# CAPACITY TO CHANGE: TRANSITIONING FROM COAL CAPACITY

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Capacity Building for Energy Assets | United States Department of Energy

November 15, 2024

# Xcel Energy Overview

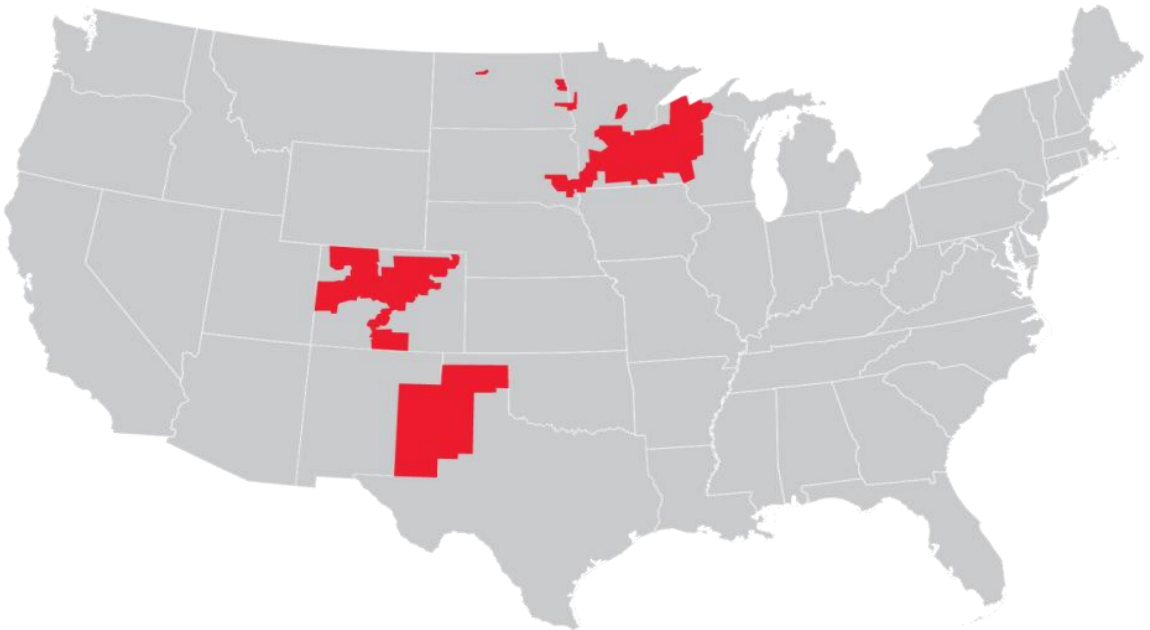
## Fully Regulated and Vertically Integrated Utility

**Four**
Operating Companies

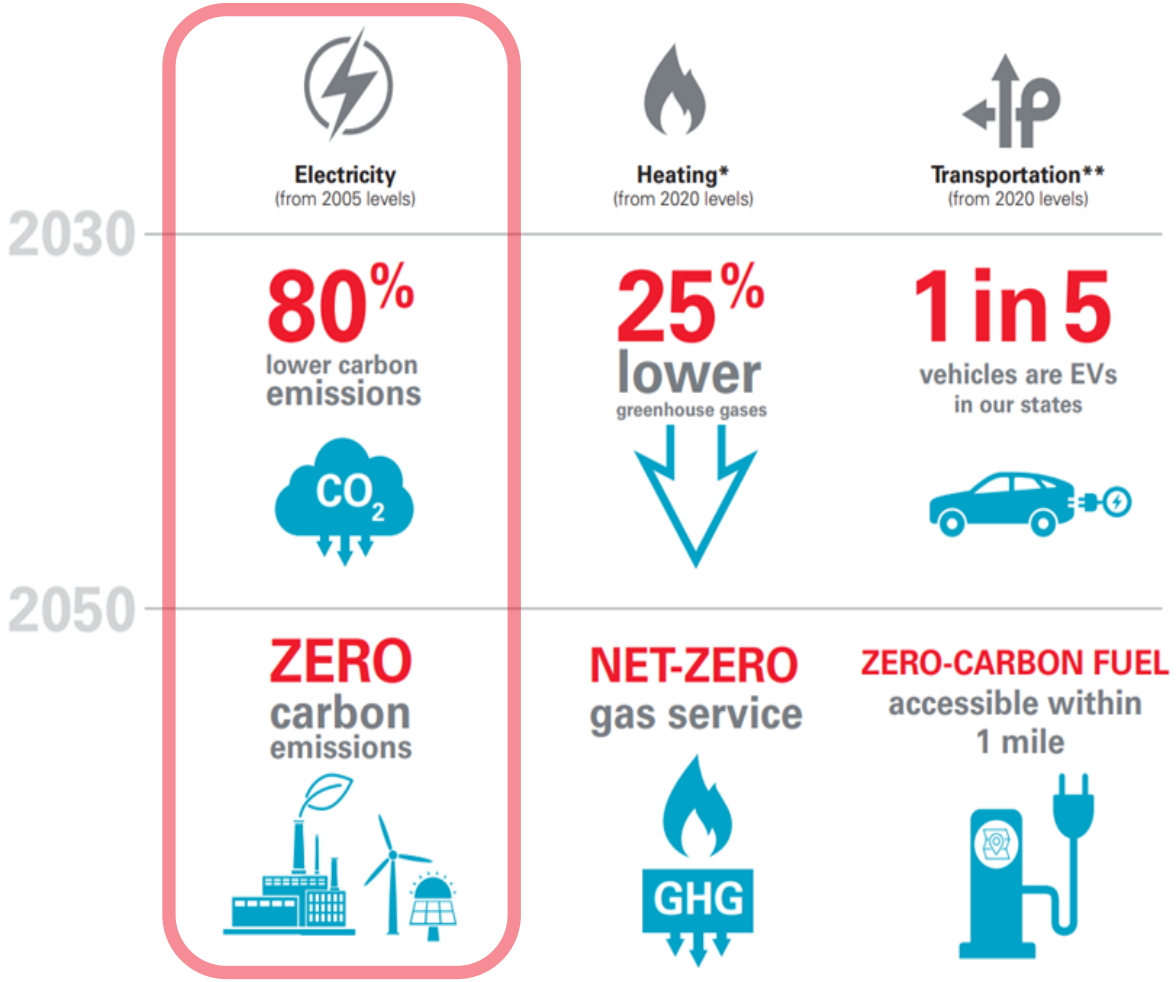
**3.8 Million**
Electric Customers

**Eight**
States

**2.1 Million**
Natural Gas Customers



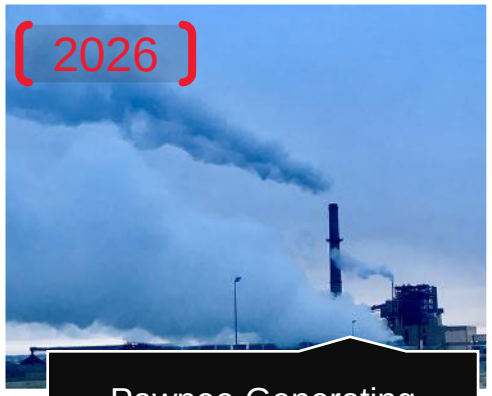
## Comprehensive Sustainability Goals



# Xcel Energy Coal Plants Planned for Transition

## Phased transition of 7.5 GW Coal Generation by 2031


Comanche Generating Station, 1150 MW, CO




Pawnee Generating Station, 505 MW, CO


Hayden Generating Station, 441 MW, CO


Tolk Generating Station, 1100 MW, TX

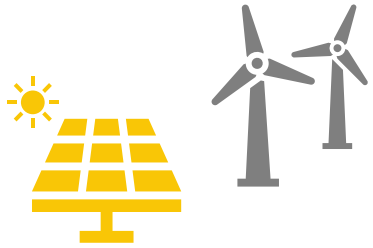

Harrington Generating Station, 1100 MW, TX


Allen S. King Generating Station, 550 MW, MN

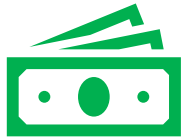

Sherburne County Generating Station – “SherCo”, 2222 MW, MN

# Drivers for our coal transition

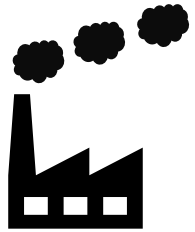
## Xcel Energy pioneered “Steel for fuel”: replace the portion customers pay in fuel costs with investments in wind & solar generation



Abundance of renewable energy



Keep Customer’s bill low

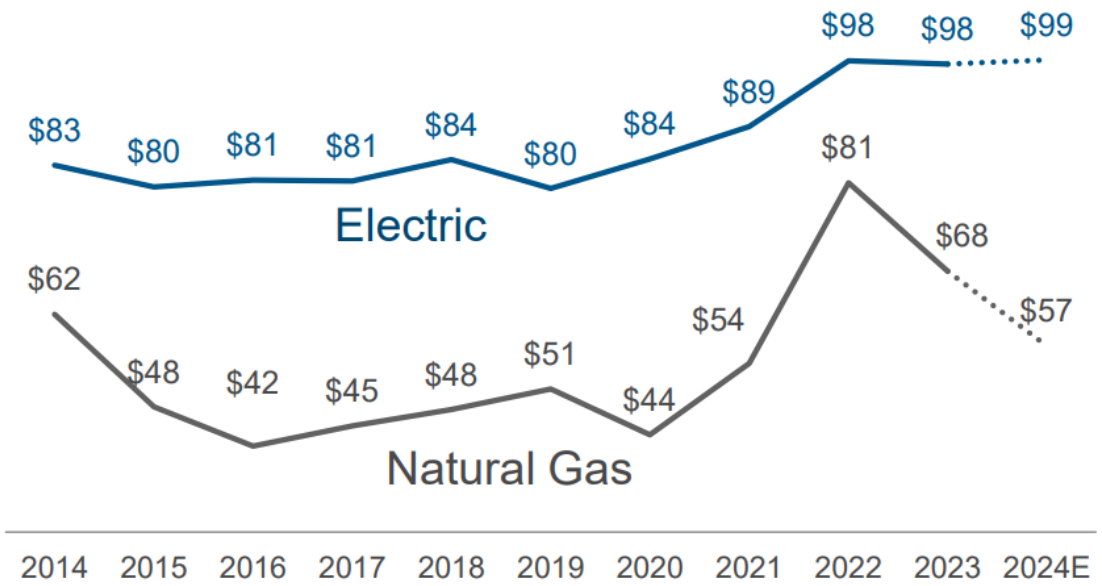


Reduce emissions

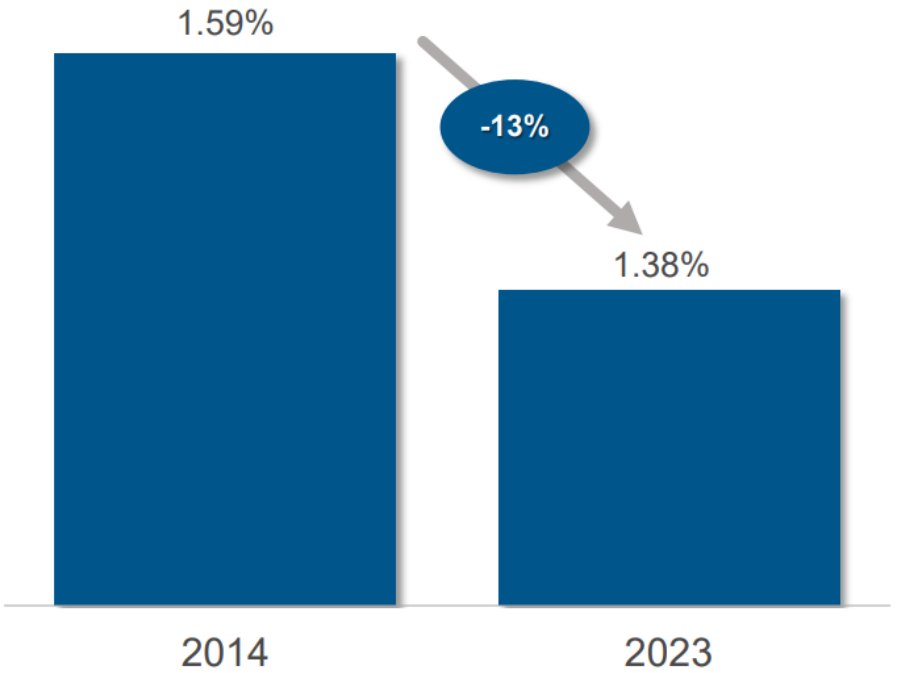
Legislation & Stakeholders

# Keeping Customer Bills Low

**2014-2024E Residential Electric CAGR = ~1.7%**
**2014-2024E Natural Gas CAGR = ~(0.8%)**



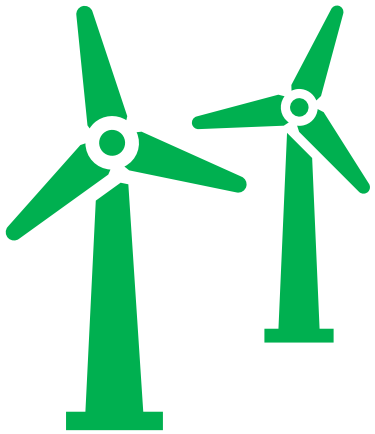

**Residential Electricity Share of Wallet***




* Average Xcel Energy residential bill divided by household income

# Carbon-Free Electricity 2050

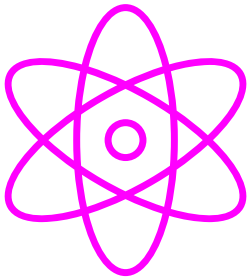
## Most of the energy will be from technologies like:



Wind



Solar



Nuclear (Minnesota)

Hydroelectric

Battery Storage

# Firm, dispatchable capacity resources make the grid more efficient in terms of both cost and reliability

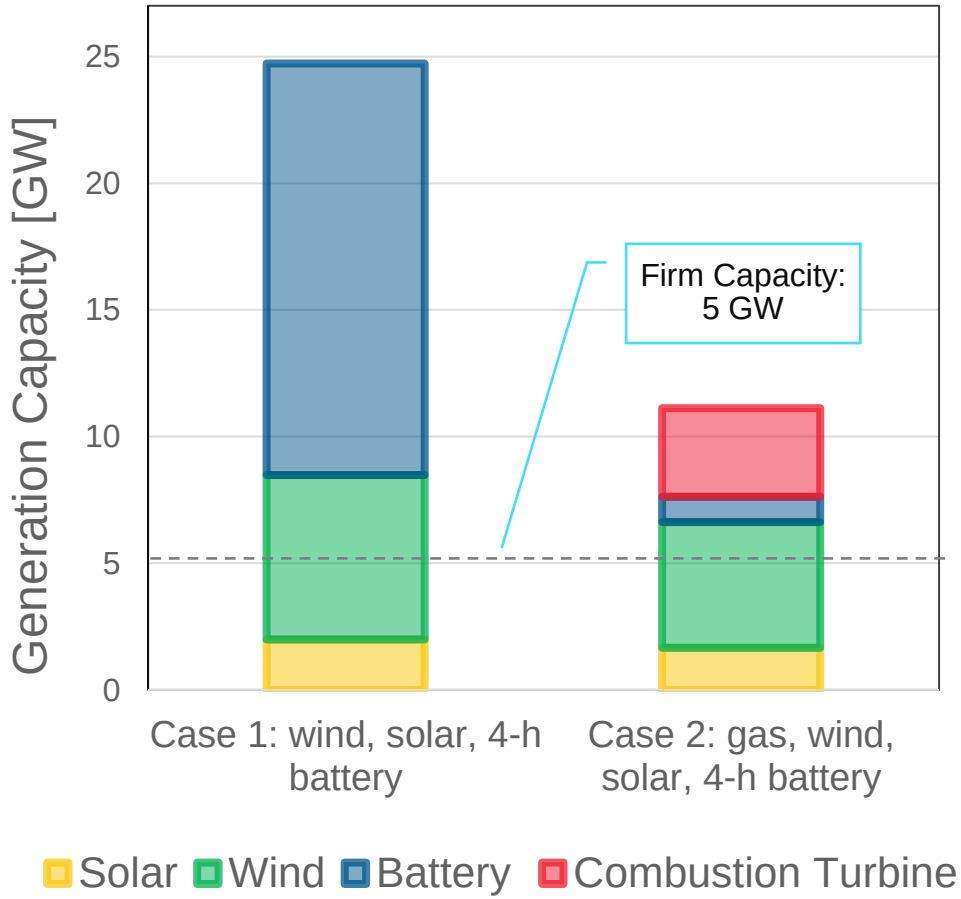
## Generation from renewables offers clean and affordable energy but without firm, dispatchable generation, overbuilding occurs

### Case study: Generation capacity expansion & energy production cost modeling:

- Case 1: Add wind, solar, 4-hour batteries only
- Case 2: Add wind, solar, 4-hour batteries, *and* simple-cycle gas combustion turbines

### Results:

- Both cases get the needed 5 GW firm capacity
- Case 1: Wind, solar, battery yields 16+ GW overbuild of 4-hour batteries (too much $$)
- Case 2: Less overbuild (too much carbon)
- Case 3: deploy carbon-free firm, dispatchable resources



# Emerging solutions that complete the transition

**Firm capacity, dispatchable, baseload, AND jobs & tax**

**Storage**
- Long-duration
- Battery
- Thermal
- Mechanical: Pressure & gravity
- +more

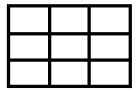
**Carbon-free Generation**
- Nuclear: fission & fusion
- Geothermal
- Natural gas w CCS
- +more

**Clean Molecules**
- Renewable Natural Gas
- Hydrogen
- Ammonia
- +more

**Additional solutions:**

Transmission Everywhere

Microgrids & Distributed Energy



# Xcel Energy & Form Energy will deploy the first large-scale 100-hour battery project

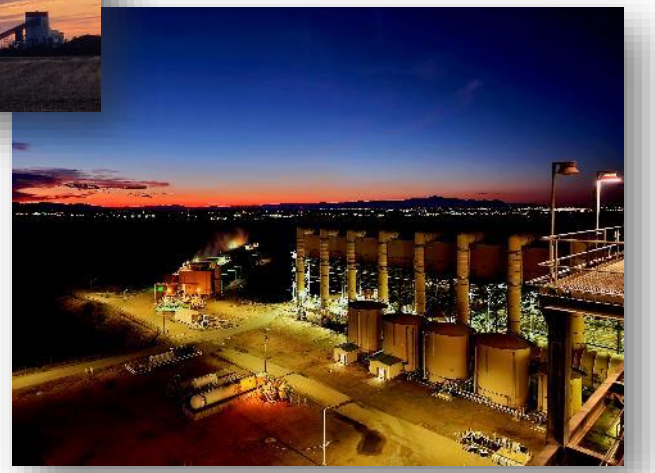
**2025** – two 10 MW x 100-hour batteries at retiring coal plants.

Project with **2 GWh**, one of the largest battery energy storage projects ever

Breakthrough Energy Catalyst, grant award commitment, $20M
Department of Energy, OCED, $70M, LDES grant

## Renewable energy & storage to replace retiring coal plants

Sherburne County Generating Station, “Sherco” (Becker, MN)



Comanche Generating Station (Pueblo, CO)

# Colorado:  Just Transition Solicitation

**House Bill HB19-1314, “Just Transition” for coal workers and communities**

Created a Just-Transition specific Electric Resource Plan for transitioning coal communities with solutions that invest in workforce & property tax revenue

Xcel Energy filed 10/15/2024 with the Colorado PUC (Proceeding No. 24A-0442E) Just Transition Solicitation

- Impacts of retiring coal generation capacity
- Estimates of replacement capacity with wind, solar, battery, natural gas generation
- Project expected load growth including datacenters
- Alternative technologies to fossil generation
- Changes required for developing carbon-free generation


# Thank you!