A Regional Roadmap for a New Net Zero

Redefining net zero and aligning on new construction codes

Town of Minturn
Town Council Meeting
November 20, 2024

Introduction

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.
- ➔ Educate group on how “net zero” code elements are showing up in building codes.
- ➔ **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.

Net Zero Code Roadmap: Partners

PM

LOTUS
Engineering & Sustainability

Tech Advisors

SWEEP
SOUTHWEST ENERGY EFFICIENCY PROJECT

SHUMS CODA ASSOCIATES

BIOSPACES

Comm. Partners

CLIMATE ACTION COLLABORATIVE

Walking Mountains

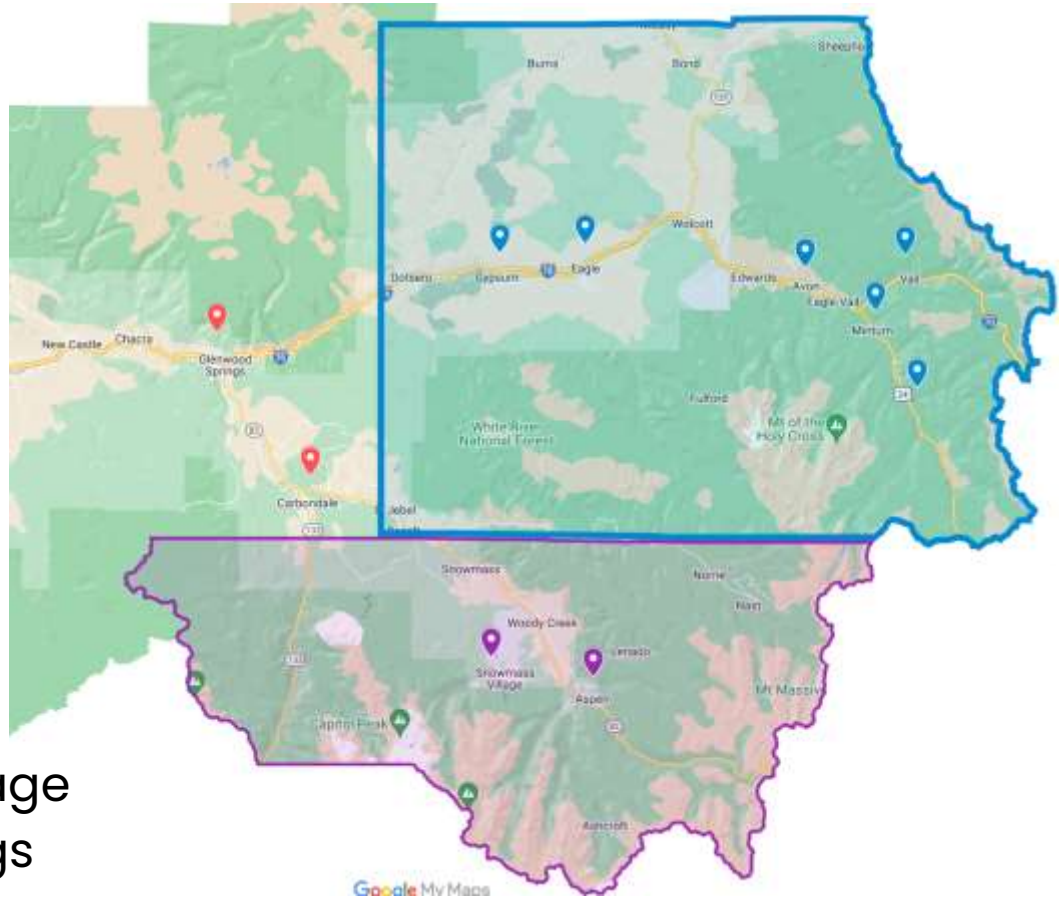
CORE
Community Office for Resource Efficiency

CLEER
CLEAN ENERGY ECONOMY FOR THE REGION

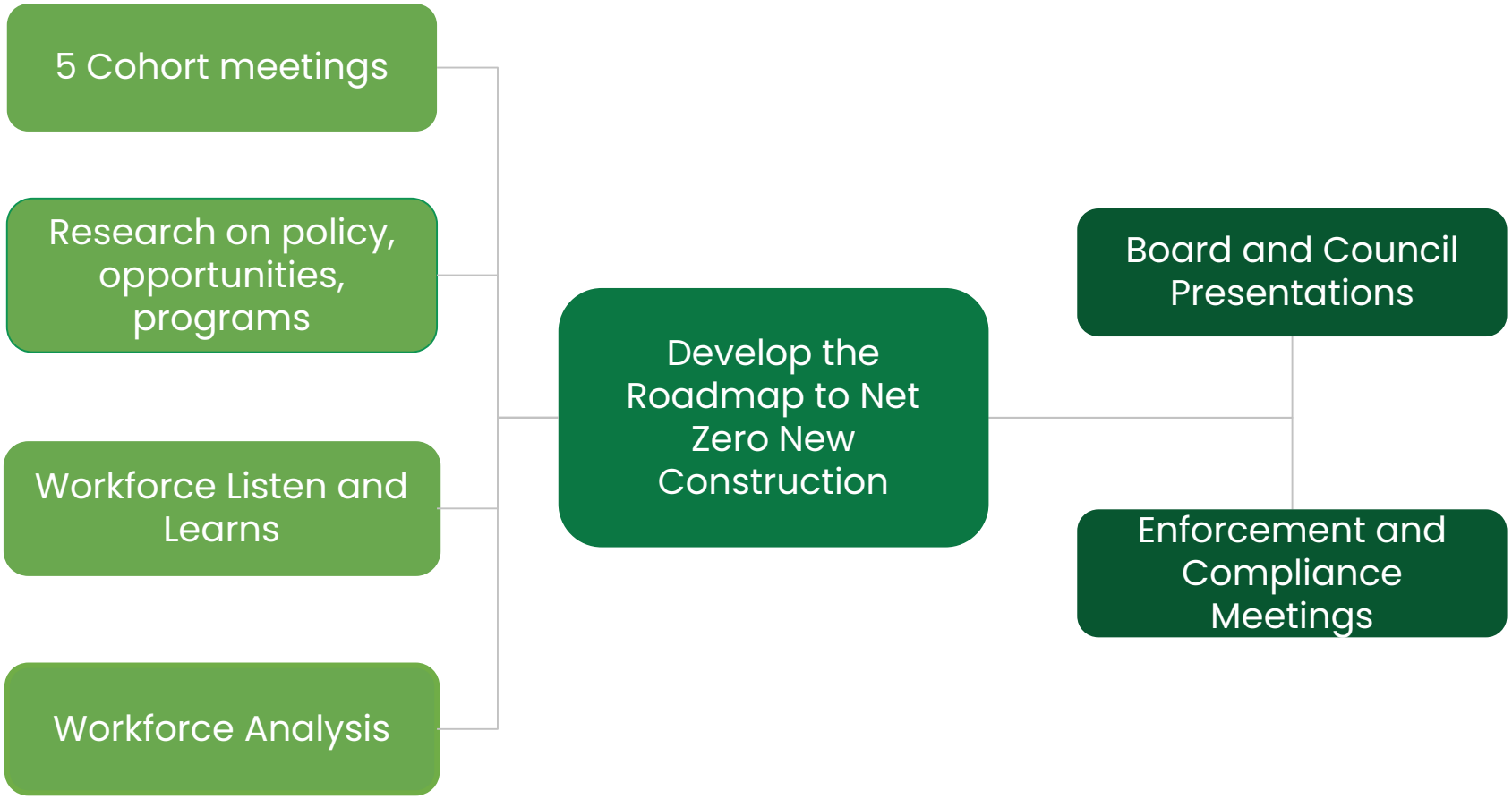
Project Participants

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

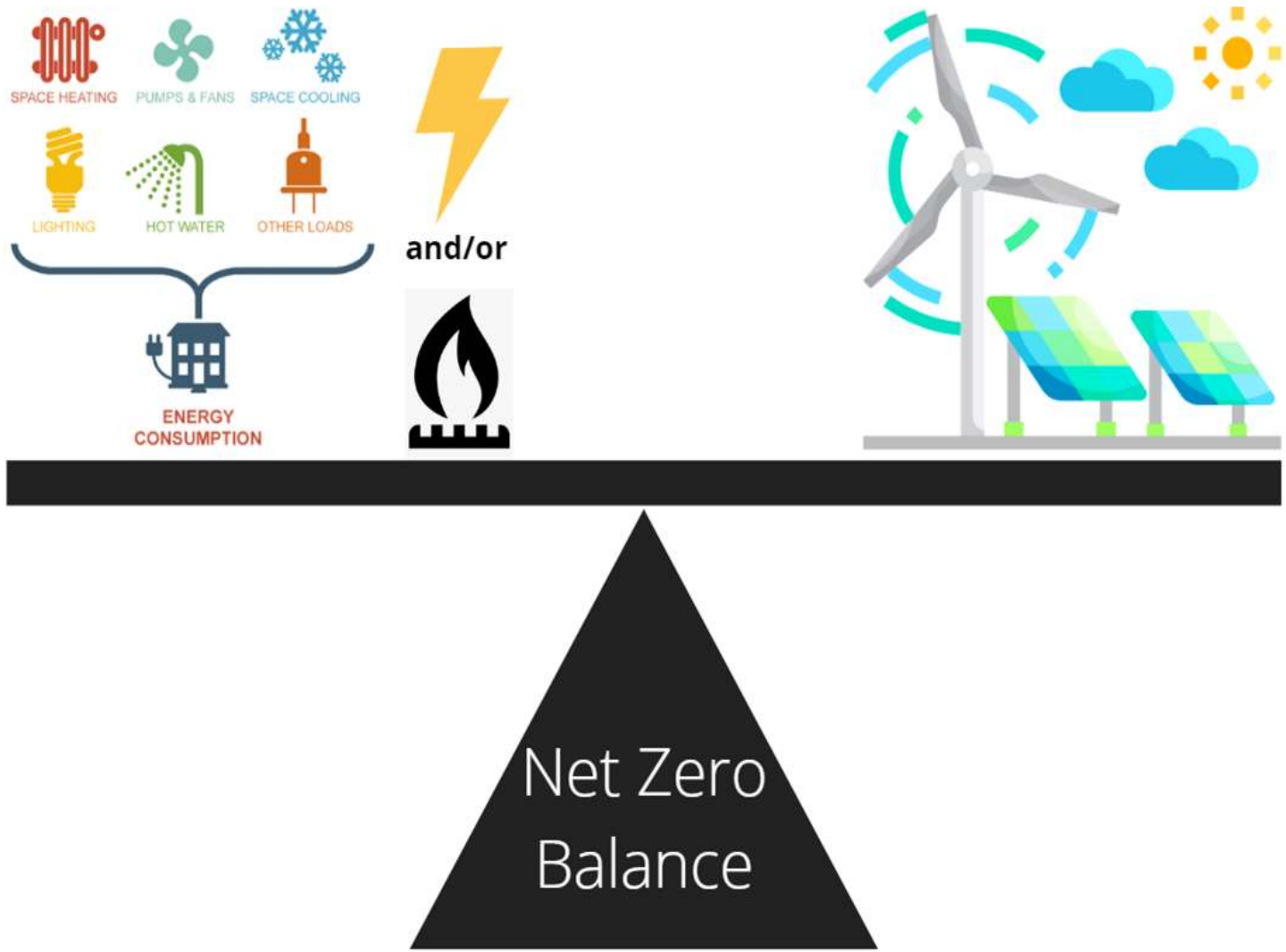


Roadmapping Process



The New Net Zero

Traditional Net Zero



Electric Utility Commitments & Requirements

Glenwood Springs Electric

- 100% renewable energy (RE) already

Aspen Electric

- 100% renewable energy (RE) already

Holy Cross Energy

- 100% RE by 2030
- This goal is a commitment

Xcel Energy

- 80% RE by 2030
- This goal is required by state law

Final Net Zero Building Definition

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

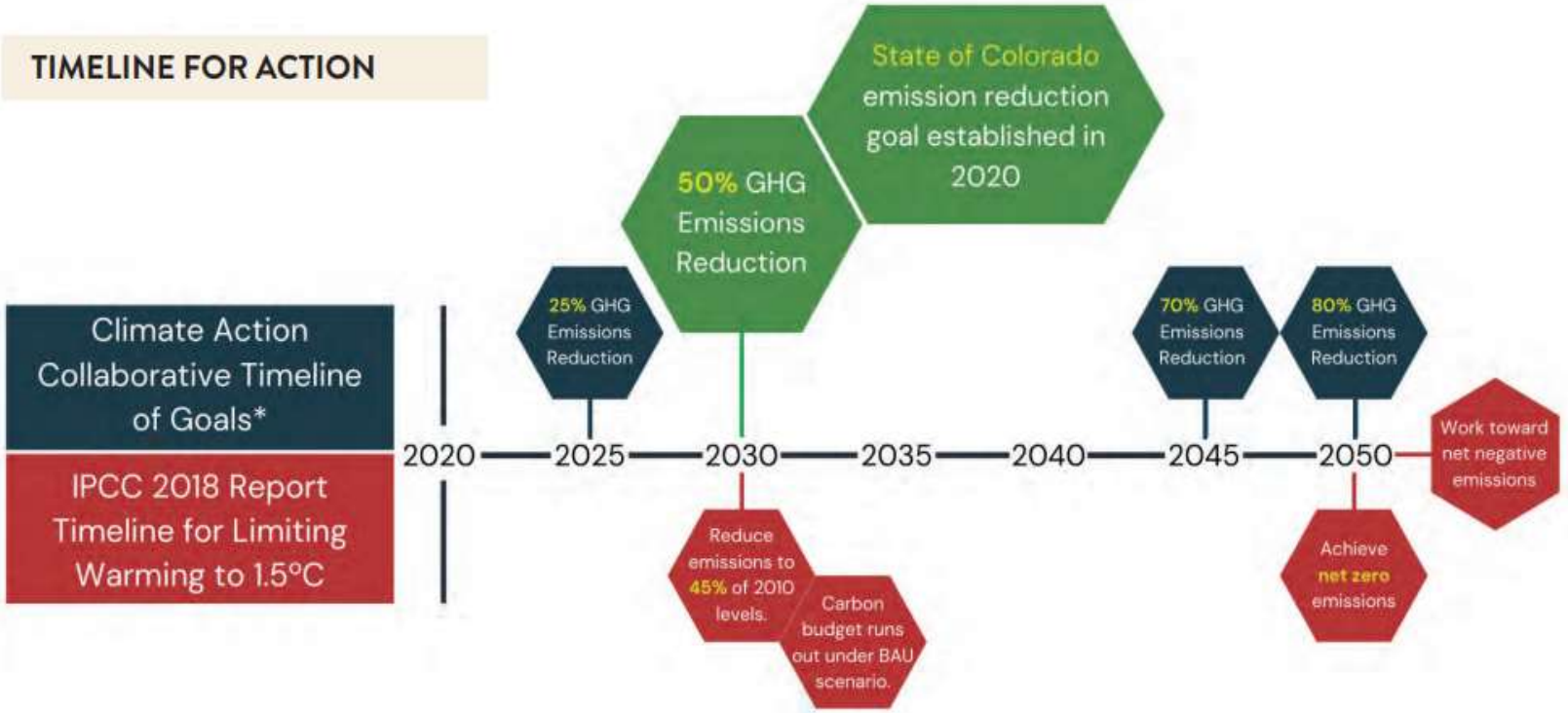
A building that:

- 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**.

Starting now is key.

The Town of Minturn is committed to 50% GHG emissions reduction by 2030

The Town of Minturn committed to "explore net zero facilities" in its 2025-2027 Strategic Plan



Community Climate Goals

Community	Building Sector Strategies
Eagle County, Vail, Avon, Minturn, Red Cliff, Basalt	"**Adopt 'above building code' standards** and incentives, and implement **net-zero or all-electric construction requirements by 2030."**
Town of Eagle	By **2030**, **all-electric residential new construction code requirement**, and install heat pumps in 70% of commercial spaces.
Pitkin County	"Ensure that land-use and **building codes** promote **state-of-the-art energy efficiency**."
Aspen	"Mandate **no- to low-carbon standards for new construction** and major remodels including considerations for energy use and embodied carbon."
Snowmass Village	Recommendation to **continually adopt the latest green building codes.**
Garfield Clean Energy	"Advise local governments on **adopting the most advanced building codes.**"
Carbondale	"**All buildings have net-zero emissions.**"

The Regional Vision

We asked the workforce…

- **What do they think of the Roadmap?**
- **What was their opinion on the need for regionally aligned codes?**
- **Are they ready for these requirements?**
- **What barriers do you face?**

- Crestone Building
- Shaeffer Hyde
- Western Refrigeration & Heating
- Beck Builds
- Radar Engineering
- Vail Custom Builders
- R&H Mechanical
- Sipes Architects
- North 39 Energy
- CCYA Architects
- issho Inc.
- KH Webb Architects
- Vail Health
- Mountain Air Mechanical
- VVP
- Eigelberger Architecture
- Rader Engineering
- Weddle and Sons Roofing
- Teague Architects
- Sunsense Solar
- BG Architecture & Design
- Land + Shelter Architecture
- & more.

From the Listen and Learns:

Set the code and we will build to it – it's not the workforce's job to sell electrification and its benefits.

"Until codes are put into place, hard to get traction on this."

Regionally aligned codes support code compliance because there is one set of codes to learn and understand.

"UNIFICATION of codes would be awesome."

"Professionals are frustrated that codes are different in the several jurisdictions in our region."

There is demand for heat pumps and electrification. Wages & Housing are an issue for maintaining a skilled workforce to execute these goals. Cost is still a barrier.

Why does it matter if the workforce understands the codes?

Improving building code compliance can save on energy costs and make buildings more affordable to operate, benefiting our community and environment.

Estimated Energy Lost from Noncompliance (GuideHouse Study)

- **Up to $2,300 per building/yr in lost energy costs** from non-compliant code buildings, especially in heating and cooling followed by insulation.

The Path to 2030

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.**

The Roadmap (Solar)

Step A: 2024-2026	Step B: 2027-2029*	Step C: 2030 & beyond*
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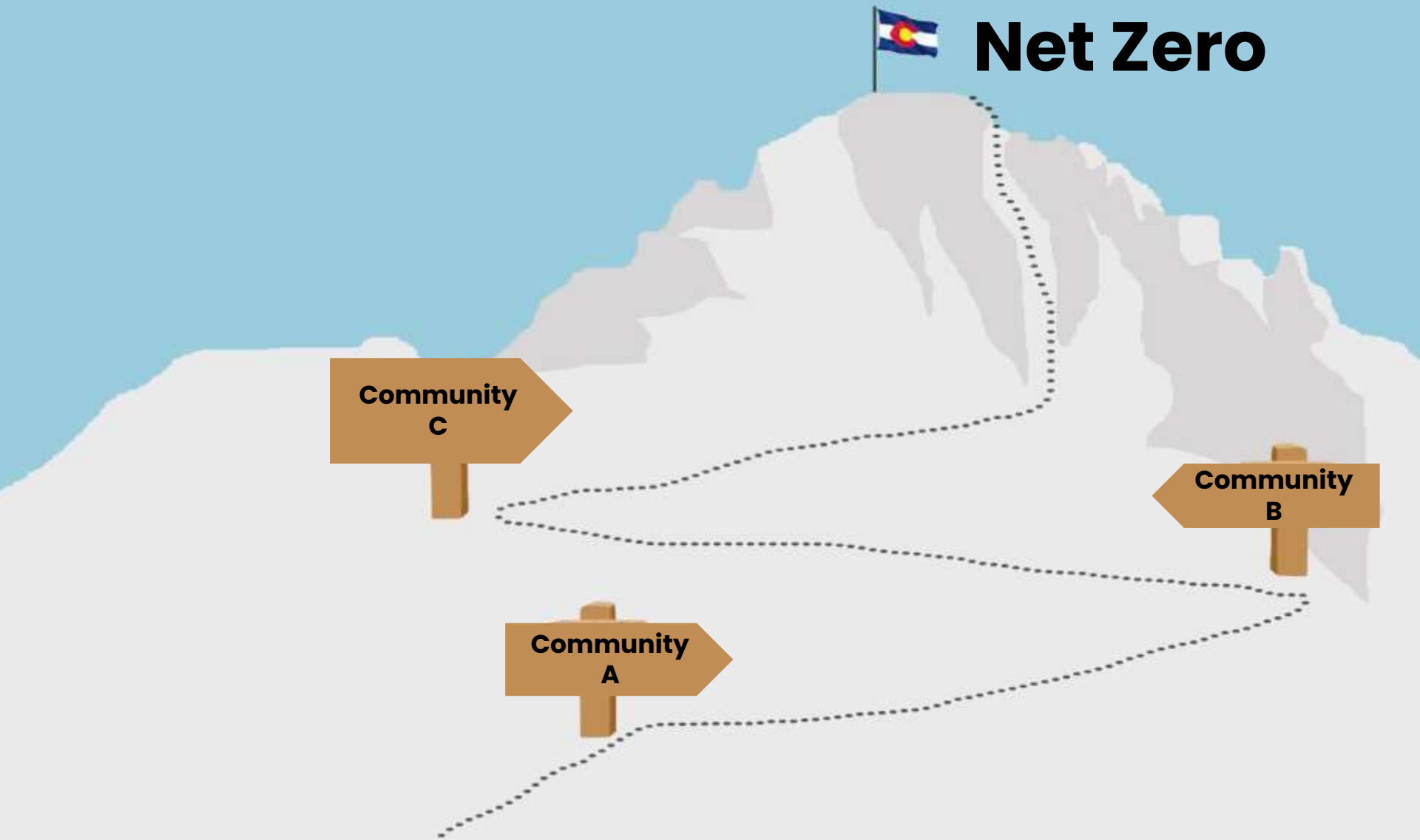
Net Zero
Community C
Community B
Community A

The Roadmap

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Net Zero Roadmap Benefits

Stronger codes =

a skilled workforce, better-built homes.

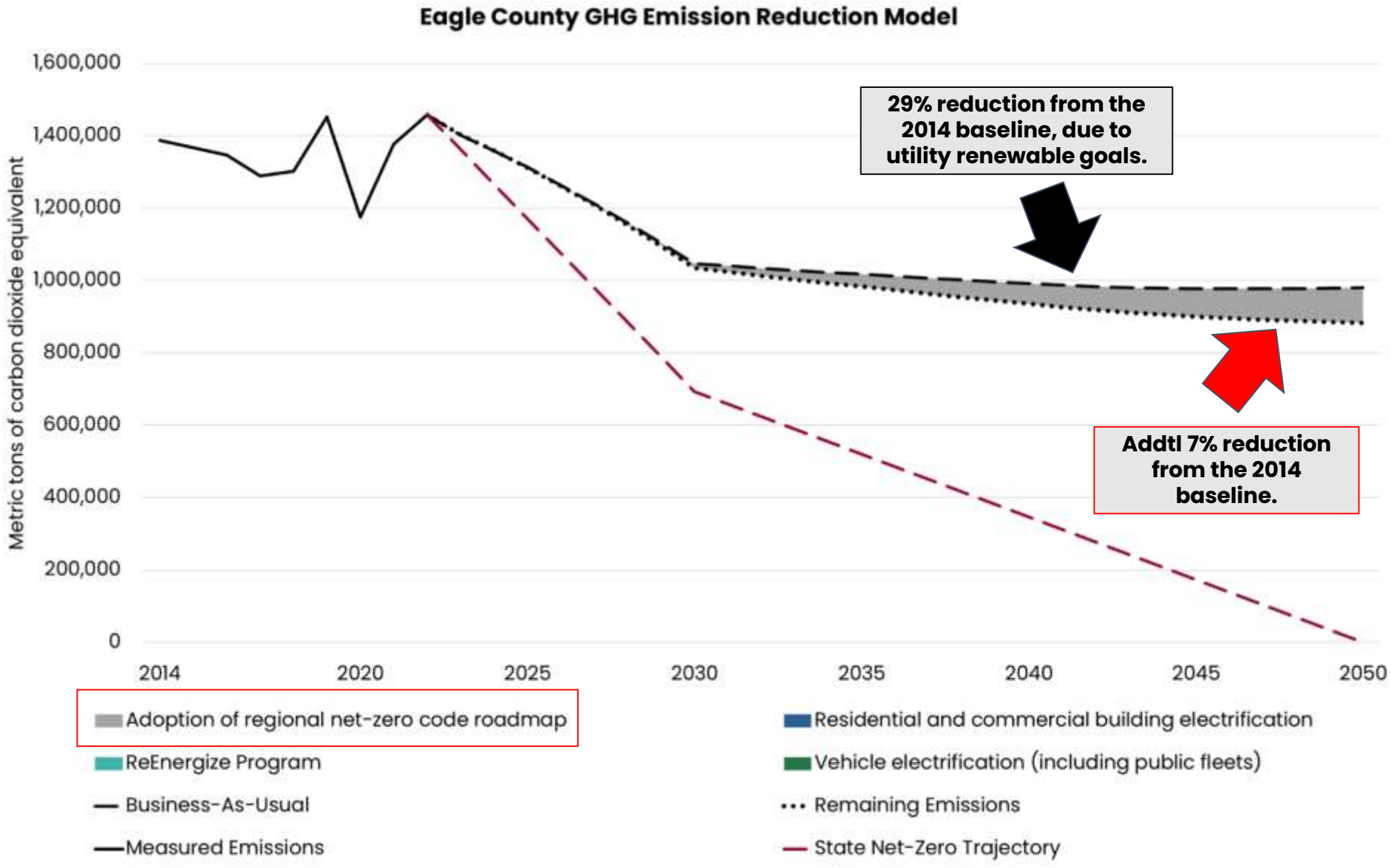
Build right the first time =

no costly fixes later.

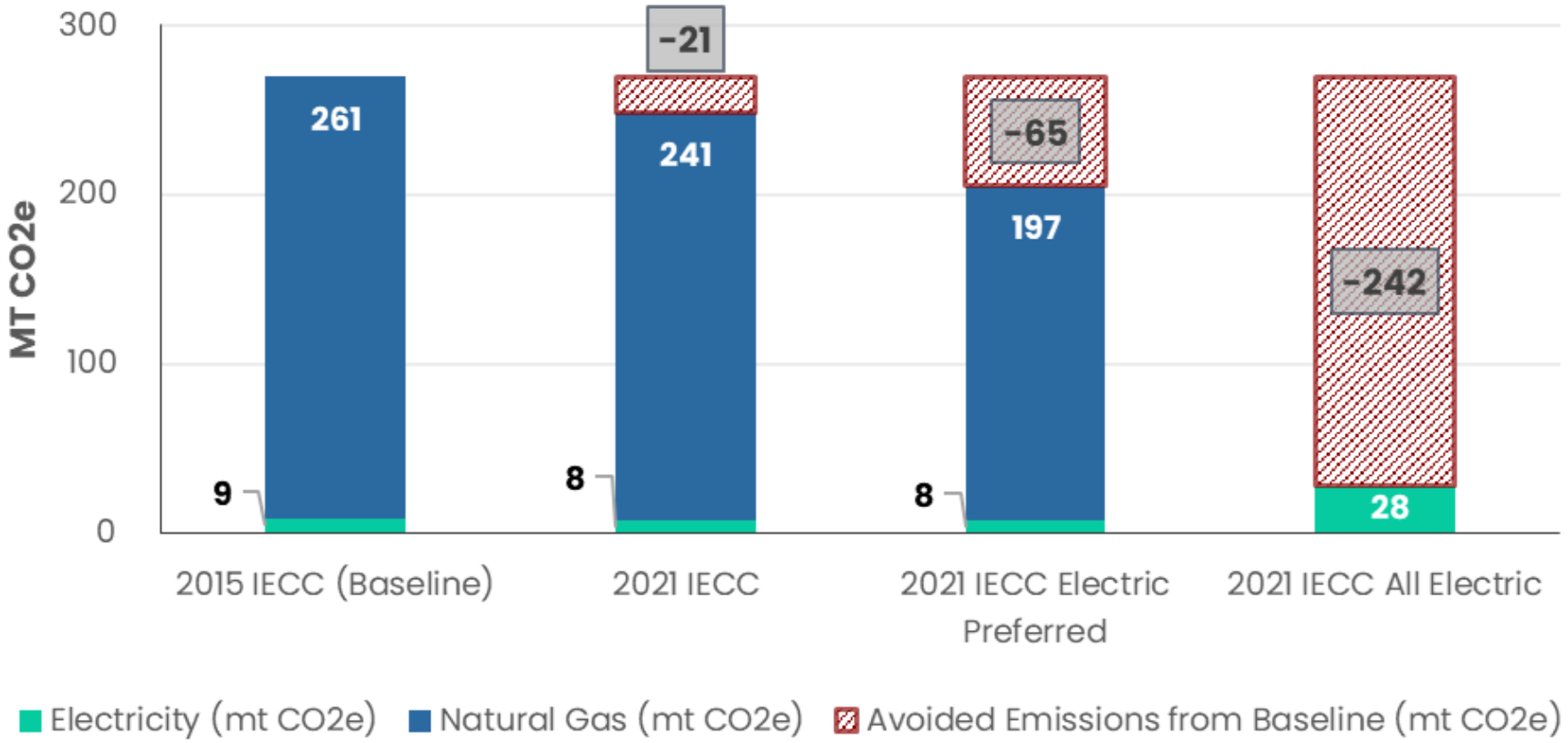
All-electric homes =

healthier, more affordable living

Benefits: GHG Reductions

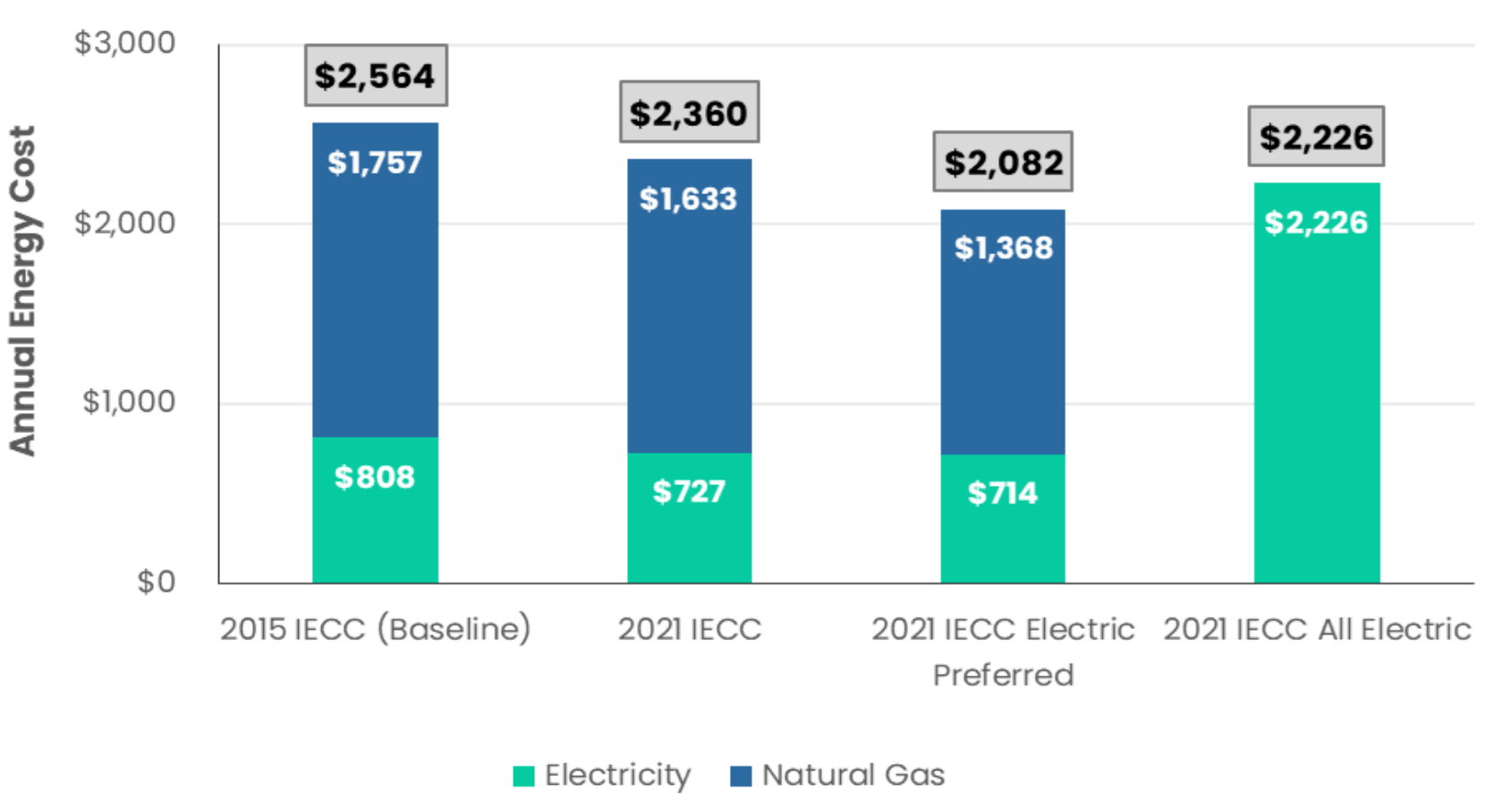


Single-Family Home: GHG Emissions - 2015 IECC vs. 2021 IECC All-Electric



Eagle County Energy Code Modeling Report, Nov 2022

Single-Family Home: Energy Cost Savings - 2015 IECC vs. 2021 IECC All-Electric



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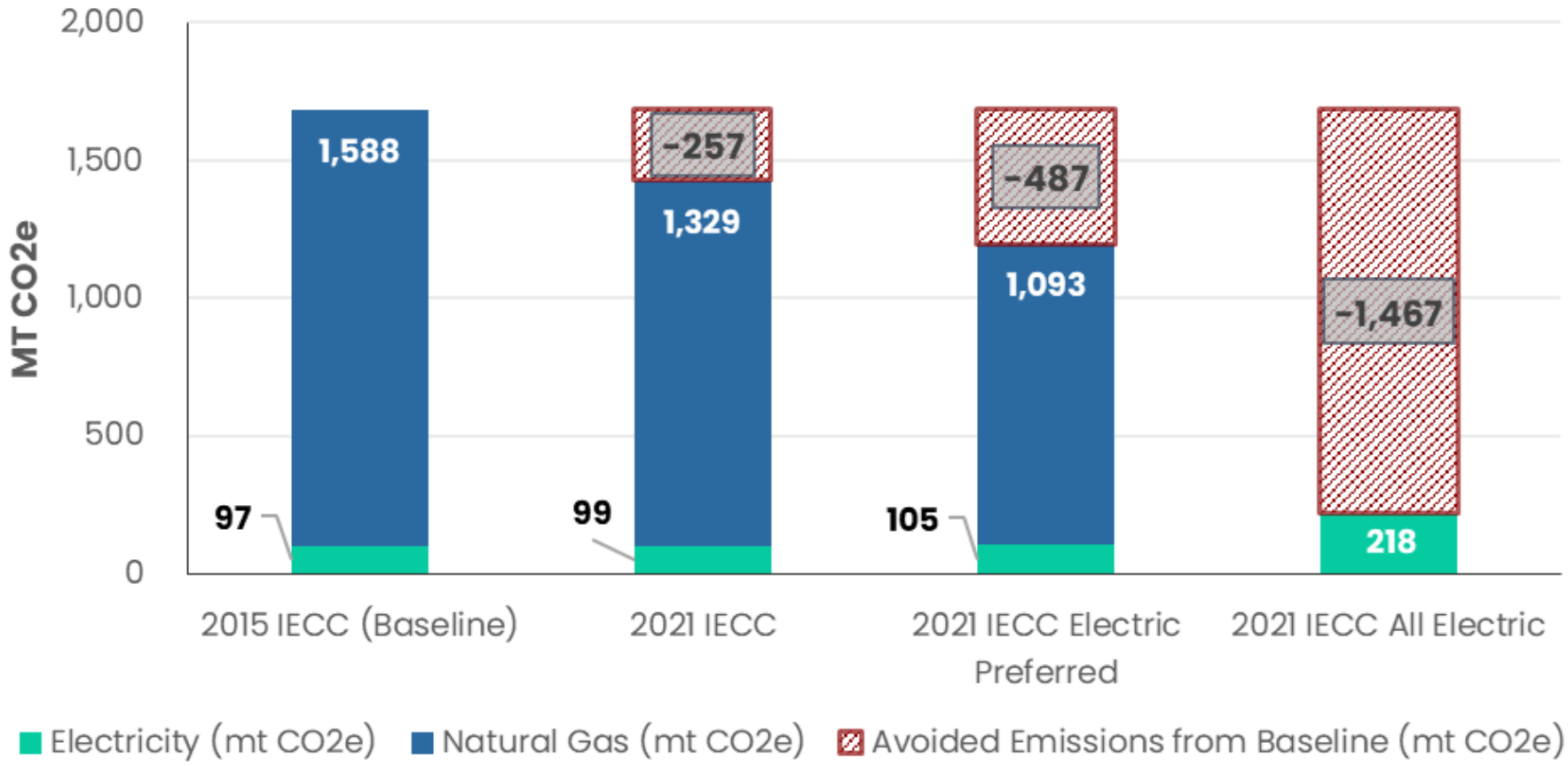
Multifamily: GHG Emissions - 2015 IECC vs. 2021 IECC All-Electric



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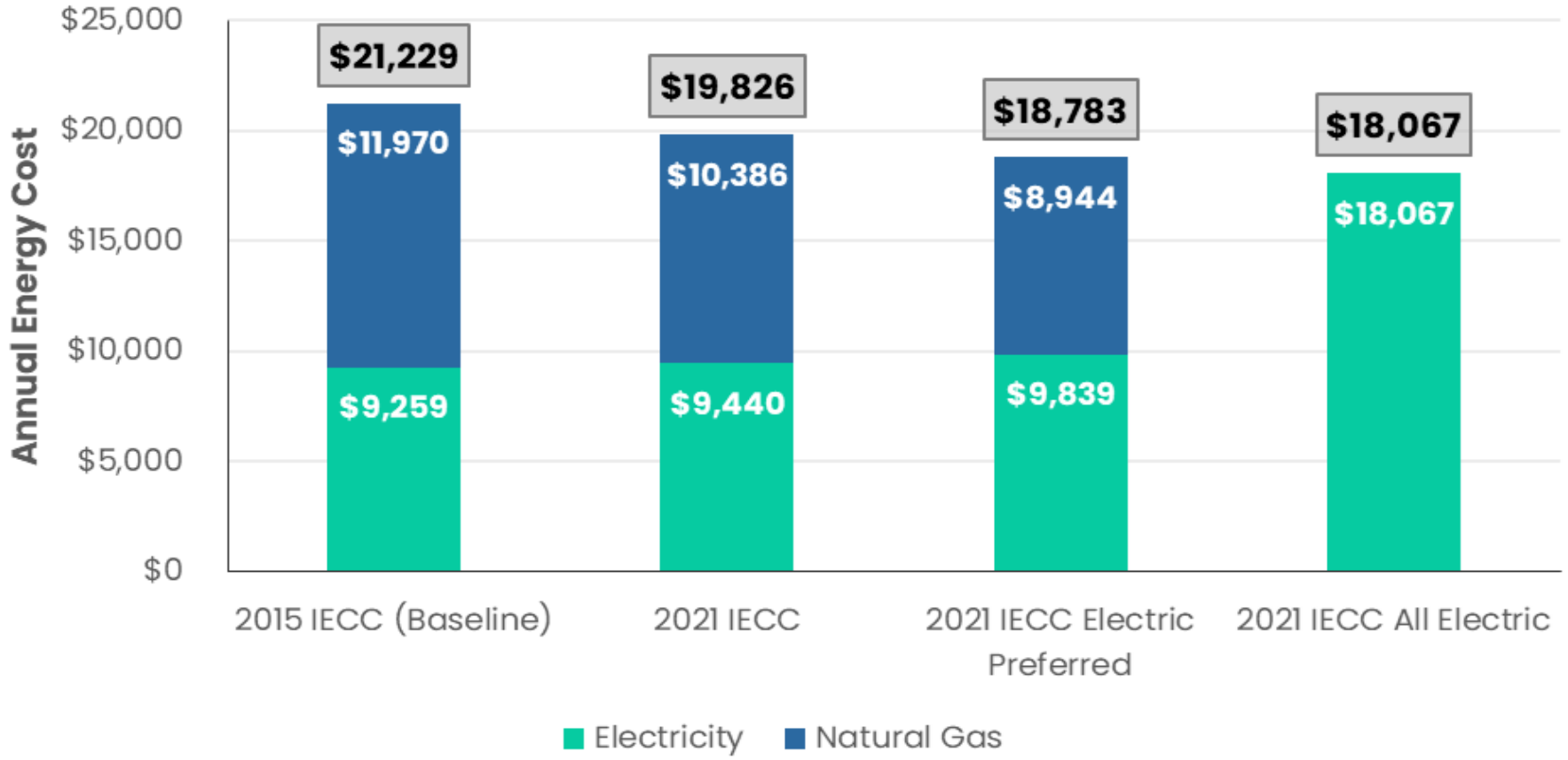
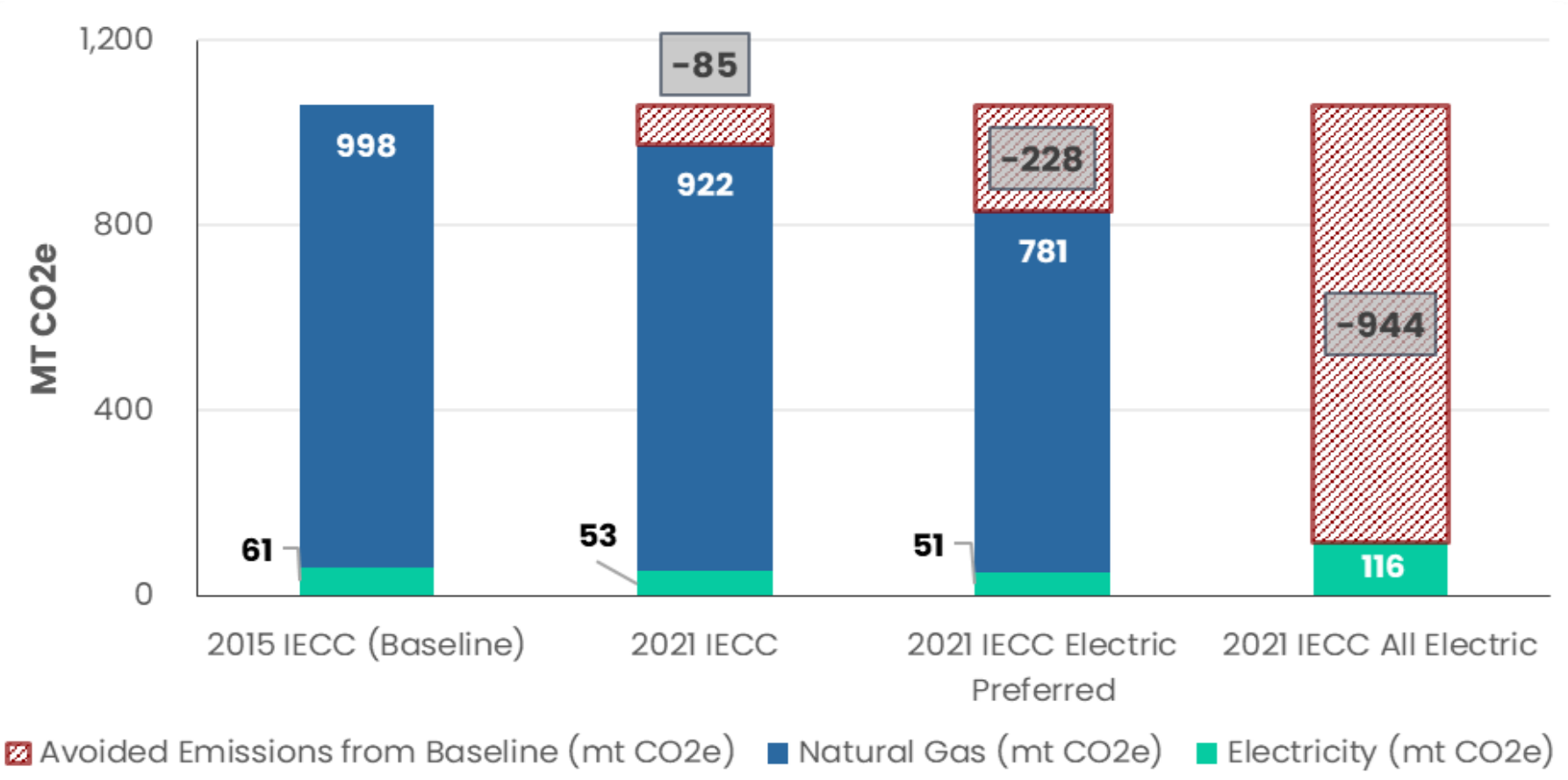


[Eagle County Energy Code Modeling Report, Nov 2022]

Commercial: GHG Emissions - 2015 IECC vs. 2021 IECC All-Electric



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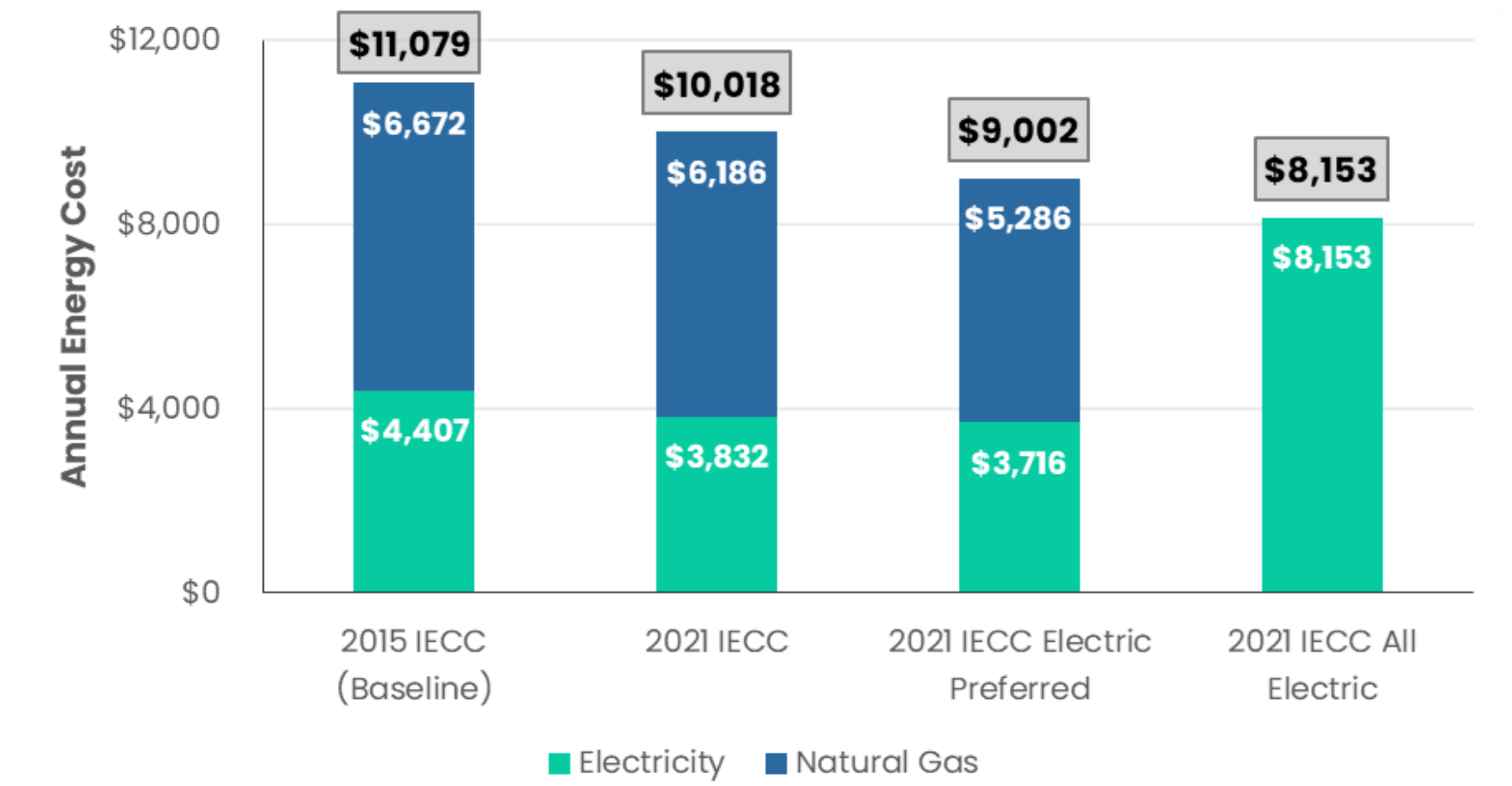
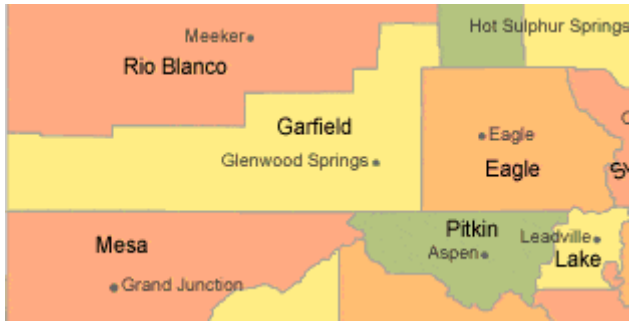


[Eagle County Energy Code Modeling Report, Nov 2022]

Partnerships and Collaboration

Community Coordinating Entities

- **CLEER**
  - Garfield Clean Energy, Garfield County
- **CORE**
  - Pitkin County (Upper Roaring Fork Valley)
- **Walking Mountains**
  - Eagle River Valley (Eagle County)



Value in Regional Partnerships

Net Zero Buildings in our Region

Aspen: Burlingame III

- 2023
- Owned units, deed restricted, managed through Aspen Pitkin County Housing Authority
- **All-electric heating, no cooling.**
- EV charging.
- **Designed to be all-electric from the start.**

Breckenridge: Alta Verde

- 2023/2024
- **All-electric, net zero.**
- **Heat pumps in each unit, with electric tank water heaters.**
- **Solar.**
- EV charging stations.
- Rented units.

Avon: Walking Mountains Educator Housing

- 2020 & 2024
- **Net zero**
- **All-electric**
- **Solar**
- **Battery storage on newest building**
- Energy efficient building envelope.
- Student housing.

Rifle: Wapiti Commons

- 2022
- **All-electric, net zero.**
- Energy efficient building envelope.
- Air source heat pumps.
- EV-ready for future EV charger installation.
- Affordable workforce housing.

The Path Ahead

Town of Minturn Building Achievements

Adoption Eagle County Code Cohort Code

- 2021 IECC
- Electric-preferred
- EV ready
- Solar ready

Exterior Energy Offset Program

Call to Action

Timeline:

- **Nov 2024 through March 2025** - Region-wide adoption of a resolution or ordinance committing to roadmap goals.

Dedicated Commitment From Leadership:

- Resolution to execute the Roadmap, achieve net zero (as defined by the Roadmap) for new buildings by 2030, and support staff and community.
- Commitment to continue **collaboration** efforts into the future.

Questions?

Thank You

Kim Schlaepfer

kim@lotussustainability.com

Gina McCrackin

ginam@walkingmountains.org