



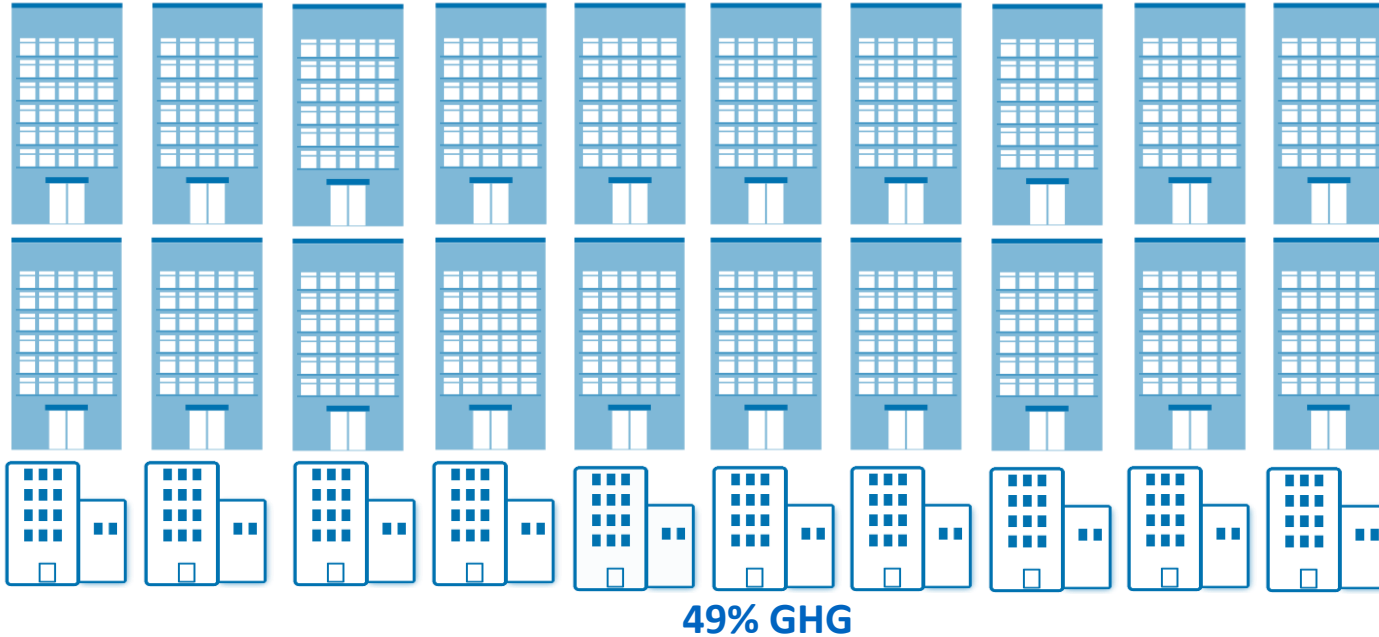
Energize Denver Task Force

Agenda

- Background/origin
- Policy development process
- Policy recommendation
- Implementation plan

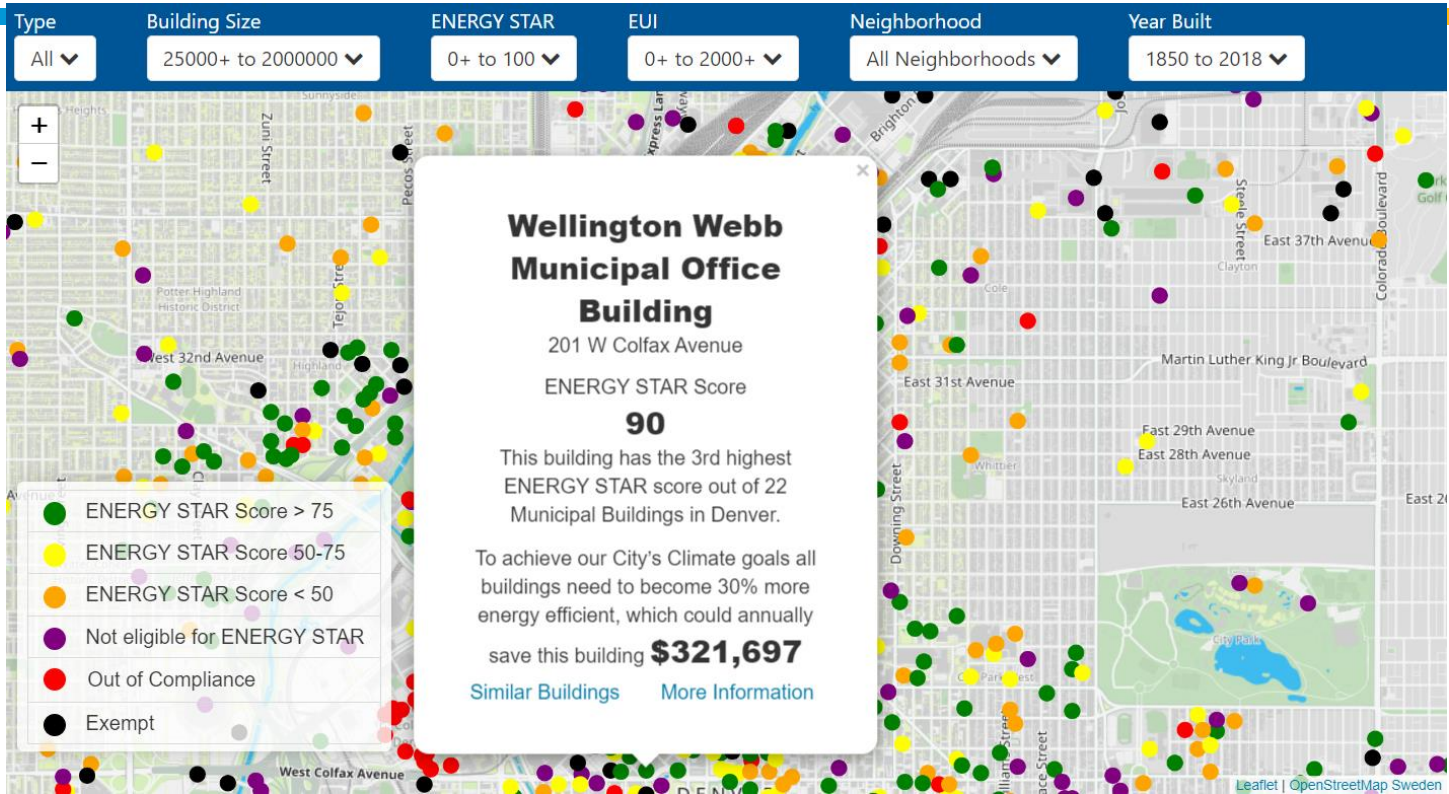
Background and Process

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



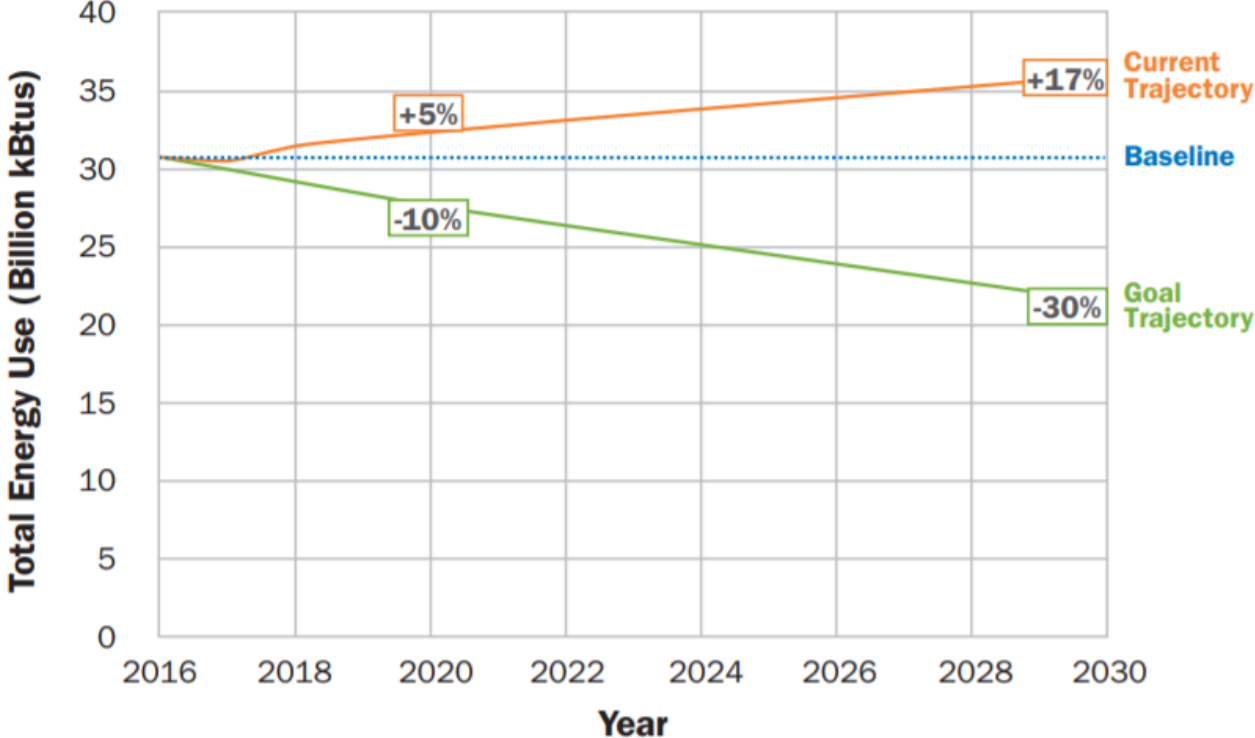
- >25,000 sq ft:
- 82% of square footage
 - **3,000** buildings

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



Benchmarking since 2016: www.energizeddenver.org

Progress Towards Goals: All Buildings

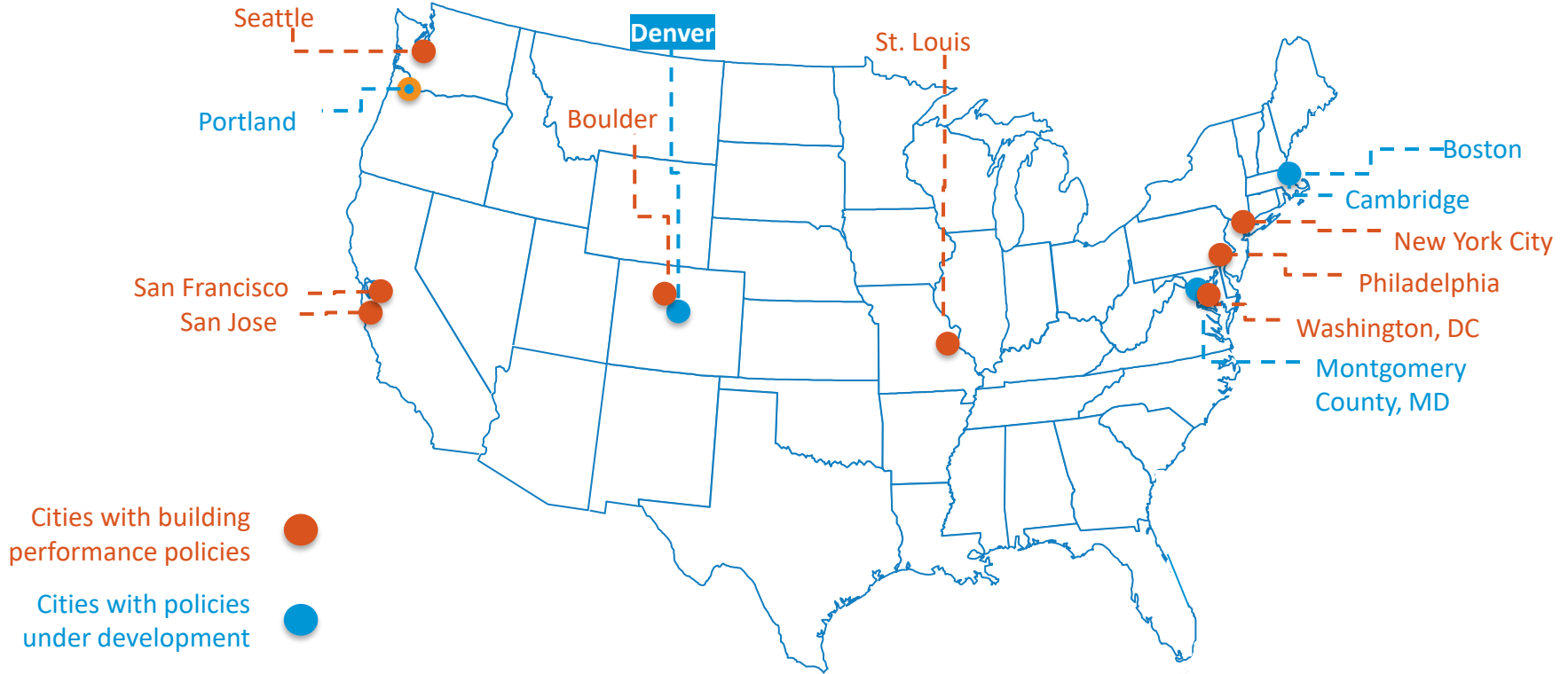


Climate Action Task Force: Existing Buildings and Homes Recommendations Overview

- 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.



Building Performance Policies in Other Cities



Charge

The Energize Denver Task Force will help the City design a building performance policy for existing buildings that:

- ***Improves Health and Equity:*** Improve indoor air quality, comfort and health outcomes. Lower energy costs for businesses and improving energy equity. Ensure under resourced communities can thrive under the policy.
- ***Creates Jobs:*** Create clean energy jobs and driving economic recovery from COVID.
- ***Drives Climate Solutions in Buildings:*** Buildings are responsible for over half of the greenhouse gas emissions in Denver today. The task force will design a policy that will require existing buildings to achieve Net Zero Energy by 2040. The task force will help the City design a regulatory path that enables all buildings achieve this goal. Net Zero Energy means highly efficient, all electric, grid flexible, and powered by 100% renewable electricity.

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



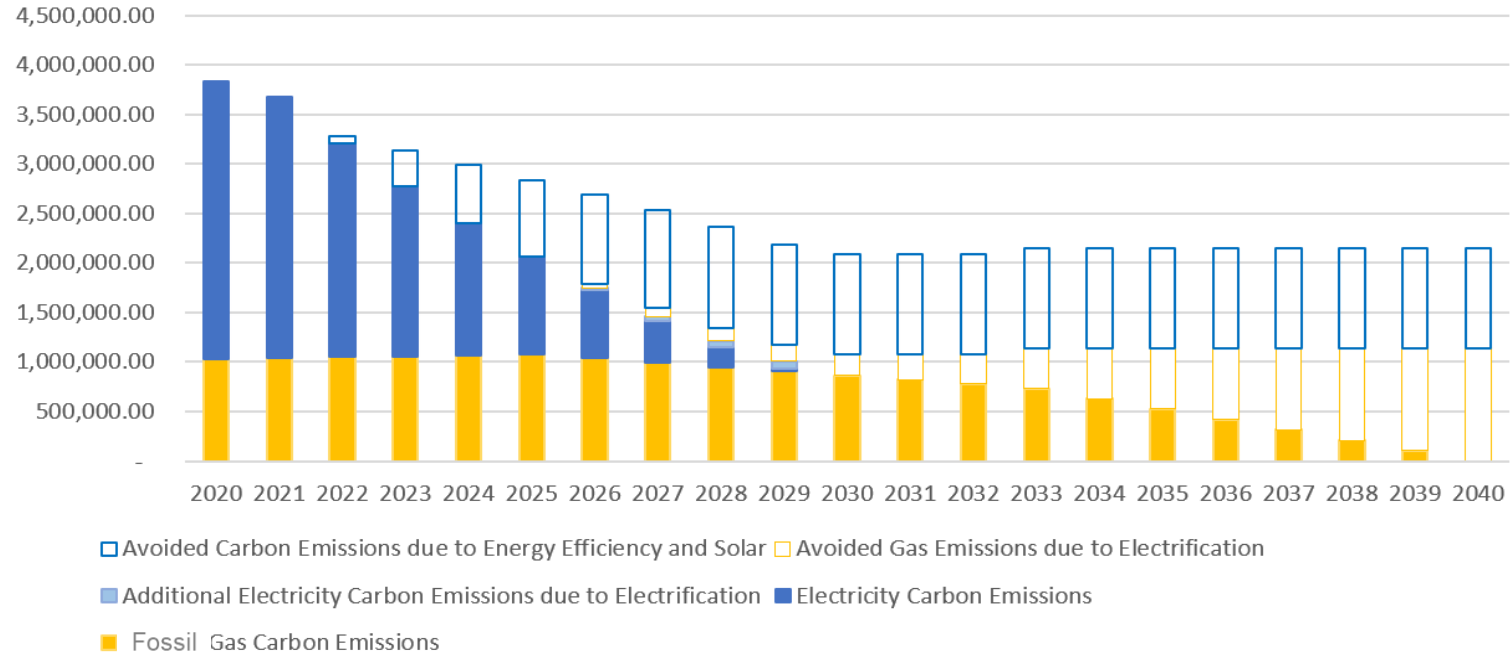
Not single-family homes

Net Zero Energy

- Highly Energy Efficient
- All-Electric
- Renewable Energy
- Demand Flexible



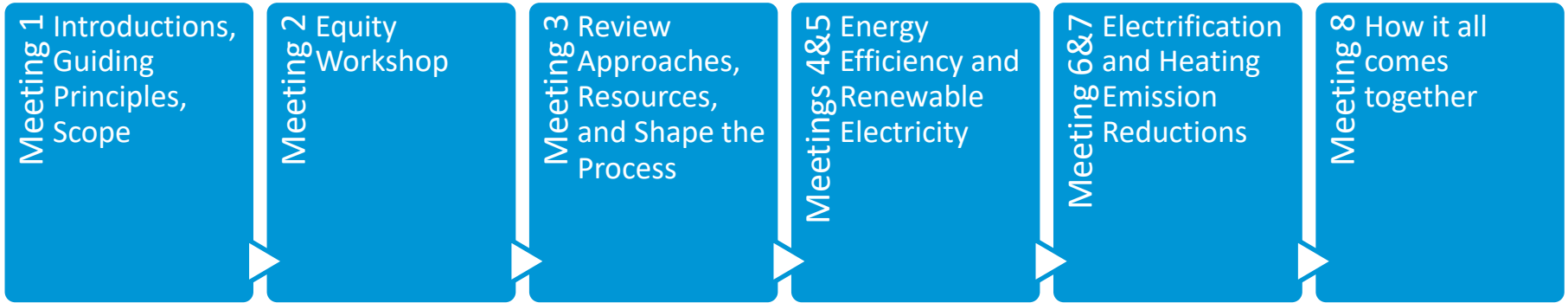
Goal of the Task Force: NZE by 2040



**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, Ensignt Energy Consulting Steve Morgan, Bolder Energy Engineers, Rocky Mtn. Assoc. of Energy Engineers
City Council	Jolon Clark, Denver City Council District 7

Task Force Schedule



Workgroups:
Equity Workgroup
Workforce Workgroup
Climate Solutions Workgroup

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.

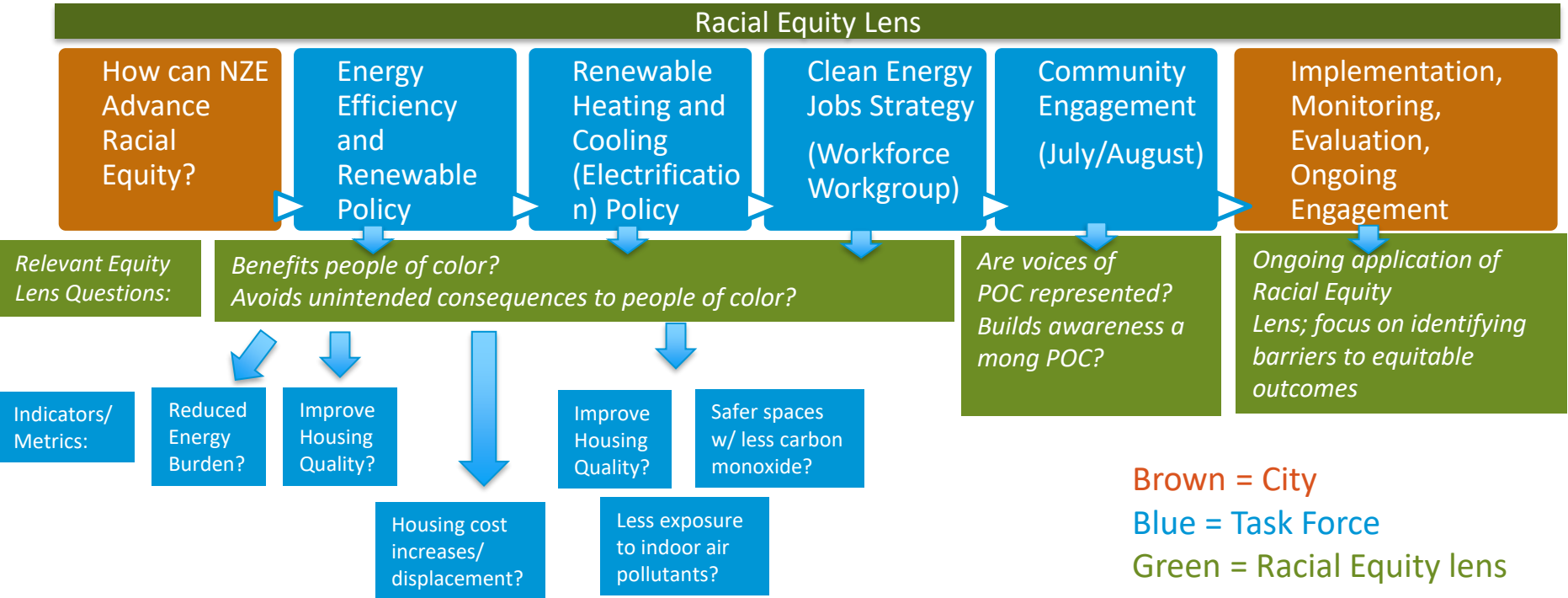


Racial Equity Lens

We are using a racial equity lens, but it is designed to also promote equity for other historically under resourced groups. We are centering on race because we know data shows designing around people of color raises all boats of other historically under resourced groups. Our goal is to keep the lens on at all times – more like lasik than glasses.

1. Does our process ensure that the voice of people of color is **present**, that the process is **accessible**?
2. Are we ensuring the outcomes **prioritize, provide benefits and improve lives of** people of color?
3. How will this proposed policy or decision be **perceived by** people of color?
4. Does this policy or decision ignore or worsen existing disparities or produce unintended consequences?
5. What are the barriers to more equitable outcomes? (e.g. mandated, political, emotional, financial, programmatic, or managerial).
6. **CHECK POINT:** Based on the above responses, what revisions are needed in the decision under discussion? Are there other things to take into consideration?

Racial Equity Roadmap



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 =

Large Building Parameters

EUI Reduction Target:

	Interim Target #1	Interim Target #2	Final Compliance
Date:	<input type="text" value="2024"/>	<input type="text" value="2027"/>	<input type="text" value="2030"/>
Average EUI Reduction Target:	<input type="text" value="10%"/>	<input type="text" value="20%"/>	<input type="text" value="30%"/>

Small Building Parameters

Policy Path:

Number of Phases:

Phase 1

- Programmable Thermostats
- LED Lighting Upgrade
- Onsite Solar

Total Expected Energy Savings:
 Compliance Date:

Phase 2

- Programmable Thermostats
- LED Lighting Upgrade
- Onsite Solar

Phase 3

- Programmable Thermostats
- LED Lighting Upgrade
- Onsite Solar

Selected Policy Impacts

Carbon Impact

Task Force Goal
 Benefit of EE & RE policies
 Benefit of electrification policies
 Benefit of all policies

Cumulative Carbon Reduction by 2040

(tons eCO2)
13,744,214
8,236,619
3,574,408
11,811,027

CARBON REDUCTION GOAL NOT MET

Cumulative avoided social cost by 2040

Annual Policy Benefit to Denver

Implementability

Buildings Impacted
 # of buildings impacted
 % total building area
 % of total energy use

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

Cost Effectiveness

Large Buildings
 Small Buildings

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

Policy Recommendations

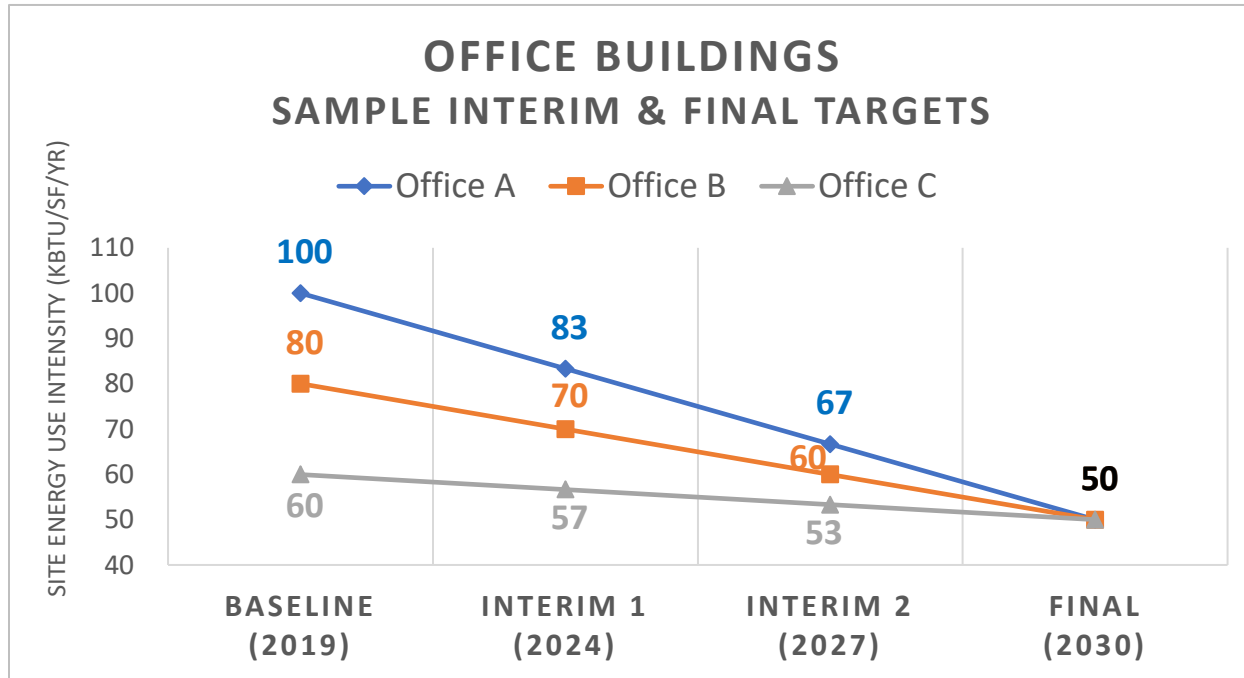
- *Energy Efficiency and Renewable Energy:* 30% improvement in energy performance by 2030.
- *Renewable Heating and Cooling:* Partial electrification upon system replacement when cost effective.

Energy Efficiency and Renewable Energy

30% Improvement in Energy Performance by 2030

- All buildings over 25,000 sq ft
- Long-term **performance target** created for each building type, measured through Energy Use Intensity (EUI)
- Required **interim** targets for 2024 and 2027 set for **each building**, by drawing straight line from the building's baseline EUI to final EUI target
- **Solar** on-site fully credited towards energy use, directly lowering a building's net EUI
- Credit for **high performers**: the 15% of buildings that already meet the target EUI for that building type (or better) need no further action

30% Improvement in Energy Performance by 2030



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.

Alternate Compliance Option 1: 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.

Small Buildings: Lighting upgrade or Solar

Install LED lights

–or–

Install/buy solar to meet 20% of the building's energy usage

Starting in 2025

Penalties

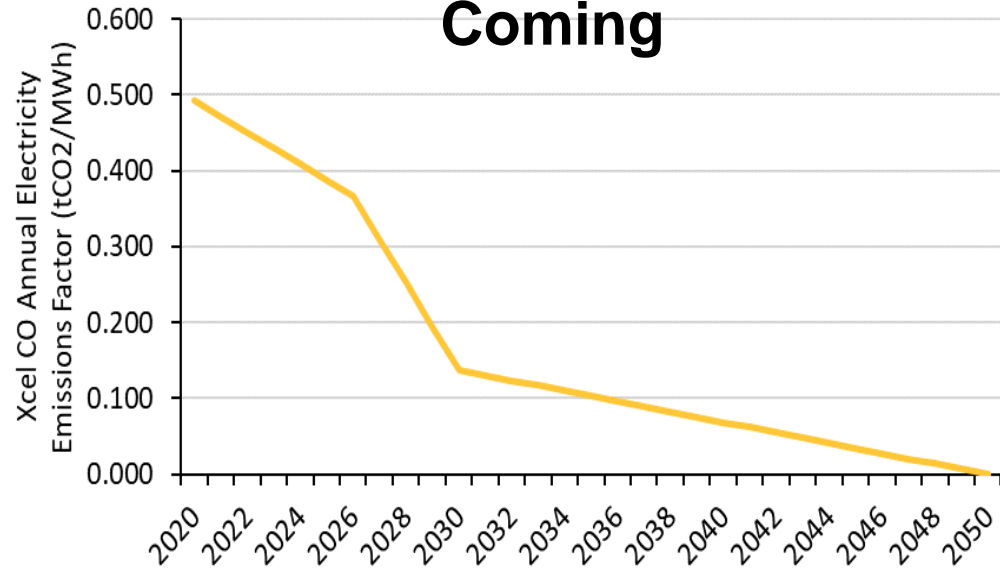
- Fines should be more than the cost of compliance.
- Higher for buildings with an alternate compliance timeline.
- City should explore mechanisms to ensure new owners know the compliance status and obligation, and that alternate compliance timelines are met while ensuring equity.

Renewable Heating and Cooling (Electrification)

High Impact Climate Benefits

- Methane, the primary component of natural gas, is released when we use gas and causes 80 times the amount of climate change as standard carbon dioxide emissions.
- As the grid moves to 100% renewable power, electric renewable heating and cooling is the clear path to reducing these emissions generated by homes and buildings.

Zero Emission Electricity is Coming



Improved Equity and Safety

- In 30% of low-income homes in Denver today, gas equipment fails carbon monoxide tests, compared to less than 5% of market rate homes.



Better Outcomes, Same Cost

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



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.



Renewable Heating and Cooling: Partial Electrification upon System Replacement when Cost Effective

Phase 1 (2022-2023)

- System Requirements: None
- Incentives for Electrification Schematic Design and Costs

Phase 2 (2023-2025)

- System Requirements: None
- Permitting Ease Equal: Make the permitting process equal because permitting a heat pump is harder than gas system today.
- Incentives for Heat Pumps for All Buildings

Phase 3 (2025-2027)

- Require heat pumps when systems are replaced when cost effective.
- Incentives for Heat Pumps for only Under resourced Buildings

Furnaces, RTU's, Individual Systems with Tanks, Gas Point of Use: Incentives and requirements upon System Replacement

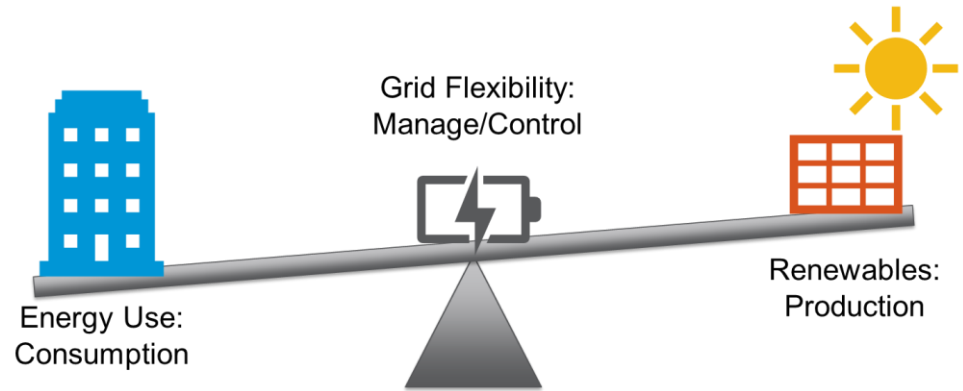
Building Heating System	2022	2023	2025
Gas Furnace	<p>Step 1: Pay for electrification schematic design</p>	<p>Step 2: Incentivize heat pump replacements.</p> <p>Permitting Difficulty Equal</p>	<p>Step 3: Heat pumps required as the primary heating source (with fossil gas back-up allowed for space heat, and electric resistance allowed for point of use).</p> <p>Incentives only for under resourced buildings.</p>
RTU			
Individual System with Tank			
Gas Point of Use System			
Total			

PTAC's, Boilers, Central Hot Water: Incentives and Requirements upon system replacement

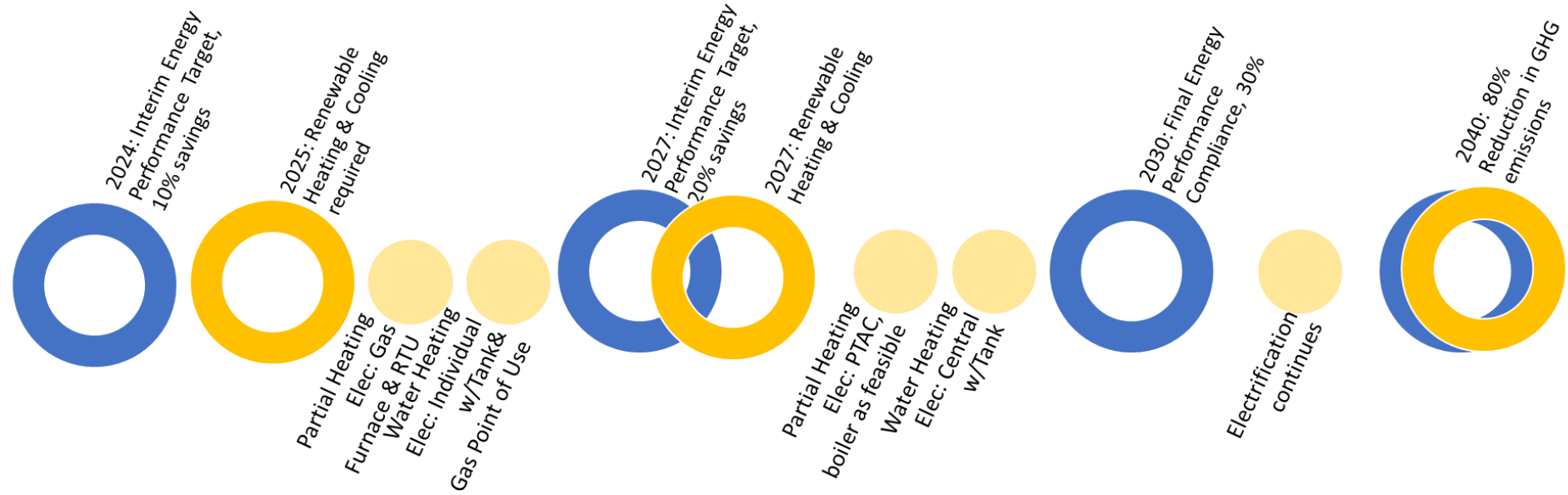
Building Heating System	2023	2024	2025	2027 (or when partial electrification nears cost parity)
PTAC's	Step 1: Pay for electrification schematic design and costs	Step 2a: Incentivize heat pump replacements for PTACs, and electrification options for boilers and central systems with a tank.	Step 2b: Permitting Difficulty Equal	Step 3: PTAC: Heat pumps (PTHP) required as the primary heating source (with fossil gas back-up allowed). Boilers and central systems: Have to convert, at least partially, to heat pumps if they can, and if no heat pump for your application then not required. Incentives only for under resourced buildings to meet requirements.
Boilers				
Central System with Tank				
Total				

Providers of demand flexibility

All 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.



Bringing it all Together



The Climate Benefit:

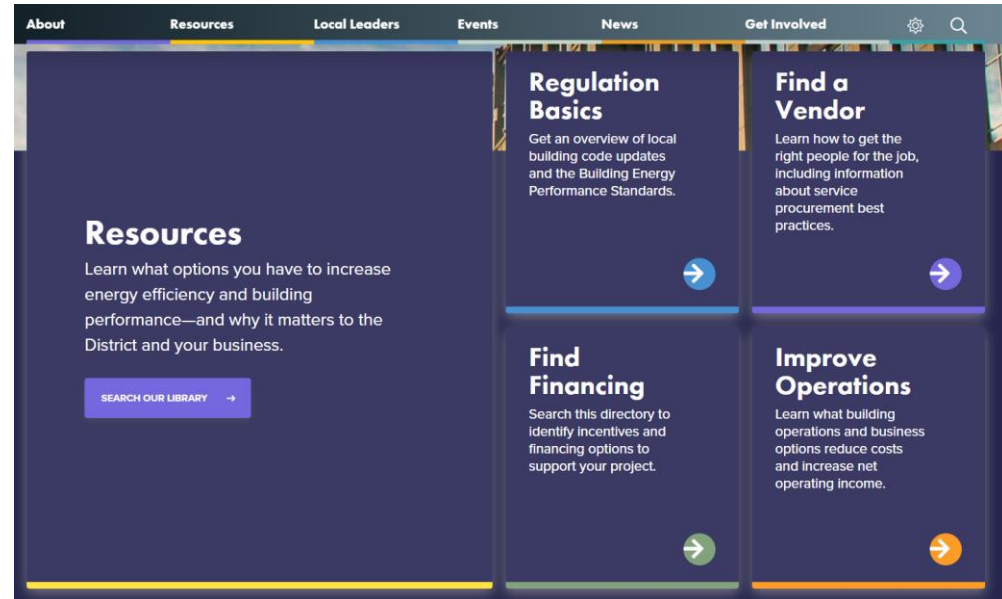
Carbon Impact	Cumulative Carbon Reduction by 2040 (million tons eCO2)
Task Force Goal	13.7
Benefit of EE & RE policies	8.2
Benefit of electrification policies	3.6
<i>Benefit of all policies</i>	11.8

- While this doesn't achieve the Task Force goal, it does get ~80% of the way there and achieve as much as the Task Force feels is reasonable and achievable for building owners and managers in Denver.

Support and Incentives

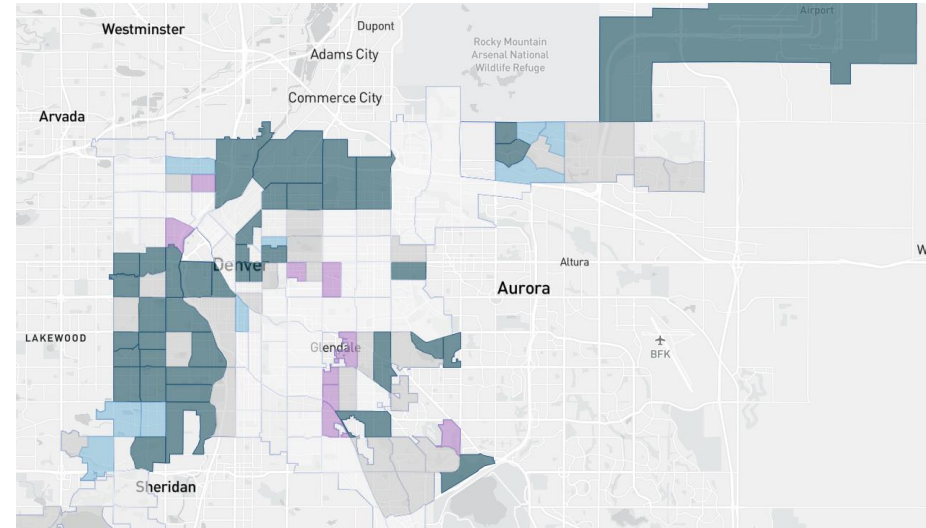
Building Resource Hub: Incentives, Supports and Outreach

- **Web Resources:** Performance Portal, Materials: how-to guide, check lists.
- Targeted **Outreach and Education**
- **Technical Assistance**
- **Financial Assistance/Incentives**
- **Community Engagement**
- **Recognition/awards**



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)

Incentive Design and Implementation: Principles to Promote Equity

Phase 1: Incentivizing Early action for all buildings – with focus on intensive outreach to under resourced buildings (50% target)

Phase 2: Helping Under resourced Buildings with Compliance

Phase 3: Phase out when cost parity is achieved (with or without utility incentives)

Ongoing: Advocate for incentives from others, fit City incentives with those.

City Incentive Standards

The City should ensure City incentive dollars support women and minority owned businesses and high-road jobs through labor standards that ensure job quality and equitable job access. To do that, the City should require contractors to meet one or more of the following requirements to utilize incentive dollars:

1. Women and Minority Owned Business
2. Commitment to high-road labor standards and prevailing wage

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](#).

Community Engagement Summary

Community Engagement Overview: *July 19-29, 2021*

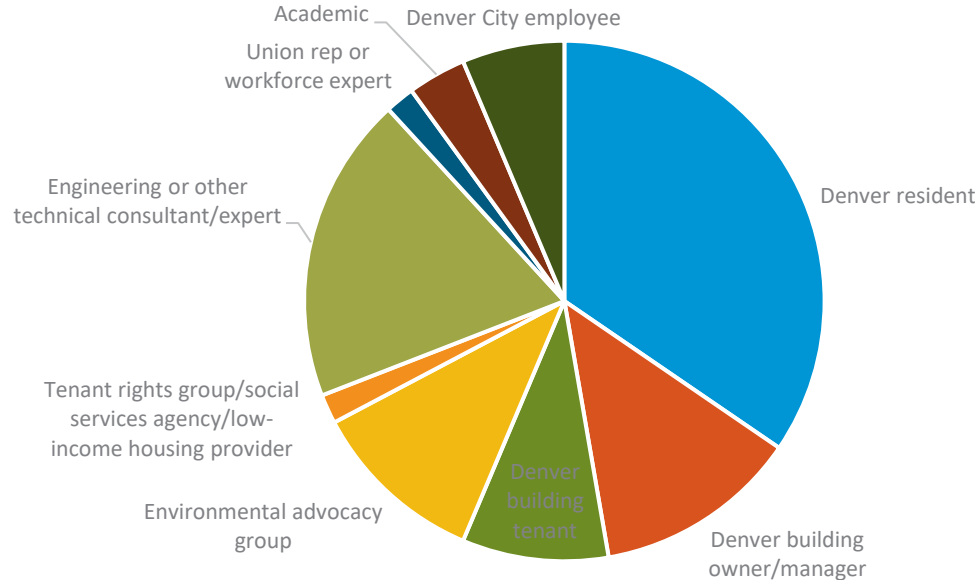
The City:

- Hosted a technical briefing and input session on July 21st that included ~80 participants;
- Hosted a technical briefing and input session on July 28th that included ~50 participants.
- Hosted a industrial and manufacturing discussion with relevant stakeholders.
- Published a survey to collect input from 64 stakeholders and community members.

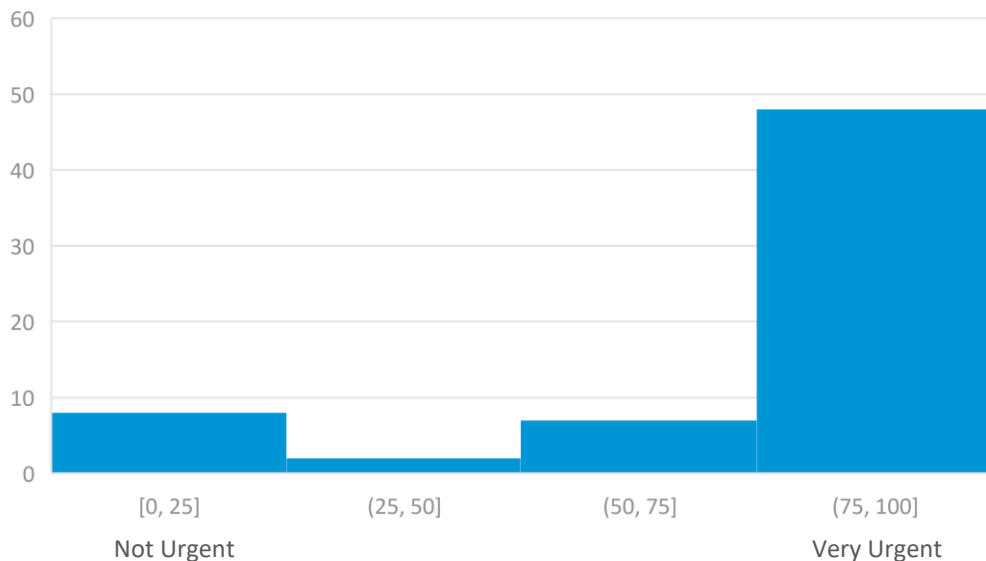
Individual Task Force members hosted briefings, discussions and collected input from the stakeholders they represent. These include:

- An input session with BOMA, NAIOP, Downtown Denver Partnership and IREM members that had ~50 participant
- A discussion with the affordable housing and non-profit sector
- Input from COSSA members

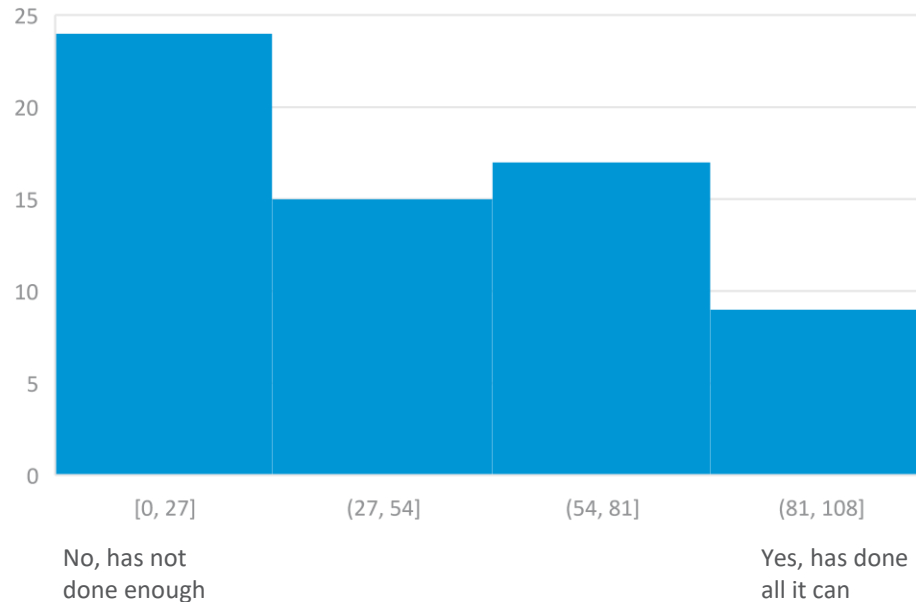
Who were the 64 survey respondents?



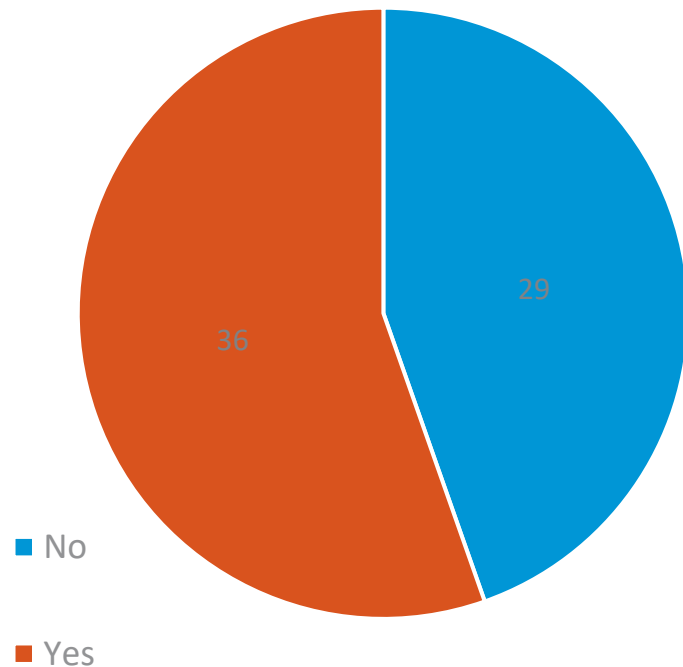
What's your sense of the urgency of the climate crisis?



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



Are we generally on the right track to ensure the ordinance is truly achievable for all building owners and managers given the recommended supports, incentives, and alternate compliance pathways?



Implementation

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

Technical Advisory Committee

- Role: Ongoing review of adjustments to targets and timelines, racial equity outcomes, and incentives design and amounts.
- Every 4 years: Larger review of compliance options and changes in technology.
- Representation: Property managers, Tenant/resident interests, building energy experts, labor, environmental groups.

City Staffing

CASR: 7 new staff to implement the policy, more for incentives and community engagement.

CPD: 6.5 staff needed to support electrification permitting.

Next Steps



Questions?