PREVENTING AND MANAGING WASTE

For decades, we have followed best practices to responsibly reduce, reuse or dispose of our waste and surplus materials.

Company-wide, our largest waste streams come from the production and delivery of energy — our operations. This includes the ash that is left behind after generating electricity with coal, as well as the materials and equipment that are used or discarded from the construction, maintenance or repair of power lines, pipelines, plants and other facilities.

The best way to manage waste is to prevent it from being generated. We try to purchase product alternatives that eliminate waste and seek practices that will reduce waste while saving time and money too, helping to keep energy costs low for customers. For instance, the electrical cable delivered to our power line projects is premeasured and cut to minimize waste on the job and increase productivity. We also look for opportunities to recycle, reuse or sell surplus materials and waste as appropriate and allowed.

When we must dispose of waste, we take steps to ensure that it is safely and properly disposed. This requires that our employees have the right training and follow the proper procedures. Additionally, we only use facilities certified to dispose of the types of wastes we generate.

HIGHLIGHTS

- We continue to produce less coal ash as we transition to cleaner energy sources, with our generating plants producing 47% less coal ash in 2019, compared to 2005. Since 2015, we have closed over half our active impoundments or ponds that we previously needed to store or dispose of coal ash.

- Approximately 18% of the coal ash our plants produced was reused in 2019, including 100% of the coal ash from our two Texas generating plants. The material provides an alternative to using natural resources in products, such as cement or roofing shingles.

- Xcel Energy demolished the Benson Power Plant in Minnesota and sold the property to the City of Benson for redevelopment in 2019. We were able to offset over 90% of the demolition project's cost through investment recovery efforts. We redeployed or resold equipment, recycled more than 8,900 tons of scrap metal and delivered about 790 loads of crushed concrete to gravel pits for reuse.

- In total, we recycled nearly 29,000 tons of material from our operations in 2019, including nearly 25,000 tons of wire and scrap metal.

- We disposed of almost 10,000 tons of regulated waste from our operations in 2019, including 56 tons of hazardous waste.

COAL ASH MANAGEMENT

Coal-fueled power plants produce coal combustion residuals (CCR) or byproducts commonly referred to as coal ash. Our coal plants produced 47% less coal ash in 2019 compared to 2005 — a trend we expect to continue as we transition to cleaner sources of energy.

Our coal ash is either beneficially reused or disposed at permitted third-party landfills or at our company-operated facilities. We currently operate nine active coal ash storage or disposal facilities, including three impoundments or ponds and six landfills. In recent years, we have closed 15 ponds that were no longer used. We removed the ash from these ponds and are now completing the required groundwater monitoring that is part of the closure process. We also continue to make improvements to existing facilities. For instance, at the Sherco Generating Plant in Minnesota, we are constructing a new pond with a synthetic liner to replace an existing clay-lined pond, which is scheduled to end its operations in late 2020.

Nearly all our coal plants have systems that collect ash prior to reuse, storage or disposal. We have only three impoundments used to store or dispose of ash in a wet condition. Two of these impoundments EPA classifies as small — one is less than three acres and the other is about 18 acres. Both are used to temporarily store ash until it is either beneficially used or transferred to a facility for disposal. The third impoundment is a 100-acre coal ash impoundment, which was constructed at the Sherco Plant using state-of-the-art standards. As part of a nationwide effort in 2009, EPA inspected this facility and determined it meets stringent safety requirements.

Throughout our system, we try to reuse coal ash for beneficial purposes whenever possible. In 2019, 18% of the coal ash produced at our plants was used for concrete products, roadbed material, soil stabilization, engineered-fill material and more, helping to avoid the use of natural resources in these products. When we sell coal ash to third parties, our contracts allow only encapsulated beneficial use or un-encapsulated beneficial use in quantities less than 12,400 tons for non-roadway applications in accordance with applicable regulations.

Generally, the amount of coal ash we reuse has declined in recent years. As we install and operate new emission controls at our plants, such as scrubbers and activated carbon for controlling mercury emissions, the ash composition changes, making it potentially less acceptable for beneficial use.

More detailed information on our coal ash management practices is available on xcelenergy.com.

Coal Ash Summary (estimated in tons)

	2017		2018		2019	
	Produced	**Reused**	**Produced**	**Reused**	**Produced**	**Reused**
Colorado	731,740	91,996	987,652	37,510	704,134	59,163
Southwest	289,391	289,391	207,092	207,092	175,354	175,354
Upper Midwest	649,662	43,531	775,237	121,675	576,234	30,945
TOTAL	**1,670,793**	**424,918**	**1,969,981**	**366,277**	**1,455,722**	**265,462**

Meeting the EPA's Coal Combustion Residuals Rule

The U.S Environmental Protection Agency's final rule for coal combustion residuals (CCR Rule) became effective in October 2015. The CCR Rule regulates coal ash as a non-hazardous waste under Subtitle D of the Resource Conservation and Recovery Act (RCRA-D). It establishes minimum national standards for the design, operation and closure of landfills and surface impoundments. Beneficial use of coal ash as defined in the rule is exempted.

Additionally, the states where we operate have regulated the management of coal ash for decades, with rules that specify construction standards and define operational requirements for coal ash storage and disposal facilities. We also operate in several arid states where groundwater is scarce or at a greater depth, a favorable geologic condition that reduces the risk of impacts from coal ash disposal.

The CCR rule has undergone several changes since it became effective in 2015. We expect that in 2020 EPA will initiate additional rulemaking initiatives to modify the rule further. Regardless of anticipated changes, Xcel Energy's facilities are well positioned to meet the CCR Rule without significant impacts to operations or cost.

The CCR Rule provides a protocol for monitoring and protecting groundwater around applicable coal ash facilities. On January 31, 2020, we completed our third annual groundwater monitoring reports as required by the CCR Rule's protocol. The groundwater monitored at Xcel Energy facilities is from designated monitoring wells located on the property of coal-fueled power plants, directly adjacent to the coal ash facilities.

The results show that all our coal ash facilities meet groundwater protection standards except for two facilities located in Colorado. Results from both facilities indicate there is no impact to local drinking water. However, we have initiated the assessment of corrective measures process as the CCR rule requires. We have also notified stakeholders, published monitoring reports to our website and are currently evaluating alternatives for corrective measures at these two sites.

Additional details and reports associated with all Xcel Energy coal ash facilities under the CCR Rule are available at Coal Ash Management on xcelenenrgy.com.

OTHER OPERATIONAL WASTES

Whether at our power plants, services centers, substations or with crews in the field, we follow best practices to manage waste. This begins by trying to prevent waste as much as possible and then having the right processes in place to responsibly dispose of waste that is generated.

Restricting Product Use

We continue to manage a list of targeted ingredients to avoid using in our operations. The list is comprised of substances that are highly regulated because of their potential environmental impacts or health concerns. While these products are not entirely banned, there use is restricted when viable alternatives exist.

Over the decades through implementation of efforts such as the targeted ingredients list and promoting the proper use and storage of products, we have significantly reduced hazardous waste quantities.

Material Recycling

Xcel Energy has an Investment Recovery group that optimizes the recycling and reuse of surplus equipment, salvage and waste materials generated as a result of serving our customers. Investment Recovery staff work closely with facility and project management to find productive outlets for materials that have a secondary value. Not only is the recovery of these materials good for the environment, but it can help reduce costs too, in some instances substantially, as in the case of the Benson Power Plant demolition project in 2019, in which over 90% of the project costs were offset by proceeds from equipment sales and scrap metal recycling.

Unfortunately, global market conditions have had a negative impact on the recyclables market for the past several years. In 2019, we continued to see a decline in the recycling markets for metal, cardboard and plastic. The vendors we choose to recycle materials are selected through a competitive bid process. Because some recyclable wastes, such as oil or batteries, could have an adverse environmental impact if mismanaged, vendors for these recyclables are reviewed using the same approved vendor program that we use for waste disposal.

Recycling Summary (in Tons)

	2017	2018	2019
Cardboard	72	21	17
Batteries[1]	49	76	36
Plastic[2]	72	2	0
Scrap metal	13,390	18,337	24,754
Used oil	3,635	4,320	4,171
TOTAL	**17,218**	**22,756**	**28,978**

1 Large lead acid batteries recycled for reclaiming lead. This waste is also included in the total for universal wastes that were generated by the company.

2 Due to the closure of our primary vendor for plastic recycling, all scrap plastic pipe generated went to the landfill for disposal.

We provide information on the recycling and disposal of wind turbines in the Renewable Energy section of the Corporate Responsibility Report.

Collection and Disposal of Regulated Wastes

Properly managing our waste streams is a shared responsibility among all Xcel Energy employees. The Environmental Services department is responsible for the company's waste management program, which focuses on ensuring regulatory compliance, minimizing waste streams and reducing environmental impacts. Our largest facilities have staff who work closely with Environmental Services and are specifically trained to manage waste for their facilities. Other individuals doing work in the field or at facilities with potential to generate regulated waste routinely receive training on the company's waste management program. In addition, Environmental Services staff conducts regular site visits and develops job aides to help employees understand their waste management responsibilities.

At several locations, Xcel Energy has centralized facilities to aggregate specific wastes prior to shipping for disposal. We operate a Hazardous Waste Transfer Storage Disposal Facility (TSDF) in Minneapolis that is licensed by EPA and the Minnesota Pollution Control Agency. It is permitted as a long-term polychlorinated biphenyl (PCB) storage facility and has a licensed Very Small Quantity Generator (VSQG) program that provides additional waste management flexibility. Wastes from our Upper Midwest operations are aggregated and temporarily stored here, including:

- Common non-hazardous wastes, such as used oil and oil contaminated materials
- Universal wastes, such batteries and lamps
- PCB-related wastes from electrical equipment and contaminated debris
- Hazardous waste streams, including paint and expired chemicals

In Colorado, we operate a centrally located facility to store PCB-related wastes, and our Materials Distribution Center in Henderson is used to consolidate common non-hazardous and universal wastes. Together, these facilities help in properly managing regulated waste streams while also lowering shipping and disposal costs.

To dispose of waste, we have an approved waste vendor program that helps to minimize risks through the exclusive use of vendors that are systematically evaluated and pre-approved. A team comprised of Environmental Services, Supply Chain, Legal, Risk Management and Investment Recovery meets quarterly to discuss the program and any relevant vendor issues. Vendors contracted to manage higher risk waste materials, including hazardous waste, are audited on a routine basis.

Waste Disposition Summary
Our waste generation in 2019 reflects normal operating conditions. Waste from non-routine remediation projects is excluded from the totals below. The regulated wastes reported here are disposed at licensed facilities that are vetted to ensure they are properly insured, financially stable and have strong compliance records.

Waste Disposition Summary (in Tons)

	2017	2018	2019
Asbestos	448	326	1,305
Hazardous	50	47	56
PCB related[1]	415	670	550
Special[2]	8,363	8,716	7,955
Universal[3]	112	163	81
TOTAL	**9,388**	**9,922**	**9,947**

1 PCBs (polychlorinated biphenyls) are chemicals controlled under the Toxic Substances Control Act. PCBs were historically used in transformer oil.

2 Special wastes include oily materials recovered from our operations, such as rags, filters, soil and water, as well as other non-hazardous industrial wastes including treated wood, spent resin, non-hazardous liquids and electronics.

3 Universal waste includes regulated waste such as fluorescent light bulbs, rechargeable batteries and mercury switches.

PCB Phase-out Effort
We have been phasing out equipment that contains PCBs from our transmission and distribution system for many years. The Toxic Substances Control Act of 1979 defines PCB equipment as equipment containing oil having a PCB concentration of 500 parts per million (ppm) or more, while PCB-contaminated equipment has oil with a PCB concentration of 50 to 499 ppm.

Xcel Energy has made dedicated efforts to remove all known PCB equipment from its system, including transformers, capacitors and other regulated categories of equipment. This equipment was targeted, removed and replaced with non-PCB equipment. In many cases, we retrofitted systems to accommodate the removal and replacement of regulated equipment with non-PCB equipment.

Other phase-out efforts include the replacement of regulated equipment with non-PCB equipment as systems are upgraded. Any regulated equipment removed from the field is disposed and replaced with non-PCB equipment unless there are extenuating circumstances associated with the design or procurement of the equipment. Xcel Energy personnel are trained on PCB regulations and the proper identification, handling, removal and disposal of this equipment to facilitate phase-out efforts. Aside from PCBs that are occasionally discovered during facility upgrade projects in small sealed or previously untested specialized equipment, most of the PCB and PCB-contaminated equipment left on our system is the result of cross-contamination occurring during manufacturing or maintenance activities prior to or shortly after the adoption of the Toxic Substances Control Act

PCB Contaminated Equipment and Oil Removed from the Xcel Energy System			
	2017	2018	2019
PCB and PCB-contaminated oil (gallons disposed)	36,632	33,311	22,085
PCB and PCB-contaminated equipment (units removed from service)	815	1,235	830

Legacy Manufactured Gas Plant Projects
In the late1800s until the mid-1900s, gas was manufactured using coal, oil and petroleum. It was used as natural gas is today, primarily for heating, cooking and street lighting. EPA estimates that thousands of manufactured gas plants or MGP facilities operated in the United States between 1815 and 1960. They were owned by municipalities and corporations, including predecessor companies to today's natural gas and electric utilities. MGPs produced a variety of wastes and byproducts, including coal tar. Some of the waste and byproducts were sold for reuse or disposed off-site, and some were left at plant sites.

Given the extensive history of our operating companies — going back more than 100 years — Xcel Energy has inherited legacy MGP sites. All the plant facilities were closed and dismantled many years ago, and some of the properties where MGPs once operated have been sold. Over the years, Xcel Energy has worked cooperatively with environmental agencies and communities to successfully investigate and remediate former MGP sites when necessary.

Ashland Shoreline Cleanup
The lakefront along Lake Superior in Ashland, Wisconsin, was one of the busiest industrial ports in the United States in the late 1800s and early 1900s. Lumber, mining, railroad and utility companies used the shoreline for operations, and later a municipal-owned dump and wastewater-treatment facility operated along the shoreline. From 1885 to 1947, a company, which Xcel Energy later acquired, operated a manufactured gas plant in the area that provided gas for street lighting and businesses.

With this history of heavy industrial operations, the site was listed as Superfund site in the early 2000s. In 2010, the EPA established methods to remediate or remove impacted soils, sediments, debris, groundwater and waste wood from the site. Xcel Energy, because it acquired the company that operated the MGP, was given responsibility to design and complete the significant cleanup effort, which lasted from 2012 to 2019.

The more than $200 million project was done under the supervision of EPA and the Wisconsin Department of Natural Resources. It involved more than 460,000 hours of work and employed best-in-class techniques, innovative technologies and a first-of-its-kind strategy to safely remove impacted lake sediments.

Working closely with state and federal agencies, the project was environmentally sound and economically balanced. Throughout the effort, we maintained strong community relations with the city, customers, elected officials and local Native American tribes. With the project completed, Ashland plans to move forward with waterfront redevelopment.