

# COLORADO ELECTRIFICATION POLICIES AND PROGRAMS

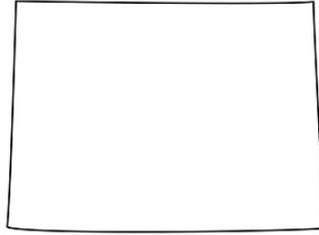
DYLAN KLOMHAUS | OCT. 12, 2022 | NASEO ANNUAL MEETING



**COLORADO**  
Energy Office

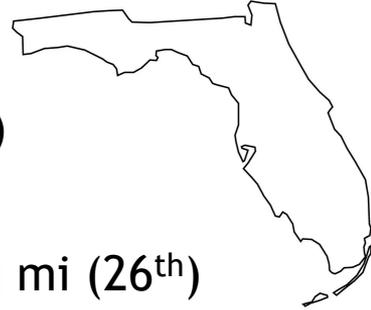
# Comparisons between Colorado and Florida

## Colorado



- Population: 5.9m (21<sup>st</sup>)
- Land Area: 103,642 sq mi (8<sup>th</sup>)
- Highest Point: 14,440 ft
- Lowest Point: 3,317 ft

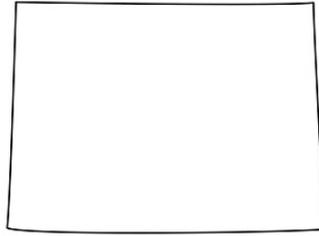
## Florida



- Population 22m (3<sup>rd</sup>)
- Land Area 53,625 sq mi (26<sup>th</sup>)
- Highest Point: 345 ft
- Lowest Point: 0 ft

# Comparisons between Colorado and Florida

## Colorado



- Average Retail ¢ /kWh:  
**10.27**
- Electric Providers (53)
  - 2 IOUs
  - 29 Municipal Utilities
  - 22 Rural Electric Cooperatives
- Net Generation by Source
  - 37% Coal, 33% Renewables, 26% Nat Gas, 4% Hydro
- Consumption per Capita (34<sup>th</sup>)
- Expenditures per Capita (44<sup>th</sup>)

## Florida



- Average Retail ¢ /kWh:  
**10.06**
- Electric Providers (58)
  - 5 IOUs
  - 35 Municipal Utilities
  - 18 Rural Electric Cooperatives
- Net Generation by Source
  - 77% Nat Gas, 11% Nuclear, 6% Renewables, 6% Coal
- Consumption per Capita (45<sup>th</sup>)
- Expenditures per Capita (50<sup>th</sup>)

# Colorado's Climate Goals

- Colorado's GHG reduction roadmap (2021)
  - Reduce GHG emissions economy wide **50% by 2030 & 90% by 2050**
  - Near-term action identified for building performance standards
- “Energy Performance for Buildings” Statute (HB21-1286) established **building benchmarking & performance standards** for the building sector.
  - Increase energy efficiency, lower energy costs and decrease GHG emission in building sector



# Colorado's Benchmarking Program

- HB 21-1286 required the Colorado Energy Office (CEO) to develop a statewide benchmarking program, now referred to as *Building Performance Colorado (BPC)*
  - Requires Commercial, multifamily and public buildings 50,000 square feet and larger to report annual energy use to the CEO
- Benchmarking turns the information on a utility bill into **knowledge that can be acted upon**
- Local benchmarking ordinance already in Denver, Boulder & Fort Collins
- 5 states have adopted statewide benchmarking laws so far



# Colorado's Building Performance Standards

- HB21-1286 established **building sector-wide GHG emission reduction targets of 7% by 2026 and 20% by 2030** (from 2021 baseline)
  - Building owners must meet certain BPS targets by 2026 and 2030
- **Building Performance Standards** create energy performance targets, such as specific levels of energy or GHG emission performance for buildings to meet after a set amount of time
  - Standards that help drive energy efficiency improvements and reduction in energy use and GHG emission in building stock over time.
- Colorado building owners do not need to take action until 2023



# BPS Compliance Recommendations

- **Energy Efficiency:** The primary method building owners should pursue
  - Property type specific and Colorado weather-normalized target EUI
- **Renewable Energy:** Support building performance by reducing grid-based energy supplied to the building
  - Building owner must retain or retire the RECs
- **Beneficial Electrification:** Full compliance if 80% of space and water heating loads are electrified with high efficient equipment
- **Compliance Adjustment:** Options under development for building owners who take action to improve building performance but still do not meet EUI targets



# COLORADO ENERGY CODE BOARD

- The Colorado General Assembly passed the Building Energy Codes law (HB22-1362 Building Greenhouse Gas Emissions) in May of 2022
  - **Model Electric Ready and Solar Ready Code**
  - **Model Low Energy and Carbon Code**
- Additionally, CEO directed by to perform the following work:
  - **Model Green Code:** Promote green code for voluntary adoption
  - **Code Training Assistance:** \$4m to provide code training & assistance
  - **Building Upgrades:** \$21m to support decarbonization of public buildings and communities



# MODEL ELECTRIC READY & SOLAR READY CODE

- Prepare New Homes and Commercial Buildings for:
  - Rooftop Solar
  - Electric Vehicles
  - High Efficient Electric Appliances
- Codes Must be Developed and Adopted by the Board by June 1<sup>st</sup>, 2023
- Local Governments w/ Building Codes Must Adopt at least IECC 2021 and Include Model Electric Ready and Solar Ready Code when Updating Codes between July 1<sup>st</sup>, 2023 to July 1<sup>st</sup>, 2026



# MODEL LOW ENERGY AND CARBON CODE

- Includes the Model Electric Ready and Solar Ready Code
- Minimize Overall Carbon Emissions from New and Renovated Buildings
- Based on either the 2021 IECC or 2024 IECC
- Model Low Energy and Carbon Code must be developed by June 1<sup>st</sup>, 2025
- Local Gov. w/ Building Codes must adopt the Model Low Energy and Carbon Code when updating codes after July 1<sup>st</sup>, 2026



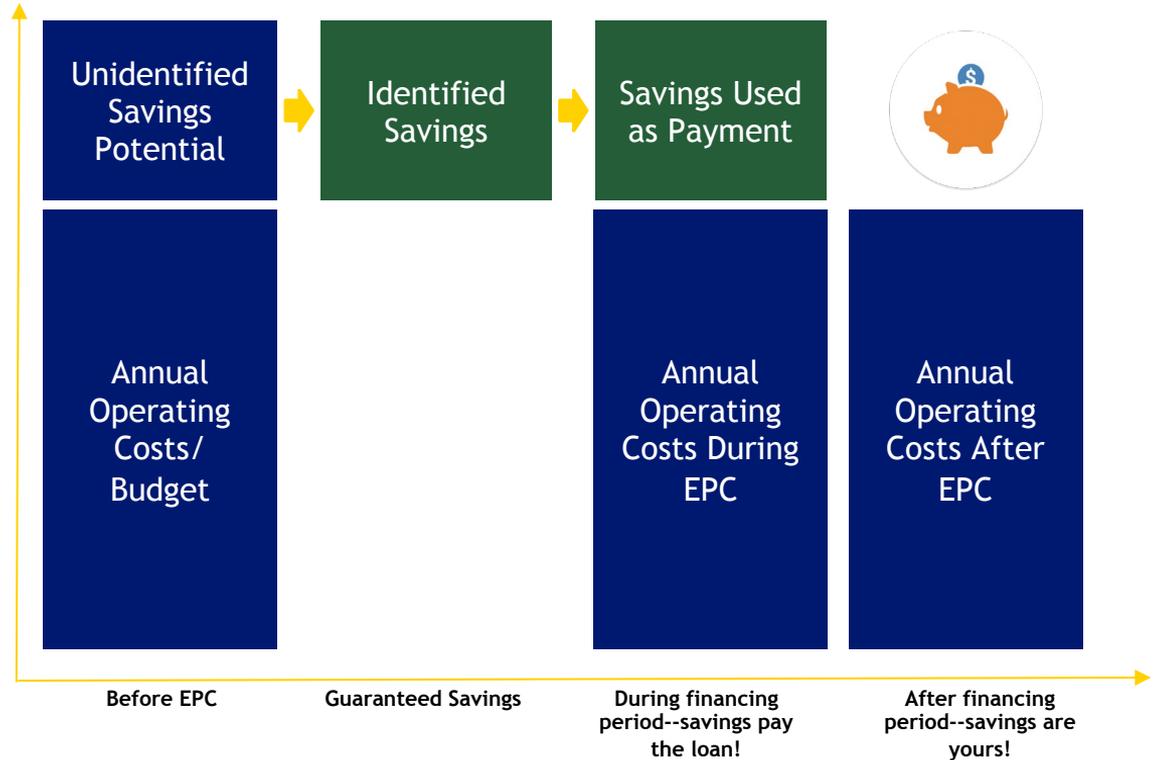
# ENERGY PERFORMANCE CONTRACTING IN COLORADO

GUARANTEED SAVINGS

EQUIPMENT LIFE >  
FINANCING TERM

THREE YEARS OF M&V

CASH FLOW POSITIVE



# SNAPSHOT: CSU-PUEBLO



7.1 MW solar array



1.2 MW, 3MWh battery



Demand management with TOU rate structure

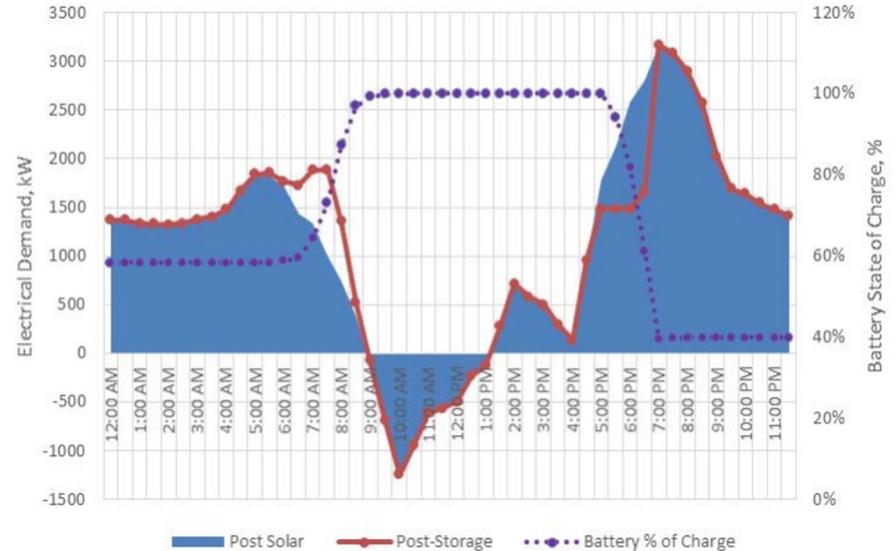


25 year PPA: Guaranteed production, 30% federal ITC, \$536k energy benefit, \$253k demand reduction



1st net-zero campus

FIM 1.2: Energy Storage Benefit



# SNAPSHOT: SAN MIGUEL COUNTY

SMC partnered with SMPA on microgrid & resiliency project



## RESILIENCY

Battery backup  
for mission  
critical loads  
(190 kW/580 kWh  
of storage)



## BENEFICIAL ELECTRIFICATION

Eliminated  
fossil fuels at  
3 facilities



## SOLAR PVs (5 SITES)

Offset 50% of  
country  
electricity



## ENERGY EFFICIENCY

LEDs, HVAC,  
Weatherization  
& controls



## SAVING PEOPLE MONEY

\$2m+ cash  
savings over 25  
years

# Holy Cross Energy “Journey to 100%”



**These actions will allow HCE to achieve its vision of**

- 100% carbon-free power supply by 2030
- Carbon-neutral or better across the enterprise by 2035

**in a way that does not sacrifice affordability, safety, or reliability for the sake of sustainability.**

- **Energy Efficiency**
- **Cleaner Wholesale Power Supply**
- **Local Clean Energy Resources**
- **Distributed Energy Resources**
- **Smart Electrification**
- **Flexible Energy Resources**

# Rate and Programs Options



## Distributed Energy Resource Service Agreement

- Low interest on-bill payments for DERs and related costs

## Distribution Flexibility Tariff

- Credit for allowing utility option to manage behind-the-meter DER assets

## Peak Time Payback

- Credit for voluntary reduction in consumption during forecasted peak event

## Power+

- HCE owned and controlled, member sited battery storage \$10.30 per kW of capacity payment

## Time of Day Rates

- Optional rate structure to encourage load shifting
- 24c/kWh on-peak (4-9 pm); 6c/kWh off-peak

## GreenUp

- Dynamic Renewable Pricing
- Credit for voluntary *increase* in consumption during forecasted “oversupply” events

# “Power+” Energy Storage Program



- Power+ offers customer resilience & reduces wholesale energy costs for all members.
- HCE controls the optimal charging and discharging of the battery during times of high energy demand or renewable energy oversupply, reducing the cost HCE pays for power.
- Savings benefit the entire co-op membership.
- HCE leaves at least 20% state of charge for resilience in a worst-case scenario.
- HCE pays for the battery and its installation costs upfront.
  - Recoup cost with monthly bill, 0% financing.
  - Customer receives ongoing bill credits \$10.3/kW of capacity
- Over 1 MW installed
- Lisa Reed, Energy Programs Manager [lreed@holycross.com](mailto:lreed@holycross.com), [www.holycross.com](http://www.holycross.com)



# FUNDING OPPORTUNITIES



## FEDERAL

### Inflation Reduction Act

- Tax incentives for renewable energy & stand-alone energy storage
- Tax exempt organizations can receive direct payment in lieu of a tax credit



## STATE

- Beneficial Electrification for Public Buildings Grant Program (\$10m)
- Microgrids for Community Resilience Program (\$3.5m)
- Energy/Mineral Impact Assistance Fund Grant (\$50m)
- High Efficient Electric Heating and Appliance Grant Program (\$10.85m)



## UTILITY

- Demand Response Programs and Incentives
- Time Of Use (TOU) rates
- Utility Ownership or Control of Demand Flexibility & Storage Assets

# COLORADO TAKEAWAYS FOR OTHER STATES

- States **CAN** make an impact on implementation of Electrification and DERs
- Start with a plan: Set goals (GHG Reduction Roadmap)
  - Identify Short-term actions
  - Identify Long-term actions
- Follow-up with legislation that aligns actions with goals
- Provide both Incentives & Penalties to drive action



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