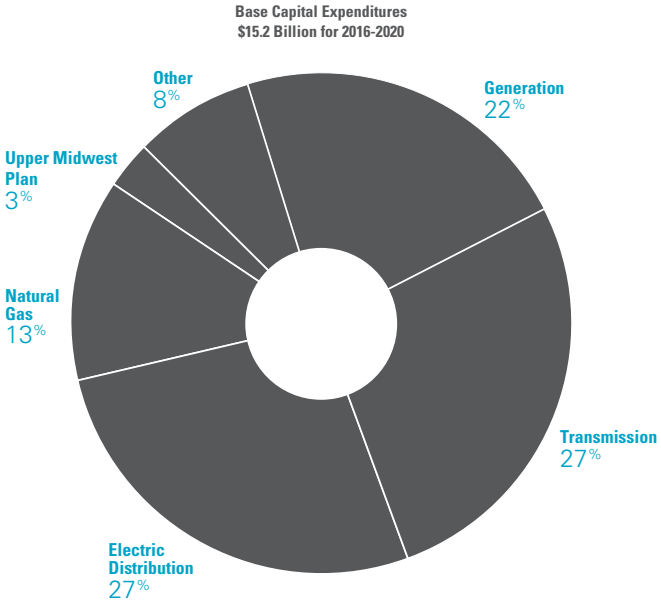
Reliable and Safe Energy Service

Xcel Energy is investing in projects that offer the most value for customers, while strengthening the reliability, safety and security of our systems.



Our Approach

Our customers depend on us to provide the energy they need whenever they flip a light switch, turn on the stove or adjust the thermostat on a cold winter night. We never lose sight of this fact and are taking steps to ensure that our reliability ranks among the best in the country, now and well into the future. In 2015, Xcel Energy customers on average had electricity service 99.9 percent of the time. When a major storm hits, we are prepared to respond swiftly and effectively to restore power, as has been demonstrated time and again in our own jurisdictions, as well as in other parts of the country where we have responded through mutual-aid agreements. As we invest in strengthening and upgrading our infrastructure for the future, Xcel Energy always considers projects that will provide the best overall value for customers and the communities we serve. This includes diversifying our energy supply, making sure that we provide electricity from a mix of resources to ensure system reliability while managing the cost, environmental impact and ensuring we are not too heavily dependent on any single energy source.

Electricity Generation

Xcel Energy produces and purchases electricity from a diverse mix of energy sources, including coal, natural gas, nuclear and renewable power sources. Through a number of projects underway, we continue to further diversify our energy supply and upgrade existing power plants, as we reduce emissions and transition to cleaner energy sources for the future. This includes retiring and replacing some of our aging coal-fueled power plants with cleaner natural gas generation. From 2005 to 2018, Xcel Energy will retire about 25 percent of the coal-fueled generating capacity that we own.

In 2015, the Black Dog Generating Station in Burnsville, Minn., received its final coal delivery and began its transition to a cleaner, more efficient natural gas facility. Preparation for a new combustion turbine gas unit at the site is now underway and is expected to be operational by early 2018.

In Colorado, we achieved two significant milestones in 2015 as part of the Clean Air-Clean Jobs project that is transforming our coal-fueled fleet of generating plants. We retired a coal unit at the Cherokee Generating Station in Denver and completed construction of a new combined-cycle natural gas facility at the plant site.

In addition, the Colorado Public Utilities Commission approved our plan to upgrade the Cabin Creek Hydroelectric Station—a unique pumped-storage facility originally installed in 1967 high in the mountains near Georgetown, Colo. The project will enable Cabin Creek to continue providing reliable and economic power to Colorado customers for an additional 25 years, while sustaining its role in balancing system requirements and accommodating variable energy sources such as wind.

Xcel Energy Owned Generating Plants

2020 (5-year)	Plants	Units	Net Dependable Capacity in Megawatts (MW)
Coal	**9**	**19**	**6,994**
Colorado	5	10	2,519
Upper Midwest	2	4	2,390
Southwest	2	5	2,085
Natural Gas	**23**	**69**	**7,343**
Colorado	7	20	2,562
Upper Midwest	9	29	2,421
Southwest	7	20	2,360
Nuclear	**2**	**3**	**1,647**
Upper Midwest	2	3	1,647
Hydro	**26**	**79**	**377**
Colorado	6	11	236
Upper Midwest	20	68	141
Wind*	**4**	**376**	**652**
Upper Midwest	4	376	652
Solar	**4**	**4**	**0.08**
Southwest	4	4	0.08
Other	**4**	**20**	**416**
Upper Midwest	4	20	416
Total	**72**	**570**	**17,429**
Colorado	18	41	5,317
Upper Midwest	41	500	7,667
Southwest	13	29	4,445

*Wind generation is based on net maximum capacity.

2015 Owned and Purchased Generation (in MWh)

	Owned	Purchased	Total
Colorado	22,976,069	11,651,358	34,627,427
Southwest	16,476,520	11,889,891	28,366,411
Upper Midwest	33,812,295	11,901,184	45,713,479
TOTAL	73,264,884	35,442,433	108,707,317

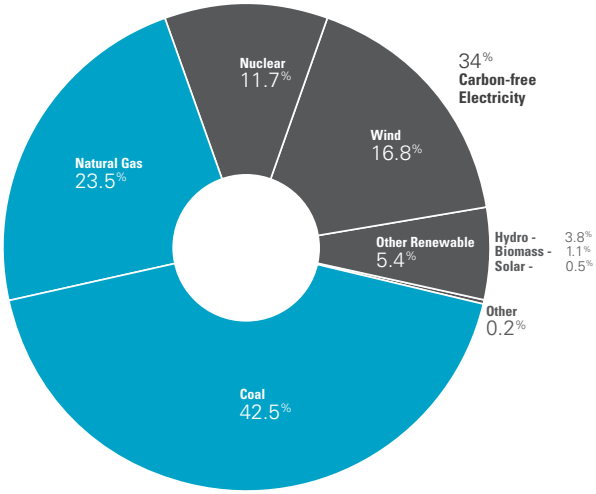
2015 Electricity Supply by Energy Source

The charts below provide a breakdown of the electricity that we supplied in 2015, including the megawatt hours that Xcel Energy plants generated and that we purchased from other power suppliers. The wind and solar categories also include energy purchased for our Windsource® customers and solar energy generated by customer-owned systems through our solar programs. We count nuclear and renewable energy sources as carbon free, including biomass, which is effectively carbon neutral.

For every megawatt hour of electricity that renewable sources produce, we receive a renewable energy certificate or credit (REC). Each year we retire RECs to comply with our state renewable energy standards or save RECs for future compliance. Based on market opportunities, we also sell some of our extra RECs and share any profits with customers.

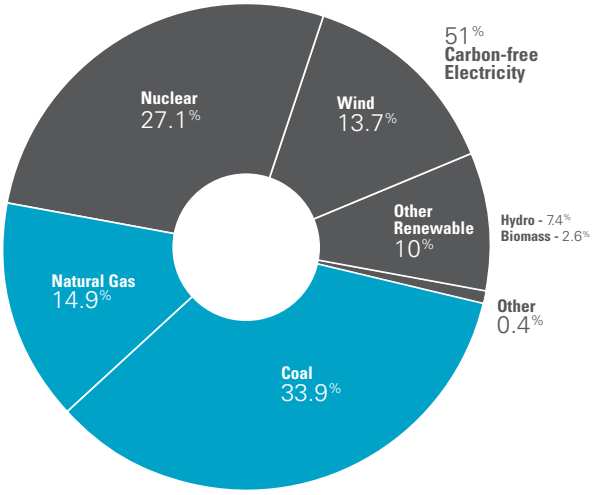
Xcel Energy

2015 Electricity Supply by Energy Source



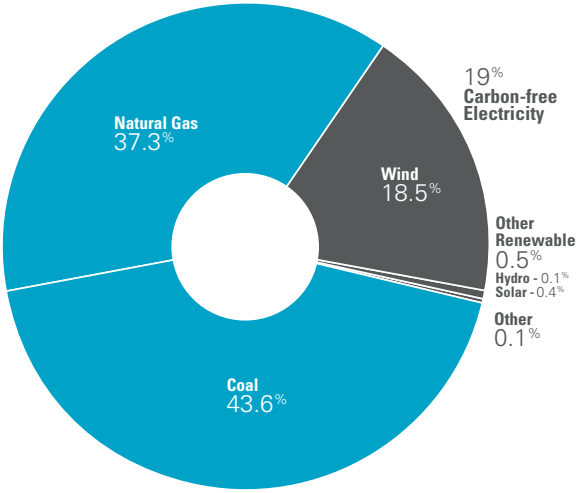
Upper Midwest

2015 Electricity Supply by Energy Source



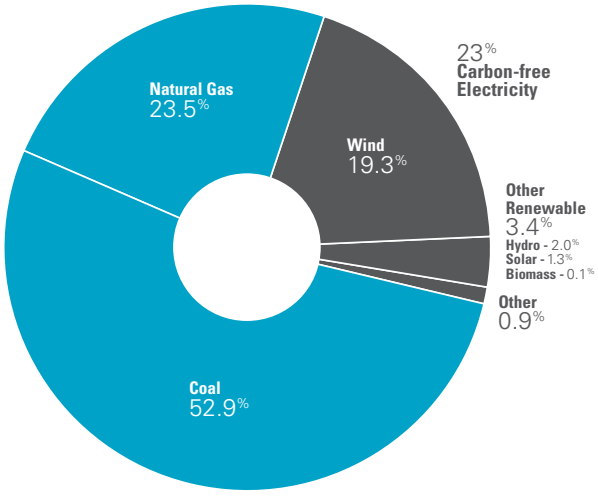
Southwest

2015 Electricity Supply by Energy Source



Colorado

2015 Electricity Supply by Energy Source



2020 Projected Electricity Supply by Energy Source

Transmission and Distribution

Transmission lines are a vital link to deliver electricity over long distances from power sources to substations closer to homes and businesses. Xcel Energy is one of the fastest growing, investor-owned transmission systems in the country with more than 20,000 miles of lines and 1,200 substations. In 2015, we energized 16 new substations, upgraded 27 existing substations and placed more than 700 miles of new lines into service—with our average cost per mile for new transmission below the national average. A strong transmission system will ensure continued reliable and affordable service; meet state and regional energy policy goals; and support a diverse energy supply mix, including renewable energy.

To distribute electricity to the communities we serve, transformers on our systems reduce the voltage so it can be carried on smaller cables or distribution lines to businesses, neighborhoods and homes. The distribution system includes substations, wires, poles, metering, billing and related support systems involved in the retail side of electricity delivery. Xcel Energy has nearly 200,000 miles of distribution lines, more than 2,800 feeders and more than 3.3 million meters in the field.

The need to expand our distribution infrastructure and install new distribution equipment to meet population and demand growth requires continued investment. As we invest in distribution system upgrades, we are focusing on new technologies that will help us meet the increased demands of our digital society and communicate more effectively with our customers.

2015 Electric Transmission and Distribution Lines

	Transmission Lines	Distribution Lines	Transmission and Distribution Lines by Voltage						
			500 kV	345 kV	230 kV	161 kV	138 kV	115 kV	<115 kV
Colorado	21,623	73,732	—	2,630	12,553	—	92	4,925	75,155
Michigan, Wisconsin	9,948	26,946	2,917	8,425	2,157	395	—	7,502	84,074
Minnesota, North Dakota, South Dakota	27,923	77,547	—	1,152	—	1,577	—	1,810	32,355
New Mexico, Texas	34,446	18,690	—	8,108	9,302	—	—	12,427	23,299
Total	**93,941**	**196,914**	**2,917**	**20,315**	**24,012**	**1,972**	**92**	**26,664**	**214,883**

(Provided in conductor miles— a measure of the conductor in use on our system in miles; it accounts for all conductor phases or strands on a circuit)

Storm Response

In 2015, we demonstrated that we are ready when customers need us most by successfully managing more than 50 major storm events, from tornadoes to extreme wind and ice to flooding. In all situations, we were able to restore service to 90 percent of our customers within 12 hours and 96 percent within 24 hours, proving that our storm response is among the best in the industry.

Our crews were honored with the Edison Electric Institute's Emergency Recovery Award for quickly and safely restoring power to 250,000 customers following a devastating storm that ripped through the Twin Cities in the summer of 2015.

Building an Advanced Power Grid

As our customers become increasingly interested in technologies like smart home applications, battery storage and electric vehicles, we are exploring technologies that can offer them new energy solutions. Advanced grid technologies can also facilitate two-way power flow, enabling more distributed, renewable generation, while enhancing system security and reliability.

Xcel Energy has three projects underway for demonstrating battery storage capabilities that include:

- A project in Denver's Stapleton neighborhood will use battery systems to manage high levels of private, rooftop solar generation on the power grid.
- Xcel Energy will own a large battery system in conjunction with a 1.3-megawatt solar energy system as part of a partnership with Panasonic's Enterprise Solutions Company in Colorado. The project will provide backup power for Panasonic and perform power regulation functions.
- We have proposed installing a large two-megawatt battery combined with a one-megawatt solar energy system near our Belle Plaine substation in Minnesota. If approved by regulators, the project would help address system overloads and perform power regulation functions.

Electricity Reliability

Xcel Energy reliability performance is consistently in the top one-third of U.S. electric utilities. We measure electric system reliability through three indexes, using methodology provided by the Institute of Electrical and Electronics Engineers (IEEE). The methodology is commonly used in our industry and incorporating it improves our ability to benchmark Xcel Energy's performance with other utilities.

- The System Average Interruption Duration Index (SAIDI) measures the average number of minutes a typical customer was without power in a year.
- The System Average Interruption Frequency Index (SAIFI) measures the average number of power outages that an average customer experienced in a year.
- The Customer Average Interruption Duration Index (CAIDI) measures the length of the average power outage in a year.

2015 Xcel Energy Reliability Results

	SAIDI	SAIFI	CAIDI
Colorado	88.31	0.95	93.02
Michigan, Wisconsin	83.67	0.66	126.30
Minnesota, North Dakota, South Dakota	88.20	0.83	106.82
New Mexico, Texas	124.25	1.23	100.73
Xcel Energy Average	**91.7**	**0.91**	**101.25**

System Resource Planning

Regulatory commissions in some of the states we serve require us to submit resource plans at regularly established intervals. The filing of a resource plan marks the beginning of a process that focuses on a proposed long-term plan that is evaluated by regulators, with input from environmental, business and community stakeholders.

The resource plan assesses future customer energy load and the resources required to meet this need. Many aspects of service are considered including transmission planning and energy efficiency program goals.

Once a plan is evaluated and approved, the company, along with regulators and stakeholders, will determine the best energy resources for meeting future load and will issue requests for proposals for acquiring the energy.

Resource Planning Activity and Schedule

Region	Frequency of Filings	Last Filing
Colorado	At least every four years	May 27, 2016
New Mexico	Every three years	July 16, 2015
Upper Midwest	Every two to three years	January 2, 2015

Bold Energy Plans for the Future

Xcel Energy has proposed plans in Colorado and the Upper Midwest that advance our transition to a more sustainable energy future.

Upper Midwest Resource Plan
Xcel Energy has proposed a plan for our Upper Midwest system that continues to transform our energy system away from coal to cleaner energy sources, investing in new wind, solar and natural gas. The result will be a 60 percent reduction in carbon emissions and a 63 percent carbon-free energy mix by 2030. Detailed analysis shows this transformation can be achieved while keeping Minnesota rates competitive with the national average.

Highlights of the plan include:

- More than doubling our renewable energy sources in the Upper Midwest through an additional 1,400 megawatts of solar energy and 1,800 megawatts of wind energy.
- Retiring two coal units at Sherco Generating Station and building a new natural gas plant at the site.
- Building a new natural gas plant in North Dakota to meet growth and ensure reliability in the area.
- Retaining our carbon-free nuclear plants that support the transition to cleaner energy by providing base-load power.

Our Colorado Energy Future
We are proposing a number of initiatives in Colorado, including a new resource plan, that pave the way for additional emission reductions and clean energy options for customers at an affordable price.

Key initiatives under our Colorado Energy Future strategy include:

- Adding one gigawatt of renewable energy that includes a new 600-megawatt wind farm that we propose to own.
- Powering the economy through a modern grid that can foster cutting-edge technology, including interactive customer meters to promote choice and control.
- Empowering customer choice through new options; specifically, we have proposed Solar*Connect℠ to give customers another solar energy choice.
- Expanding our existing solar energy programs for customers through our proposed renewable energy plan.
- Powering emerging technology through two innovative solar-to-battery projects.

Natural Gas Service

Xcel Energy is the fourth largest provider of natural gas service, based on American Gas Association data. We currently operate more than 2,400 miles of natural gas transmission and more than 34,000 miles of natural gas distribution pipelines to serve our customers in Colorado and the Upper Midwest. We continue to modernize our natural gas infrastructure to ensure reliable service, safe transportation and delivery of natural gas and the ability to meet customer demand at a competitive and affordable cost. Low natural gas prices have enabled us to invest in and accelerate upgrades to our natural gas distribution system with minimum impact to customer bills. In 2015, we made the following progress to upgrade our natural gas system:

- Construction was completed on a new 3.5 mile natural gas line that runs on the south side of Eau Claire, Wis. The project will help to meet growing customer demand and ensure reliability for the future.
- We entered the fourth year of the five-year West Main project to replace 77 miles of high pressure transmission pipeline between Westminster, Colo., and the Wyoming border. The project will ensure continued safe and reliable natural gas service to our current and new customers along Colorado's Front Range.
- We completed the third year of the four-year East Metro Gas Pipeline Replacement Project in Minnesota to replace 11.5 miles of natural gas transmission line in St. Paul and Roseville. These lines are the backbone of the gas delivery system in the East Metro area, serving around 100,000 homes and businesses. Originally installed in the 1940s and 1950s, we are replacing the lines to ensure the integrity and reliability of the system.

2015 Natural Gas Pipelines (measured in miles)

	Transmission	Distribution
Colorado	2,278	22,045
Michigan, Wisconsin	—	2,342
Minnesota, Michigan, North Dakota, South Dakota	136	10,084
WestGas Interstate (WGI)*	11	—

*WGI is an interstate natural gas pipeline company that is part of our continuing regulated utility operations.

Growing Our Natural Gas Business
Xcel Energy continues to pursue opportunities to grow our natural gas business and build new infrastructure, as well as investing in natural gas transmission pipeline or natural gas reserves. Because natural gas is a cleaner fossil fuel, we see great opportunities for new natural gas infrastructure as our industry works to address more stringent environmental rules, including the Environmental Protection Agency's Clean Power Plan to regulate greenhouse gas emissions from existing coal-fueled power plants.

One such opportunity is Xcel Energy's successful proposal to build a new high pressure natural gas pipeline for the repowering project at our Black Dog Generating Station in Minnesota. With plans underway to add a natural gas combustion turbine at the plant, competitive bids were requested to construct and operate the pipeline that will deliver the plant's fuel. Xcel Energy's natural gas organization responded. After the proposals were evaluated, Xcel Energy's bid was selected as providing the best overall value, proving that the company can offer competitively priced solutions in the marketplace. Xcel Energy will construct a roughly two-mile pipeline to be completed in 2017.

Natural Gas Supply
Xcel Energy relies on a consistent supply of natural gas for generating electricity and for distributing to customers for use in their homes and businesses. We are not a natural gas producer but purchase gas as a commodity. Our gas purchases are generally not tied to any specific well or production technique since generally all the natural gas produced combines as it flows into the national pipeline system.

Our customers are currently benefiting from low natural gas prices. Lower fuel costs have enabled us to make system improvements that contribute to the safety and reliability of our natural gas system with less impact to our customers' bills.

Today's reduced natural gas prices are the result of production methods that have significantly increased supply. Hydraulic fracturing, commonly referred to as fracking, is a technique gas producers use to fracture shale rock to stimulate the flow of natural gas to the well bore so it can be more easily obtained. Fracking along with horizontal drilling—a technique that allows for the extraction of natural gas along sources that run horizontally such as shale rock—allow producers to reach a significant supply of natural gas that was previously inaccessible with conventional drilling.

Natural gas production is governed by federal, state and local regulations, with additional regulations under consideration. Natural gas producers currently face intense scrutiny around these techniques and continue to refine their practices while the U.S. Environmental Protection Agency and other scientific groups conduct more analysis around water safety, air emissions and gas production.

We expect the natural gas that we purchase and distribute to be produced responsibly and in compliance with the law. We encourage gas producers to adopt best practices and continue to reduce the environmental impact of natural gas production. It is important that additional regulation be done in a reasonable manner that assures continued access to affordable natural gas. We have seen evidence that this is possible, particularly at the state level.

Physical and Cybersecurity

Xcel Energy is committed to the security of customers, our assets and the nation's critical infrastructure. We understand the risks and continue to focus on the improvement of our security program, leveraging our partnerships with public and private agencies, to ensure the protection of the critical assets that deliver safe, reliable energy to our communities and secure our customers' information. Our security programs are built on a Defense-in-Depth strategy that provides multi-layered safeguards against security risks. Because there is no solution that can guarantee complete security of our systems and critical infrastructure, we use a risk management approach inclusive of planning and preparing for events to ensure full, fast mitigation and recovery.

We view law enforcement, defense agencies and regulatory agencies as critical partners in our effort to protect our systems. We have longstanding relationships with personnel from these groups that enhance our own security. Further, Xcel Energy's chairman, president and CEO Ben Fowke is a member of the National Infrastructure Advisory Council (NIAC) subcommittee on cybersecurity, which advises President Obama through the secretary of Homeland Security on the security of critical infrastructure sectors and their information systems. Through membership in the Electricity Subsector Coordinating Council (ESCC), Mr. Fowke, along with other industry CEOs and leaders, serve as the principal liaison between the federal government and the electric power sector to address national security threats to the grid. The ESCC has made tangible progress to improve the security posture of the industry and the nation, including:

- Deploying tools and technology to improve industry and government situational awareness
- Improving the flow of and access to security threat information for all stakeholders
- Unifying industry and government efforts to plan and prepare coordinated responses to incidents
- Enhancing coordination with other critical infrastructure sectors

In addition, we are subject to a number of statutory and regulatory requirements, including data privacy laws focused on protecting our systems and customer information and data.

The responsibility of protecting our critical assets continues to evolve as new threats emerge, and we continually elevate our capabilities to prepare, prevent and respond to potential threats. Our investments in infrastructure, cyber-assets and personnel reinforce our commitment to protecting customers, our assets and the nation's critical infrastructure.

Regulation of Infrastructure and Information Security
As we go forward, we believe that infrastructure security and information security laws and regulations should focus on:

- Aligning relevant requirements to avoid conflict or duplication across state and federal agencies
- Establishing a clear reporting and federal agency responsibility structure in case of a cybersecurity event
- Limiting the scope of any new federal regulatory or enforcement authority over the electric sector to imminent threats against truly critical assets
- Recognizing interdependencies by including all critical infrastructure sectors in a comprehensive cybersecurity regime
- Sharing cybersecurity threats and vulnerabilities information between the federal government and the private sector
- Giving the utility industry the tools and flexibility it needs to develop safeguards that are appropriate for each utility's risk profile
- Strengthening cyber defenses while minimizing paperwork and ineffective compliance measures
- Limits on liability associated with sharing cyber data

Emergency Preparedness and Response
At Xcel Energy, we consider our preparations for safe and timely power restoration following severe weather events and other natural disasters as key components of electric and gas reliability. Industry leading emergency preparedness and response includes many elements, such as training, weather system monitoring, resource staging prior to emergencies, rapid mobilizations for restoration and ongoing communications with all stakeholders.

We continuously assess potential risks—natural, technical and terrorist. We carefully consider the consequences of each possible emergency and develop our response plans. To test our plans, we conduct several complex and multi-business unit reliability drills each year.

These drills challenge the organization with scenarios such as earthquakes, severe weather, major power or natural gas outages or cyberattacks. Our primary drill objective is to test our emergency procedures and processes to identify performance gaps or previously unconsidered issues and make the plans more effective and efficient. Many of our reliability drills involve Xcel Energy's executive team as well as participants from federal, state and local regulatory and emergency-management agencies.