



# Xcel Energy: Path to Carbon-Free Energy

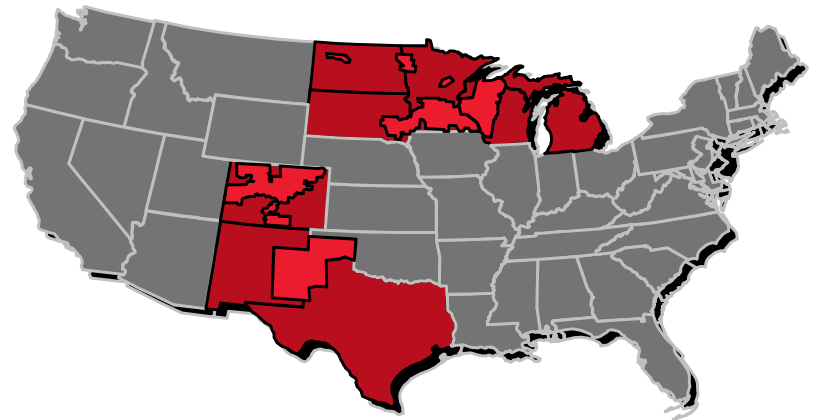
Patrick Burke VP Strategy

January 14, 2020

# Company Profile – Xcel Energy

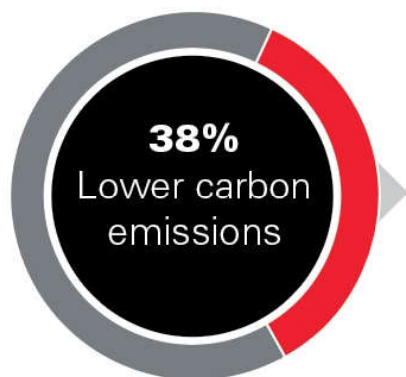
Xcel Energy is an electric and natural gas company that is committed to the clean energy transition. Based in Minneapolis, Minn., we have regulated operations in eight Midwestern and Western states, and provide a comprehensive portfolio of energy-related products through four operating companies.

- **Employees:** 11,865
- **Natural gas operations**
  - Customers: 2.0 million
  - Transmission: 2,209 miles
  - Distribution: 35,112 miles
- **Electricity operations**
  - Customers: 3.6 million
  - Transmission and Distribution: 219,841 miles

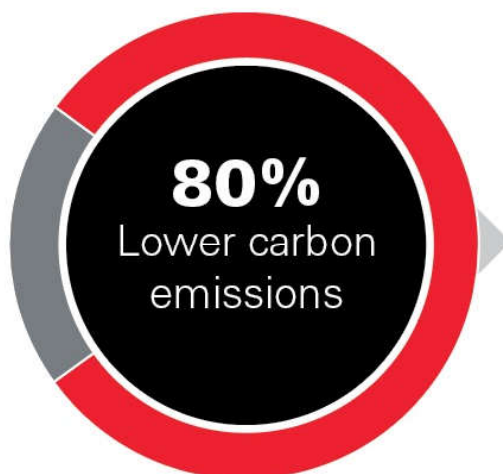


# Bold carbon-reduction goals

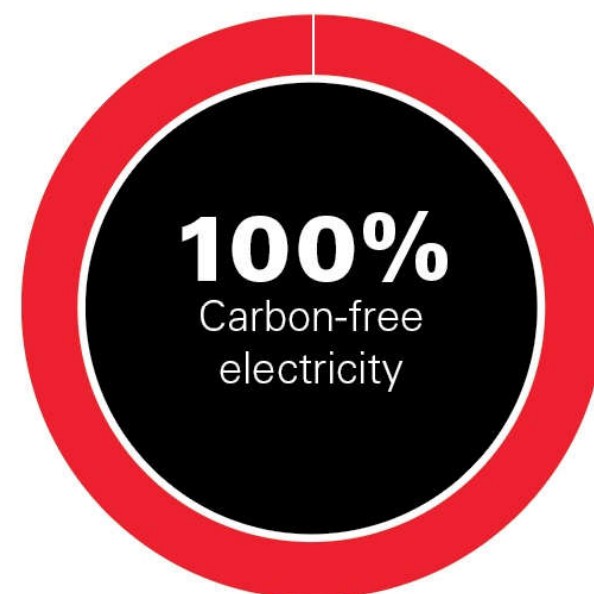
2018 Results



2030 Goal



2050 Vision



Company-wide emissions reductions from the electricity serving our customers, compared to 2005

**Safe ■ Clean ■ Reliable ■ Affordable**



# 2030 Plan – Ensuring Reliability



**Natural Gas**



**Nuclear**

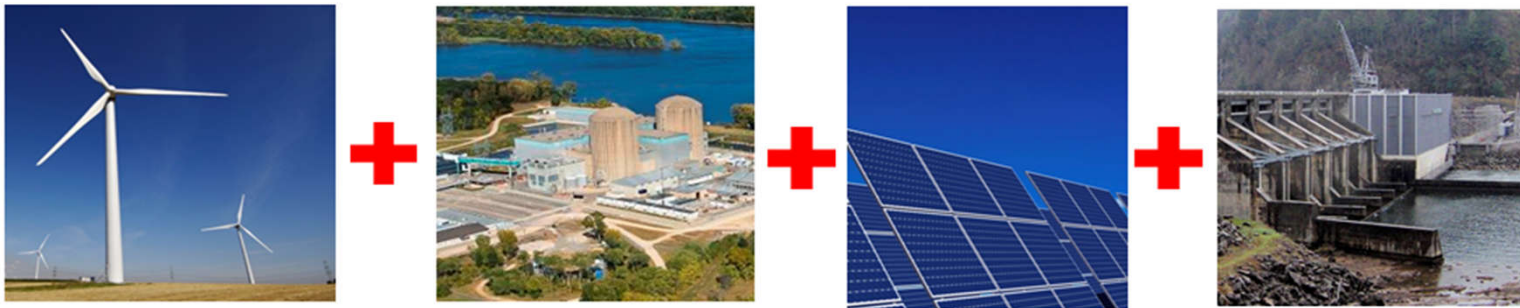
**Nuclear is about 25% of Energy Generation  
Natural Gas (Hydrogen?) for Integration**



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- The diagram illustrates the Hydrogen Economy, showing the flow of energy and materials between various components. The central element is  $H_2$  (Hydrogen). The components are categorized into three main sectors:
- Value Added Applications:** Includes Hydrogen/ Natural Gas Infrastructure, Hydrogen Vehicle, Synthetic Fuels, Upgrading Oil / Biomass, and  $NH_3$ .
  - TRANSPORTATION:** Includes Hydrogen Vehicle, Synthetic Fuels, Upgrading Oil / Biomass, and  $NH_3$ .
  - INDUSTRIAL:** Includes  $NH_3$ , Upgrading Oil / Biomass, and Synthetic Fuels.
- The components are interconnected by arrows, showing the flow of energy and materials. The central  $H_2$  is connected to all other components. The components are also connected to each other, forming a network. The diagram is divided into three main sectors: Value Added Applications, TRANSPORTATION, and INDUSTRIAL.

# Flexible Power Operations

An innovation that enables 80% carbon-free by 2030



- In MISO day ahead market
- Current reductions to 80% power
- Evaluating hybrid operations - Hydrogen

# New Technology Drives Lower Prices



Since January 2016

Wind	↓	24%
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Universal Solar	↓	33%
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Hydrogen Fuel Cells	↓	???
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# Questions?



Powering our Energy Future



