



Destination 2050

Building the Future

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Xcel Energy

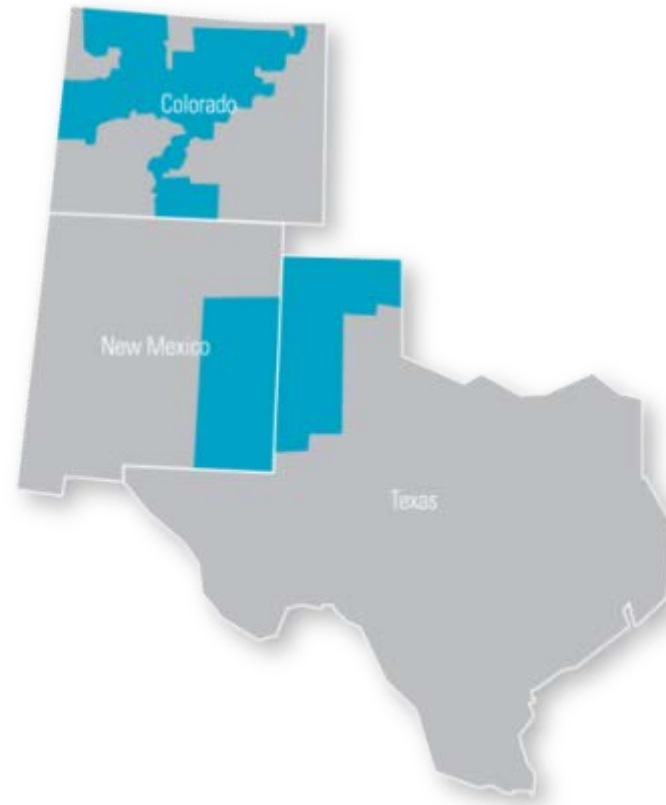


Serving eight states

- 3.6 million electricity customers
- 2 million natural gas customers

Nationally recognized leader:

- Wind energy
- Energy efficiency
- Carbon emissions reductions



Xcel Energy Priorities



Lead the Clean
Energy Transition



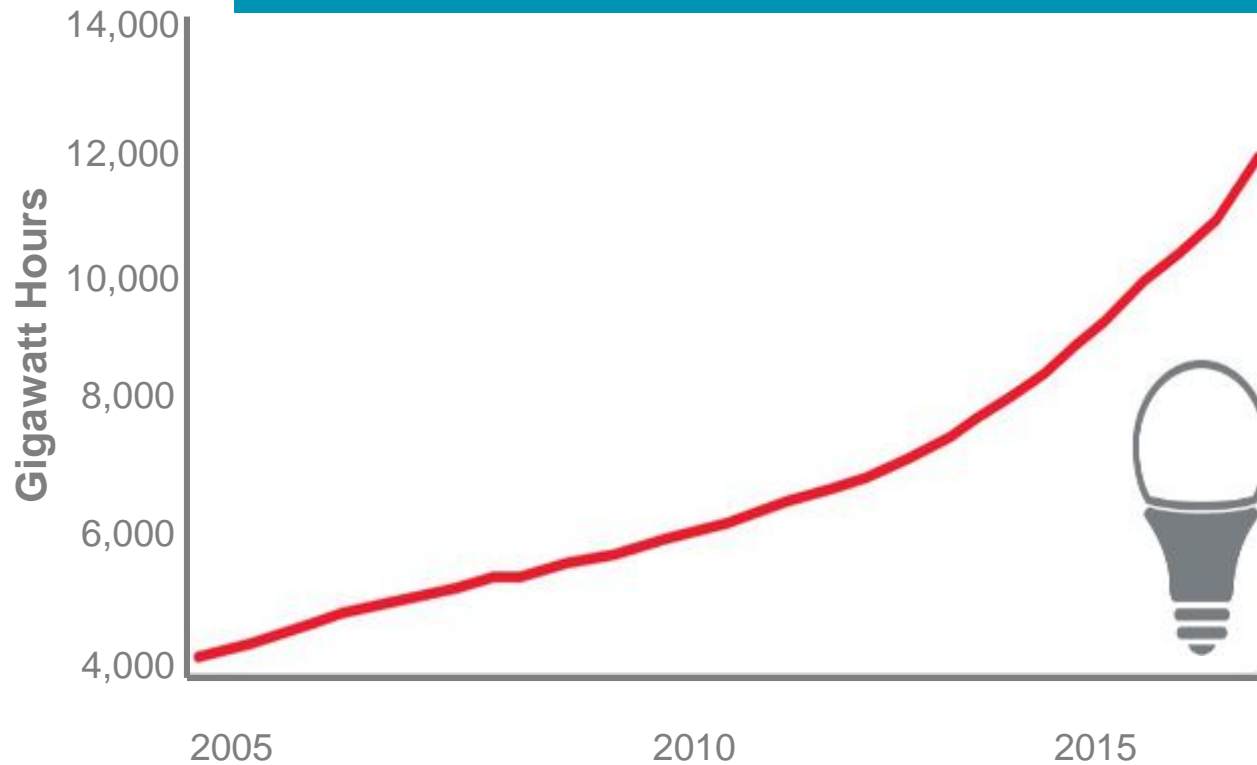
Enhance the
Customer Experience



Keep Bills Low

Energy Efficiency Leadership

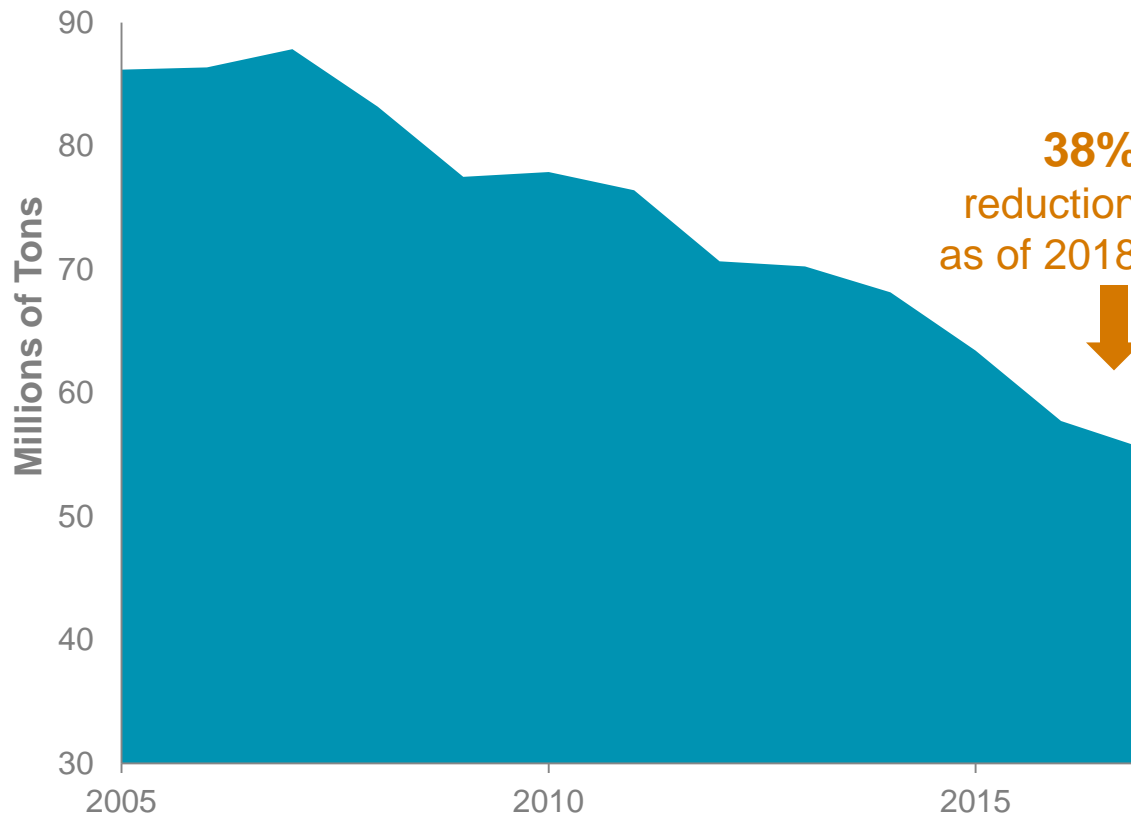
Cumulative Customer Energy Savings



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

Carbon Reduction Progress to Date

Xcel Energy Carbon Reductions

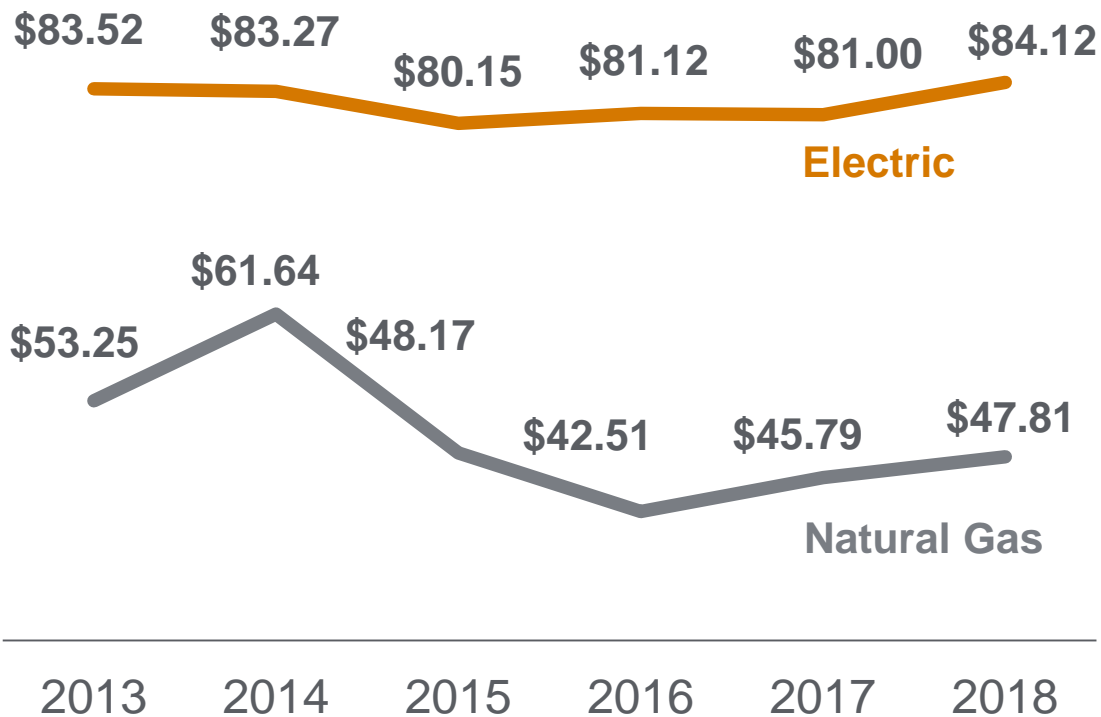


Reductions to date surpass:

- United States commitment for 2025 in Paris agreement
- Clean Power Plan national goal for 2030

Keeping Customer Bills Low

Average Residential Customer Bill



Xcel Energy gas and electric bills are below the national average

Steel for Fuel

CUSTOMER AFFORDABILITY IS THE FOUNDATION OF STEEL FOR FUEL

Renewable Generation

Displace Fossil Generation
Drive Capital Investment

PPA Buyouts and Increasing Generation Ownership

Diversify Ownership Portfolio
Drive Capital Investment

Enables

Lower Fuel
and Capacity Costs

Lower O&M

Lower Environmental
Compliance Costs

Production Tax Credits

Capital investments that reduce total customer costs
provide headroom for infrastructure investment
that benefits our customers

Xcel Energy Carbon Strategy

2018



2030

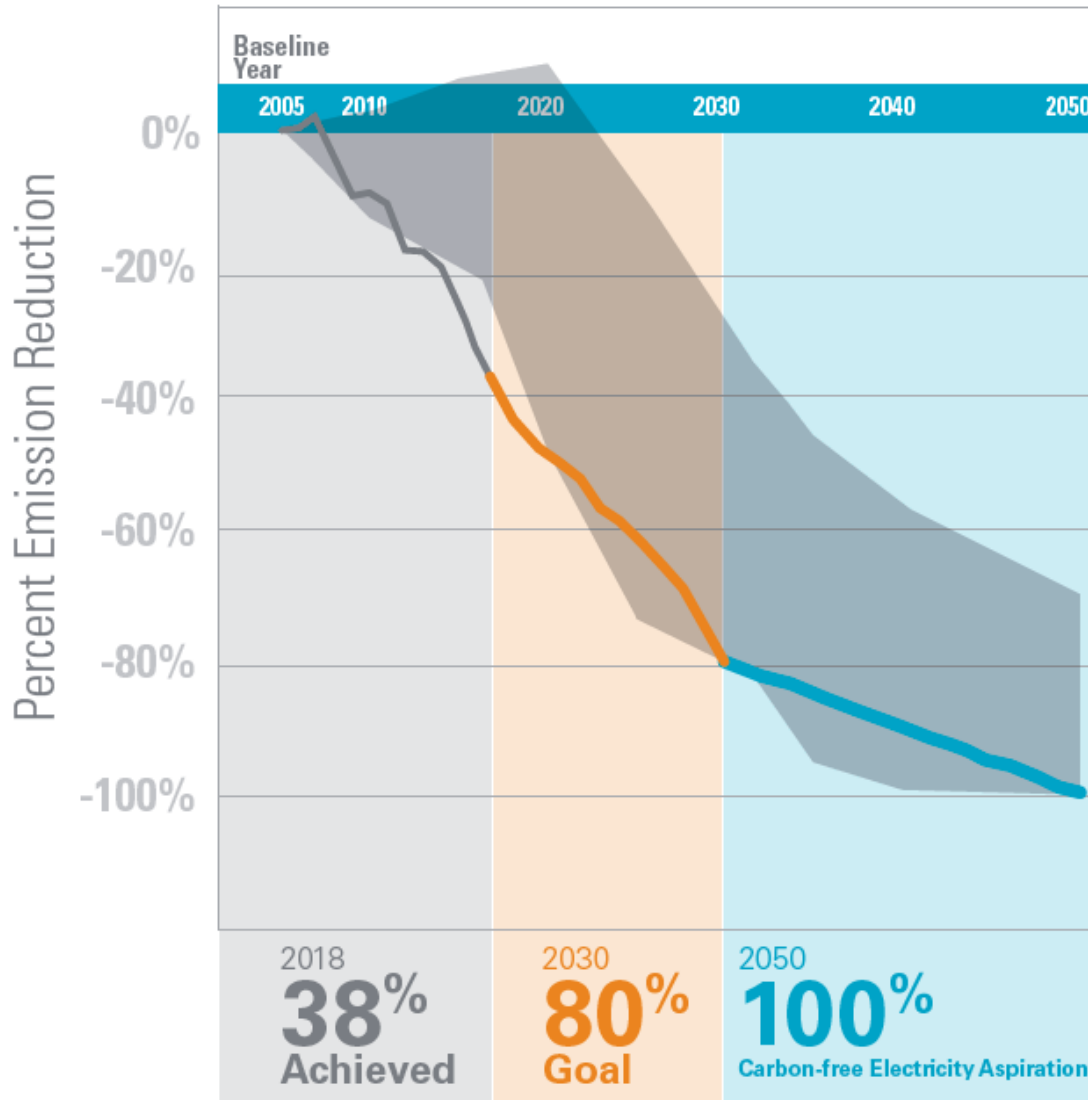


2050



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

Range of electric sector reductions in scenarios likely to limit warming to below 2 C

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

Achieving the Vision

Reducing Carbon Emissions is Job #1

- Protect energy reliability and affordability
- Support from our states and stakeholders
- Advocate for constructive public policy
- Develop carbon-free 24/7 technologies for 2050

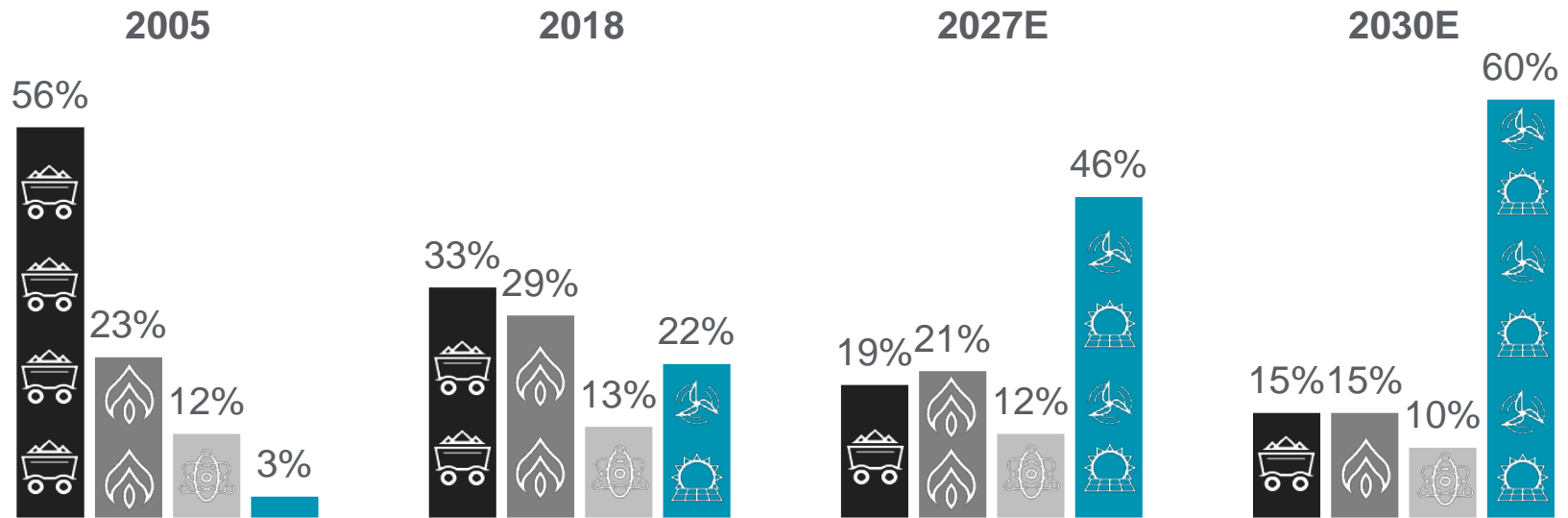
Path to an 80% Reduction by 2030

Affordably and reliably, with current technology

- Increase renewables
- Natural gas and energy storage
- Preserve nuclear
- Transition coal fleet
- Energy efficiency
- Strategic electrification
- Invest in the grid



Increasing Renewables on the Grid



Remainder of 6% includes hydro, biomass and other

Remainder of 3% includes hydro, biomass and other

Remainder of 2% includes hydro, biomass and other

These are estimates that reflect potential scenarios that achieve 80% carbon reduction by 2030; actual system depends on various factors, including regulatory approval of future plans.

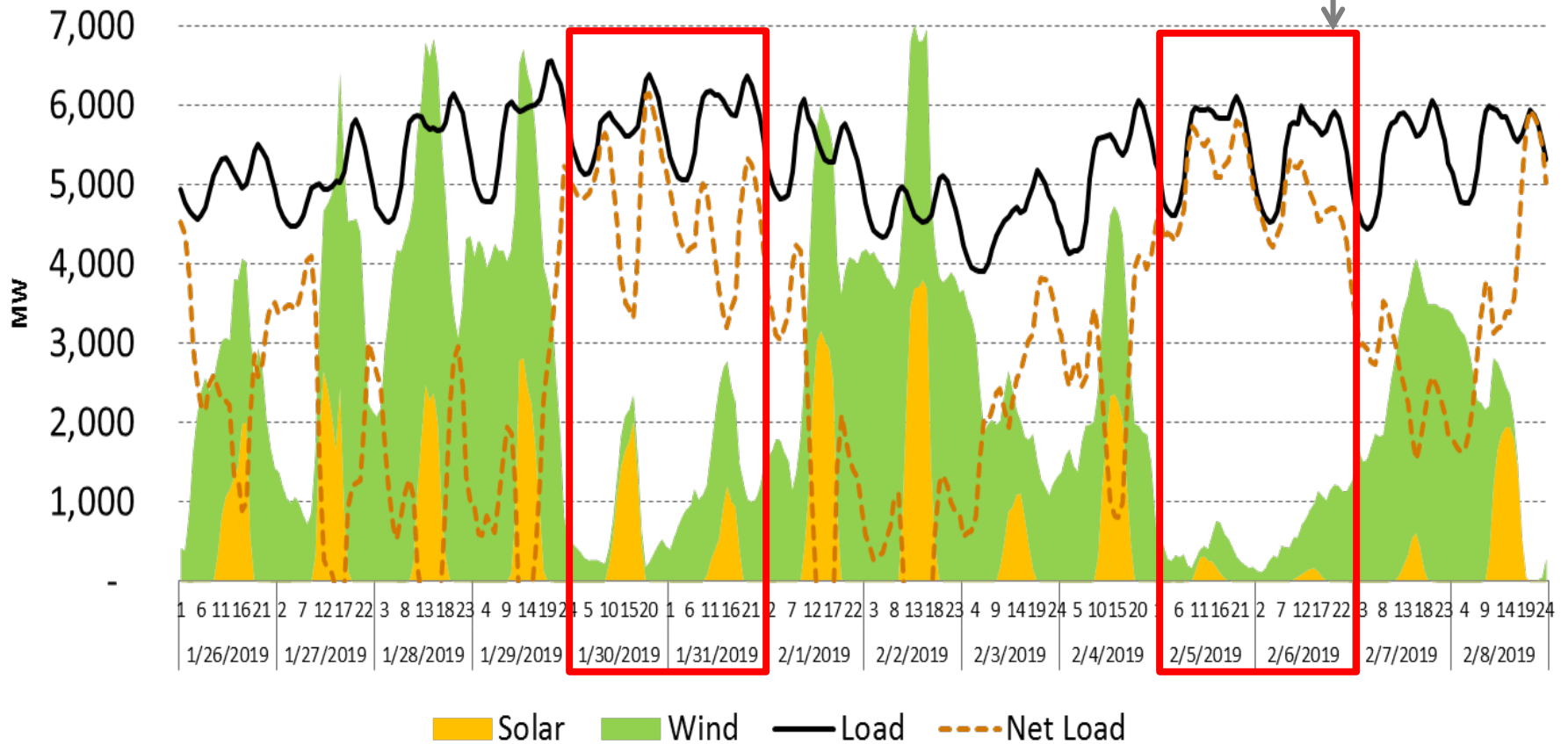
Coal
 Natural Gas
 Nuclear
 Renewables

Estimated Renewable Additions by 2030: 5,000 MW Wind and 8,500 MW Solar

The Winter Challenge Incremental Renewables

More renewables & use-limited resources alone cannot reliably fill the gap

2019 Illustrative Scenario (5,000 MW Wind, 5,000 MW Solar)



Challenges to a 100% Renewable Grid

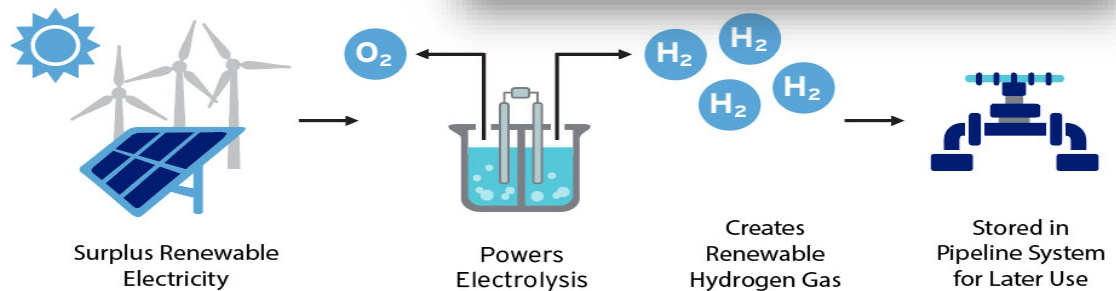
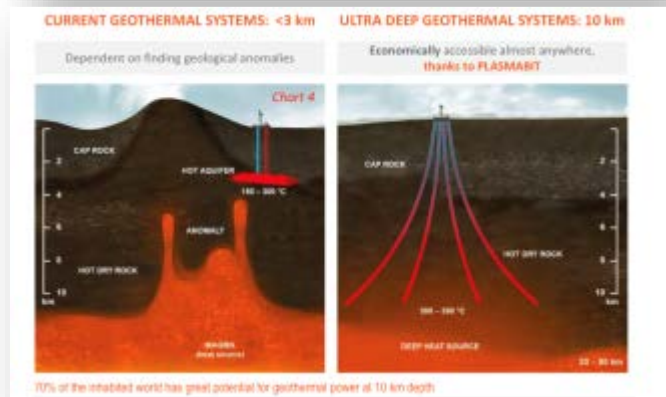
1. Costs increase steeply at high levels of annual renewables
2. At 100%, “overbuilding” grid capacity as much as 8X peak is required
3. No great solution to use or store surplus renewable generation



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



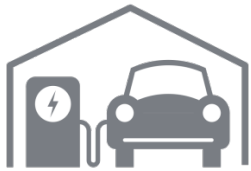
Constructive State Policies

- **Colorado**
 - Statewide Carbon Cap
 - Carbon Reduction Bill
 - Electric Vehicles Bill
- **Minnesota** – Preferred Resource Plan Announcement
- **Texas** – Generation Rider
- **New Mexico** – Carbon and renewable targets

EV Implementation Plan

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



Home
Charging



Public
Charging



Fleet
Operations



~2 million EVs projected in Xcel Energy territories by 2035

Thank You

