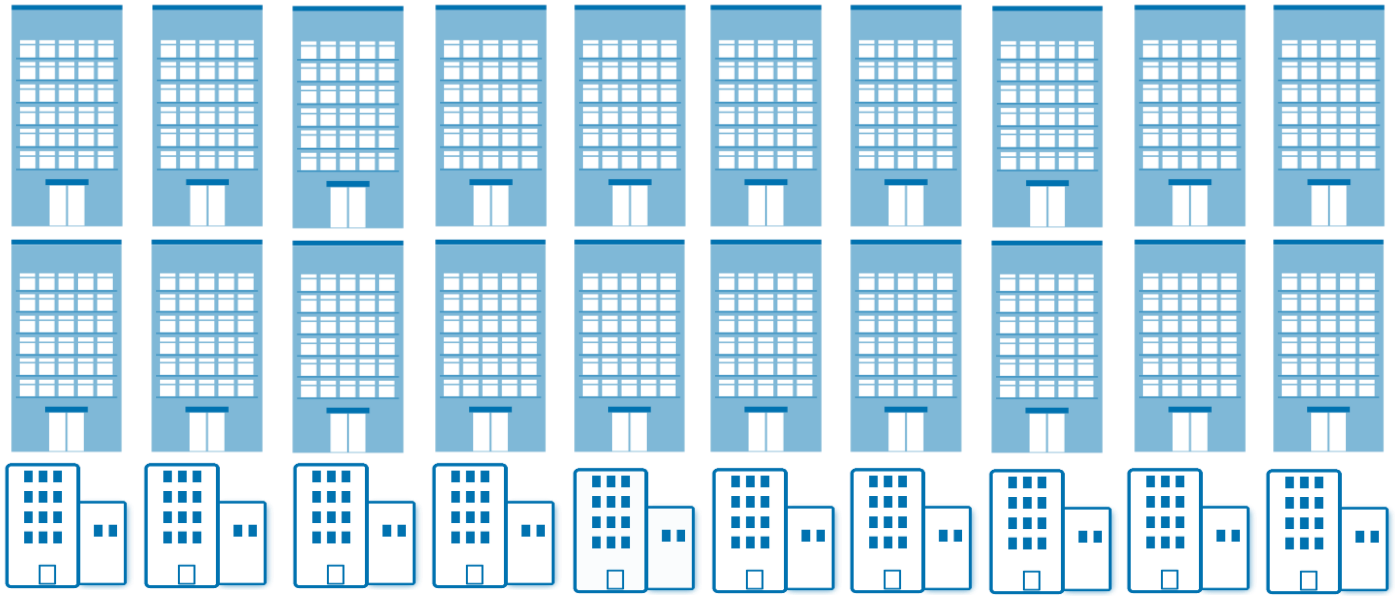
Energize Denver Task Force

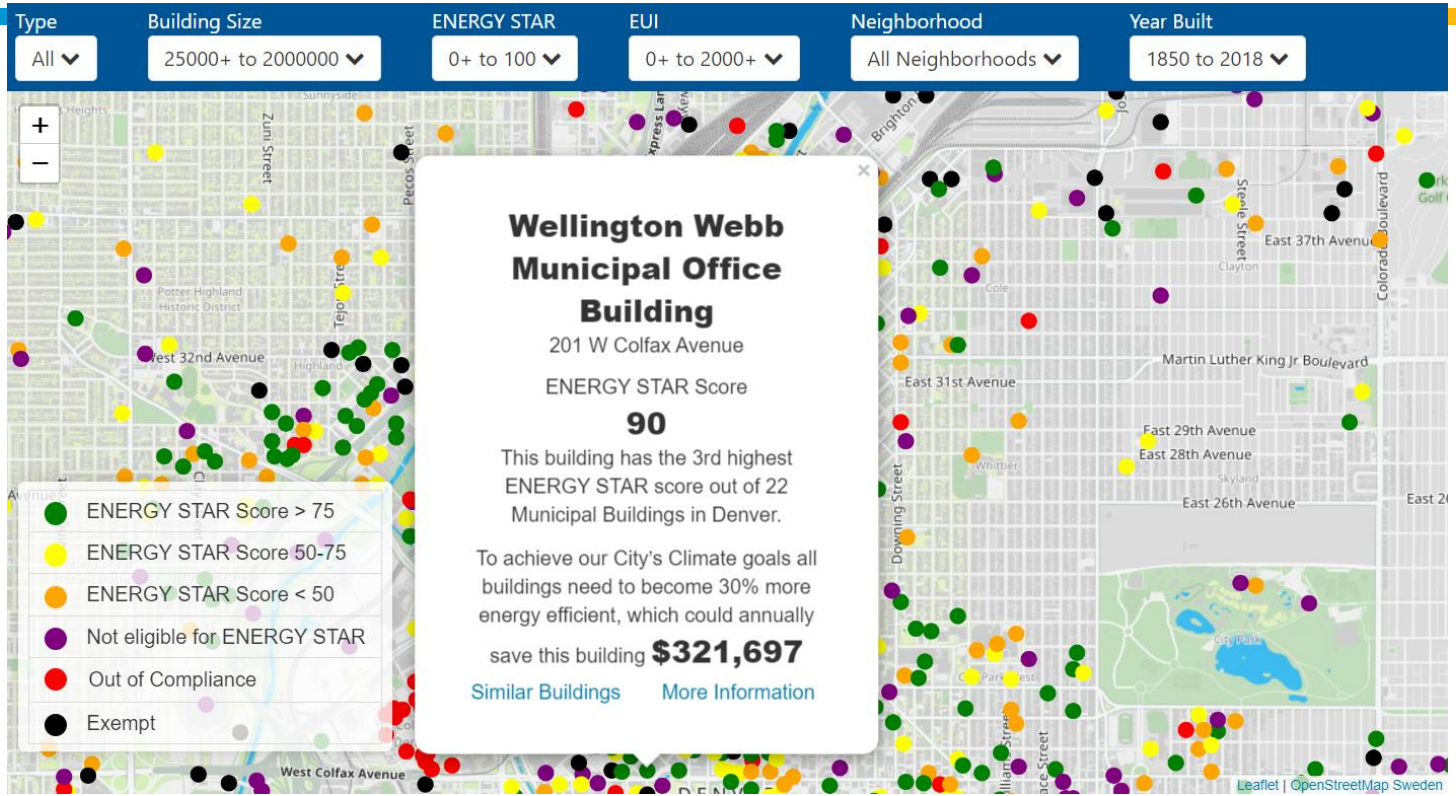
Denver City Council SAFEHOUSE Committee, 11-03-2021

Commercial and Multifamily Buildings Account for 49% of Denver's GHG Emissions



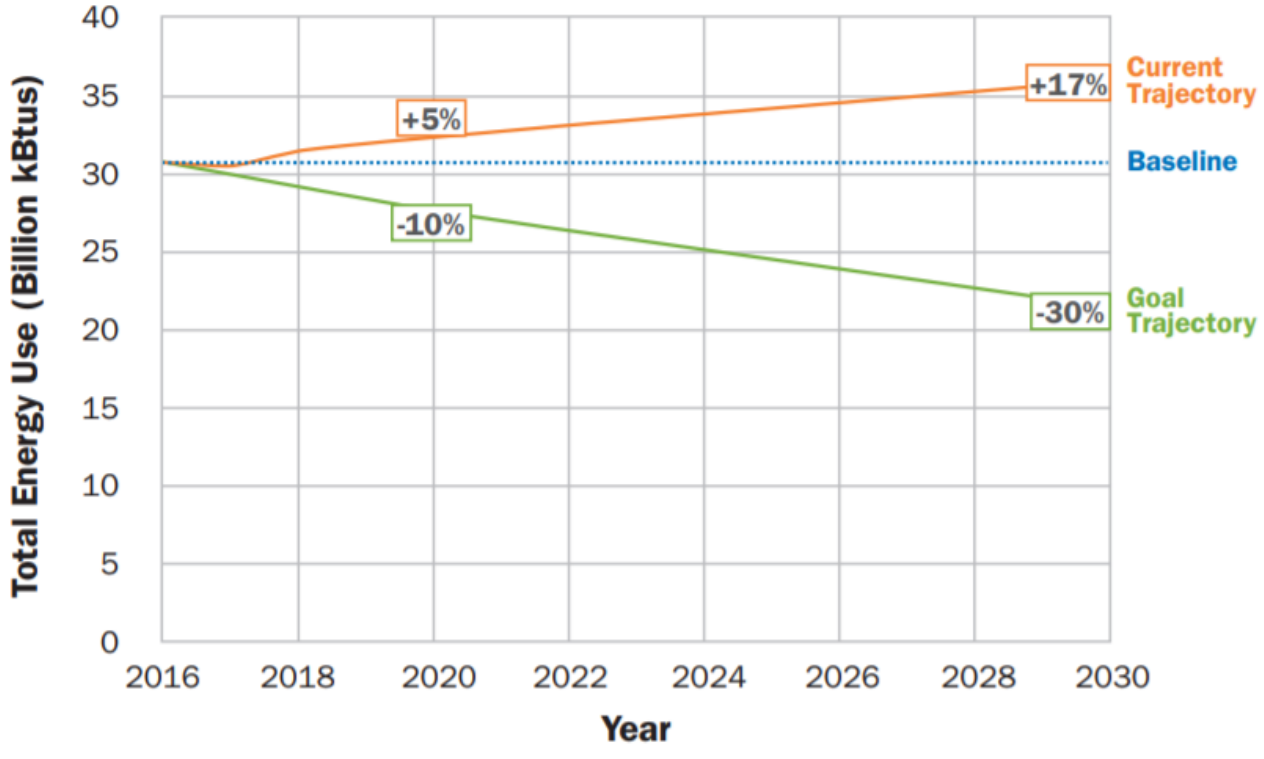
>25,000 sq ft:
- 82% of square footage
- 3,000 buildings

<25,000 sq ft:
- 18% of square footage
- 14,000 buildings

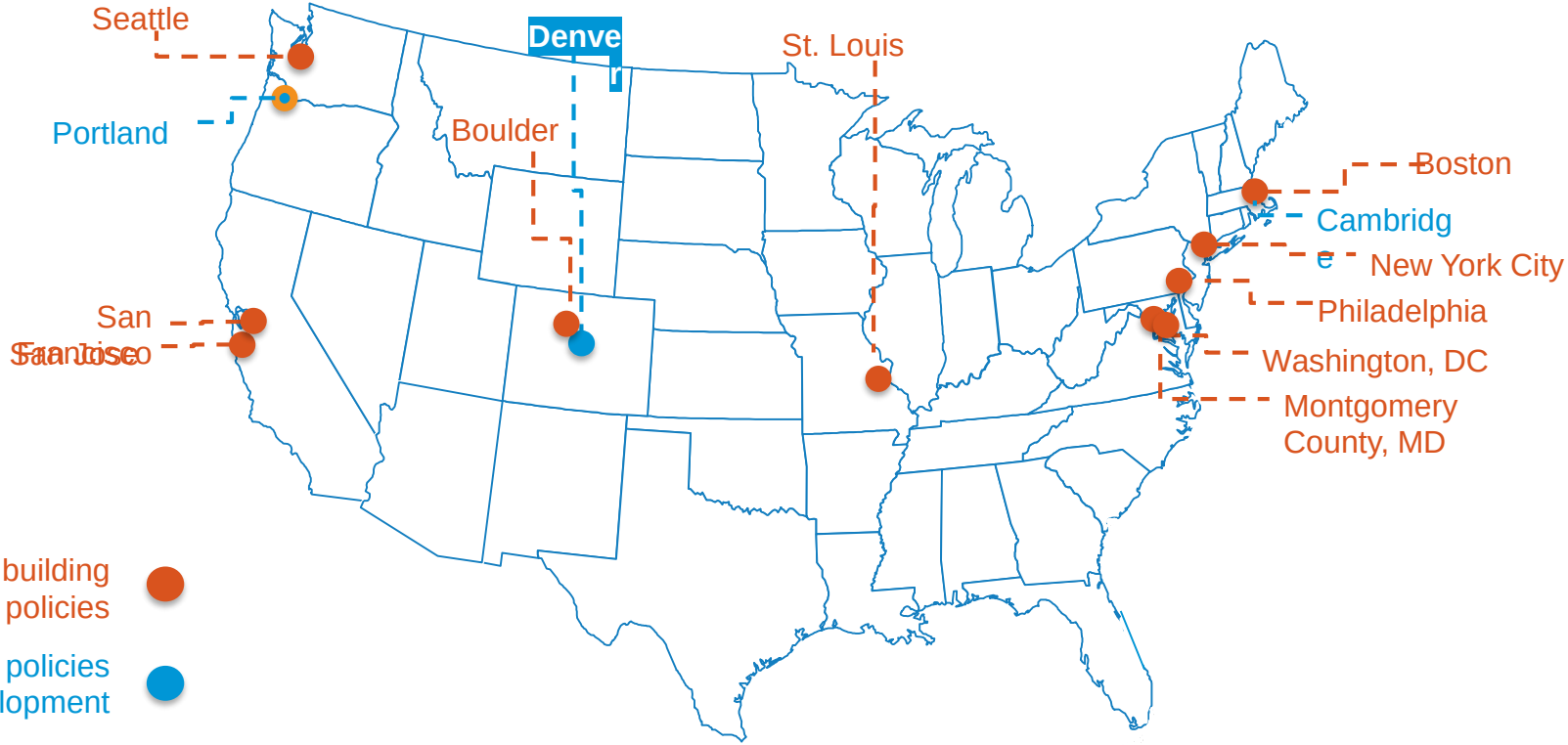


Benchmarking since 2016: www.energizedenver.org

Progress Towards Goals: All Buildings



Building Performance Policies in Other Cities



The Energize Denver Task Force was focused on existing commercial and multifamily buildings

Not single-family homes

Energize Denver Task Force: Improving health and equity, creating jobs, bringing existing buildings to net zero energy by 2040

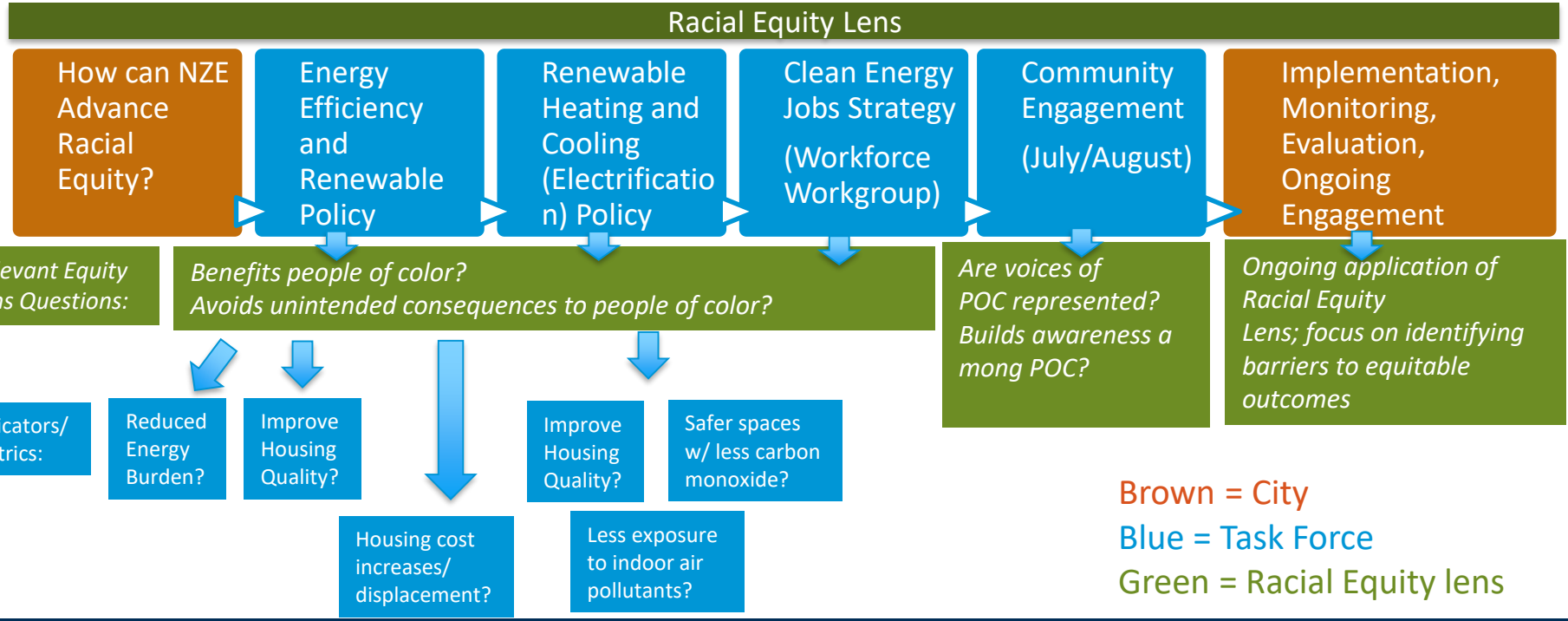
Building Owners/Managers	Amie Mayhew, Colorado Hotel & Lodging Association Frank Arellano, LBA Realty Jon Buerge, Urban Villages Kathie Barstnar, NAIOP Colorado Lori Pace, Denver Metro Association of Realtors Peter Muccio, Apartment Association of Metro Denver Stephen Shepard, Denver Metro BOMA
Utility/Oil and Gas	Tyler Smith, Xcel Energy Sam Knaizer, bp, bpx energy Scott Prestidge, Colorado Oil and Gas Association
Residents/Tenants/Non-Profit Representatives	Aaron Martinez, Urban Land Conservancy Angela Fletcher, Denver Housing Authority Jennifer Gremmert, Energy Outreach Colorado Jonathan Cappelli, Neighborhood Development Collaborative
Labor/Workforce Training	Jennie Gonzales, IBEW 68 Sergio Cordova, Pipefitters Local Union No. 208 Eddie Bustamante/Anthony Trujillo, LiUNA Local 720
Environment/Clean Energy	Celeste Cizik, Group 14 Engineering Christine Brinker, Southwest Energy Efficiency Project (SWEEP) Jenny Wilford/Emily Gedeon, Colorado Sierra Club Ariana Gonzalez/Alejandra Mejia Cunningham, NRDC Mike Kruger, Colorado Solar and Storage Association (COSSA) Monique Dyers, Ensight Energy Consulting Steve Morgan, Bolder Energy Engineers, Rocky Mtn. Assoc. of Energy Engineers
City Council	Jolon Clark, Denver City Council District 7


Retrain
Long Term Costs
Barriers
Job Creation
Livable
Gentrification
Multiple Pathways
Affordable
First Costs
Performance Options
Workforce Development
Biggest Challenge
Clean Energy
Spacing Constraints
Contractor Training
Gradual
Rate Structures
Faster Outcomes
Under Resourced
Eager Compliance
Efficiency
Benefits
Attract New Business
Tenant Costs
Feedback
Credits
Carbon Reduction
Model Community
Net Zero Energy
Health
Equity
People
Energy Costs
Owner Costs
Financing
Heating Loads
Sustainable
Achievable
Incentives
Real Stories
Expectations
Responsible
Electric Appliances
Lower Heating/Cooling Costs
Electrify
Implementable
Financial Barriers
Unique
Co-Benefits
Job Training
Attract People
Unfamiliarity
Impact
Diversity
Effective
Capital
Effective
Workable
Who's Going to Pay
Delayed Requirements
Jobs
Steam
Labor Force
Building Types
Multifamily
Cost-Effective
What's Working Elsewhere
Oil and Gas
Simple
Displacement
Renewables
Parameters
Supported
Opportunities
Culture Change
Natural Gas Transition
Real Impacts
Listen
Trade Offs
Fiscally Attainable
Solutions
Requirements
Informed
Challenge
Retrofit
Labor Gap
New Jobs
Gas Industry Workers
Improving
Workforce Transition
Electrification
Education
Prescriptive Options
Accelerate
Well-Being
Strategic
Flexibility
Technology
Owner's Focus
Ventilation
Can Do
Learning Various Jurisdictions
COVID-19
Climate Impacts
Community
Compliance
Goals
Peak Demand
Human
Buy-In
Technologically Feasible
Green City
Reinvent
Help Landlords
Indoor Air Quality
Landlord/Tenant Rights

The Process

- 8 task force meetings January-August, 2021.
- Many working group and side meetings along the way.
- Building on best practices and lessons learned in other cities.
- Community engagement – public survey and input sessions.

Racial Equity Roadmap



Brown = City
Blue = Task Force
Green = Racial Equity lens

Policy Recommendations

Energy Efficiency/Renewable Energy Policy:

Implemented by CASR

Renewable Heating and Cooling Policy:

Implemented by CPD

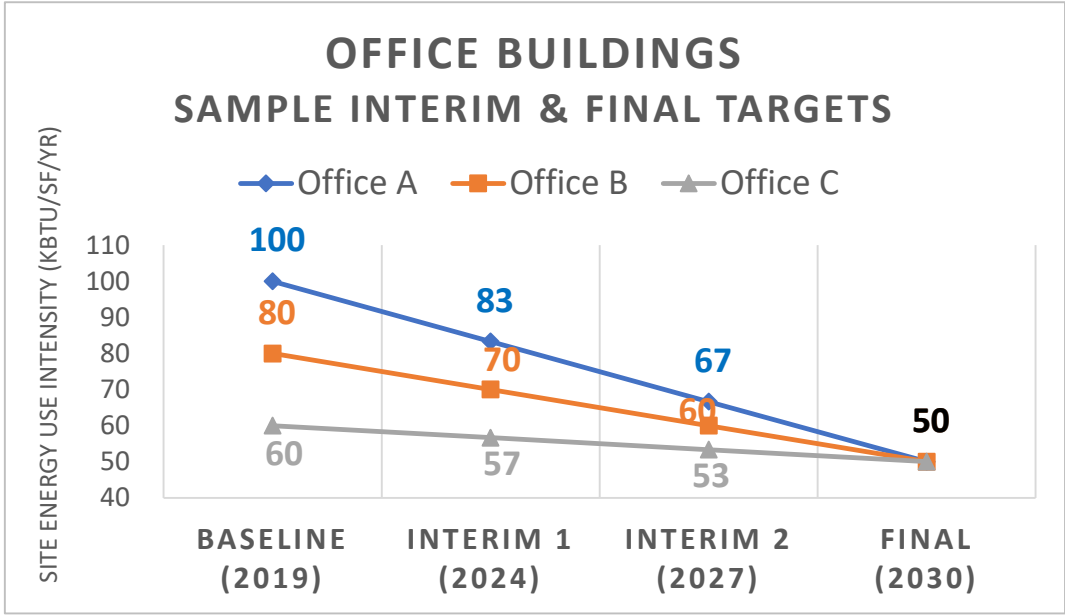
The Climate Benefit:

Carbon Impact	Cumulative Carbon Reduction by 2040 (million tons eCO2)
Task Force Goal	**13.7**
Benefit of EE & RE policies	8.2
Benefit of electrification policies	3.6
Benefit of all policies	**11.8**

- ~80% reduction in building emissions by 2040. As much as the Task Force felt is reasonable and achievable for building owners and managers in Denver.
- Over $1 billion in benefit through avoided social cost of carbon, which is the cost of the damages created by carbon dioxide emissions.

Energy Efficiency/Renewable Energy Policy:
Large Buildings, 30% Improvement in Energy Performance by 2030

- All buildings over 25,000 sq ft
- Long-term **performance target** created for each building type
- Required **interim** targets for 2024 and 2027
- **Solar** fully credited towards energy use
- Credit for **high performers**.



Energy Efficiency/Renewable Energy Policy:

Large Buildings, Alternate Compliance Options

1. Request different **compliance timeline**
2. Adjust **end goal**
3. **Prescriptive** Option: for 25,000-100,000 sq ft buildings
4. Manufacturing/Agriculture: Rules to be developed by manufacturing and agricultural stakeholders to achieve 30% savings by 2030 across this sector.

Energy Efficiency/Renewable Energy Policy:
Small Buildings

- Buildings 5,000-25,000 square feet
- Lighting Upgrade or Solar
- Requirements begin in 2025

Renewable Heating and Cooling Policy:

All Buildings, Partial Electrification of Space and Water Heat upon System Replacement, when Cost Effective

Date Requirements move into Code	Requirements for all Commercial and Multifamily Buildings (implemented by CPD)	Incentives (implemented by CASR, funded by Climate Protection Fund)
2023	• Permitting equal for a heat pump and a gas system	• 2022: Incentives for Electrification Feasibility Studies • 2023: Incentives for Heat Pumps for All Buildings
2025	• Require heat pumps upon replacement for easy to electrify systems (furnaces, roof top units, individual water heaters) when cost effective.	• Incentives for Heat Pumps for All Buildings, including harder to electrify systems
2027	• Require heat pumps upon replacement for harder to electrify systems (ptac's, boilers, central hot water) when cost effective.	• Incentives for Heat Pumps for only Under-resourced Buildings

Improved Equity and Safety

- In 30-40% of low-income homes in Denver, gas equipment fails carbon monoxide tests.

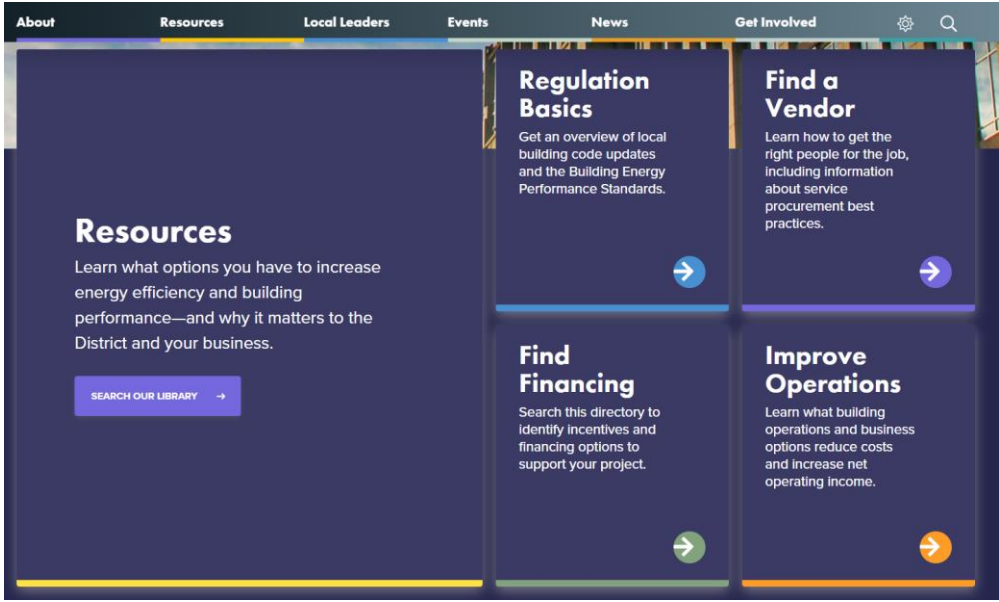
Increases Grid Utilization

- Denver's electric system is already built to withstand high air conditioning load during the summer, therefore winter heating needs can shift to renewable electricity without significant infrastructure build-out.

Implementation

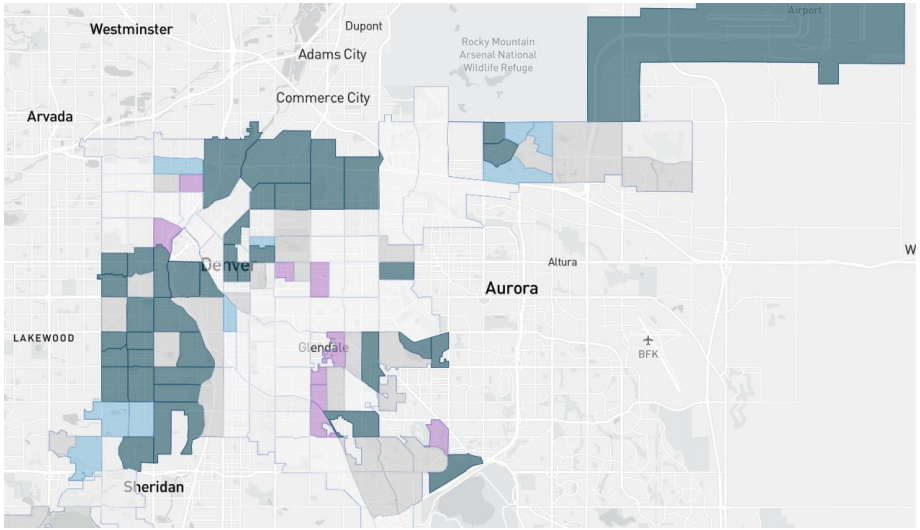
Implementation: Incentives, Supports and Outreach

- Building Resource Hub
- Performance **Portal**
- **Materials.** How-to guide, check lists.
- Targeted **Outreach** and **Education**
- **Technical** Assistance
- **Incentives**
- Community **Engagement**



Extra Support for Under-Resourced Buildings

- Identifying under-resourced buildings
  - Buildings in areas with high Social Equity Index scores.
  - Buildings with affordable units or otherwise serving under-resourced communities
- Extra Support
  - Technical assistance
  - Financial assistance



Social Equity Index: Weighted social equity indicators (utility burden, income stress, asthma rates, racial composition)

Energy Efficiency / Renewable Energy Policy:
Penalties

- Penalties are set just slightly higher than the cost of compliance.
- CASR will utilize penalties to drive compliance.
- CASR is committed to help building owners and managers put alternate compliance plans in place to avoid penalties.

Energy Efficiency / Renewable Energy Policy:

Rules and Regs Outline

- Introduction
- Definitions
- Requirements for benchmarking and reporting
- Requirements for existing building performance for covered buildings with a gross floor area equal to or greater than 25,000 square feet
- Requirements for existing building performance for covered buildings with a gross floor area of 5,000-24,999 square feet.
- Enforcement and penalties

Next Steps


Ordinance through City Council
Rules and Regs by CASR
Outreach and Seminars begin for building owners and managers, and the community
Equitable Incentive Design
Stakeholder engagement to give input on implementation
Building Resource Hub stood up, with individual support for under-resourced buildings
Initial compliance notices go out for energy efficiency and renewable energy requirements

Appendix

Climate Action Task Force: Existing Buildings and Homes Recommendations Overview

- Implement building performance policy that includes the strategic electrification of all existing buildings & homes so they achieve net zero energy by 2040.

- Equitably enhance affordable housing incentives and low-income programs.

Examples of Incentives

- CASR Steam Program can help contribute to the refinancing capital stack and to help pay for upgrades in buildings on steam.
- Financing programs for energy improvement projects: PACE financing, Colorado Clean Energy Fund.

Colorado HB 21-1286: Energy Performance for Buildings

The final bill applies only to buildings above 50,000 square feet and includes the following:

- Benchmarking starting in 2022 with 2021 data,
- A task force that will develop the performance standards to reach a minimum of 7% GHG savings by 2026 and 20% GHG savings by 2030 across covered buildings.

Policy Design Tool

- A tool that let the task force turn on and off different policy options for different building sizes and types and see if they are on track or off track of their carbon budget, cost effectiveness, implementability, renewables goals, and grid impacts.

Policy Design Tool

Energy Efficiency & Renewable Energy Policies

Policy Inputs

Energy Efficiency and Renewable Policy Parameters

Large building =	25,000 SF or greater
Large Building Parameters	
EUI Reduction Target:	30%

	Interim Target #1	Interim Target #2	Final Compliance
Date:	2024	2027	2030
Average EUI Reduction Target:	10%	20%	30%

Small Building Parameters

Policy Path:	Prescriptive
Number of Phases:	1

	Phase 1	Phase 2	Phase 3
	☐ Programmable Thermostats	☐ Programmable Thermostats	☐ Programmable Thermostats
	☑ LED Lighting Upgrade	☐ LED Lighting Upgrade	☐ LED Lighting Upgrade
	☐ Onsite Solar	☐ Onsite Solar	☐ Onsite Solar
	Solar 30% Roof Area	Solar 5% Roof Area	Solar 15% Roof Area
Total Expected Energy Savings:	15%	0%	0%
Compliance Date:	2025	2030	2035

Selected Policy Impacts

Carbon Impact

	Cumulative Carbon Reduction by 2040 (tons eCO2)
Task Force Goal	**13,744,214**
Benefit of EE & RE policies	8,236,619
Benefit of electrification policies	3,574,408
Benefit of all policies	**11,811,027**

CARBON REDUCTION GOAL NOT MET

	Cumulative avoided social cost by 2040
Annual Policy Benefit to Denver	$892,858,752

Implementability

Buildings Impacted	Large Buildings	Small Buildings
# of buildings impacted	3,400	14,158
% total building area	82%	18%
% of total energy use	76%	24%

Cost Effectiveness

	Low Simple Payback (years)	High Simple Payback (years)
Large Buildings	3.0	15.0
Small Buildings	N/A	N/A

Alternate Compliance Option1: Request a Different Compliance Timeline

- Apply for a timeline that is more cost effective or feasible. Allows upgrades to be timed around :
  - End of system life
  - Refinancing for capital constrained affordable housing
  - Major renovation
  - Change in major tenant.
- Application should include:
  - Reason for the delay
  - Simple plan for achieving target EUI in the future
  - Proof that easy items have been completed

Alternate Compliance Option 2: Adjust the End Goal

- A building's target EUI can be adjusted due to:
  - Inherent characteristics of the building
  - Substantial change in use (ex – new data center or 24 hour call center moved in)
- A standard analysis that a building owner can hire an engineer to complete will be developed to adjust targets.

Alternate Compliance Option 3: Prescriptive Option

- Buildings 25,000-100,000 square feet
- Prescriptive steps count in 2024 and 2027
  - Electrify space and water heat (partially or fully)
  - Verify they have all-LED lights (honor system, City will spot check)
- Building still needs to meet it's 2030 EUI target, but these two steps should get most buildings most of the way there.

Alternate Compliance Option 4: Manufacturing/Agriculture

- Option for a building where a manufacturing or agricultural process uses significant energy (not a distribution center or warehouse).
- Rules to be developed by manufacturing and agricultural stakeholders to achieve 30% savings by 2030 across this sector.
- One option: Use ENERGY STAR Energy Performance Indicators for plants and achieve and maintain a score of 75 or higher.

Target EUI's for different building types

Property Type	2030 Target EUI
Multifamily Housing	45
Office	50
Hotel	62
Medical Office	72
Non-Refrigerated Warehouse	31
Distribution Center	28
Self-Storage Facility	8
Strip Mall	73
Supermarket/Grocery Store	167
Retail Store	47
Senior Care Community	68
College/University	62

3-year compliance cycles

2022

City communicates target EUI's, steps to take, resources available in early 2022 to allow time for planning and budgeting for improvements in 2023.

2023

Building owners and managers:

Complete initial quick-payback improvement projects and tune-ups.

Begin to plan for alternate timelines or end goals if that seems necessary for a building.

2024

Interim Compliance Year

Energy usage data from Jan-December this year will count for compliance.

2025

June 1: Reporting Deadline to demonstrate compliance with 2024 target.

City supports development of alternate timeline plans where targets are missed.

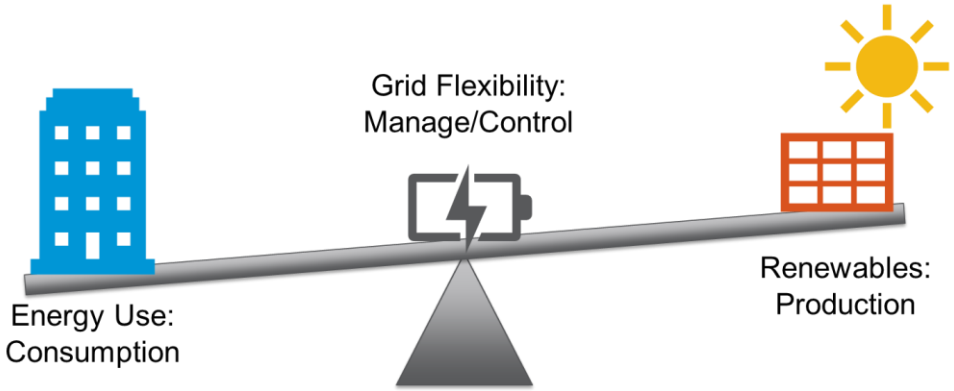
City communicates 2027 targets, encourages planning and budgeting for improvements in 2026 to reach 2027 targets.

Better Outcomes, Same Cost

- When a furnace, A/C system, or hot water heater fails, many buildings can replace it with an electric equivalent with a similar cost for both installation and operation with incentives and social cost of carbon, as they would pay with a new gas system.

Providers of demand flexibility

All electric water heaters installed in commercial buildings should be compatible with the ANSI/CTA-2045 demand response protocol so that they can be providers of demand responses to the grid.



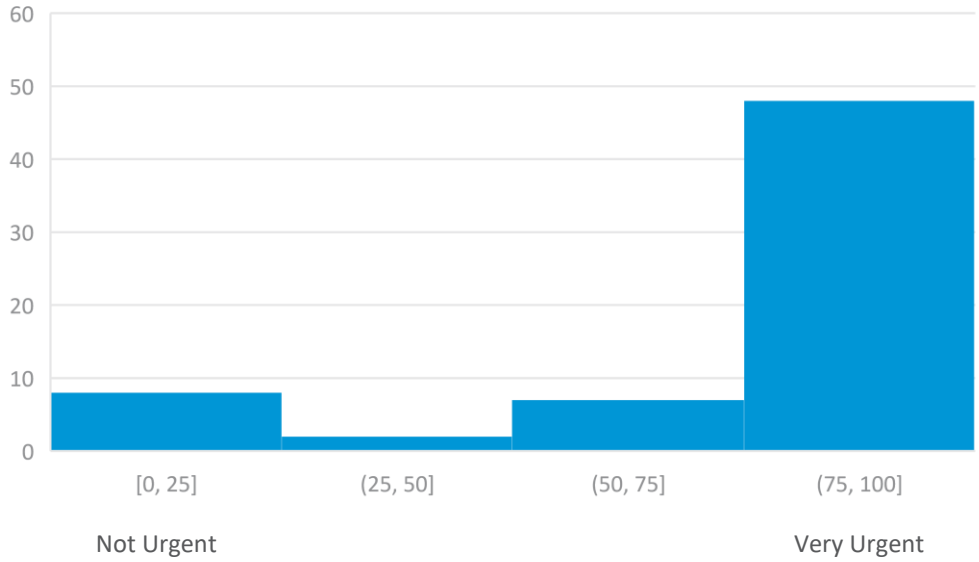
Workforce Training

1. **Equitable Access:** Outreach and education to give equitable access to clean energy jobs to people from under-resourced communities, BIPOC & Women
2. **Training Programs and Pathways**
   a. develop a pipeline of entry level workers
   b. upskill current workers

Equitable Implementation and Evaluation

- Ensure measurable outcomes by using the identified focus areas, indicators, and metrics
- Develop a Social Equity Index in 2021 to understand impacts and trends over time
- Develop and scope outreach to these buildings beginning in 2022
- Develop incentives and supports
- Develop programs and tools to prevent increased cost burdens and associated gentrification and displacement. The City should work to prevent additional rent burdens on people of color, low-income people, and community-serving businesses or nonprofits.
- Ensure ongoing community outreach to communities and people of color
- Use the mechanism to update policy based on racial equity outcomes
- Ensure funding is assessed based on racial equity

What's your sense of the urgency of the climate crisis?



Has the task force done all it can to reach its goal of requiring existing buildings to achieve Net Zero Energy by 2040?