# CEO Presentation to the Joint Committee on Rising Utility Rates

March 7, 2023

COLORADO
Energy Office

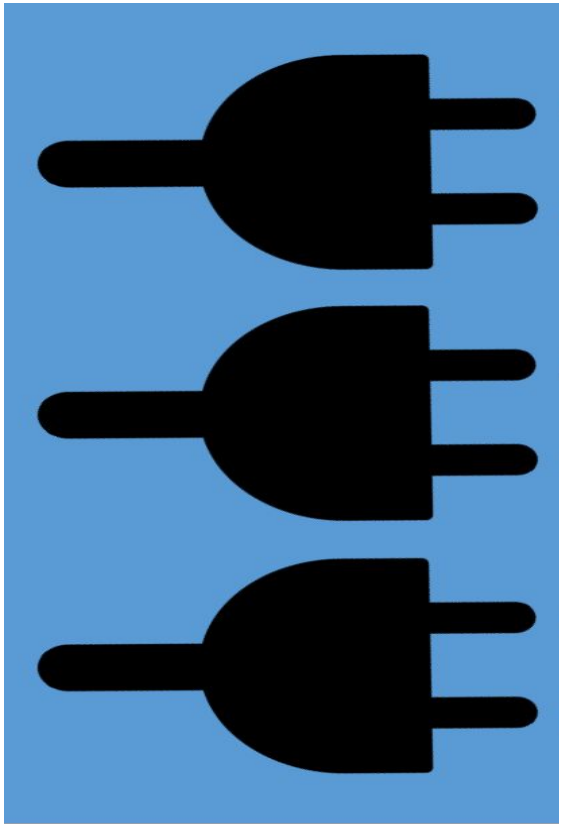
# Colorado Energy Office: Mission & Vision

# Governor's Letter

- *Recognized natural gas prices are imposing terrible burdens on households and businesses and have long-term consequences for Colorado's competitiveness as a great place to live and work.*

- *Called on state agencies to work collaboratively with the state's utilities and others to develop responses that can help reduce the energy cost burden.*

# Elements of Customer Bills

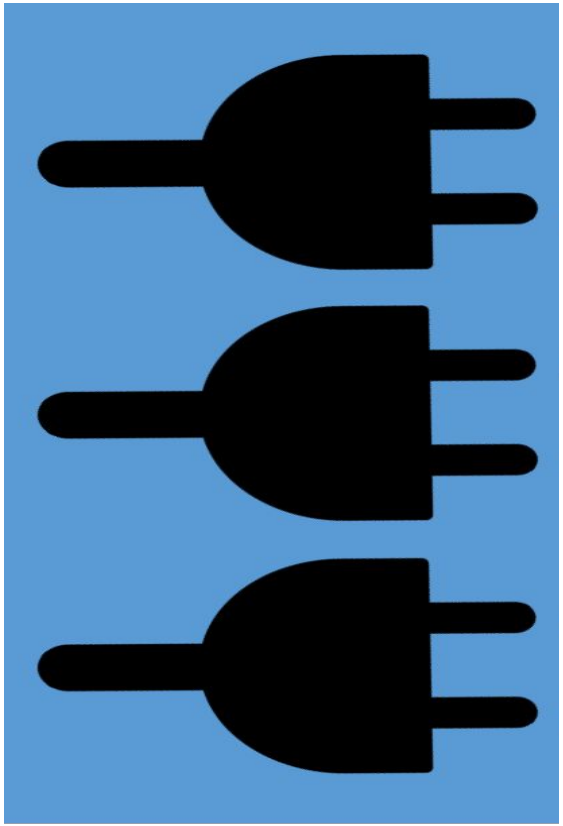


Customer Charge: A monthly charge applied to all customers in class to recover specific costs (e.g., meters, billing).

Energy Charge: A volume based price (usually per kWh). It may be time varying or based on blocks of usages.

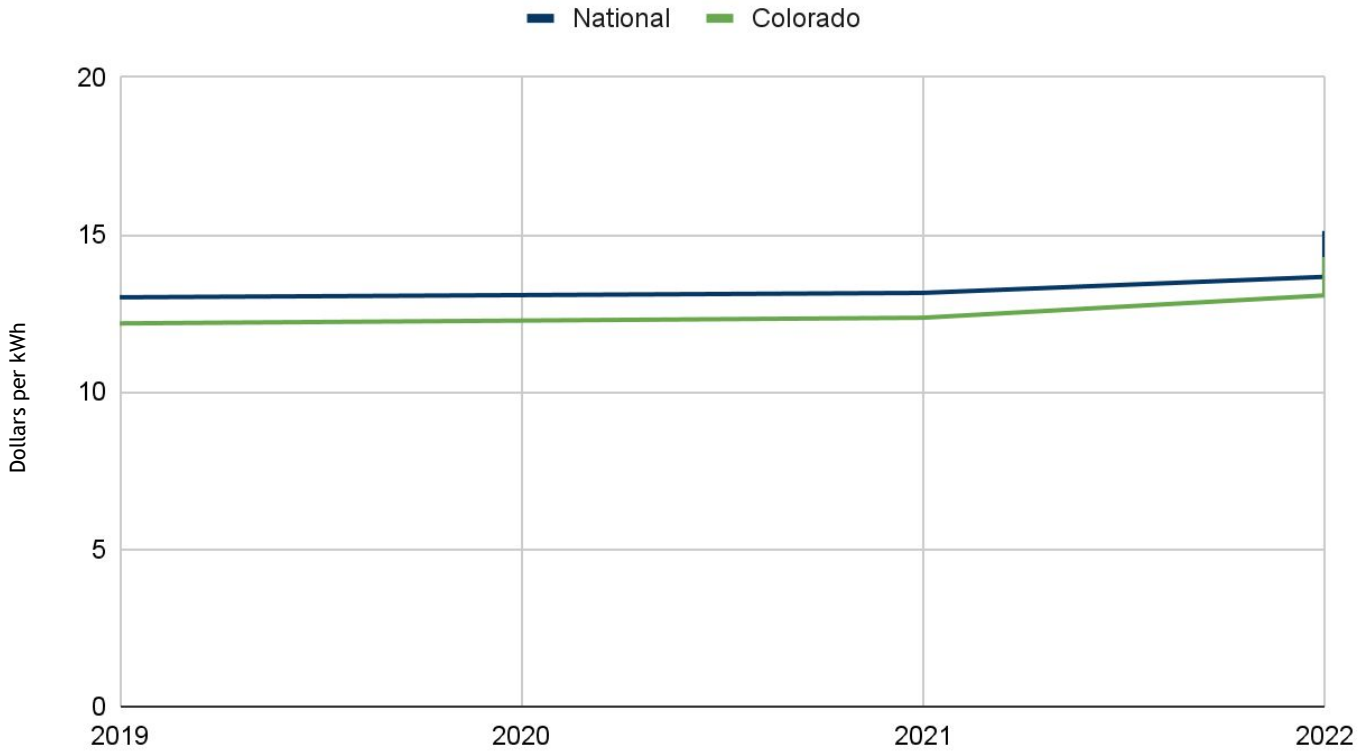
Demand Charge: A monthly fee charge based on the highest instantaneous power usage.

# Traditional Principles of Rate Design



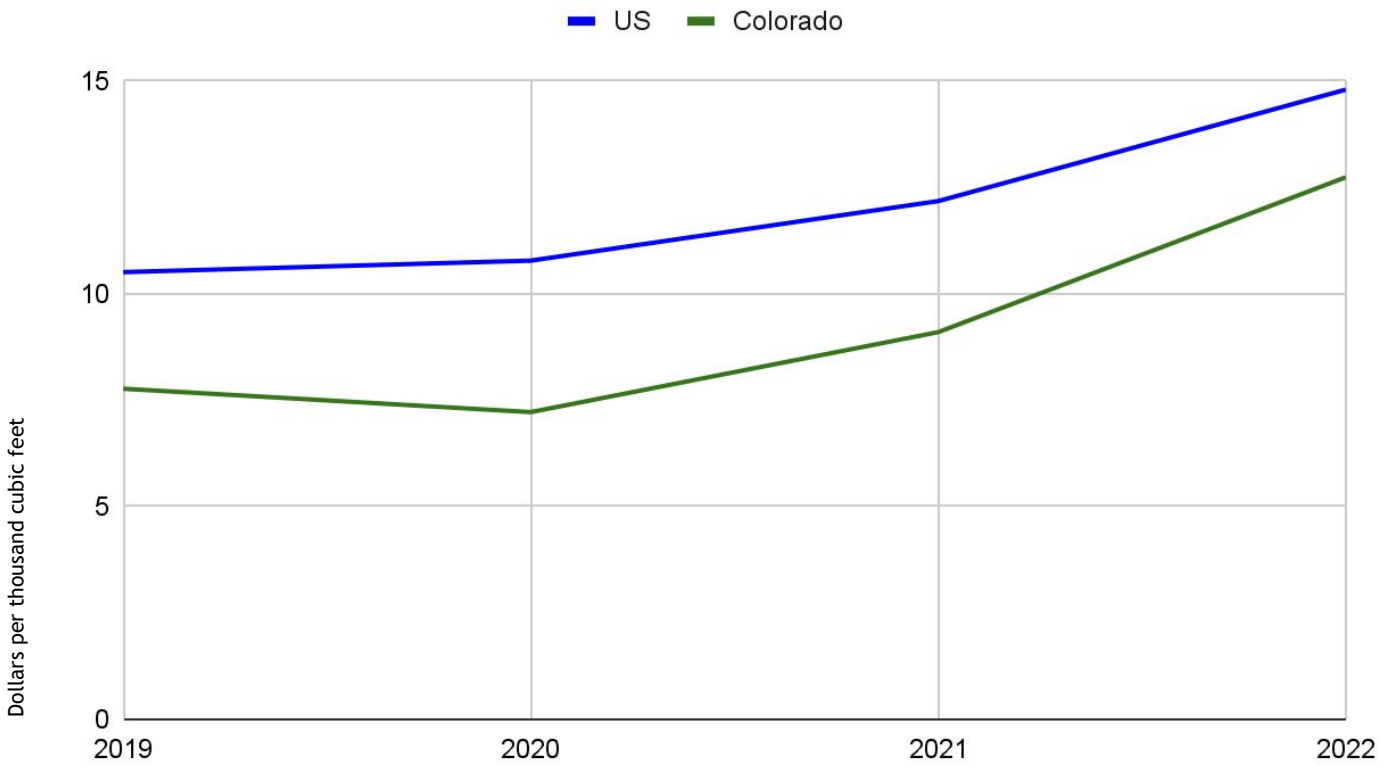
- Simple
- Understandable
- Acceptabile to the public
- Yield total utility revenue requirement
- Stable utility revenue
- Stable rates for customers
- Fair among customer classes
- Avoid undue discrimination
- Economically efficient energy use

# US and Colorado Retail Electric Rates



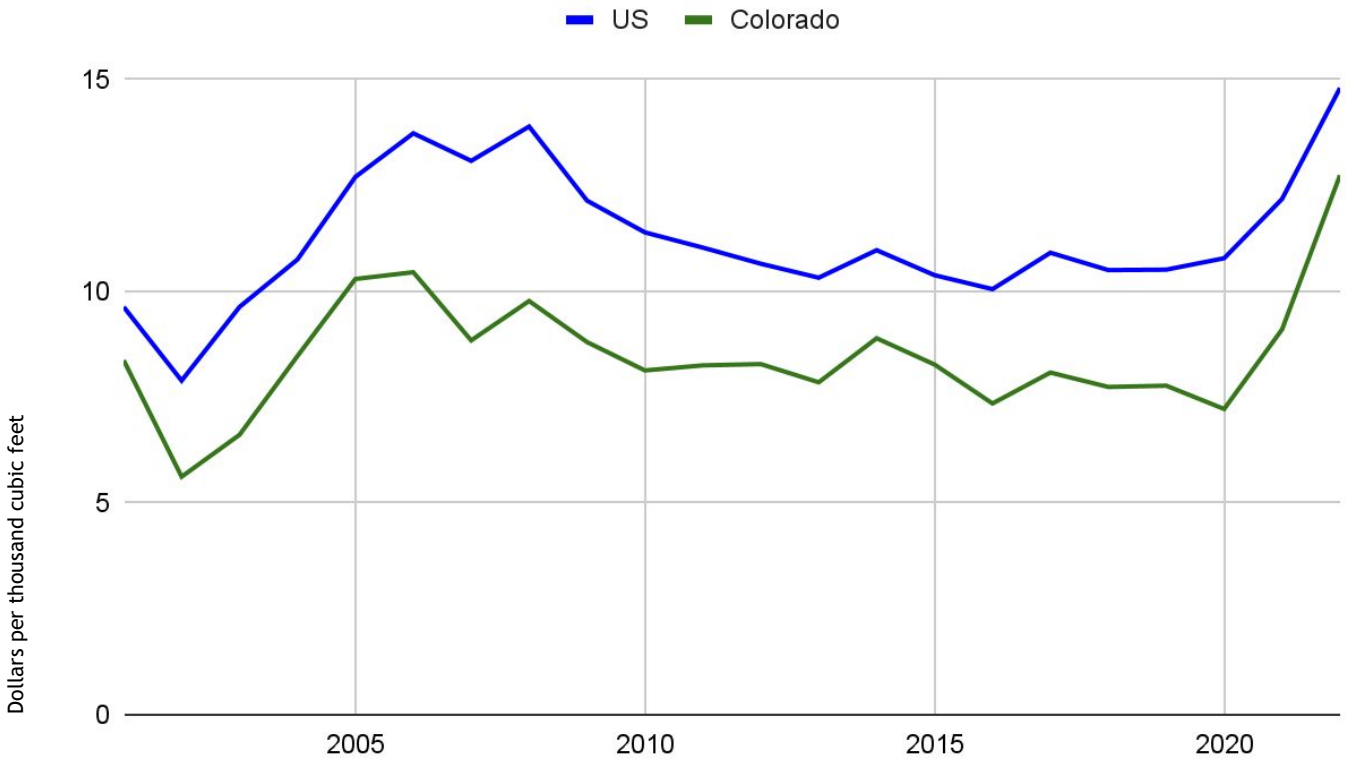

Data Source: EIA

# Cost of Delivered Gas




Data Source: EIA

# Cost of Delivered Gas Costs (2001-2022)




Data Source: EIA

# Colorado's Clean Energy Transition


Electric Utility Plans

Building Decarbonization and Gas Planning

Low and Zero Emission Vehicles

# Clean Energy Progress in Colorado

**Xcel Energy**

- Reduce GHG emissions by about 85% by 2030
- Retire all coal plants by start of 2031
- Wind- 2,500 MW
- Solar - 1,600 MW
- Storage - 400 MW

**Holy Cross Energy**

- Filed a Clean Energy Plan
- Reduce GHG 90% by 2030
- 100% carbon free electricity by 2030
- Wind - 100 MW
- Solar - 110 MW
- Storage - 80 MW

**Black Hills Electric**

- Filed a Clean Energy Plan, PUC process beginning
- Reduce GHG 80% by 2030
- 79% Renewable by 2030
- Wind - 100 MW
- Solar - 200 -250 MW
- Storage - 50

**Colorado Springs Utilities**

- Filed a Clean Energy Plan
- Reduce GHG 80% by 2030
- 32% renewable energy by 2030
- Close all coal plants by 2030

**Platte River Power Authority**

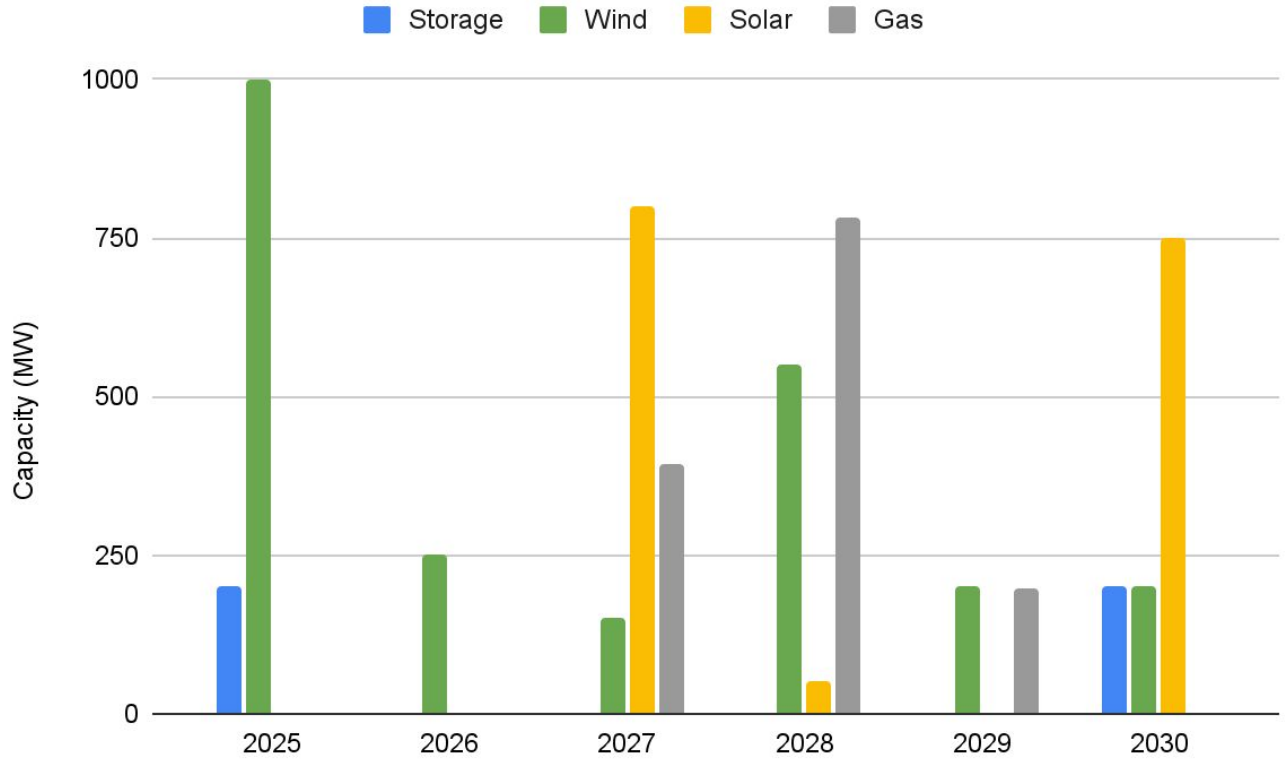
- Filed a Clean Energy Plan
- Reduce GHG 87% by 2030 levels
- Close all coal plants by 2030
- Wind - 200 MW
- Solar - 300 MW
- Storage - 200 MW

**Tri-State G&T**

- Filed ERP to Reduce in-state GHG 84% by 2030
- Close Colorado coal plants by 2030
- Wind - 300 MW
- Solar - 1050 MW

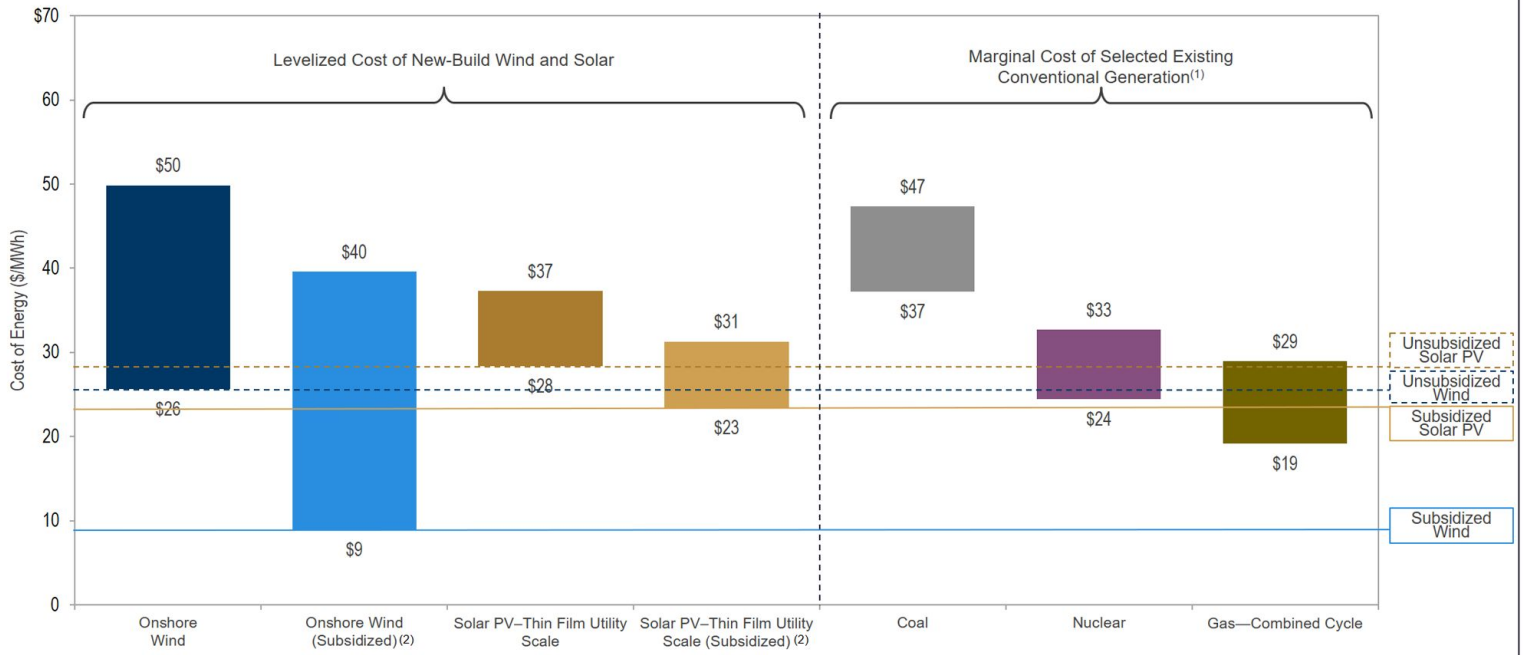
Six utilities that operate 99% of the fossil power plants filed Clean Energy Plans, will close all coal plants by 2031 and will reduce GHG 87% by 2030

# Xcel - Forecasted New Capacity



## Levelized Cost of Energy Comparison—Renewable Energy versus Marginal Cost of Selected Existing Conventional Generation

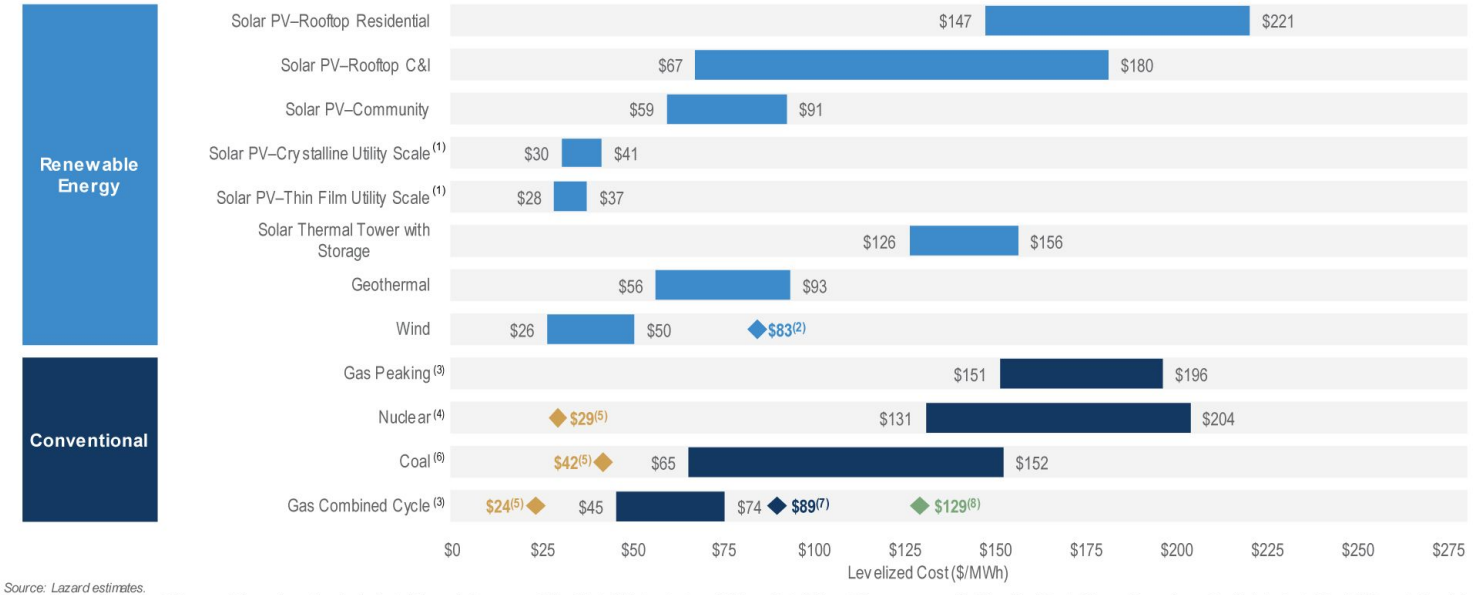
### Certain renewable energy generation technologies have an LCOE that is competitive with the marginal cost of existing conventional generation




*Source:* *Lazard estimates.*
Note: Unless otherwise noted, the assumptions used in this sensitivity correspond to those used in the global, unsubsidized analysis as presented on the page titled "Levelized Cost of Energy Comparison—Unsubsidized Analysis".
(1) Represents the marginal cost of operating fully depreciated gas combined cycle, coal and nuclear facilities, inclusive of decommissioning costs for nuclear facilities. Analysis assumes that the salvage value for a decommissioned gas combined cycle or coal asset is equivalent to its decommissioning and site restoration costs. Inputs are derived from a benchmark of operating gas combined cycle, coal and nuclear assets across the U.S. Capacity factors, fuel, variable and fixed operating expenses are based on upper and lower quartile estimates derived from Lazard's research.
(2) The subsidized analysis includes sensitivities related to the TCJA and U.S. federal tax subsidies. Please see page titled "Levelized Cost of Energy Comparison—Sensitivity to U.S. Federal Tax Subsidies" for additional details.

## Levelized Cost of Energy Comparison—Unsubsidized Analysis

### Selected renewable energy generation technologies are cost-competitive with conventional generation technologies under certain circumstances




*Source: Lazard estimates.*

Note: Here and throughout this presentation, unless otherwise indicated, the analysis assumes 60% debt at 8% interest rate and 40% equity at 12% cost. Please see page titled "Levelized Cost of Energy Comparison—Sensitivity to Cost of Capital" for cost of capital sensitivities. These results are not intended to represent any particular geography. Please see page titled "Solar PV versus Gas Peaking and Wind versus CCGT—Global Markets" for regional sensitivities to selected technologies.

(1) Unless otherwise indicated herein, the low case represents a single-axis tracking system and the high case represents a fixed-tilt system.

(2) Represents the estimated implied midpoint of the LCOE of offshore wind, assuming a capital cost range of approximately $2,500 – $3,600/kW.

(3) The fuel cost assumption for Lazard's global, unsubsidized analysis for gas-fired generation resources is $3.45/MMBTU.

(4) Unless otherwise indicated, the analysis herein does not reflect decommissioning costs, ongoing maintenance-related capital expenditures or the potential economic impacts of federal loan guarantees or other subsidies.

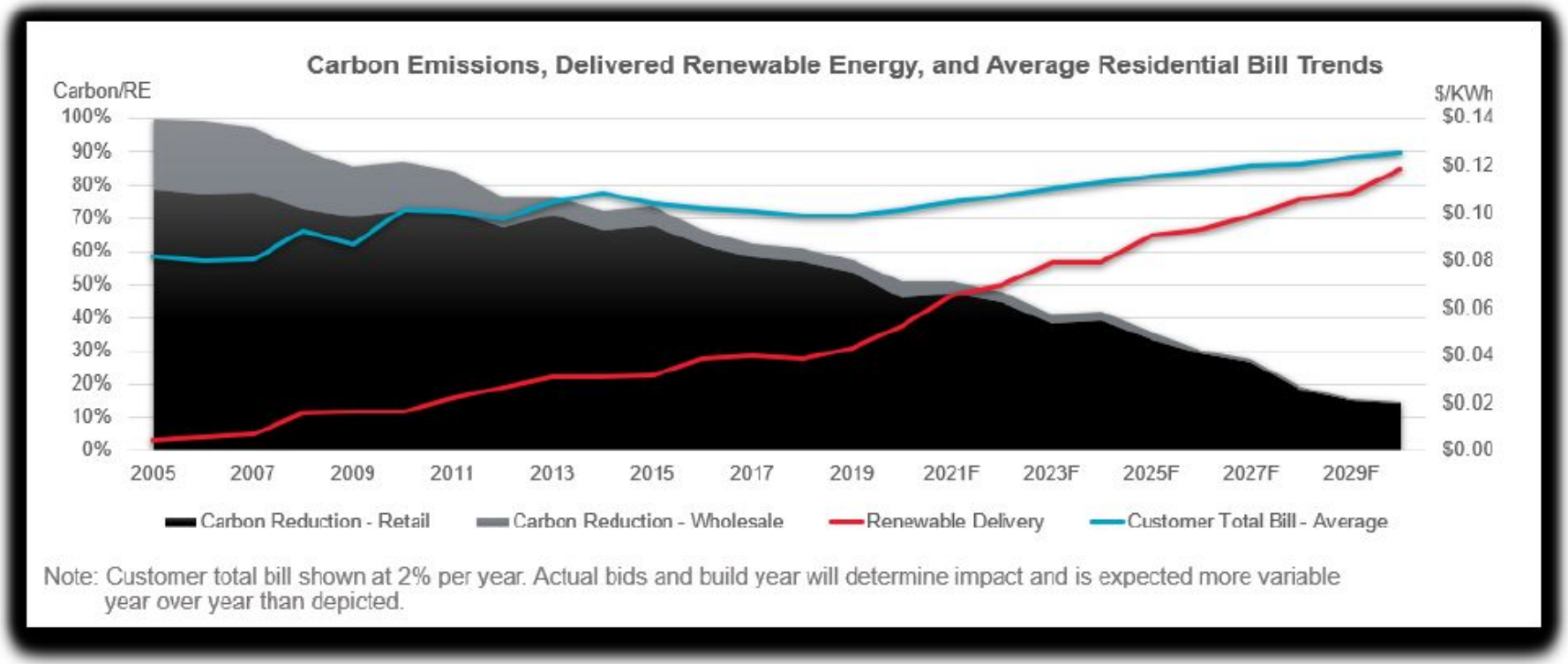
(5) Represents the midpoint of the marginal cost of operating fully depreciated gas combined cycle, coal and nuclear facilities, inclusive of decommissioning costs for nuclear facilities. Analysis assumes that the salvage value for a decommissioned gas combined cycle or coal asset is equivalent to its decommissioning and site restoration costs. Inputs are derived from a benchmark of operating gas combined cycle, coal and nuclear assets across the U.S. Capacity factors, fuel, variable and fixed operating expenses are based on upper- and lower-quartile estimates derived from Lazard's research. Please see page titled "Levelized Cost of Energy Comparison—Renewable Energy versus Marginal Cost of Selected Existing Conventional Generation" for additional details.

(6) High end incorporates 90% carbon capture and storage. Does not include cost of transportation and storage.

(7) Represents the LCOE of the observed high case gas combined cycle inputs using a 20% blend of "Blue" hydrogen, (i.e., hydrogen produced from a steam-methane reformer, using natural gas as a feedstock, and sequestering the resulting $CO_2$ in a nearby saline aquifer). No plant modifications are assumed beyond a 2% adjustment to the plant's heat rate. The corresponding fuel cost is $5.20/MMBTU, assuming $1.39/kg for Blue hydrogen.

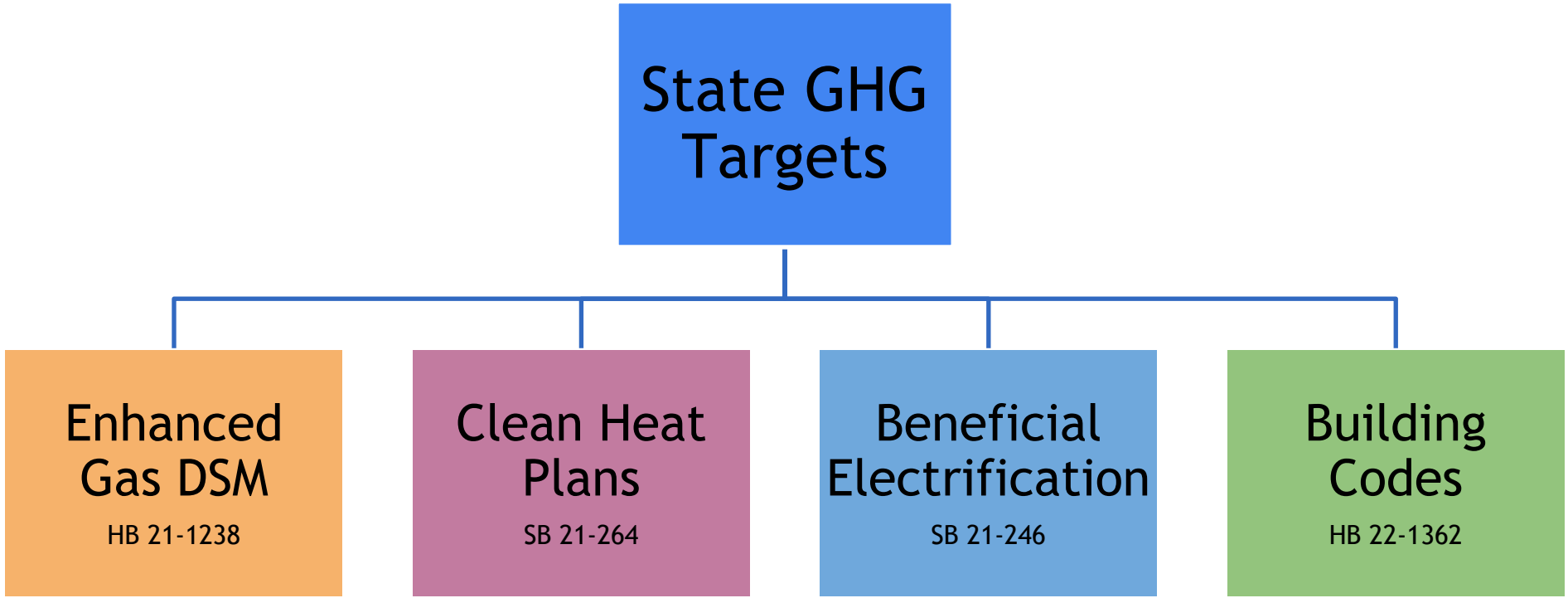
(8) Represents the LCOE of the observed high case gas combined cycle inputs using a 20% blend of "Green" hydrogen, (i.e., hydrogen produced from an electrolyzer powered by a mix of wind and solar generation and stored in a nearby salt cavern). No plant modifications are assumed beyond a 2% adjustment to the plant's heat rate. The corresponding fuel cost is $10.05/MMBTU, assuming $4.15/kg for Green hydrogen.

# Electricity: Xcel Clean Energy Plan




Note: Customer total bill shown at 2% per year. Actual bids and build year will determine impact and is expected more variable year over year than depicted.

# Colorado Building Decarbonization Strategy



# Gas Utility Planning Rules


- Long-range forecasting
- Portfolios of Resources

- Understanding of current gas infrastructure system
- Define and approve planned projects
- Future of the gas system

# Enhanced Gas DSM

(HB 21-1238)

- Benefits of gas DSM
- DSM program goals
  - Public Service Company/Xcel Energy
    - 2023 Goals pending
    - 2024+ Strategic Issues
  - Black Hills Energy
    - 2023 Goals are set
    - 2023 Strategic Issues
  - Atmos Energy and Colorado Natural Gas have gas DSM programs, with new goals & incentives filed by May 2023

# Xcel Residential Customer Bill Savings in 2021

# Clean Heat Plans

(SB 21-264)

- Targets: 4 percent by 2025 and 22 percent by 2030
- Technology-neutral and outcome based
- Utilities must file plans to help customers shift to electric appliances
- State regulators will post 2030 targets

# Beneficial Electrification

(SB 21-246)

- Requires Xcel and Black Hills to file plans to support customer investment
- Focuses on incentives for energy-efficient electric equipment
- Requires PUC to set targets & requires the development of 10 year targets

# Benefits of Low Energy Cost, Low-emissions Housing

- **Energy efficiency**: insulation, air sealing, passive solar, high-performance windows, ENERGY STAR appliances, etc.
- **Clean, electric heating and appliances**: efficient air source or ground source heat pumps, heat pump water heaters, induction stoves, dryers
- **Renewables**: rooftop or community solar, geothermal

***Benefits include energy savings, health and safety, comfort and resiliency***

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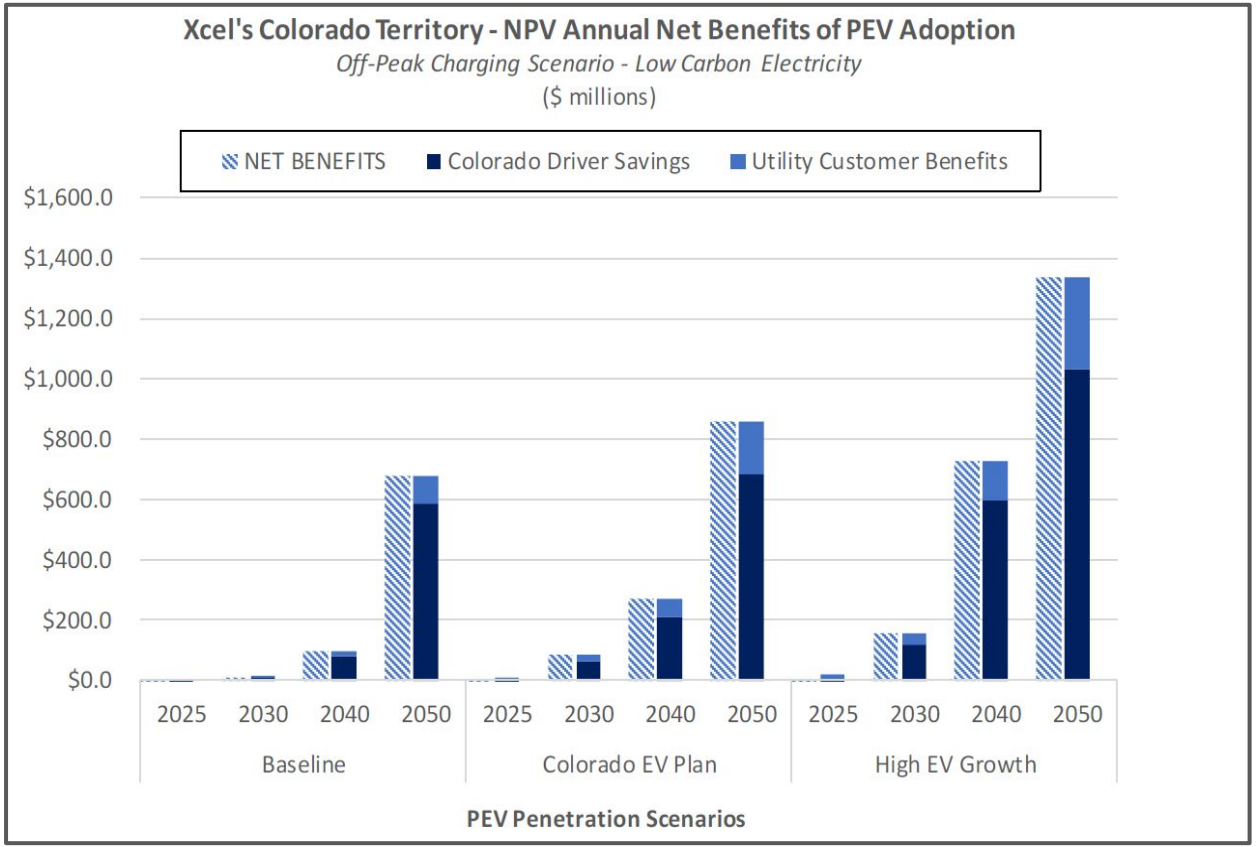
# Example: Basalt Vista

- All-electric, net zero workforce housing community of 27 homes in the Roaring Fork Valley
- Homes priced at $270,000-$395,000 for two to four bedroom units
- Saved $30,000-$40,000 on new natural gas line connections plus eliminated monthly natural gas fixed charges
- Rooftop PV plus cold-climate air source heat pumps, heat pump water heaters, and induction stoves lead to avg. total energy bills <$15/month
- Multi-partner collaboration made it possible

# Building Energy Codes (HB22-1362)

- Beginning in July 2023, Colorado has new minimum building energy codes that will require greater energy efficiency and pre-wiring for future rooftop solar, EVs, and high efficiency electric appliances. In July 2026, these minimum requirements increase.
- Homes built to the 2021 energy code compared to older energy codes will see significant cost, energy, and emissions savings.
- Home built to 2021 energy code vs. 2006 energy code:
  - Front Range (climate zone 5): over 35% energy savings, over $800/yr utility savings
  - Mountains (climate zone 7): nearly 42% energy savings, nearly $1,500/yr utility savings

# Transportation Electrification



# Programs that CEO will Administer with IRA Funds

| Title | Description | CO Amount | Timeline |
|---|---|---|---|
| High Efficiency **Electric** Home Rebate Program (HEEHR) | Electrification of efficient appliances | $70.3M | Two years to set up program<br>CEO awaiting DOE guidance, expected summer 2023<br>RFI closed 3/3/2023 |
| Home Energy **Performance**-Based, Whole Home Rebates (HOMES) | Energy efficiency retrofits with savings based on energy saved, either modeled or measured | $69.9M | |

# How Much Money is Potentially Available Per Project?

| Type of Home Energy Project | Household Income (HHI) below 80% Area Median Income (AMI)* | HHI between 80% and 150% AMI | HHI above 150% AMI |
|---|---|---|---|
| Efficiency project with at least 20% predicted energy savings** | 80% of project costs up to $4,000 | 50% of project costs up to $2,000 (max of $200k for a multifamily building) | |
| Efficiency project with at least 35% predicted energy savings** | 80% of project costs up to $8,000 | 50% of project costs up to $4,000 (max of $400k for a multifamily building) | |
| Home electrification project qualified technologies | 100% of project costs up to $14,000 | 50% of project costs up to $14,000 | Not eligible |
| | ENERGY STAR electric heat pump water heater: Up to $1,750 | | |
| | ENERGY STAR electric heat pump for space heating & cooling: Up to $8,000 | | |
| | ENERGY STAR electric heat pump clothes dryer: Up to $840 | | |
| | ENERGY STAR electric stove, cooktop, range, or oven: Up to $840 | | |
| | Electric load service center: Up to $4,000 | | |
| | Electric wiring: Up to $2,500 | | |
| | Insulation, air sealing, and ventilation: Up to $1,600 | | |

*Look up AMI for your area: https://www.huduser.gov/portal/datasets/il.html#2022_query

**Other rebate amounts (roughly within these ranges) may be available if efficiency rebate rates are determined through measured performance.

*Source: U.S. Department of Energy, Office of State & Community Energy Programs*

# Tax Credits Available for New All-Electric Homes

| Equipment Type | Available Tax Credit |
|---|---|
| Geothermal Heat Pump | 30% of total cost |
| Solar thermal for water heating | 30% of total cost |
| **Home Energy Performance Standard** | **Available Tax Credit** |
| Energy Star Certified Home - highly efficient home | Up to $2,500 per single family duplex, or townhome<br>Up to $500 per dwelling unit in a multifamily building |
| Zero Energy Ready Certified Home* - home that is so efficient that onsite renewable energy can offset energy use | Up to $5,000 per single family, duplex, or townhome<br>Up to $1,000 per dwelling unit in a multifamily building |

*Does not technically require all-electric construction, but will be difficult to achieve in mixed fuel buildings

# Future Opportunities

- 100 Percent Clean Energy by 2040
- Percent of Income Payment Plan analysis
- Rate design

# Legislation

- Tax Incentives For Decarbonization
- Including Thermal Energy as a Clean Heat Resource

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