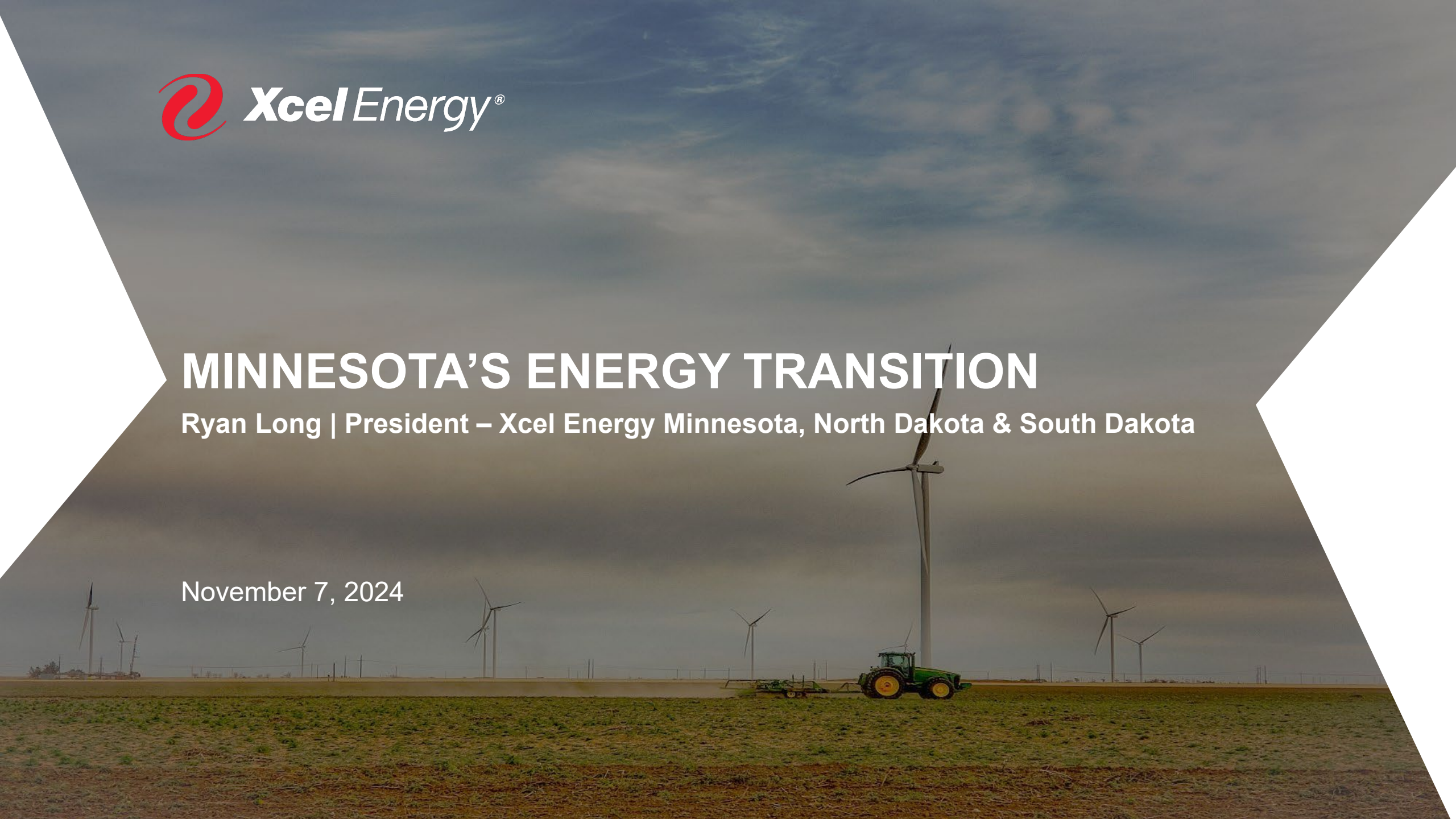




MINNESOTA'S ENERGY TRANSITION

Ryan Long | President – Xcel Energy Minnesota, North Dakota & South Dakota

November 7, 2024



Alternative Titles (Courtesy of ChatGPT)

Here are some creative title ideas for a presentation on the **energy transition, reliability, and load growth**:

1. “**Powering the Future**: Balancing Energy Transition with Reliability and Demand”
2. “**Bridging the Gap**: Navigating Load Growth in the Era of Clean Energy”
3. “**The Energy Puzzle**: Transitioning to Renewables While Ensuring Grid Reliability”
4. “**From Coal to Clean**: Managing Reliability in a Growing, Greener Grid”
5. “**Reshaping the Grid**: Tackling Load Growth and the Renewable Revolution”
6. “**Charging Forward**: The Energy Transition and the Path to Reliable, Scalable Power”
7. “**Securing Tomorrow**: Balancing Renewable Growth with Grid Stability”
8. “**Sustaining Growth**: Integrating Reliability into the Energy Transition”
9. “**A Balancing Act**: Ensuring Energy Reliability Amidst Rapid Load Growth”
10. “**Renewable Revolution**: Can We Keep the Lights On in a Growing World?”

Fully Regulated and Vertically Integrated Utility

Four
Operating Companies

Eight
States

3.8 Million
Electric Customers

2.2 Million
Natural Gas Customers

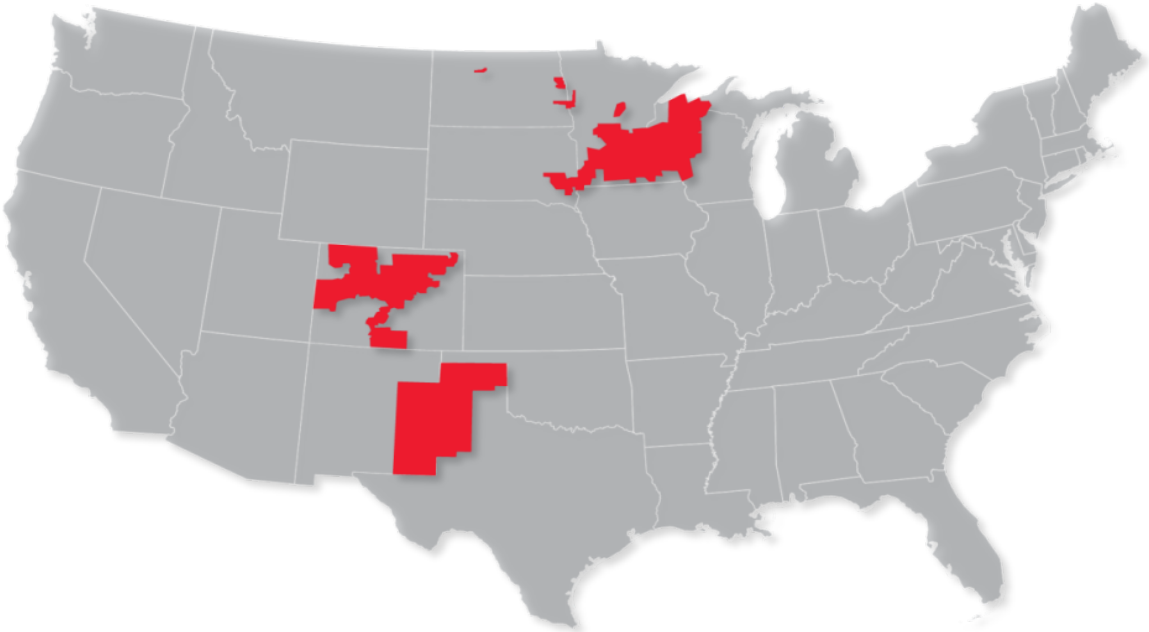
\$42 Billion
2023 Rate Base

21 GW
Owned Gen. Capacity

~11,000
Employees

Northern States Power Minnesota (NSPM)
Minnesota, South Dakota, North Dakota

Northern States Power Wisconsin (NSPW)
Wisconsin, Michigan



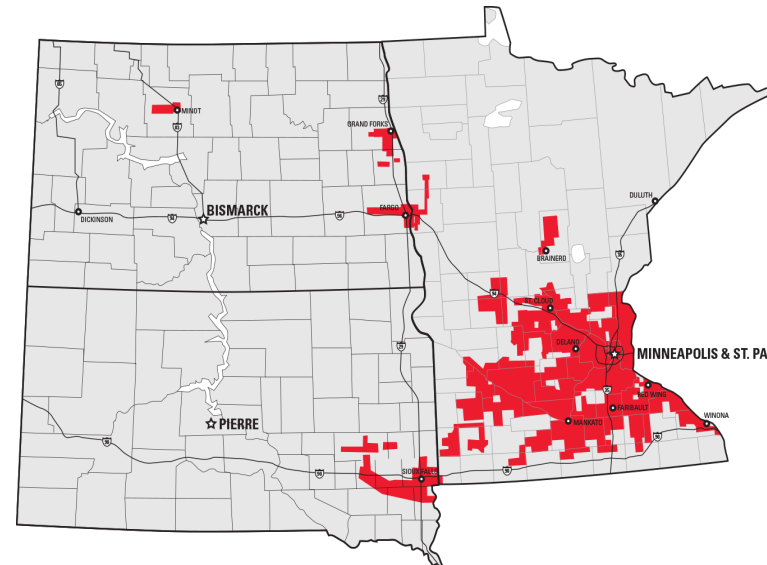
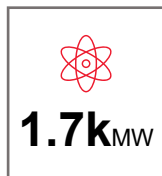
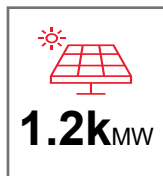
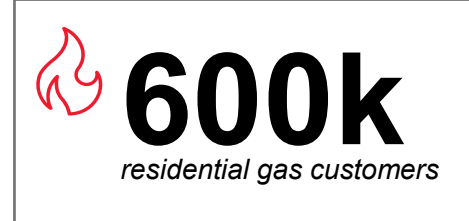
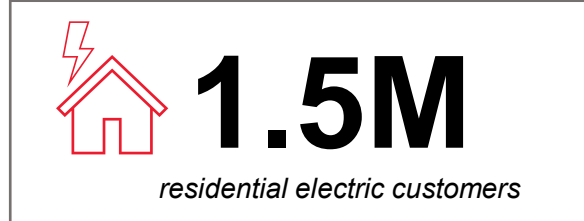
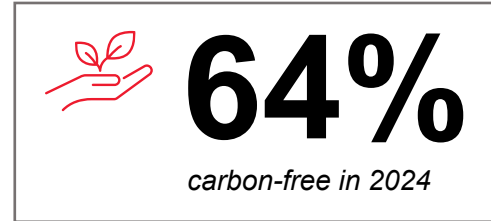
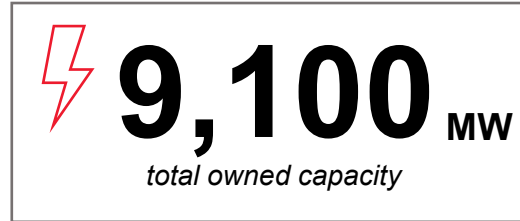
Public Service Company of Colorado (PSCo)
Colorado

Southwestern Public Service (SPS)
Texas, New Mexico

As of 12/31/2023

Minnesota, North Dakota & South Dakota Overview

NSPM Major Infrastructure



Allen S. King Plant
Bayport

Sherco Plant
Becker

Freeborn Wind Farm
Freeborn

Pleasant Valley Wind Farm
Mower County

Grand Meadow Wind Farm
Mower County

Prairie Island Nuclear Plant
Red Wing

Monticello Nuclear Plant
Monticello

Riverside Plant
Minneapolis

High Bridge Plant
St. Paul

Black Dog Plant
Burnsville

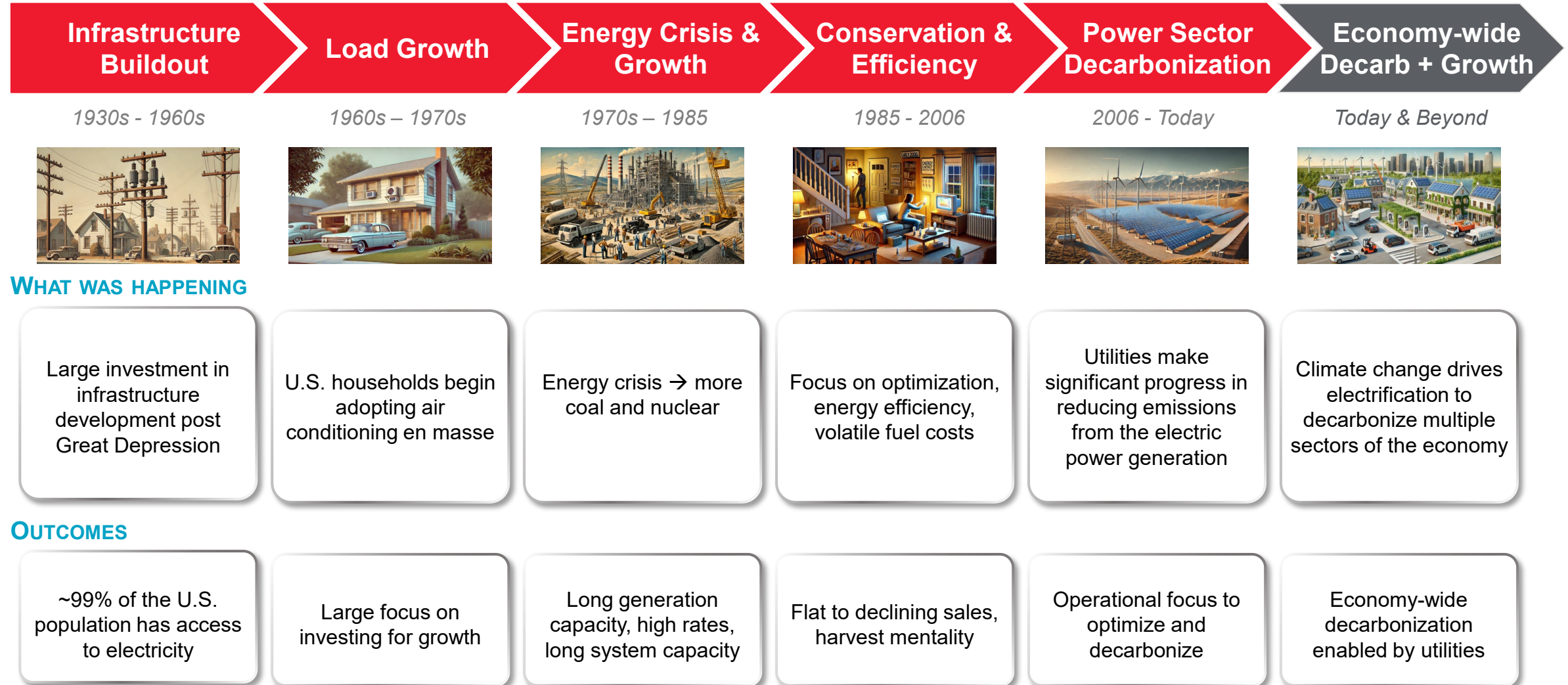
Wescott Gas Peaking Plant
Inver Grove Heights

Transmission Lines – 33k Miles

Natural Gas Lines – 11k Miles

A Brief History: System Transitions

The electric system has been built out over the last century in tranches in response to various drivers



The Energy Transition By The Headlines

THE WALL STREET JOURNAL.

NEWSPLUS

Xcel Energy Surpasses 50% Carbon-Free Power Companywide

Carbon-free energy made up 53% of Xcel's 2022 energy mix, company says, topping nationwide average

BUSINESS

Xcel Energy receives \$70M federal grant for long-lasting grid battery in Becker

BUSINESS

Xcel closing first unit at Sherco coal plant, a milestone in energy transition

Utility regulators grant key permit for huge Xcel solar farm at retiring coal plant

Xcel Energys ambitious plan to help replace a massive retiring coal plant with one of America's largest solar farms is almost a reality. The Minnesota ...

Minnesota's 2040 carbon-free energy bill advances to Gov. Walz for signature

BUSINESS

Xcel Energy wants to extend life of Prairie Island nuclear facility, add two gas plants

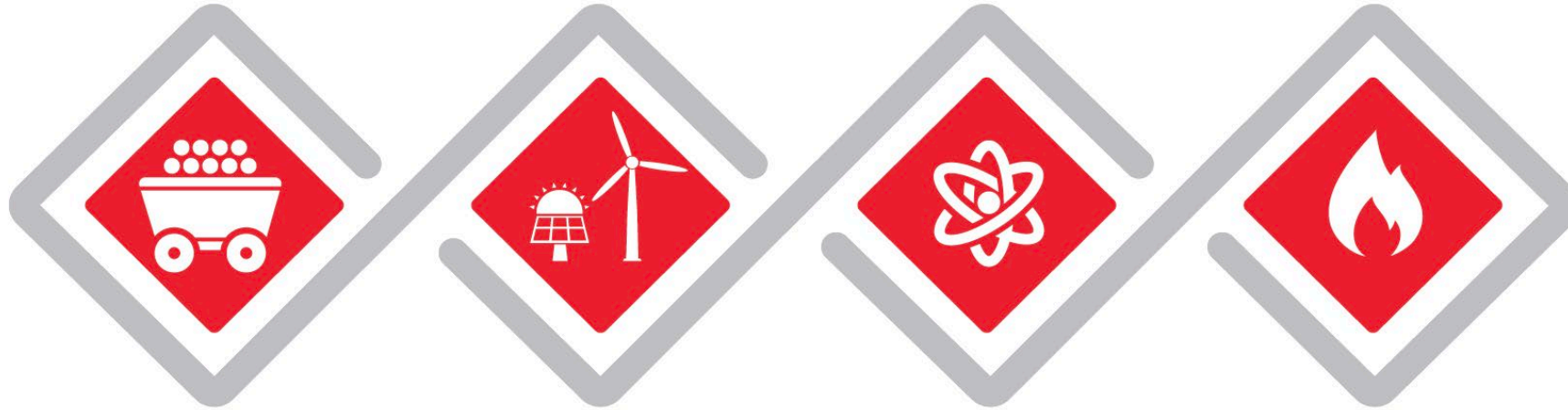
2024 Integrated Resource Plan



- Filed February 2024
- Detailed Modeling and Forecasting
- New Load Environment
- Balances 4 Key Objectives:



Elements of Our Plan



Close coal plants

Retire the last of our coal plants in the Upper Midwest by 2030

Add renewables

Build about 3,600 megawatts of new wind and solar facilities, along with 600 megawatts of battery energy storage by 2030

Continue carbon-free nuclear

Extend the use of our carbon-free nuclear plants until the early 2050s

Enable a carbon-free future

Continue to use natural gas facilities to ensure the reliability and stability of the electric system while exploring new “always available” energy sources to advance the clean energy transition

Major Transition Projects



Sherco Solar 1, 2 & 3
\$1.1B CapEx
• 710 MW
• 1,000 jobs
• \$160M landowner payments



King Gen-Tie
\$110M CapEx
• 20 Miles
• 30 jobs



Sherco Gen-Tie
\$1B CapEx
• 180 Miles
• 200 jobs



LRTP Lines
\$1.2B CapEx
• 285 Miles
• 300 jobs



Form Long-Duration Battery
\$70M CapEx
• 100 hours
• 15 jobs



Renewables
\$5.8B CapEx
• 3800 MW
• 6,000 jobs



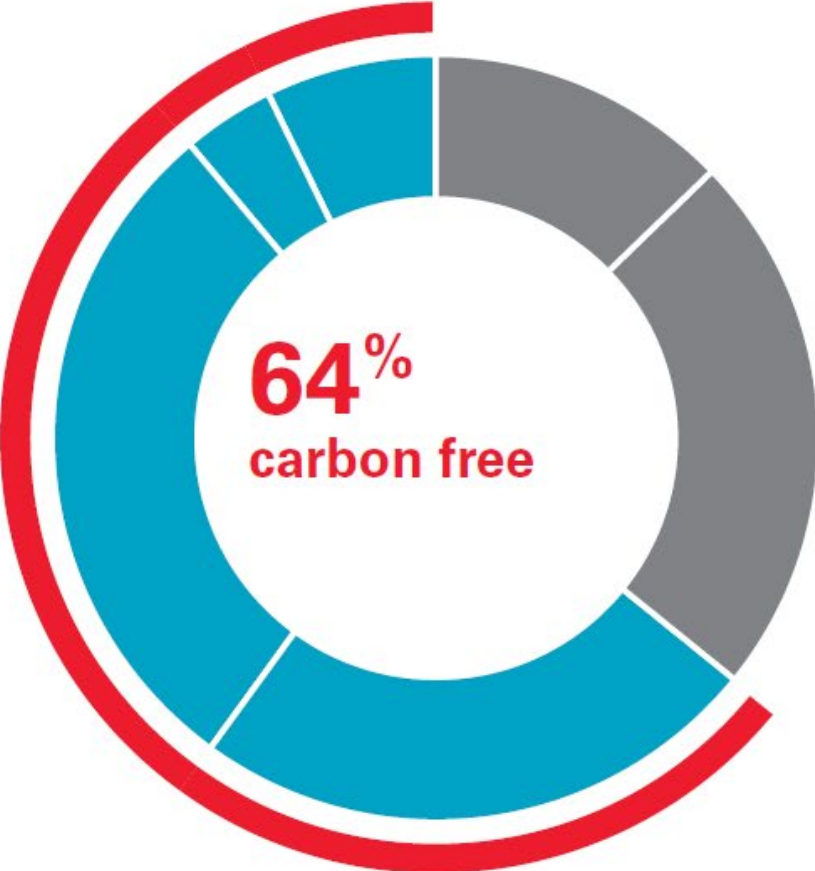
Firm Dispatchable Units
\$500M CapEx
• 400 MW
• 100 jobs



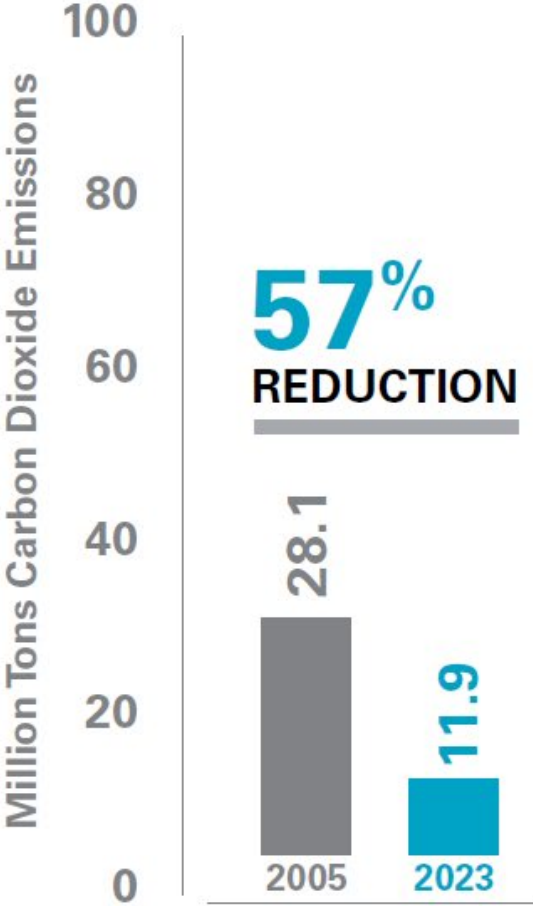
Distributed Capacity Procurement
• 400-1000 MW

Cleaner Energy Mix

Upper Midwest electricity sources



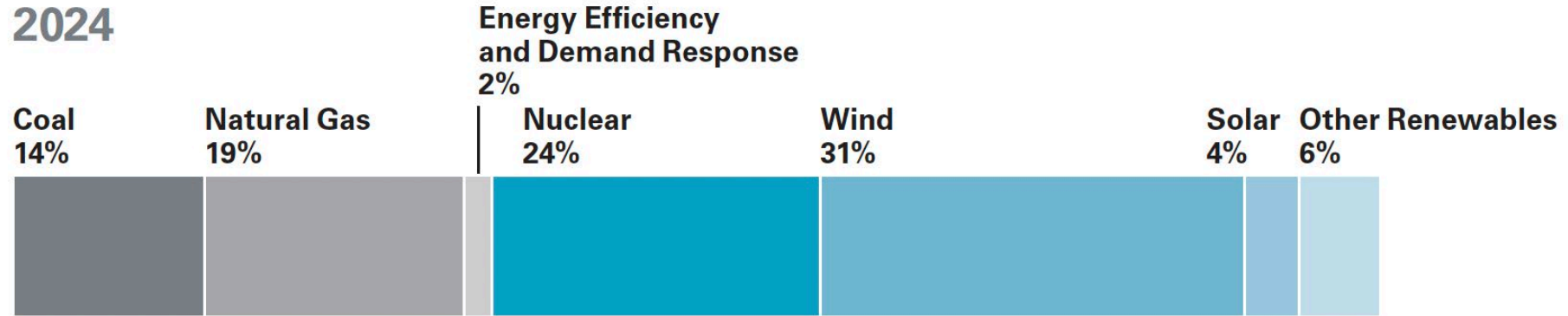
Coal	13%
Natural Gas	23%
Nuclear	24%
Wind	29%
Solar	4%
Other Renewable	7%
Other	<1%



Data based on 2023 Sustainability Report. To view full report: xcelenergy.com/sustainability.

Our Customers' Energy Mix

2024



2030

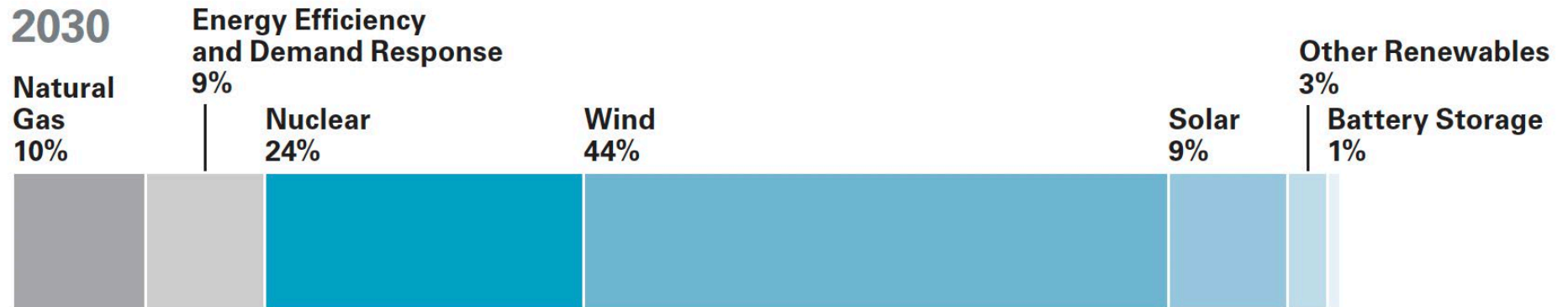
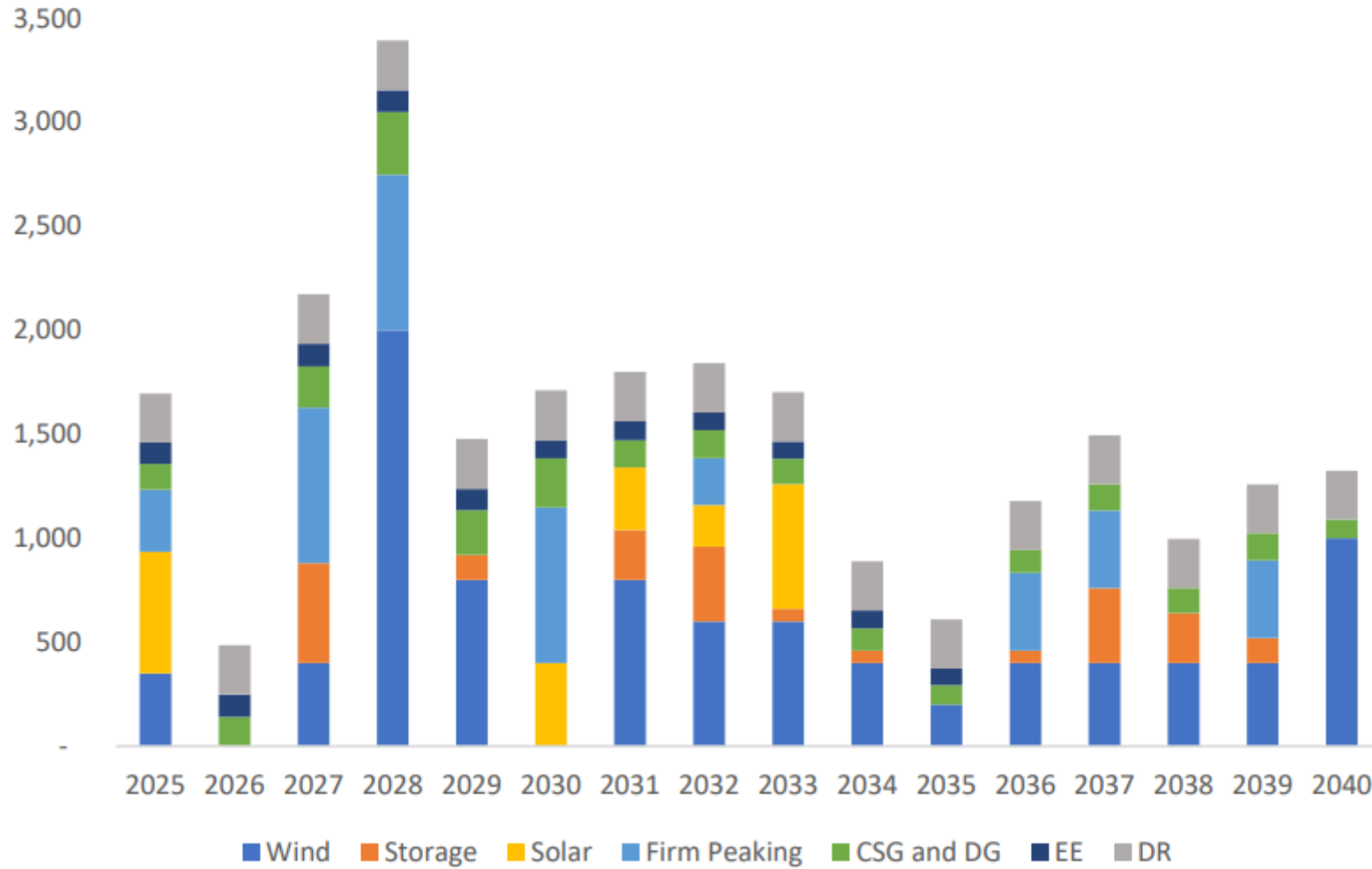
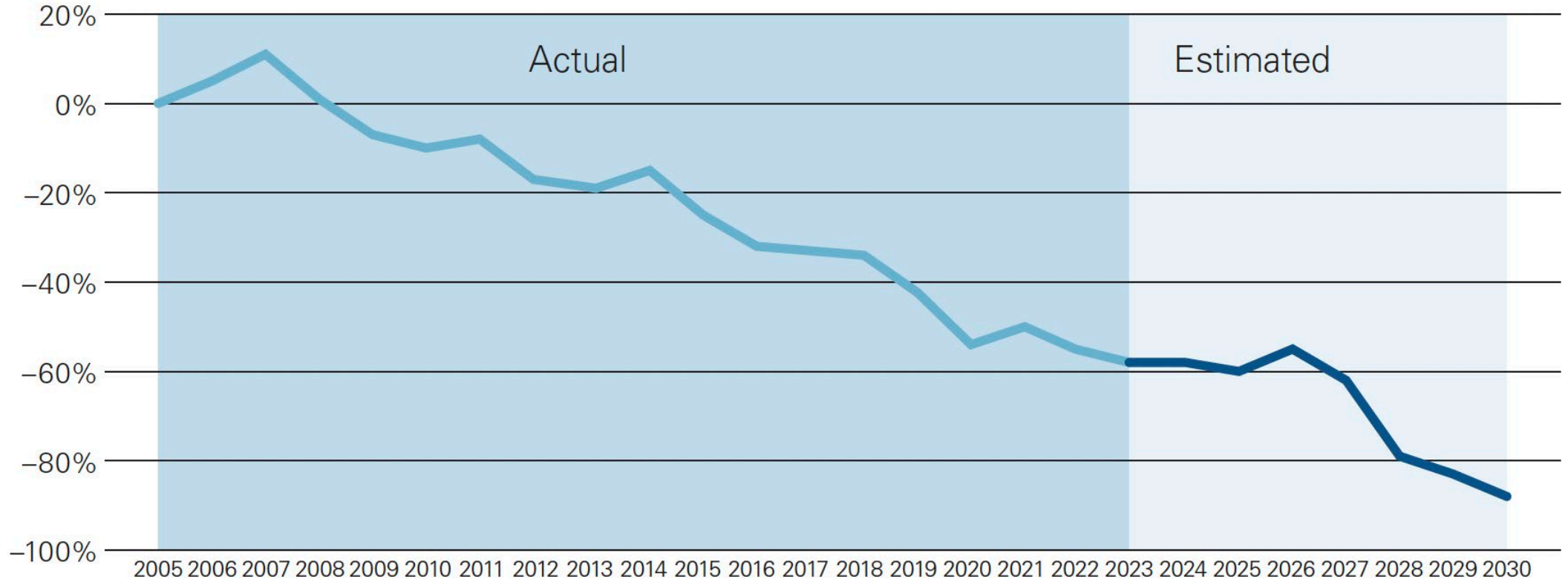


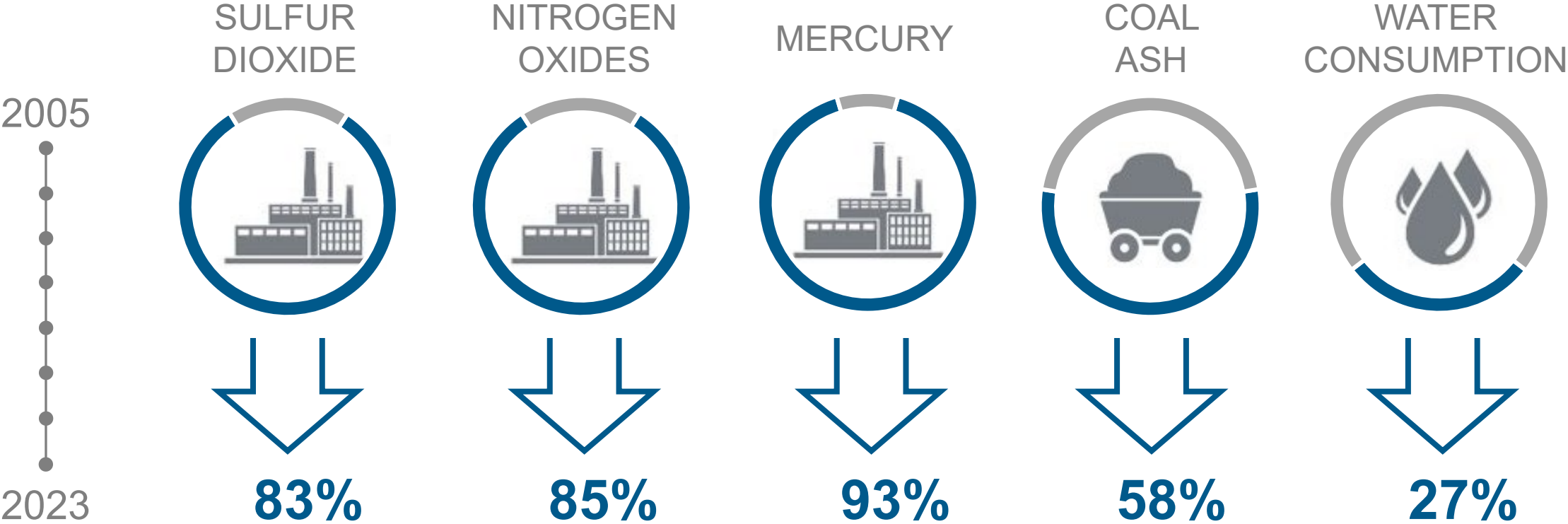
Figure 1-6: 2024-2040 Preferred Plan Resource Additions (MW)



Projected Carbon Emissions



Emission Reductions Beyond Carbon



Results from owned generating plants except for water, which includes owned and purchased electricity that serves our customers

Data based on 2023 Sustainability Report. To view full report: [xcelenergy.com/sustainability](https://www.xcelenergy.com/sustainability).

Resource Adequacy

- We examined our preferred plan compared to a market access scenario under seven historical weather years.
- Load and Renewable profiles were adjusted based on historical data.
- An 8760 dispatch was run and analysis performed analyze the reliability of the energy adequacy of the preferred pan resources and a market access expansion plan.



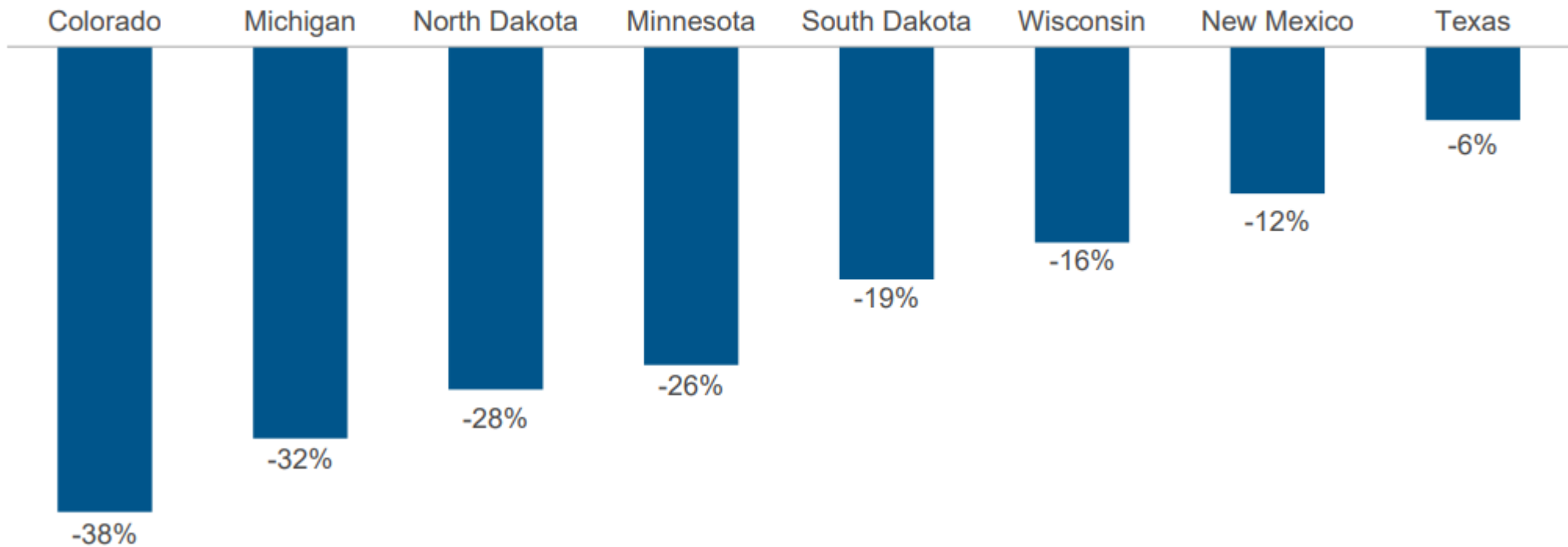
Advanced Technology Required for 2050 Goal

- All Options on the Table
- Advanced Technologies
 - Long-Duration Storage
 - New Nuclear (Small Modular Reactors & AP1000)
 - Hydrogen
 - Carbon Capture & Sequestration
- Depending on technological advances, each resource presents the potential to contribute to meeting carbon emission goals.



Committed to Affordability

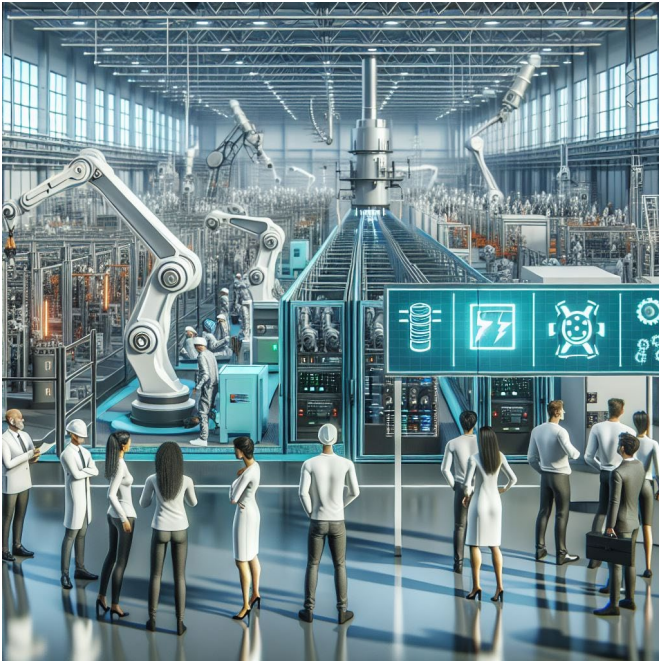
Average Xcel Energy Residential Electric Bill to National Average*



* Based on 2019-2023 EIA data

Load Growth – Considerations & Planning

Manufacturing



Data Centers



Transportation



Emerging Issues – Growth & Economic Development

Agriculture Tech



Chips & Sensor Manufacturers



Emerging Aviation Opportunities



Data Center Interest



Data Center Journey

Data Center Maturity – Cloud Computing

Subset of Machine Learning that enables software to train itself to perform tasks like speech and image recognition but leveraging multilayered neural networks to vast amounts of data (Alexa) (Social Media) (Cloud)

2017-
2022

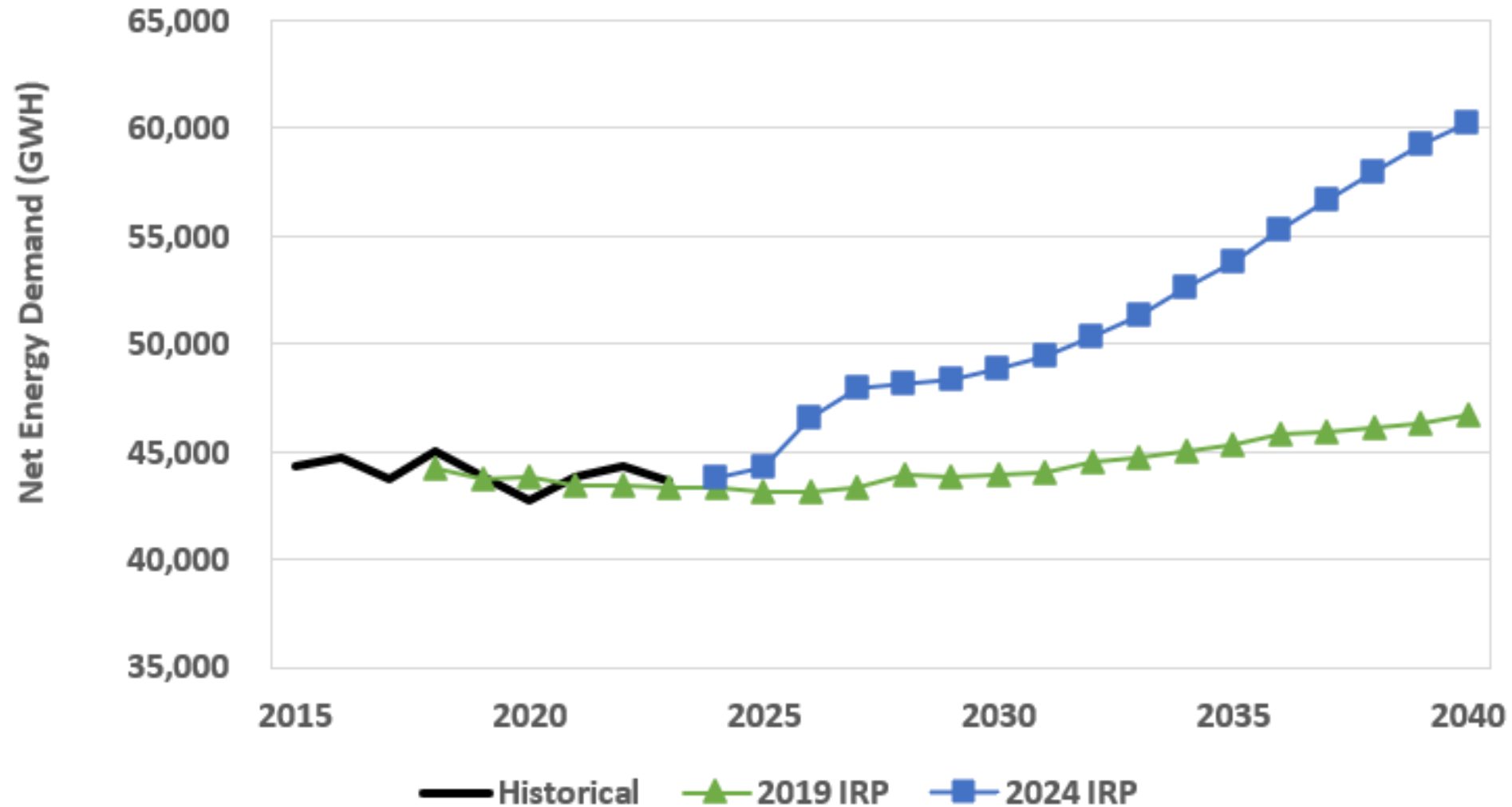
- Xcel Energy enters data center industry through origination efforts
- Minimal outreach from customers researching Xcel Energy market and capabilities
- Bi-lateral negotiations which often resulted in delays based on data center demand forecast and iterative non-committal discussions
- Signed one ESA contract with Google – did not materialize into a project

Generative AI Transformation Create new written, visual, and auditory content given prompts or existing data – market leading. Large Language Models (LLMs) (Chat GPT) (CoPilot)

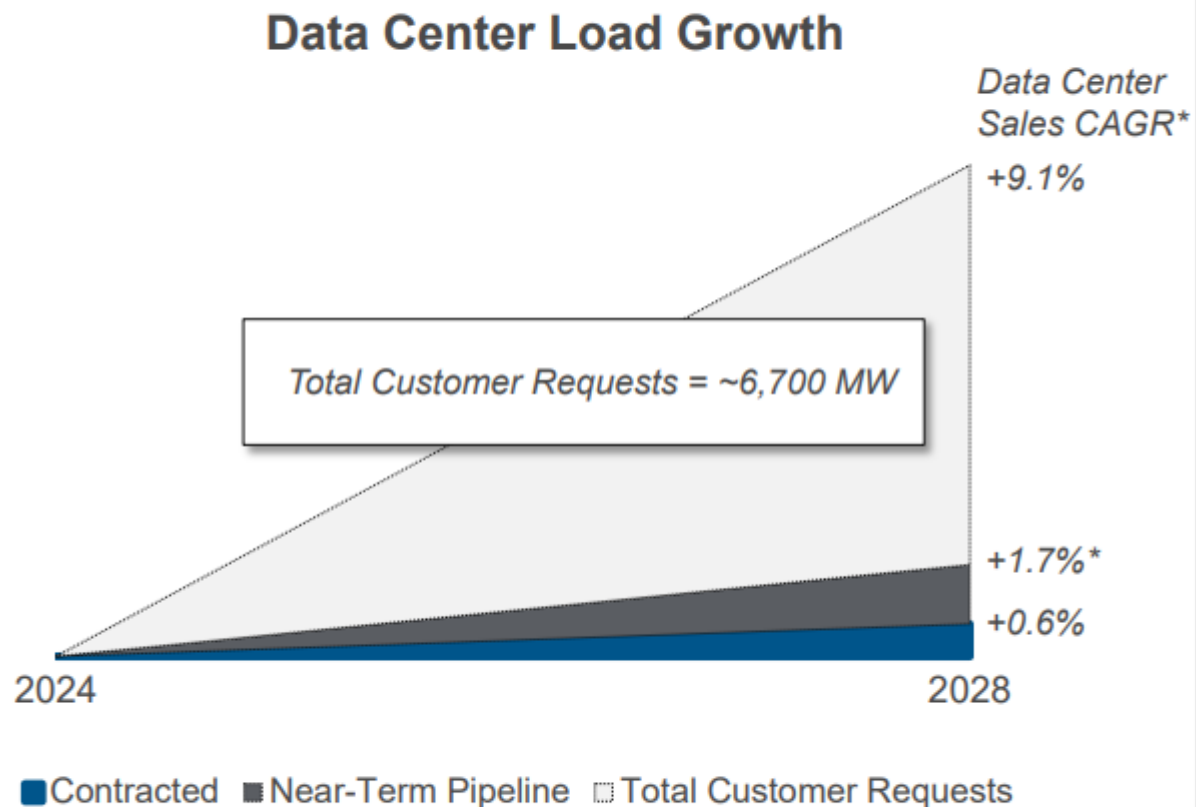
2023-
Now

- Midcontinent and Tier 2 regions are leading the next generation of data center development
- Utilities inundated with requests for the “next” generation of data center development
- Utilities managing many GWs of requests/opportunities

Forecasted Net Energy Requirements After Energy Efficiency Adjustments (GWh)



Data Center Growth



Data Center Wins

- Recent Contracts: Meta (MN) and QTS (CO)
- Land sales to Microsoft and third-party to support multiple data sites at Sherco (MN)
- Xcel Energy competitive advantages:
 - Low priced wind and solar resources
 - Access to unencumbered land
 - Access to water
 - Constructive regulatory processes
 - Balance reliable service with clean power
 - Proven economic development teams
 - Contracts that benefit all customers

* Xcel Energy base five-year sales forecast ~3% annually for 2024-2028, which reflects data center growth of 1.7%

Data Center Market Dynamics

Entergy and AWS (Jackson, MS)

\$10B Capital Investment and 2GW

AEP and AWS (South Bend, IN)

\$11B Capital Investment and 2GW

Evergy and Meta (Kansas City, MO)

\$2B Capital Investment and 500MW

Black Hills and Microsoft (Cheyenne, WY)

\$1B Capital Investment and 300MW

Constellation and Microsoft (Three Mile Island, PA)

825MW at 96.3% capacity, \$100+ megawatt-hour

Talen and Amazon (Salem Township, PA)

960MW Behind the Meter Arrangement

Key Considerations and Complexity

Near and long-term impacts must be weighed and balanced



Carbon Goals



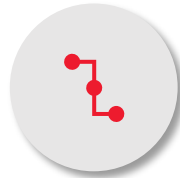
Commercial Risk



Existing
Customer
Benefits



DR & Load
Flexibility



Supply Chain



Core Business
Impact



Load Capacity



Contracts/Tariffs



Policy Alignment

