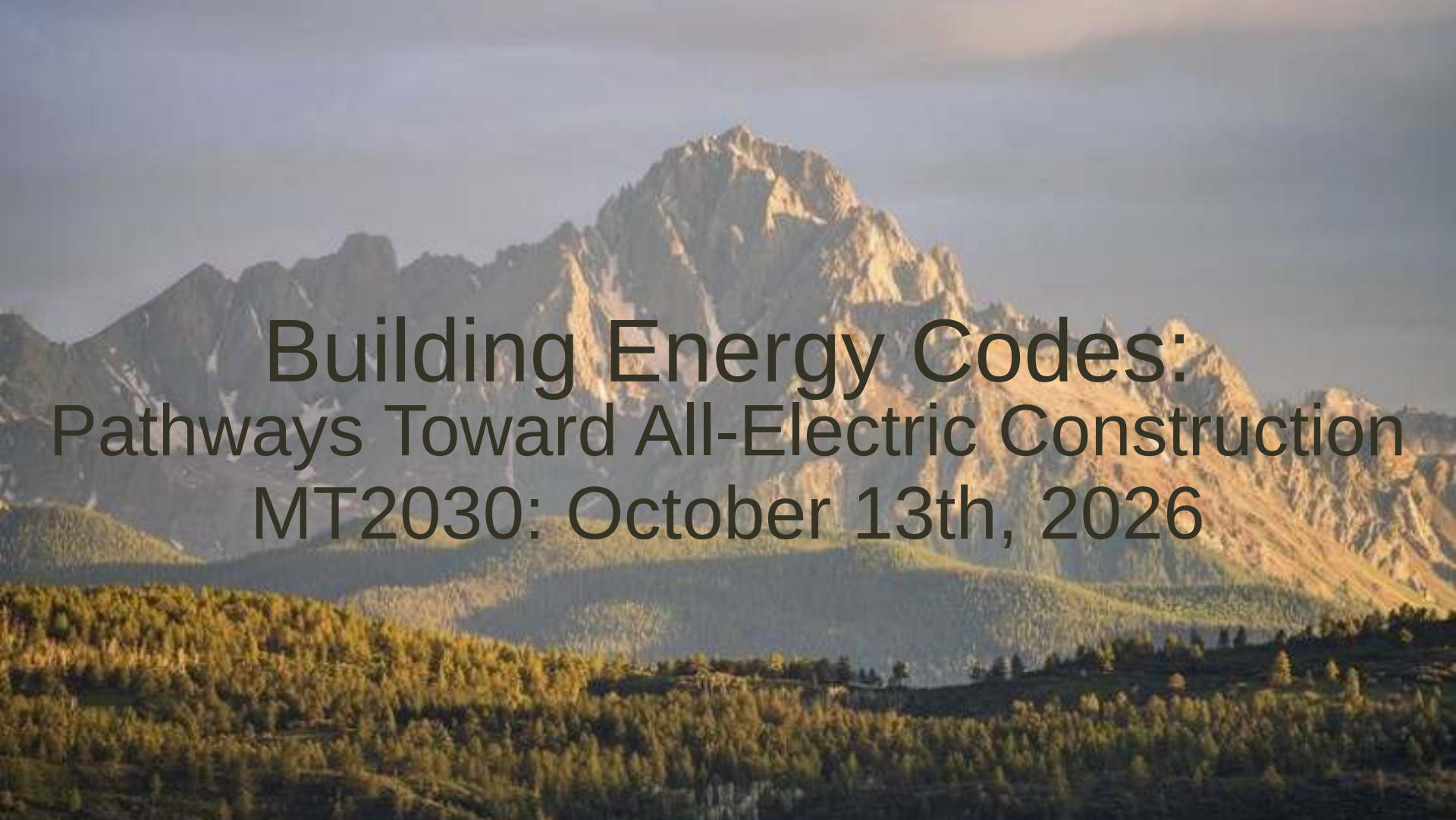

MT2030
CLIMATE
SUMMIT
SUN VALLEY 26
PRESENTED BY TORUS



Building Energy Codes:
Pathways Toward All-Electric Construction
MT2030: October 13th, 2026

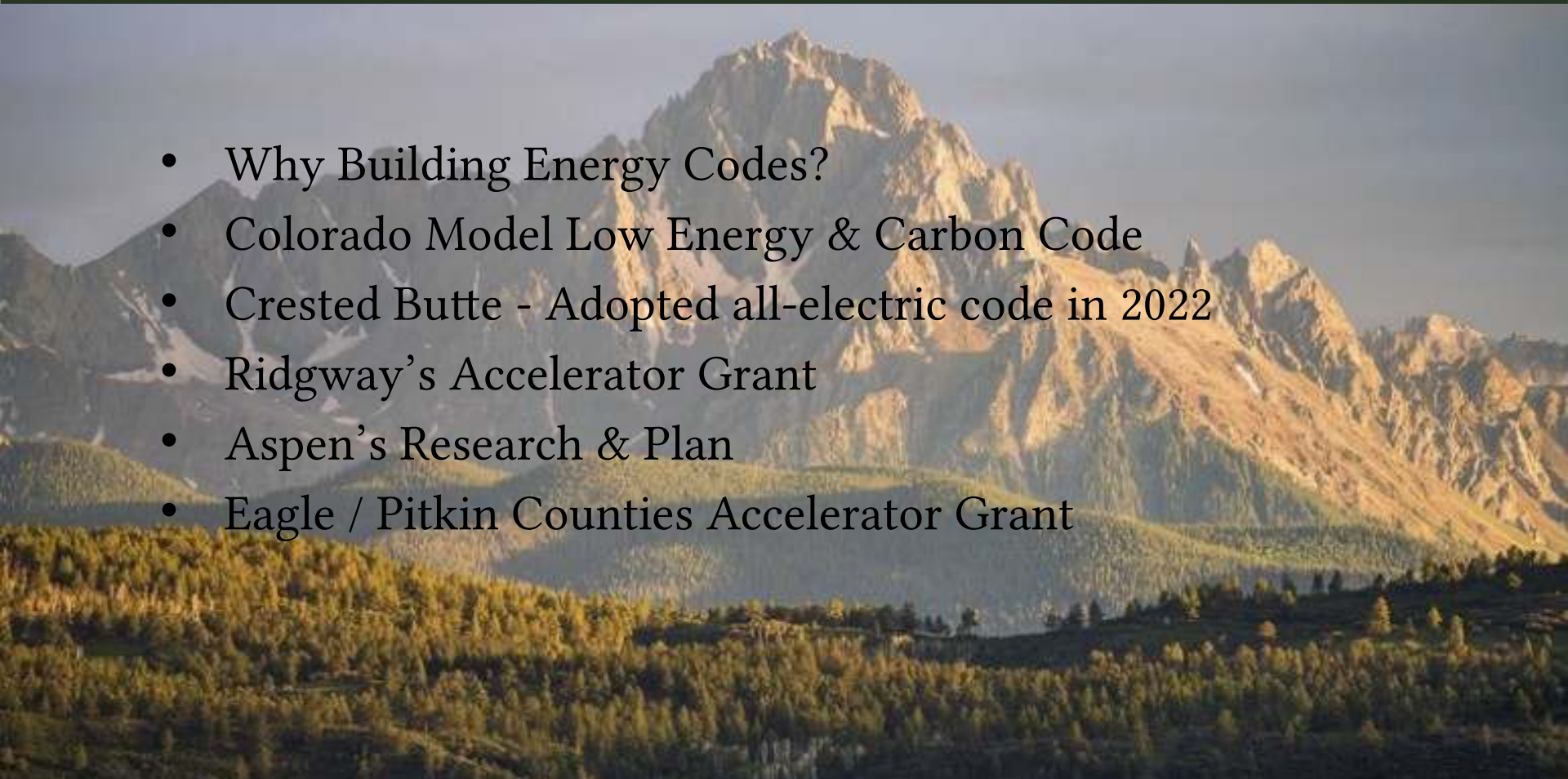
Introductions



- **Kim Wheels**
  EcoAction Partners, Special Projects Coordinator
- **Kim Schlaepfer**
  Lotus Engineering & Sustainability, Managing Director of Climate Mitigation & Resiliency Planning

Overview

EcoAction Partners



- Why Building Energy Codes?
- Colorado Model Low Energy & Carbon Code
- Crested Butte - Adopted all-electric code in 2022
- Ridgway's Accelerator Grant
- Aspen's Research & Plan
- Eagle / Pitkin Counties Accelerator Grant

Building Energy Codes

EcoAction Partners



Support many community goals:

- Climate / emissions reduction
- Energy efficiency
- Resilience (battery storage backup, etc.)
- Occupant health & safety
- Operational cost
- Renewable energy
- Electrification

Why electrification? Electricity can be 100% renewable-sourced, thereby all-electric buildings can be carbon free energy use… fossil fuels can not

Building Energy Codes

EcoAction Partners

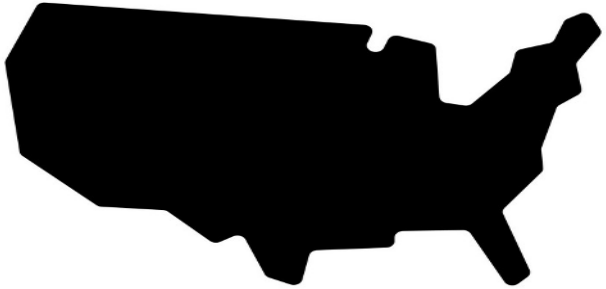


- Address new construction & significant remodels
  - Not existing buildings

- Policy lever
  - more effective than voluntary incentive programs
  - Impact energy use for lifetime of buildings

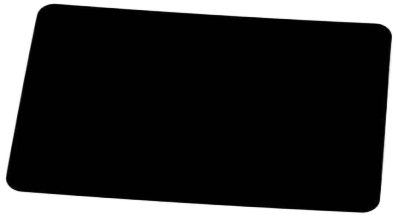
Incentives are highlighted for those unable to adopt beyond state code

Low Energy & Carbon Code (LECC)



IECC

LECC



Local



Low Energy & Carbon Code Benefits

- Balances costs/cost-effectiveness with advancing energy/carbon goals
- Removes the Energy Codes bias towards use of natural gas
- Creates cheaper compliance options for all-electric buildings
- Electric-ready, solar-ready, EV-ready requirements
- Simplifies overly complex sections of the code
- Removes requirements that are overly burdensome and don't yield significant energy savings
- Localized solutions that work best for Colorado



Crested Butte, CO

TOWN OF
CRESTED BUTTE
COLORADO

Crested Butte - Successful Adoption

Adopted all-electric code Dec, 2022 w/ 2021 IECC

- Political Willpower: Community Compass, CAP, Citizens
- Resisted natgas company pressure
- Town's pre-study of all-electric construction costs:

HVAC costs to build and operate all-electric are lower!

TOWN OF CRESTED BUTTE COLORADO

	Natural Gas	Electric
HVAC Costs	**95% Efficient Gas Boiler**	**Cold-Climate Heat Pump with Hydronic Heat**
Equipment Cost	$3,500	$16,000 *(2 heat pumps based on size and energy usage)*
Available Rebates	*$300*	*$4,800*
Total Cost After Rebate	$3,200	$11,200
Energy Star Water Heater Costs	**Gas Water Heater**	**Heat Pump Water Heater**
Installed Cost	$1,500	$2,500
Available Rebates		*$740*
Total Cost After Rebate	$1,500	$1,760
Stove/Range	**Gas Stove**	**Electric Induction Stove**
Cost*	$3,200	$3,200
Available Rebates		$500 *($350 + 25% additional off purchase price up to $150)*
Total Cost After Rebate	$3,200	$2,700
Infrastructure Costs	**Gas Equipment**	**Electric Equipment**
Electrical modification		$500
Gas connection & piping	$12,600 *($2,100 gas line to house, $10,500 internal piping and ventilation)*	
Total Installation/Equipment Costs	**$20,500**	**$16,160**
Annual Energy Costs		
Calculated Annual Energy Costs	$2,008	$2,722
Scenario: Annual Energy Costs (with 10 kW of solar)	$1,099 *(off-setting lighting and other appliances)*	$813 *(off-setting heating, hot water heating, lighting, and appliances)*

Crested Butte - Implementation

Small, slow-growth, built-out community

- 3 years - 24 workforce units, 7 single-family homes

2026 Study: "Crested Butte's All-Electric Building Code in Practice: A Winter Energy Use and Experiential Report"

Successes:

- Energy Use & GHG emissions reduction / SF
  (Even on the coldest winter days with backup resistance heat)
- Gas homes produced 20% more carbon emissions / SF
- Carbon intensity of electricity decreasing, 47% renewables 2025
- Public Works staff recommend Town "stay the course"

TOWN OF CRESTED BUTTE COLORADO

Crested Butte - Challenges

Knowledge & Experience Gap

- Limited Workforce w/ insufficient knowledge & expertise
  - Cold Climate Heat pumps
  - Air-to-water heat pumps for radiant in-floor heating systems

Cost Reality / Perception: “Building electric more expensive”

- Learning curve increased design costs for all trades
  (not just mechanical equip costs)
- Design efficient home first, then right-size equipment
- Currently no federal incentives; Rebates are complicated
- Short term cost analyses use low natgas prices

TOWN OF CRESTED BUTTE COLORADO

Crested Butte - Needs

Heat Pump Education

- Designers & Engineers
  - Energy efficient home design first, then right-size heat pump
- Residents & Tenants
  - Efficient Operation & Maintenance of Equipment
- Mechanical Workforce
  - Training, Certifications, Experience

TOWN OF CRESTED BUTTE COLORADO

Town of Ridgway

CEO Local IMPACT Accelerator Grant

$1,334,800 to assist Ridgway in meeting their Net Zero by 2030 Goals



Why Ridgway was awarded

Small Towns Doing Big Things
“Think Outside”

Grant funds support local governments adopt policies that extend beyond state requirements to bolster local resilience, reduce emissions, and advance other state priorities, such as improved air quality.

Ridgway’s Grant focuses on Buildings

Residential & Commercial Buildings emit 45% of our regional GHG emissions (Regional Climate Action Plan Greenhouse Gas data 2010-2025)





The Town Council voted to ratify the Regional Climate Action Plan.

Ridgway adopted the LECC w/ regional amendments May, 2026.

All-electric code amendment is consistent with the action items identified for Ridgway

Town of Ridgway

The town of Ridgeway has a population of 1,183 residents and is located in Ouray County. Town representatives participate in the Ridgeway Ouray Community Council (ROCC) to work towards maintaining quality of life and sustainability for present and future generations. Ridgway encourages the use of carbon-free and renewable energy systems within the town and supports the goal of carbon neutrality for Colorado.



ACTION	GHG REDUCTION POTENTIAL	CO-BENEFITS	TIMELINE	PARTNERS
Adopt an energy code that achieves equivalent or better energy performance than the 2021 international energy conservation code and the model electric and solar ready code developed by the energy code board.			Ongoing	Ridgway
Encourage the use of innovative building practices and materials, as allowed by the Town's building regulations, including the international energy conservation code, when such practices or materials would increase energy efficiency, curb greenhouse gas emissions, and reduce home costs.			Ongoing	Ridgway

7	Participate on the Sneffels Energy Board and work with the Board and EcoAction Partners to implement the objectives and supporting actions detailed in the *San Miguel & Ouray County Regional Climate Action Plan* in order to help our community continue to reduce our greenhouse gas emissions from our 2010 GHG emissions baseline.

2026 Strategic Plan
Community Value 1
Healthy Natural Environment

Key Grant Provisions

- **Phase 1:** Consultant to conduct extensive research, education, stakeholder engagement, community outreach, permitting and implementation support.

  Partial Town Hall retrofit to demonstrate the benefits to demonstrate the benefits of electrification and strengthen policy adoption efforts.

  Adoption of the All-electric New Construction Code Amendment

- **Phase 2:**
  - **Town Municipal building electric retrofits** helping to meet the Net Zero by 2030 Resolution- $120,350 ($35,500 before and $84,850 after adoption)

    Community Electrification Program*: Incentives for new construction electric measures- $391,400

    Community Beneficial Electrification Program*: rebate incentive funding for existing home electric retrofits - $519,600

- **Town provides 5% matching funds** distributed over 3-year program term ($66,740 – 68% applies to incentive pools)

* Implementation funding and incentives contingent upon code amendment adoption beginning in 2028

** Code may include a **"fee in lieu of" option**

Phase	Tasks	Available Funding	Funding Availability
Phase 1	1 - Project Communication and Administration	15,000	Upon Agreement Effective Date
	2 - Quality Assurance	$40,000	
	3 - Advance Milestones toward Policy Adoption	$115,550	
Phase 2	4 - Project Implementation After adopting All-electric Ammendment	$1,164,250	Successful completion of Tasks 3.1 and 3.2 and approval of Task Continuation Work Request as described in Task 3.3.
	Total Costs	**$1,334,800**	

Cost Category	Budget	
Personnel/Fringe	$0	
Travel	$0	
Equipment	$120,350	Town Buildings
Supplies/Other Direct	$4,550	
Contracts/Subawards	$298,900	Consultants
Construction	$0	
Participant Support Costs	$911,000	Incentive pools
Indirect	$0	
Total	**$1,334,800**	



Highlights

1. Code amendment to be voted on by Council early 2028 – after all research, stakeholder and community outreach is complete.
2. Funds cover all consultant costs, Town building retrofits and generous incentives (68% of Grant) for both new construction compliance and existing home retrofits
3. Small to no Town budget impacts spread over 3 program years
4. Significantly advances Net Zero goals for municipal operations and encourages town residents through > $900k incentives

Provides significant financial incentives

Move the ball

Protect our community

Walk the Talk

Follow through with Council approved commitments, Master Plan, Climate Action Plan and 2026 Strategic Plan

Help Ridgway become a Sustainable and Healthy place to call home



Aspen Energy Code Update

2025-2026

Aspen's Electrification Journey

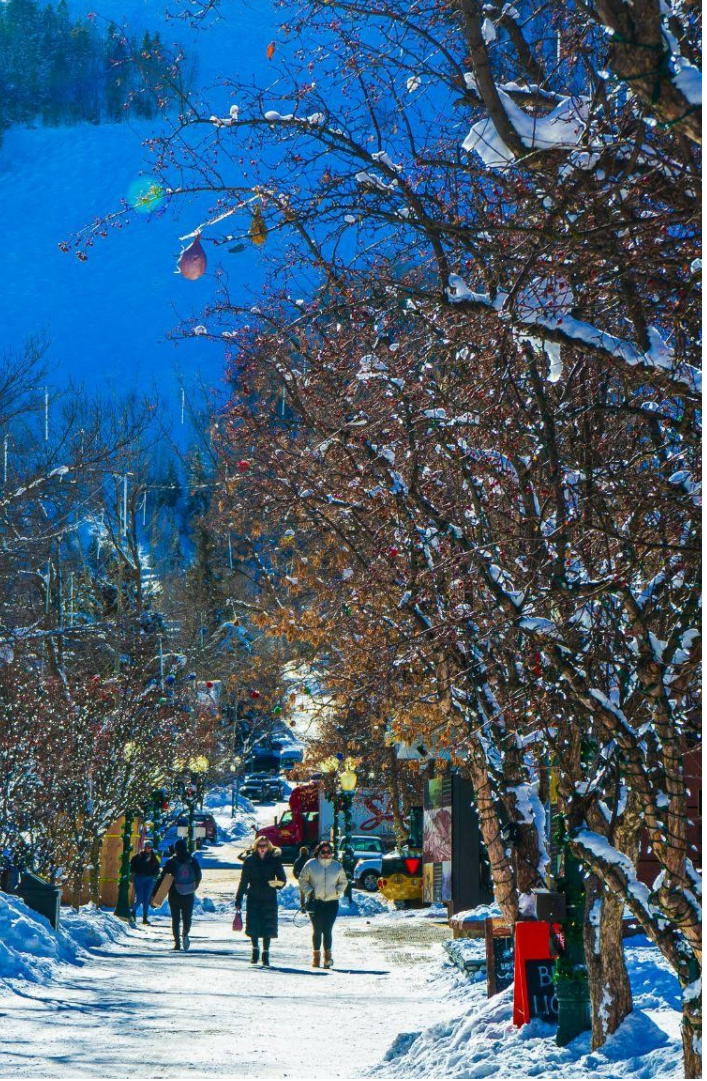
Quick Primer

CITY OF ASPEN



Where we started

- City of Aspen Climate Goals
  - Two utilities serving Aspen
    - City of Aspen Electric - 100% RE
    - Holy Cross Energy - ~90% RE
- State minimum energy code development
  - Low energy and carbon code
  - Electric ready requirements
- Market trends toward electrification
  - Increase of projects going all-electric in Aspen (expedited permit review) highlighted challenges with current code
  - Goal to provide good customer service to building projects in Aspen



Code Development Process

- Energy code development
  - Peer community research
  - Modeling with REG and BackFly Energy to craft innovative policies
  - Targeted feedback from a few frequent collaborators
- Cross-departmental code alignment
  - Internal collaboration with Planning & Zoning and Utilities to align across depts.

Key new code concepts

- Electrified new construction - focused on biggest loads
- Partial electrification for existing building additions, alterations, and ‘substantial improvements’
  - Substantial improvements defined as any alteration exceeding 25% of assessed home value*
- Get away from State Electric-Ready requirements where possible
- Increasing the stringency of the exterior energy policy

**May adjust based on stakeholder input*

Model Low Energy and Carbon Code General Amendments

- **Higher efficiencies** for heat pumps and heat pump water heaters.
- **Remove** requirement for **residential and commercial Additional Efficiency Package Options** (Aspen has strong above code envelope requirements)
- **Remove** requirement for Dwellings over 7500 Sq ft to be **Net Zero Energy**. Instead apply Net Zero Carbon
- **Amend Energy monitoring requirements** to apply to buildings 5000 sq ft or more. (Connects to local building benchmarking policy)
- **Remove** Requirement for **Electric- Readiness** - instead you must be fully or partially electric
- Electrification requirements captured in new appendix for new and existing buildings.
    - Requirements for **Additions and Substantial Improvements** to be **Partially Electrified**
- Bring in **‘above code’ envelope improvements, EV ready, BESS ready, solar ready and energy monitoring, and other elements** from Aspen current code.

Electrification Code - New Construction

- **All new construction shall have all-electric systems**
  - **Residential exceptions**: backup generators, emergency heat, portable propane outdoor equipment, fireplaces, cooking equipment.
  - **Commercial exceptions:** backup generators, emergency heat, portable propane outdoor equipment, fireplaces, cooking equipment, manufacturing or industrial facility equipment other than space or water heating, research and development lab equipment other than space or water heating, water heating for labs, hospitals, and some large S-1 occupancies.
- **Cooling equipment shall be electric heat pump** equipment sized for cooling and heating
- **Combustion equipment allowed for cooking** but must be “electric-ready”
- **Snowmelt and pool heaters must be all-electric**

Partial Electrification Code - Existing Buildings

- Substantial Improvements as well as additions 500 sq ft or larger must comply with partial electrification.
- Addition can be all electric OR the addition plus the whole existing structure may choose one of the partial electrification paths.
- Commissioning required when utilizing supplemental or backup heating
- New and replaced gas equipment must be electric-ready

Residential Partial Electrification Options:

- Space heating partial electrification
- Service water heating partial electrification
- Snowmelt reduction
- Outdoor pool or spa partial electrification

Commercial Partial Electrification Options:

- Space heating partial electrification
- Service water heating partial electrification (for R-1, R-2, I-2, and A-2 only)
- Snowmelt reduction
- Outdoor pool or spa partial electrification
- Commercial kitchen electrification
- Considering:
  - Thermal envelope improvements

Eagle & Pitkin Counties Net Zero Code Cohort

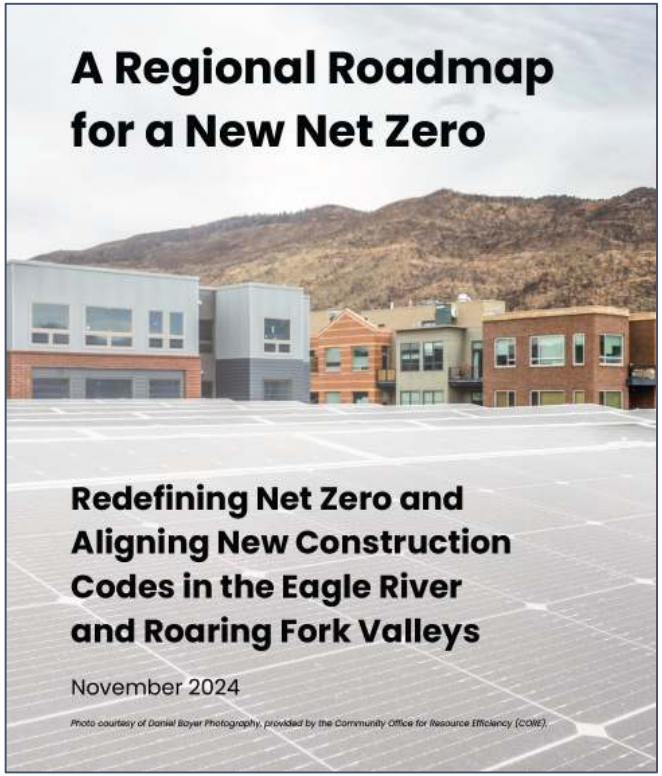
Net Zero Code Roadmap Goals

Purpose

Align the region on future building code updates required to implement a net zero energy code by **2030**.

Approach

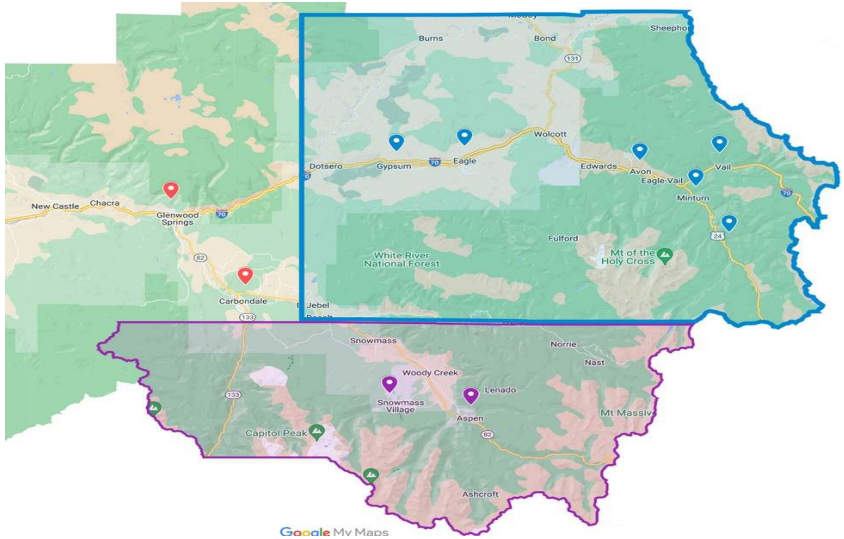
- ➔ Involve **sustainability and building department** teams.
- ➔ **Define as a region** what attributes does a "net zero building" have.
- ➔ **Collaboratively develop a "stepped approach"** to achieve buildings with "net zero" attributes through code adoption cycles from 2024 through 2030.



Project Participants

Communities:

- Town of Avon
- Town of Basalt
- Town of Eagle
- Eagle County
- Town of Gypsum
- Town of Minturn
- Town of Red Cliff
- Town of Vail
- City of Aspen
- Pitkin County
- Town of Snowmass Village
- City of Glenwood Springs
- Town of Carbondale



LOTUS Engineering & Sustainability

CLIMATE ACTION COLLABORATIVE | Walking Mountains

CORE Community Office for Resource Efficiency

CLEER CLEAN ENERGY ECONOMY FOR THE REGION

SWEEP SOUTHWEST ENERGY EFFICIENCY PROJECT

SHUMS CODA ASSOCIATES

BIOSPACES

Final Net Zero Building Definition

Describing the **ideal end state** of buildings in 2030 and beyond.

A building that:

- Is **powered by electricity**;
- Uses **renewable energy** from the grid and/or onsite generation;
- Has the **ability to store energy** and/or **shift energy use** to reduce peak demand on the electric grid;
- Achieves **energy performance above base** the International Energy Conservation Code.
- Is designed to **minimize embodied carbon**; and
- Is **EV-ready**.

The Roadmap

Step A: 2024-2026	Step B: 2027-2029*	Step C: 2030 & beyond*
• 2021 or 2024 IECC	• 2024 or 2027 IECC	• 2027 or 2030 IECC
• Electric-Preferred	• All-Electric w/ exceptions	• All-Electric limited exceptions
• Addt efficiency for very large homes	• Addt efficiency for very large homes	• Addt efficiency for very large homes
• EEOP or REMP in place	• EEOP or REMP in place	• EEOP or REMP in place
	• If solar is added, storage is required	• If solar is added, storage is required
	• Demand response for water heating (state law)	• Demand response for water heating (state law), thermostat capability

***Provisions will be reevaluated to ensure alignment with technology, utilities, and best practices.**

IMPACT Accelerator Advancing Roadmap Step B

- **$2.2 million awarded to Eagle / Pitkin Counties** to implement Step B in the Roadmap, all-electric code with exceptions. ($200k for policy work)
- **Application led by CORE and City of Aspen.**
- **Launch of a two region Code Cohort** to align on all-electric code pathways with LECC as baseline.
- **Modeling completed** to show cost effectiveness of Step B requirements locally.
- **Aspen is Cohort member** and will provide group summary of engagement, technical research, and lessons learned from their code effort.



Thank you!

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