

Xcel Energy

Presentation for Northglenn City Council
June 24, 2019



Xcel Energy

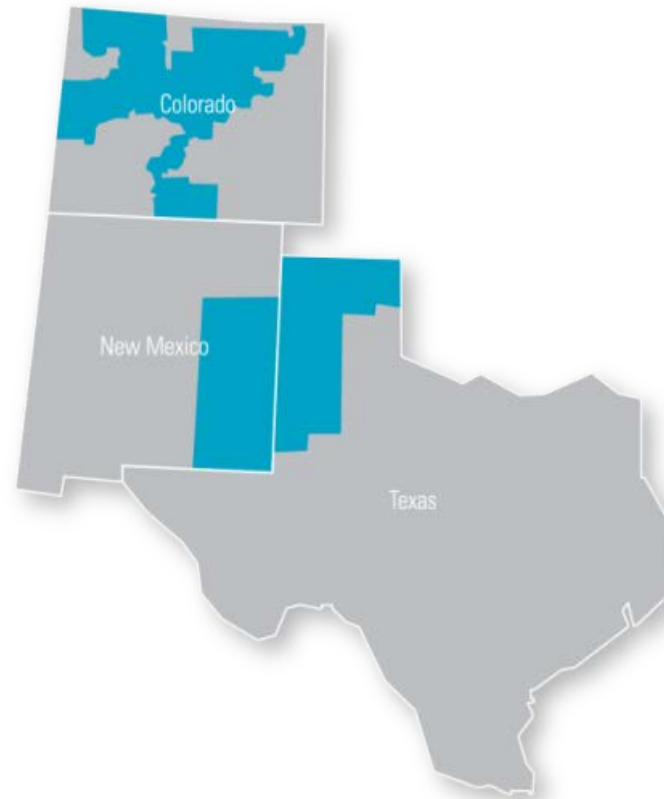
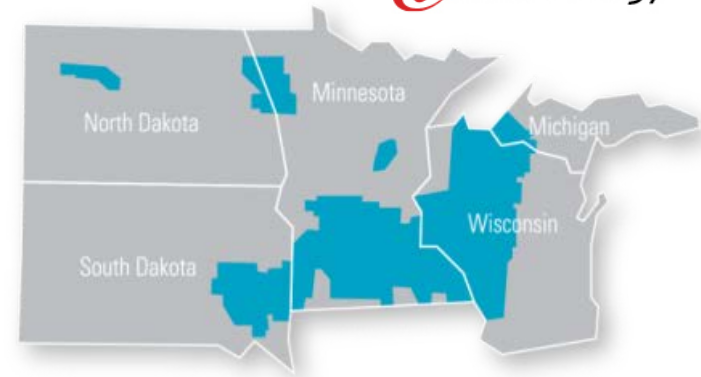


Serving eight states

- 3.6 million electricity customers
- 2 million natural gas customers

Nationally recognized leader:

- Wind energy
- Energy efficiency
- Carbon emissions reductions
- Innovative technology
- Storm restoration



Xcel Energy Priorities



Lead the Clean
Energy Transition



Enhance the
Customer Experience



Keep Bills Low

Our Carbon Vision



**Job #1
Reduce
Carbon**



**Protect
Cost and
Reliability**



**Advance
Technology**



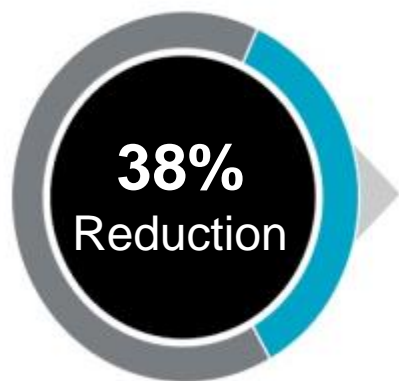
Shared Objectives

A large, light gray double-headed arrow spans the width of the three columns, with the text 'Shared Objectives' centered in red.

Leading the Clean Energy Transition

A bold vision for a carbon-free future

2018



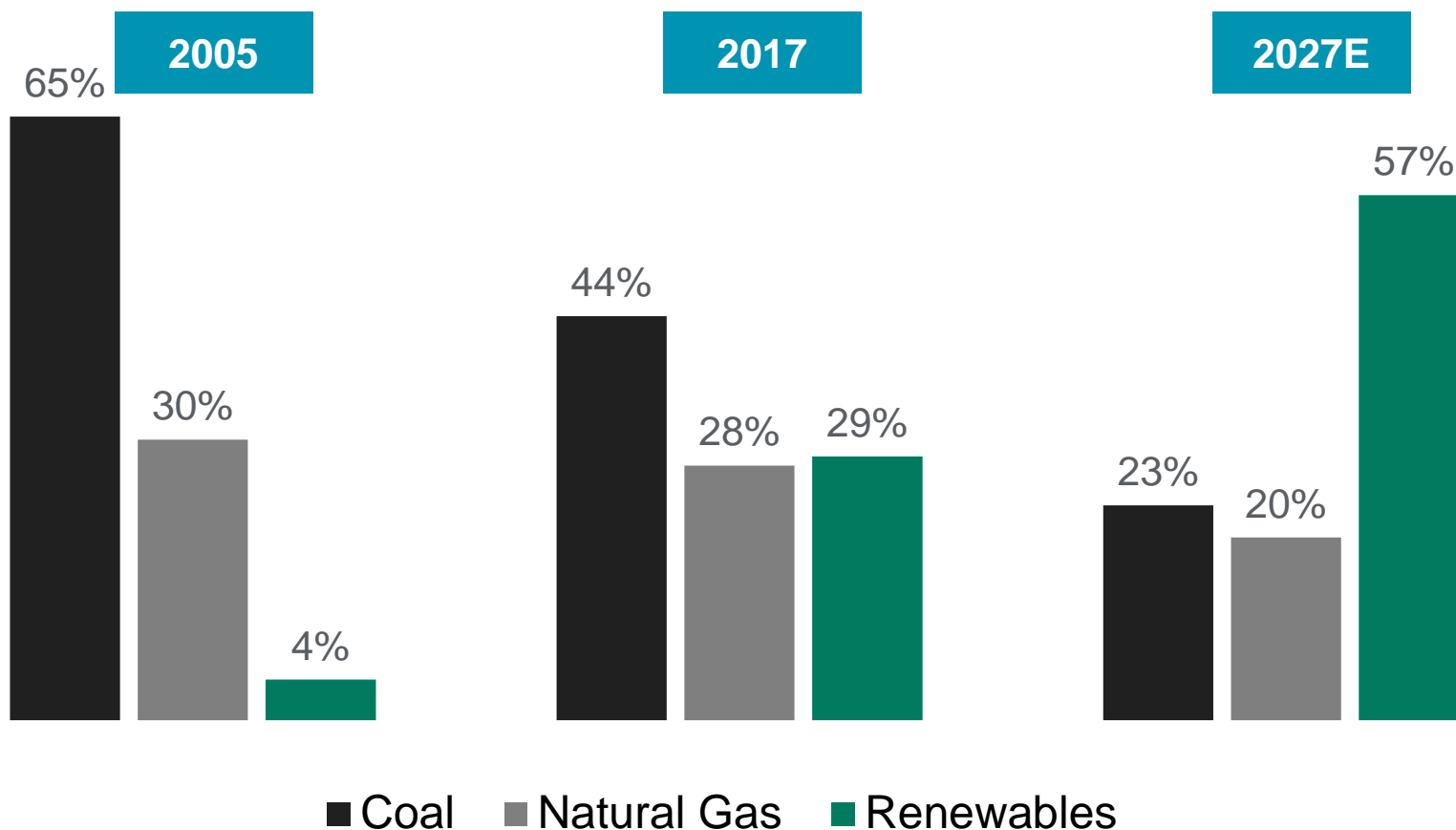
2030



2050



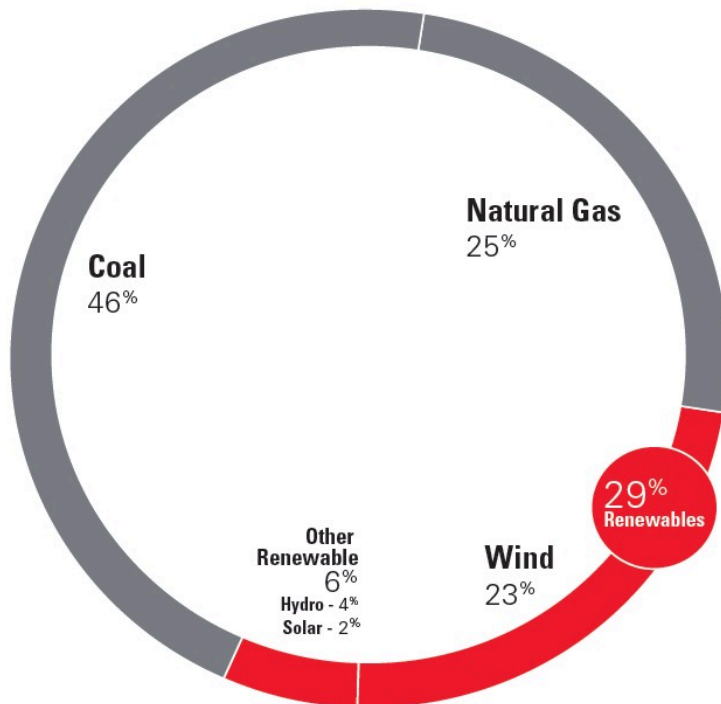
Increasing Renewables on the Grid Colorado



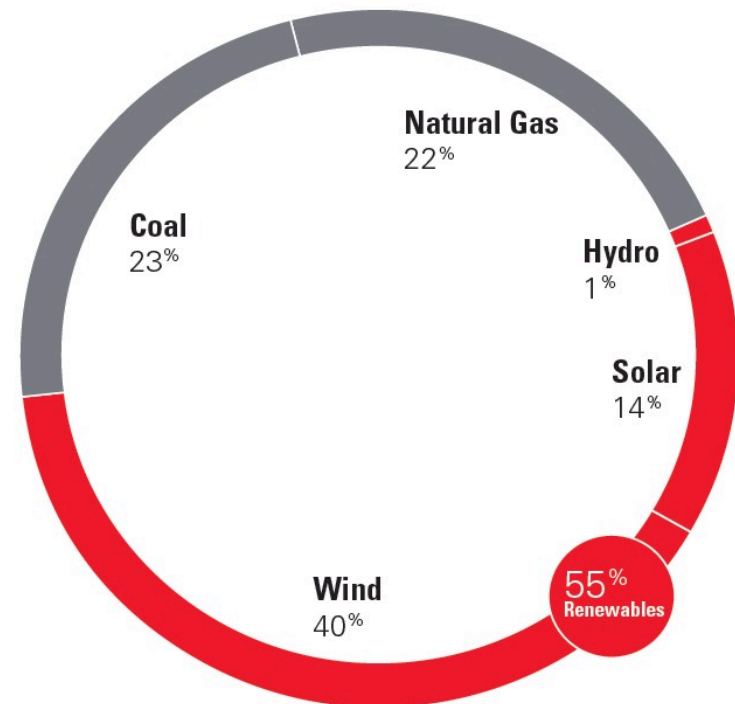
A cleaner energy mix

Increasing renewable and carbon-free share

2016 Colorado Energy Mix

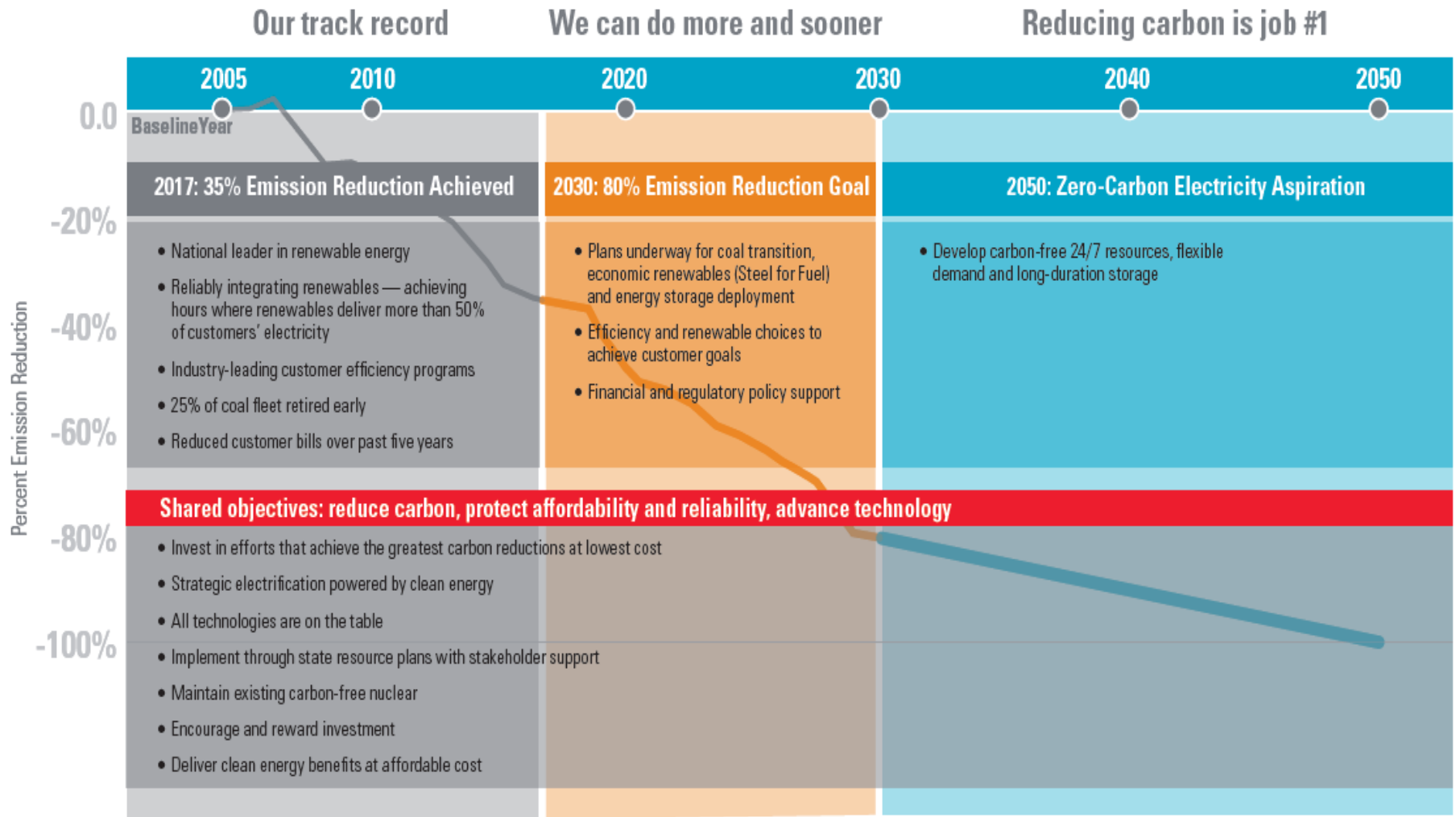


2026 Estimated Energy Mix
Under The Colorado Energy Plan



Leading the Carbon Transition

A bold, new vision for 2030 and 2050



Community Energy & Carbon Goals



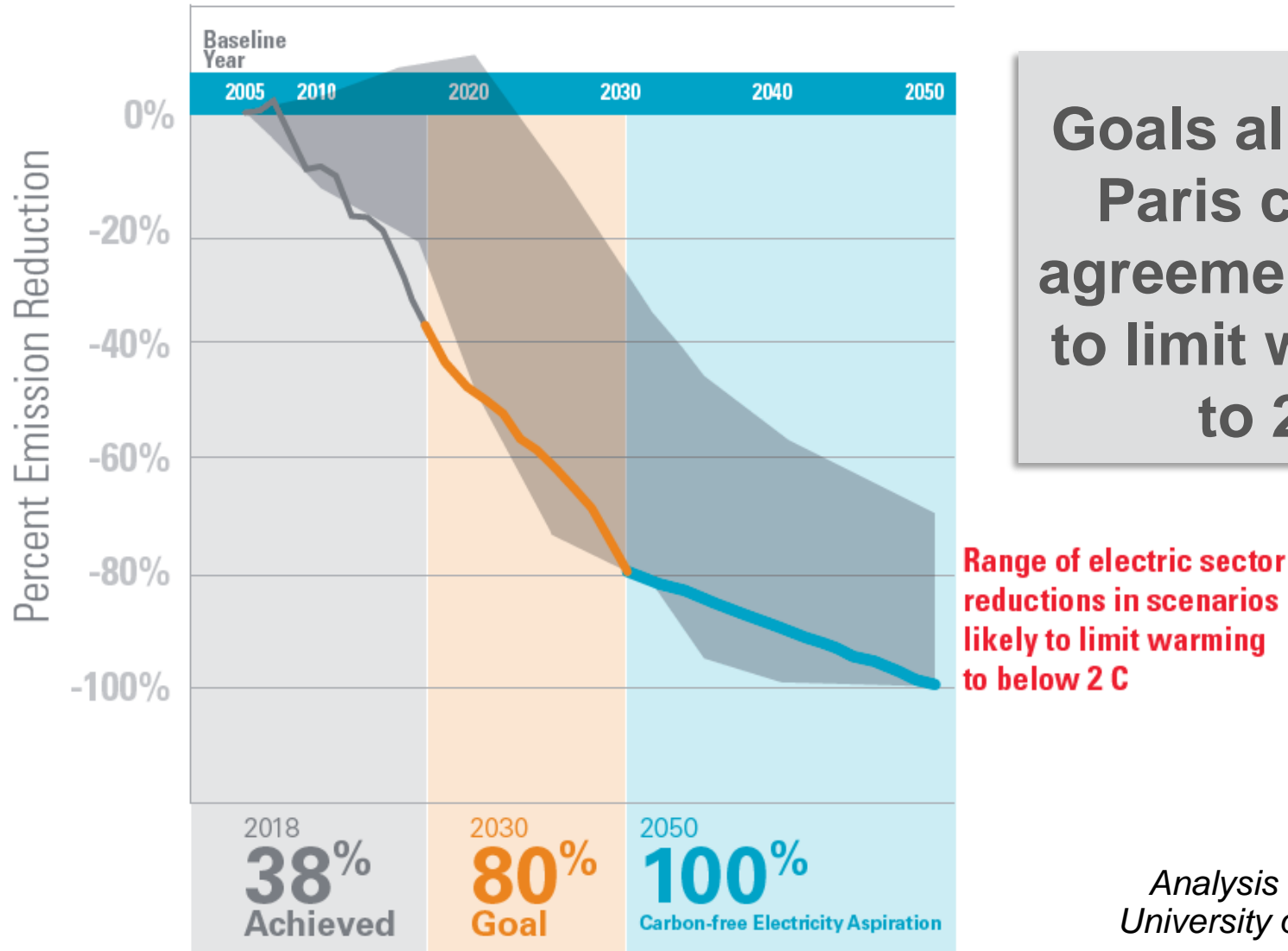
Carbon Reduction Goals	
Minnesota	
Mahtomedi	100% by 2050
Edina	30% by 2025
Minneapolis	80% by 2050
Saint Paul	100% by 2050
Eden Prairie	80% by 2050
Saint Louis Park	100% by 2040
Red Wing	25% reduction
Winona	100% by 2050
Wisconsin	
Eau Claire	100% by 2050
Colorado	
Boulder	80% by 2050
Denver	80% by 2050
Englewood	12% by 2030
Fort Collins	100% by 2050
Lafayette	80% by 2050
Lakewood	50% by 2050
Garfield County	100% by 2040

Renewable Energy Goals	
Minnesota	
Minneapolis	100% by 2022 for municipal facilities 100% by 2030 community-wide
St Louis Park	100% by 2030
St. Cloud	80% by 2018
Wisconsin	
Eau Claire	100% by 2050
La Crosse	25% by 2025
Colorado	
Boulder	100% by 2030
Breckenridge	100% by 2025 for municipal facilities 100% by 2035 community-wide
Denver	100% by 2030
Fort Collins	20% by 2020
Lafayette	100% by 2030
Lakewood	45% by 2025
Longmont	100% by 2030
Nederland	100% by 2020 for municipal facilities 100% by 2025 community-wide
Garfield County	35% by 2020
Pueblo County	100% county-wide by 2035
Summit County	100% community-wide by 2035

Grounded in Climate Science



Xcel Energy Carbon Goals Compared to 2 C Scenarios



Goals align with
Paris climate
agreement target
to limit warming
to 2 C

Analysis by Dr. Brian O'Neill,
University of Denver and IPCC
lead author

A Message that Resonates



BUSINESS

Xcel's pledge to be carbon-free by 2050 makes good business sense

What we have here might simply be a case of a big company going carbon-free to meet the rising expectations of its customers.

DECEMBER 9, 2018 — 6:58PM



MATTHEW STA

Xcel Energy is pledging to be carbon-free by 2050. Above, its Green Project serves customers in Colorado.

WHY XCEL ENERGY'S PLAN TO GO 100% CLEAN ENERGY—IS A BIG DEAL

Xcel Energy, one of the biggest utilities in the US, has committed to going completely carbon-free by 2050 (and 80 percent carbon-free by 2030).

Bloomberg



Climate Changed

Xcel Is First Big U.S. Utility to Swear Off Greenhouse Gas

By Brian Eckhouse

December 04, 2018 5:15 PM Updated on December 05, 2018 8:15 AM



Paul Douglas

@pdouglasweather

Xcel is on the leading edge. Other utilities will quickly discover that lowering carbon can reduce climate risk AND lower costs for consumers over the long haul. There is a real and sustainable ROI for all stakeholders involved



Al Gore

@algore

Follow

To bring global emissions down, we must demand that business & political leaders urgently [#ActOnClimate](#). It can work: A major utility committed to a zero-carbon future, responding to investment opportunity & customer demand. Let's keep the pressure on!

BusinessWire
A Berkshire Hathaway Company

Xcel Energy Aims for Zero-Carbon Electricity by 2050

Photograph

The New York Times

Utility Aims for Zero Carbon Emission From Electric Power

By The Associated Press

Dec. 4, 2018



DENVER — A utility serving 3.6 million electricity customers in eight states said Tuesday it will try to eliminate all its carbon emissions from electrical generation by 2050.

How We Plan to Get There

2030 Goal: 80% Reduction

Four Common Elements:

- Investing in wind and solar under our Steel for Fuel growth strategy and offering customers more renewable energy options
- Helping customers manage their energy usage and bills through efficiency and rebate programs
- Maintaining our carbon-free nuclear plants in the Upper Midwest
- Transforming the energy grid by retiring or reducing the operation of aging coal plants and replacing their energy with flexible natural gas, renewables and advanced technologies

2050 Aspiration: Carbon Free

- We will need clean technologies that can be dispatched to integrate high levels of wind and solar, balancing the peaks when customer use exceeds renewable generation and valleys when renewable generation exceeds customer use.
- There needs to be significant research and development in new carbon-free dispatchable technologies, flexible demand and long-duration energy storage – all technologies that are not yet commercially available at the cost and scale needed.

Challenges to a 100% Renewable Grid

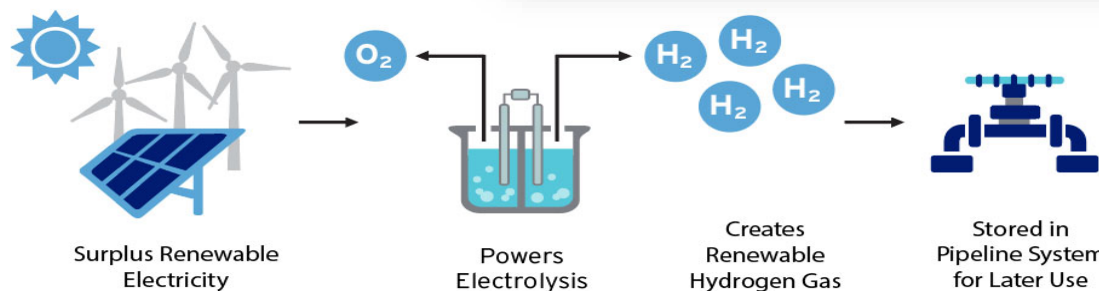
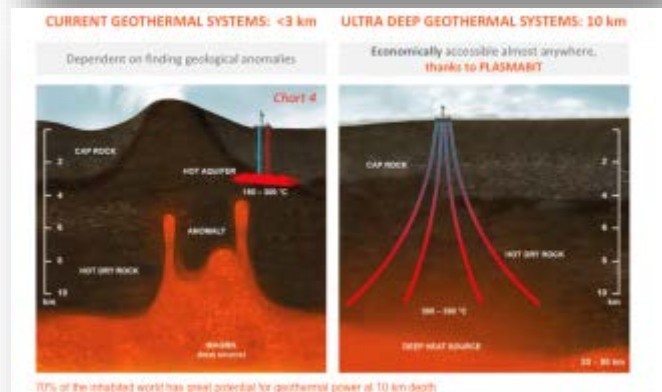
1. Costs increase steeply at high levels of annual renewables
2. At 100%, “overbuilding” grid capacity as much as 8X peak is required
3. No great solution to use or store surplus renewable generation



2050 Aspiration Depends on 24/7 Carbon-Free Technology

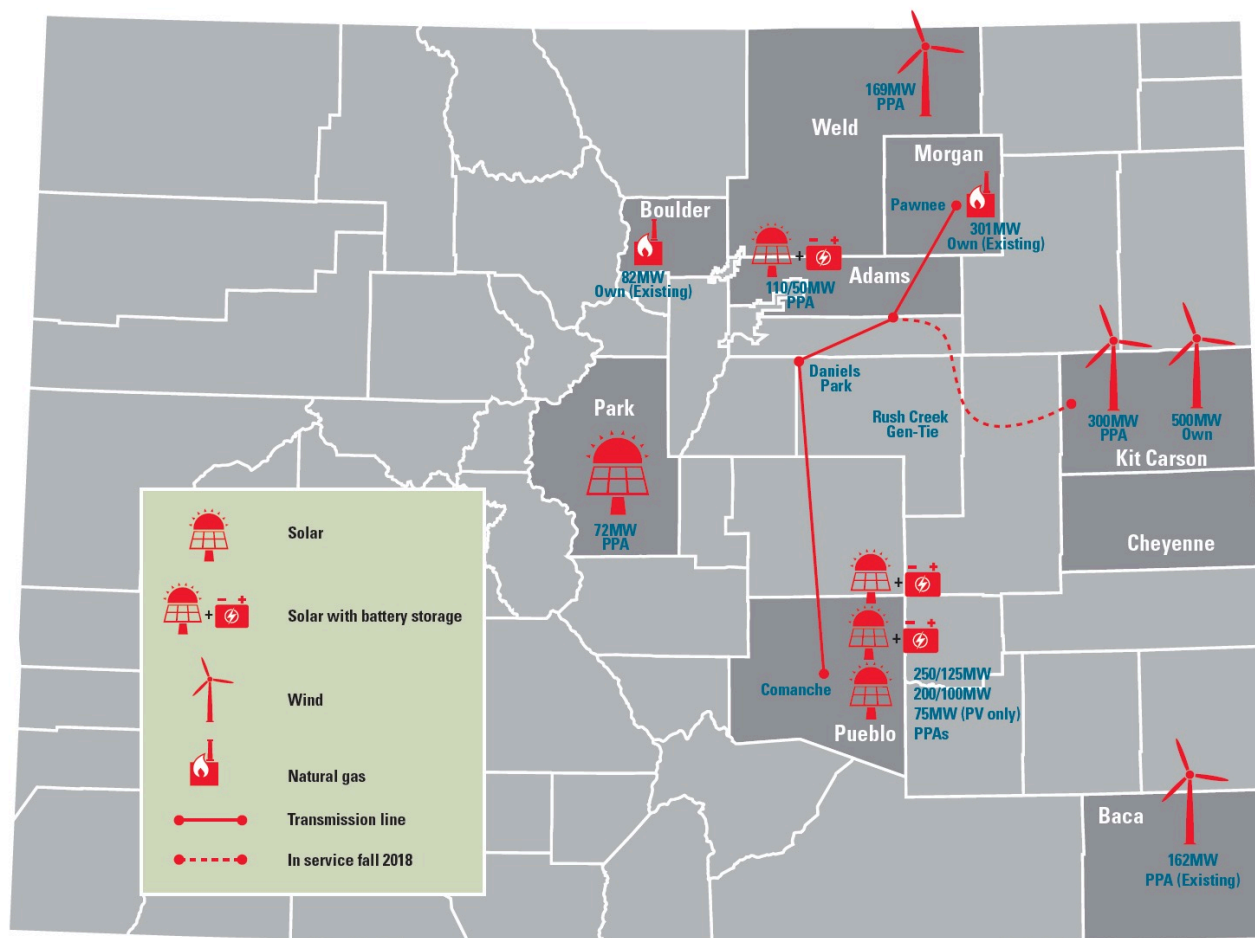
Examples include:

- Natural gas with carbon capture and storage
- Deep rock geothermal
- Power to gas
- Advanced nuclear
- Seasonal storage
- Others



Power to Gas Diagram Courtesy of SoCal Gas

Preferred Colorado Energy Plan Portfolio



Customer-Focused Energy Solutions










Through programs such as Solar*Rewards, Solar*Rewards Community, Renewable*Connect, and Windsource, we are providing our customers with more control over how their energy is produced. These programs make it possible for our customers to choose their own personal energy options that best fit their individual interests and needs.

Our Colorado customers can participate in 22 energy efficiency programs that allow our customers more control over their energy use and their monthly bills.

Renewable Choice Programs



	Standard Energy Mix	Renewable*Connect (Available early 2018)	Windsource®	Solar*Rewards Community®	Solar*Rewards®	Net Metering Without Incentives
Energy Source	23% Wind, 4% Hydro, 2% Solar					
Cost to participant	29% renewable energy at no extra cost	Subscription fee on Xcel Energy bill	Subscription fee on Xcel Energy bill	Subscription fee paid to solar garden per contract terms	Pay solar installer for equipment per contract terms	Pay installer for equipment per contract terms
Financial Benefit	Lowest cost renewables keep rates low for everyone	Personal per kWh fuel credit for using solar	None	Bill credit payment for solar energy produced	Monthly energy use is offset by solar, plus incentive per kWh of solar	Monthly energy use is offset by solar
Requires on-site installation	No	No	No	No	Yes	Yes
Minimum contract length	None	0 to 10 years	None	Up to 20 years	Up to 20 years	None
Increases costs for non-participating customers	No	No	No	No	Yes	Yes
Contract with	No Contract			Solar Garden Company	1) Solar Installer – equipment 2) Xcel Energy – interconnection & incentive	1) Installer – equipment 2) Xcel Energy – interconnection
Earn renewable energy credits*	No	Yes	Yes	No	No	Yes

Advanced Grid Intelligence & Security

A key component of our transformation is to create an interactive, modern, and efficient grid that will deliver more of what our customers expect: cleaner, more reliable energy, more ways to save money, and a better customer experience.



Reliability



Outages



Renewable Energy



Setup and Billing



Customer Choice and Control

Energy Storage



As the price of battery storage continues to fall, we are taking advantage of this emerging technology to determine the best ways to use batteries to manage the electrical grid and enhance service and maximize value for our customers.

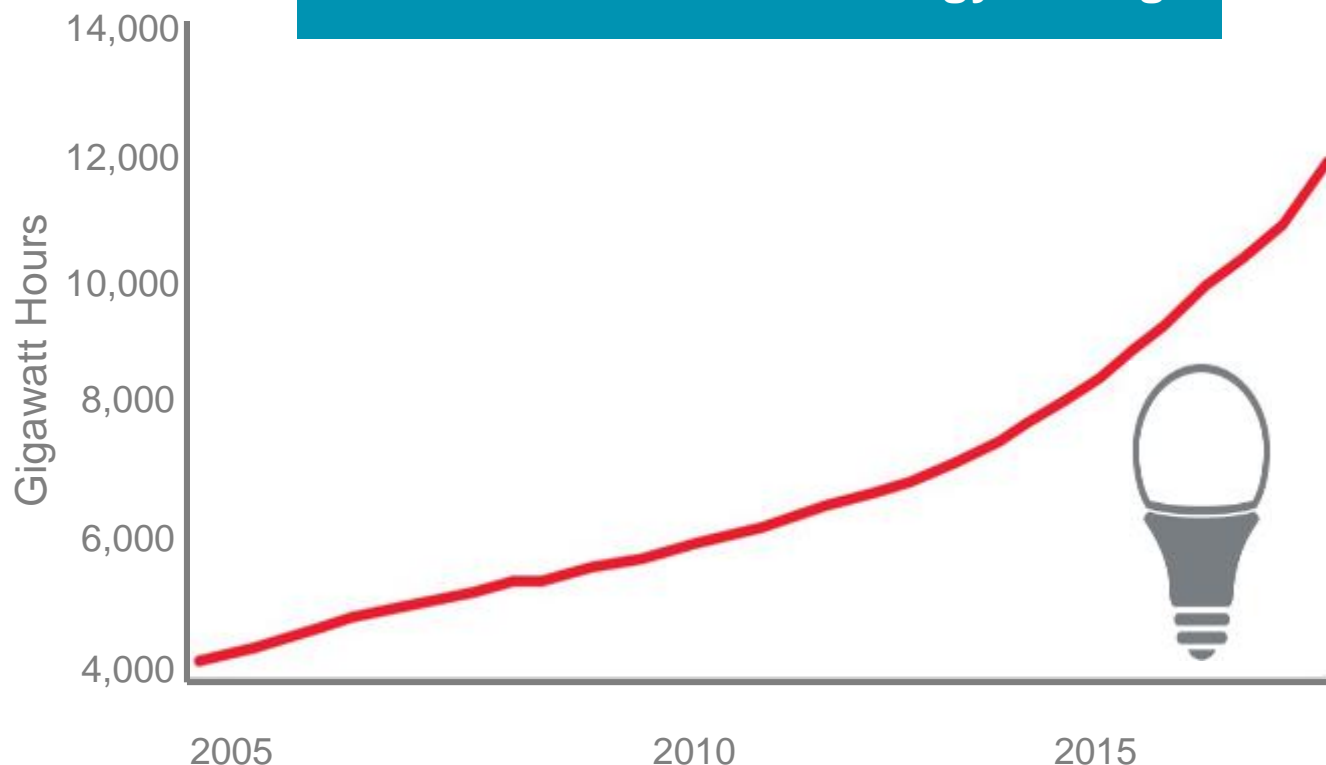
- Through the Colorado Energy Plan, we will add 275 MW of large-scale battery storage.
- In Stapleton, we are testing the use of batteries to integrate and manage high levels of rooftop solar on neighborhood homes.
- In partnership with Panasonic, we are testing batteries to help us manage the power grid while providing back-up power to Panasonic's new headquarters building at Pena Station.



Energy Efficiency Leadership



Cumulative Customer Energy Savings



- **150** programs
- **20** power plants avoided
- **628,000** tons carbon avoided in 2017

Strategic Electrification

A solution for reducing carbon economy-wide

Xcel Energy Electric Vehicle strategy:

- Making EV adoption easier
- Creating charging infrastructure
- Establishing rates and technology to encourage charging on low-cost, low-carbon energy

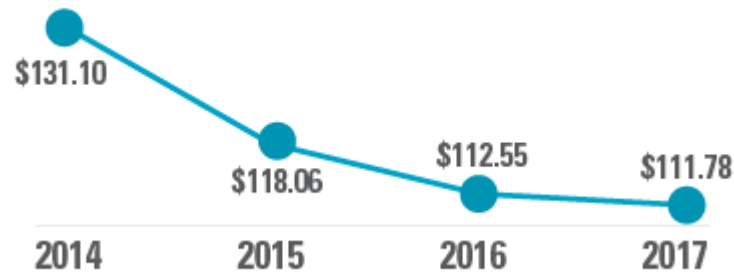


~2 million EVs projected in Xcel Energy territories by 2035

Affordable Clean Energy

Goal to Keep Energy Rates at or Below Inflation

Xcel Energy Average Combined Residential Bills



\$111.78
CO Xcel Energy
Customer Average

vs.

\$163.14
National Average

*Most recent (2017) Average Combined Bill from EIA National Reporting

Contact Information

Thank You

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