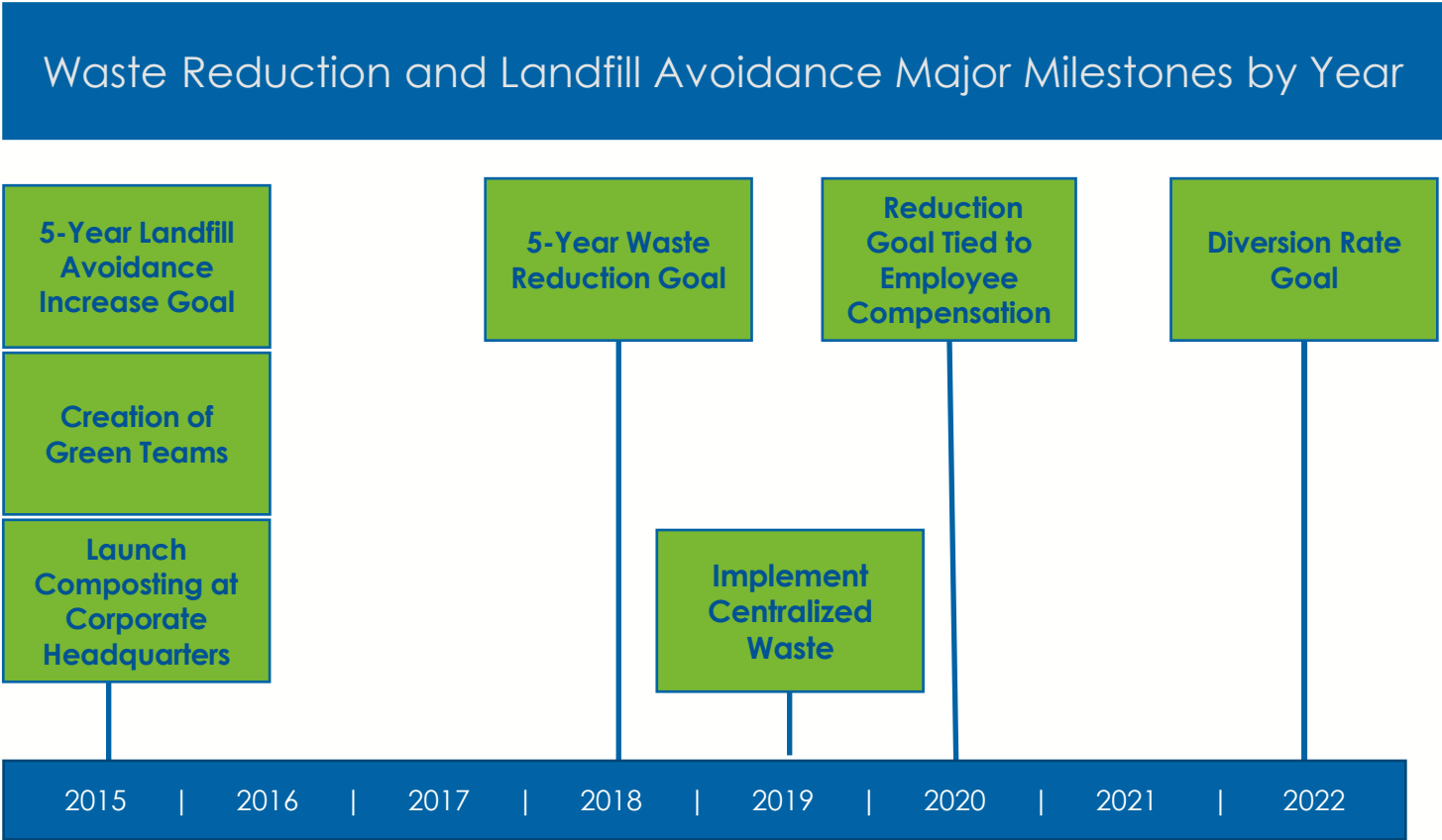
Diversion Rate Improvement Goal

We focus on waste reduction as the combined efforts of reducing waste, improving reuse, and increasing recycling. That is why we expanded our goal to focus on waste generated and the amount recycled. The percentage of the total amount of waste recycled is known as the diversion rate. Our 2022 goal is to increase the diversion rate to 90% from a 2021 baseline of 88%.



Major Milestones

We've achieved results with companywide strategies over the past eight years, including goal setting and creating a corporate culture focused on waste reduction.



Our 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 quantify the amount of trash we generate and how each facility handles waste.
- Recycle utility poles and rubber protective equipment used by line workers.



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.

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 in the energy generation process. We've worked with the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to properly, and will continue to do so, until we eliminate these residuals.

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. We are committed to handling fly and bottom ash safely, including reusing concrete and other materials when possible. These efforts contribute to greater environmental protection.

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.

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.

2021 Waste Data

Consumers Energy

All Waste in US/Short Tons	2021
Asbestos	1,143
Hazardous Waste	30
Non-hazardous Liquid	7,892
Manufactured Gas Plant Impacted Waste	172
Non-hazardous Solids (mostly soils and trash)	22,993
PCB Impacted Waste	99
Wood	2,087
Incinerated	0
Total	34,366

CMS Enterprises

All Waste in US/Short Tons	2021
Asbestos	0
Hazardous Waste	0.1
Non-hazardous Liquid	6
Manufactured Gas Plant Impacted Waste	0
Non-hazardous Solids	245
PCB Impacted Waste	0
Wood	0
Incinerated	0
Total	251

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, EIRP recycled directional drilling muds, Phragmites and other reused materials diverted from the landfill.

Ash:

- From 2015 to present, any new initiatives to market ash.
- Bottom ash reuse was determined beneficial by the regulatory body (EGLE).

2021 Ash Data

Consumers Energy

Coal Ash in US/Short Tons	2021
Landfilled	352,305
Beneficially Reused	18,061
Total Generated	381,937

CMS Enterprises

Combustion Ash in US/Short Tons	2021
Landfilled	47,497
Beneficially Reused	9,508
Total Generated	57,005

2021 Landfill Avoidance Data

Consumers Energy

Landfill Avoidance Totals in US Tons	2021
Appliances	4,123
Coal Ash	18,061
Compost	12
Concrete	345
Drilling Fluids	6,600
Drywall	13
Electrical Equipment	3581
Empty Drums	3
Material Removal	97
Mixed Recycling	928
Office Paper	10
Oil Filters	7
Plastic Gas Pipe	152
Rubber Goods	4
Scrap Metal	5,435
Scrap Tires	6
Soil Reuse	18,614
Toner Cartridge	1
Wood - Recycled	41,255
Recoverable Petroleum Product	373
Universal	209
Used Oil	1,369
Grand Total	101,199

CMS Enterprises

Landfill Avoidance Totals in US Tons	2021
Universal	0
Mixed Recycling	18
Used Oil	1.8
Scrap Metal	38
Grand Total	57

Benchmarking data criteria varies. The data in the following sections address the specific criteria assessed by the Dow Jones Sustainability Index, CDP Climate, CDP Climate Scope 3 Emissions, ISS, and Corporate Knights. The percentages and totals change in accordance with the unique parameters collected by the various benchmarking entities. For the purposes of benchmarking, data is provided for Consumers Energy, CMS Enterprises and the parent company, CMS Energy.

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.

Dow Jones Sustainability Index

Waste Disposed

INCLUDED: Asbestos, MGP, NH 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. Ash that has been diverted from disposal through preparation for reuse/recycle.

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

Dow Jones data is reported in metric tons. Ash percentage is based on ash data only. It does not include other non-hazardous solids, hazardous waste, or liquids.

Consumers Energy

Ash	Unit	FY 2018	FY 2019	FY 2020	FY 2021
Ash and gypsum waste					
Total ash and gypsum waste recycled/reused	Metric tonnes	39,741	67,820	17,877	26,882
Total ash and gypsum waste disposed	Metric tonnes	279,0960	228,985	195,215	319,606
Data coverage (as % of denominator)	Metric tonnes	100	100	100	100

CMS Enterprises

Ash	Unit	FY 2018	FY 2019	FY 2020	FY 2021
Ash and gypsum waste					
Total ash and gypsum waste recycled/reused	Metric tonnes			8,263	8,626
Total ash and gypsum waste disposed	Metric tonnes			34,728	43,089
Data coverage (as % of denominator)	Metric tonnes			100	100

CMS Energy: Consumers Energy and CMS Enterprises

Ash	Unit	FY 2018	FY 2019	FY 2020	FY 2021
Ash and gypsum waste					
Total ash and gypsum waste recycled/reused	Metric tonnes			26,140	35,507
Total ash and gypsum waste disposed	Metric tonnes			229,943	362,694
Data coverage (as % of denominator)	Metric tonnes			100	100

Dow Jones Sustainability Index: Waste

Consumers Energy

Waste Disposed	Unit	FY 2018	FY 2019	FY 2020	FY 2021
Total waste recycled/reused	Metric tonnes	72,615	45,059	171,035	91,806
Total waste disposed	Metric tonnes	48,947	65,075	93,476	31,176
- Waste incinerated without energy recovery	Metric tonnes				126
- Waste with unknown disposal method	Metric tonnes	48,947	65,075	93,476	31,050
Data coverage (as % of denominator)	Percentage of: MWh generated	90	90	90	90
Total hazardous waste disposed	Metric tonnes	22	24	23	27
- Hazardous waste incinerated without energy recovery	Metric tonnes	22	24	23	27
Data coverage (as % of denominator)	Percentage of: MWh generated	100	100	100	100

CMS Enterprises

Waste Disposed	Unit	FY 2018	FY 2019	FY 2020	FY 2021
Total waste recycled/reused	Metric tonnes	6,805	2,496	182	52
Total waste disposed	Metric tonnes	82	120	553	228
- Waste with unknown disposal method	Metric tonnes	82	120	553	228
Data coverage (as % of denominator)	Percentage of: MWh generated	90	90	90	90
Total hazardous waste disposed	Metric tonnes	0	0	0	0.1
- Hazardous waste with unknown disposal method	Metric tonnes	0	0	0	0.1
Data coverage (as % of denominator)	Percentage of: MWh generated	100	100	100	100

CMS Energy: Consumers Energy and CMS Enterprises

Waste Disposed	Unit	FY 2018	FY 2019	FY 2020	FY 2021
Total waste recycled/reused	Metric tonnes	79,420	47,555	171,217	91,858
Total waste disposed	Metric tonnes	49,029	65,195	94,051	31,404
- Waste with unknown disposal method	Metric tonnes	49,029	65,195	94,051	31.277
Data coverage (as % of denominator)	Percentage of: MWh generated	90	90	90	90
Total hazardous waste disposed	Metric tonnes	22	24	23	27
- Hazardous waste incinerated with energy recovery	Metric tonnes	22	24	23	26.9
- Hazardous waste with unknown disposal method	Metric tonnes				0.1
Data coverage (as % of denominator)	Percentage of: MWh generated	100	100	100	100

The metric value is the amount of waste counted in our goal reduced 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: 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
Metric Value	1,571
Metric Numerator	1,571
Metric Denominator (intensity metric only)	NA
% Change from Previous Year	15%
Direction of Change	Decreased

Please explain:

In 2021, the Company set and surpassed our waste goal that targets the reduction of hazardous waste and non-regulated wastes sent to landfill 10% by reducing those wastes 1,571 tons which is a 15% reduction from the 2020 baseline of 10,540 tons. This reduction contributed to the 44% waste reduction achieved in 2021 toward the five-year 35% waste reduction goal set in 2018 based on the 2017 baseline. 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. CMS Enterprises is not included in this goal.

CDP Climate Scope 3 Emissions

EXCLUDED: Does not include hazardous waste, liquids, toner cartridges, appliances (refrigerators and freezers recycling from customers), or bottom ash. CMS Enterprises ash assumes 10% of total ash is bottom ash.

Consumers Energy: Waste

Metric Tons CO ₂ e/ Short Ton Material				
2021 All Landfill Waste	Emission Material	US/Short Tons	Landfilled	Total Emissions ¹
Asbestos	Mixed MSW	1143	0.52	594
Hazardous waste		30		
Non-hazardous liquid		7892		
Manufactured gas plant impacted waste	Mixed MSW	172	0.52	90
Non-hazardous solids	Mixed MSW	22,943	0.52	11,930
PCB impacted waste	Mixed MSW	99	0.52	51
Wood	Dimensional lumber	2087	0.17	355
Incinerated		0		
Total				13,020

CMS Enterprises: Waste

Metric tons co ₂ e/ short ton material				
2021 All Landfill Waste	Emission material	US/Short Tons	Landfilled	Total Emissions
Asbestos	Mixed MSW	0	0.52	0
Hazardous waste		0.1		
Non-hazardous liquid		6		
Manufactured gas plant impacted waste	Mixed MSW	0	0.52	0
Non-hazardous solids	Mixed MSW	245	0.52	128
PCB impacted waste	Mixed MSW	0	0.52	0
Wood	Dimensional lumber	0	0.17	0
Incinerated		0		
Total				128

CMS Energy Waste: Consumers Energy and CMS Enterprises

Metric Tons CO ₂ e/ Short Ton Material				
2021 All Landfill Waste	Emission Material	US/Short Tons	Landfilled Emission Factor	Total Emission
Asbestos	Mixed MSW	1,143	0.52	594
Hazardous waste		30		
Non-hazardous liquid		7,898		
Manufactured gas plant impacted waste	Mixed MSW	172	0.52	90
Non-hazardous solids	Mixed MSW	23,188	0.52	12,058
PCB impacted waste	Mixed MSW	99	0.52	51
Wood	Dimensional lumber	2,087	0.17	355
Incinerated				
Total				13,148

CMS Enterprises: Landfill Avoidance

Metric Tons CO ₂ e/ Short Ton Material						
2021 Landfill Avoidance Totals	Emission Material	US/Short Tons	Recycle	Combusted	Compost	Total Emission
Universal	Mixed electronics	0	NA			NA
Mixed recycling	Mixed recyclables	18	0.09			2
Used oil		2				
Scrap metal	Mixed metal	38	0.23			9
Total						10

Consumers Energy: Landfill Avoidance

	Metric Tons CO ₂ e/ Short Ton Material					
2021 Landfill Avoidance Totals	Emission Material	US/Short Tons	Recycle	Combusted	Compost	Total Emissions
Rubber Goods		4				
Oil Filters	Mixed Metal	7	0.23			2
Toner Cartridges		1				
Paper Savings	Office Paper	10	0.02			0.2
Plastic Gas Pipe	HDPE	152	0.21			32
Compost	Mixed Organics	12			0.17	2
Recoverable Fuel		373				
Burned	Yard Trimmings	0		0.05		0
Universal	Mixed Electronics	209	NA			NA
Mixed Recycling	Mixed Recyclables	928	0.09			83
Used Oil		1,369				
Asphalt	Asphalt Concrete	0	0			0
Appliances		4,123				
Wood-Recycle	Dimensional Lumbar	41,255	0.09			3,713
Concrete	Concrete	345	0.01			3
Scrap Metal	Mixed Metal	5,435	0.23			1,250
Drilling Fluids		6,600				
Soil-Reuse		18,614	0			0
Total						5,086

CDP Climate Scope 3 Emissions

CMS Energy Landfill Avoidance: Consumers Energy and CMS Enterprises

Metric Tons CO ₂ e/ Short Ton Material						
2021 Landfill Avoidance Totals	Emission Material	US/Short Tons	Recycle	Combusted	Compost	Total Emissions
Rubber goods		4				
Oil filters	Mixed metal	7	0.23			2
Toner cartridges		1				
Paper savings	Office paper	10	0.02			0.2
Plastic gas pipe	HDPE	152	0.21			32
Compost	Mixed organics	12			0.17	2
Recoverable fuel		373				
Burned	Yard trimmings	0		0.05		0
Universal	Mixed electronics	209	NA			NA
Mixed recycling	Mixed recyclables	945	0.09			85
Used oil		1,371				
Asphalt	Asphalt concrete	0	-			0
Appliances		4,123				
Wood-recycle	Dimensional lumbar	41,255	0.09			3,713
Concrete	Concrete	345	0.01			3
Scrap metal	Mixed metal	5,473	0.23			1,259
Drilling fluids		6,600				
Soil-reuse		18,614				
Total						5,096

Consumers Energy: Ash

	Metric Tons CO ₂ e/ Short Ton Material				
2021 Combustion Ash	Emission Material	US/Short Tons	Recycled	Landfilled	Total Emissions
Landfilled	Fly ash	335,681		0.02	6,714
Beneficially reused	Fly ash	3,978	0.01		40
Total generated	Fly ash	339,659			6,753

EXCLUDED: Bottom ash is not included.

CMS Enterprises: Ash

	Metric Tons CO ₂ e/ Short Ton Material				
2021 Combustion Ash	Emission Material	US/Short Tons	Recycled	Landfilled	Total Emissions
Landfilled	Fly ash	42,747		0.02	855
Beneficially reused	Fly ash	8,557	0.01		86
Total generated	Fly ash	51,305			941

EXCLUDED: Fly ash data is less than total ash to account for an assumption of 10% bottom ash. CMS Enterprises ash is considered Scope 3 because they do not have or dispose in onsite landfills.

CMS Energy Ash: Consumers Energy and CMS Enterprises

	Metric Tons CO ₂ e/ Short Ton Material				
2021 Combustion Ash	Emission Material	US/Short Tons	Recycled	Landfilled	Total Emissions
Landfilled	Fly ash	378,428		0.02	7,569
Beneficially reused	Fly ash	12,535	0.01		125
Total generated	Fly ash	390,964			7,694

Waste Disposed

INCLUDED: Asbestos, MGP, NH 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.

Data is reported in short tons.

Consumers Energy

	US/Short Tons
Hazardous Waste	30
Non-hazardous waste	105,458
% of non-hazardous waste recycled	75%
% of non-hazardous waste incinerated	0
% of non-hazardous waste landfilled	25%

CMS Enterprises

	US/Short Tons
Hazardous Waste	0.1
Non-hazardous waste	302
% of non-hazardous waste recycled	19%
% of non-hazardous waste incinerated	0
% of non-hazardous waste landfilled	81%

CMS Energy: Consumers Energy and CMS Enterprises

	US/Short Tons
Hazardous Waste	30.1
Non-hazardous waste	105,760
% of non-hazardous waste recycled	75%
% of non-hazardous waste incinerated	0
% of non-hazardous waste landfilled	25%

Corporate Knights

Total Waste Generated

INCLUDED: Landfill waste: Asbestos, Hazardous, MGP, 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).

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	509,609
Total Waste Recycled	97,076

CMS Enterprises

	US/Short Tons
Total Waste Generated	57,250
Total Waste Recycled	9,565

CMS Energy: Consumers Energy and CMS Enterprises

	US/Short Tons
Total Waste Generated	566,859
Total Waste Recycled	106,641