



# MANAGING WATER USE

Water is an important consideration in our clean energy transition. As we rely less on coal and more on wind and solar power, we can reduce water use.

With global and regional concerns over future water resources, protecting water quality and conservation are increasingly greater priorities for us. Our thermal generating plants require water to cool equipment and power steam turbines that produce electricity, while our hydroelectric plants use the power of water to generate electricity. To make sure the water these plants use and return to local waterways is safe and meets the discharge limits contained in their Clean Water Act permits, we continually monitor and evaluate plant systems and processes.

In the more arid Western and Southwestern regions where we operate, carefully managing our water supply is especially important given challenges we face in dry years and concerns over drought. Because of this, we have strategic water resource plans to forecast, model and manage our water needs in these regions for decades to come.

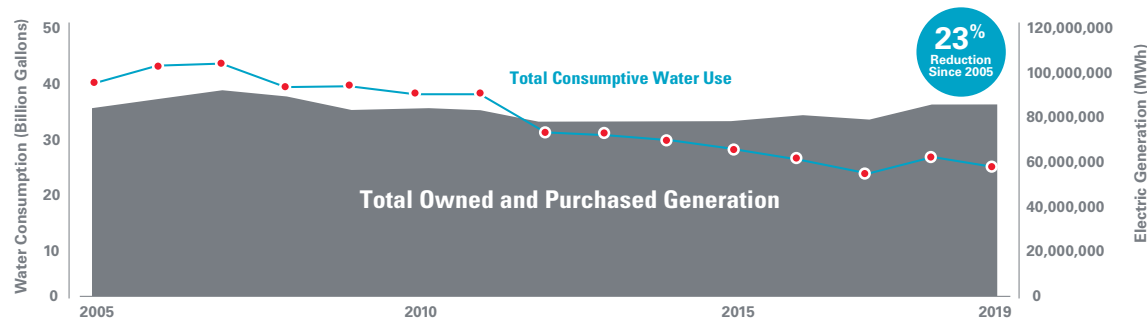
As competition for water increases and weather patterns change, our water resources will become more stressed. We understand that water is a fundamental, shared resource and is vital to the growth and development of our communities and to other industries, agriculture and ecosystems. That is why we continue to work cooperatively with our communities and states to secure responsible supply options and to save fresh water where we can.



# HIGHLIGHTS

- From 2005 to 2019, we reduced water consumption approximately 23% from electricity production, including the electricity we generate and purchase. While water consumption has declined, electricity production has remained relatively the same during that same period. As we retire coal units, the water we contract or permit for is released back to the owner or water authority so others can use it. For water rights that our company holds, we are exploring different opportunities to use that water in our operations or to benefit customers.
- We withdrew approximately 625 billion gallons of water, including municipal wastewater or effluent, to generate electricity at Xcel Energy thermal electric and hydroelectric generating plants in 2019. From these withdrawals, our facilities consumed approximately 24 billion gallons of water and returned approximately 601 billion gallons (96%) to the original water source.
- Our Upper Midwest thermal plants use open-loop or once-through cooling where water is continuously withdrawn, used and directly returned. Although water withdrawals are higher with this type of cooling system, consumption is lower. Our plants with open-loop cooling systems return about 99% of the water they withdraw to its original source.
- Our thermal plants in Colorado, Texas and New Mexico use closed-loop cooling which requires less water to operate efficiently and minimizes fresh water withdrawals by recirculating water multiple times within the system — up to 25 times at some plants.
- Since the Tolk Generating Plant in Texas began operating in the 1980s, it has relied on groundwater from the Ogallala Aquifer. Over the years, the water table has dropped significantly, putting increasing pressure on the many users of the aquifer, including Tolk. It is a unique situation within our generating plant fleet. In 2019, we started reducing the operation of Tolk's two units to minimum load during off-peak times to conserve water and will continue this through 2020. Beginning in 2021, the plant will be idled during off-peak, winter months through 2032, when we plan to retire Tolk, pending regulatory approval.
- Over the past 38 years, we have saved over 200 billion gallons of freshwater by pioneering the use of treated municipal effluent to cool the Nichols-Harrington and Jones generating plants in Texas — enough water to nearly fill nearby Lake Meredith.

**Xcel Energy is reducing water consumption associated with electricity production, including the electricity we generate and purchase.**



## WATER QUALITY

The Hayden and Pawnee plants in Colorado and most of our plants in Texas and New Mexico are zero-discharge facilities, which means no process water is released from the plant sites. Instead, waste water is disposed through evaporation ponds. At the Harrington Plant in Texas, farmers reuse waste water to grow crops on the plant property.

In the Upper Midwest where our plants continuously withdraw and return water to nearby waterways, we systematically treat, monitor and analyze the water to ensure our plants meet discharge requirements and protect fish and other aquatic life.

We report water compliance results in the Environmental Management section of the Corporate Responsibility Report.

## WATER SUPPLY

### Thermal Operations in Colorado and the Southwest

In the semi-arid and arid states where we operate — Colorado, New Mexico and Texas — we have strategic water resource plans that are updated annually to reflect our current operational requirements, local climate conditions and water use. Throughout the year we conduct a variety of activities to accurately predict and plan for future water supplies, which include:

- Forecasting plant water requirements based on anticipated electric generation
- Accounting for the water we need and use
- Monitoring snowpack reports
- Studying stream flow forecasts, seasonal climate projections and changes to the Ogallala aquifer — the primary aquifer that underlies much of the region in Texas and New Mexico that we serve

We acquire water for our thermal and hydroelectric plants through water rights and other agreements. Our integrated portfolio of water supply resources includes owned or self-supplied water rights, reservoir storage, groundwater rights and a number of other supplies, such as municipal and recycled water supplies. We own water supplies dedicated for our own use, and in Colorado, these water rights are available depending on regional water supply conditions in accordance with the state's prior appropriation system. Our portfolio also includes water from geographically diverse areas, including water imported from other basins. This diversity is critical for maintaining a resilient, reliable water supply in the arid, climatically variable western United States.



We have expended significant resources to improve our water supply and the resiliency of our systems. Other suppliers that we do business with have responded similarly, taking steps to improve their water supplies and adopt drought response plans for ensuring they meet their municipal and industrial water supply obligations.

Finally, we use recycled water or treated municipal effluent where available and feasible, including at the Cherokee, Harrington, Jones and Nichols plants. The practice minimizes the competition between water needs for power generation and needs for environmental, recreational, municipal or other industrial uses. Recycled water use has the added benefit of increasing the reliability of our water supply because it is virtually drought proof and preserves billions of gallons of fresh water.

### Thermal Operations in the Upper Midwest

In the Upper Midwest, water is more abundant for our thermal plants to use once-through cooling where they are permitted to withdraw and return water to nearby rivers and other waterways. While once-through cooling helps to minimize water consumption, we still take a strategic approach to water use in these areas by monitoring weather patterns and using meteorological forecasting models to predict and ensure an adequate water supply during times when unusually dry conditions are likely.

During rare dry periods, we evaluate the use of alternative cooling options for each facility and implement prudent, temporary measures to provide supplemental thermal cooling. In times of energy emergencies, our permits have provisions that allow some plant operating flexibility, along with additional environmental monitoring requirements to ensure the protection of fish and other aquatic life.

<b>2019 Water Use by Source at Xcel Energy Owned Thermal Plants (Billions of Gallons)</b>			
<b>Source</b>	<b>Withdrawn</b>	<b>Consumed</b>	<b>Returned</b>
South Platte River Basin	*6.50	5.45	1.05
Arkansas River Basin	*3.97	3.23	0.74
Yampa River Basin	1.54	1.54	0.00
<b>Colorado Total</b>	<b>12.01</b>	<b>10.22</b>	<b>1.79</b>
Ogallala Aquifer	3.16	2.80	0.40
Treated Municipal Effluent (Lubbock, Amarillo)	4.58	3.69	0.85
<b>Southwest Total</b>	<b>7.74</b>	<b>6.49</b>	<b>1.25</b>
St. Croix River	121.78	0.0	121.78
Lake Superior	10.24	0.0	10.24
Mississippi River	425.14	7.16	417.98
Minnesota River	47.60	0.0	47.6
<b>Upper Midwest Total</b>	<b>**604.76</b>	<b>7.16</b>	<b>597.60</b>
<b>XCEL ENERGY TOTAL</b>	<b>624.51</b>	<b>23.87</b>	<b>600.64</b>

\*Includes trans-basin diversions

\*\*Does not include groundwater from these locations

### Hydroelectric Operations

Xcel Energy operates 26 hydroelectric plants, including six in Colorado, one in Minnesota and 19 in Wisconsin, with enough capacity to power more than 280,000 homes. Although these plants use water to produce electricity, the only water loss is through natural evaporation from reservoirs. We work with environmental and wildlife agencies to ensure plans are in place for monitoring watering quality, protecting aquatic life, ensuring minimum stream flow, preventing erosion, and controlling noxious weeds and other invasive plants. Many of our hydroelectric plants offer public recreational opportunities and some are stocked with fish.

**Xcel Energy's hydroelectric plants operate on the following waterways, many of which are open to public recreation.**

Colorado	Minnesota	Wisconsin
Lower Clear Creek	Mississippi River	Chippewa River
South Fork Arkansas River		Apple River
South Clear Creek		Red Cedar River
Colorado River		Namekagon River
Animas River and Tributaries		Montreal River
San Miguel River and Tributaries		White River
		Flambeau River
		St. Croix River

### MEETING MUTUAL WATER NEEDS

Planning for and managing future water supply is essential for the states and communities we serve. We actively participate in these efforts to provide expertise and solutions, as well as to plan for our own water needs. The following are examples of our engagement and some of the innovative partnerships and agreements we have in place.

- Our Water Resources staff is actively engaged in the ongoing Colorado Water Plan process. They participate on volunteer boards and technical working groups, serve on the board of water-user groups working to meet Colorado's obligations under Endangered Species Recovery programs, and participate in other water-user groups working to craft policy and legislation to better adapt Colorado's water supplies to changing conditions. For decades, they have participated on boards and as officers overseeing nine ditch companies in Colorado where the company owns significant water rights. Through these organizations, conflicts involving water are often identified and amicably resolved.
- We own very senior water rights on the Colorado River that are used to operate the Shoshone Hydroelectric Generating Plant. To help meet water needs within the city of Denver, along the Front Range and for some users on the Western slope, we established an agreement in 2006 to "relax" a portion of our water requirements for Shoshone during dry years. Colorado experienced below-average moisture in 2013, which is the most recent year that we executed on the agreement. We reduced Shoshone's water use by more than half and allowed water to be stored for critical uses, benefitting users throughout the state.
- We have agreements with the cities of Longmont and Westminster in Colorado to exchange high quality water under our water rights with their lowest quality water or effluent, which we use at our area power plants. This is similar to a practice we pioneered in Texas where we use recycled municipal effluent for cooling at our power plants.
- Colorado farmers typically lack the full water supply they need to produce marketable crops during dry years. Through a mutually beneficial agreement, we buy limited quantities of water that farmers have available during these difficult periods and use it in our power plants, helping to compensate and financially support farmers.
- In the Southwest, our Water Resources staff serves on regional groundwater planning committees to better manage critical resources like the Ogallala Aquifer which is the region's primary water supply and underlies much of our service area in the region.
- Xcel Energy is a member of the Minnesota Sustainable Growth Coalition, a business-led partnership of approximately 30 businesses and organizations that work to promote a circular economy in the state. The coalition focuses on energy, water and waste issues to optimize use of resources, minimize waste and conserve resources. In the water area, the coalition is working on "greening grey infrastructure" or promoting infrastructure and practices designed to mimic the natural water cycle.