

NZE Buildings Work Update

High Performance Buildings & Homes



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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:

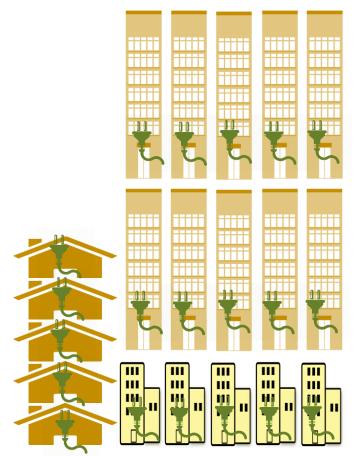
- 18% of square footage
 - <mark>14,000</mark> buildings

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By 2050, ~40% of our building stock will be "new" construction



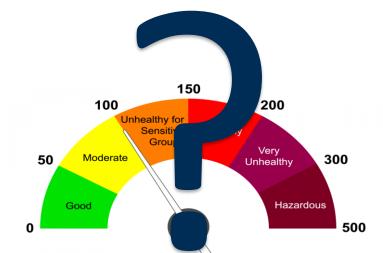
Denver Goal: Net Zero Energy (NZE) New Buildings by 2030



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Health Impacts of Gas Combustion

 Indoor Air quality is largely unregulated and often worse than outdoor air quality. We spend 90% of our lives indoors.



People of color are the least likely to have carbon monoxide detectors in their home.



Children are particularly vulnerable to pollution
from gas appliances.
Kids growing up in a
household with a gas
stove are at a 42%
increased risk of
developing asthma



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The transition to renewable electric heat is possible today

- Heat pumps are 200-300% efficient
- Heat pumps provide heating <u>and</u> cooling
- Like your refrigerator, heat pumps use electricity to move heat.



Example rooftop heat pump from Daikin.



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Energize Denver Task Force

Charge: Help the City design a building performance policy for existing buildings that:

- Improves Health and Equity
- Creates Jobs
- Drives Climate Solutions in Existing Buildings that Achieve Net Zero Energy by 2040



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

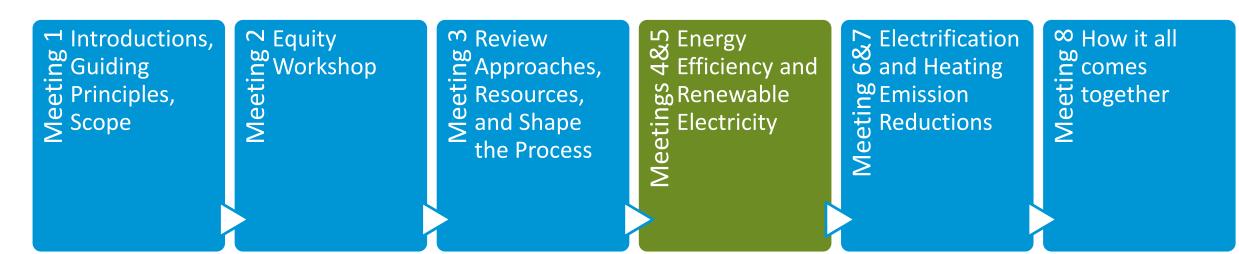


Not single-family homes



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Task Force Draft Schedule

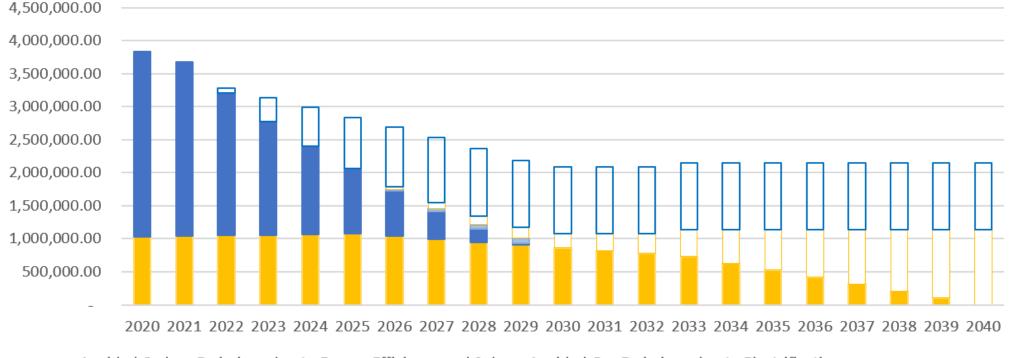


Workgroups: Equity Workgroup Workforce Workgroup Climate Solutions Workgroup



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Goal of the Task Force: NZE by 2040



Avoided Carbon Emissions due to Energy Efficiency and Solar 🗆 Avoided Gas Emissions due to Electrification

Additional Electricity Carbon Emissions due to Electrification Electricity Carbon Emissions

Fossil Gas Carbon Emissions



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Energy Management in Buildings

Ongoing Operations Energy Efficiency: Tune-up's, Lighting upgrades, Fan and Motor upgrades Renewables: Solar

Periodic Equipment Replacement Furnaces: Every ~20 years Hot Water Heaters: Every ~15 years

2021

2030



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2040

Building Performance Policies in Other Cities





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Net Zero Energy New Buildings 2021 Code Update



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Net Zero Energy (NZE) New Buildings & Homes Implementation Plan

Released January 2021

Denver's Net Zero Energy (NZE) **New Buildings & Homes Implementation Plan** January 2021 **nbi** new buildings



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Key finding: All-electric new buildings are lower cost to build and operate

- All electric homes and buildings are 8-27% lower cost to build.
- All electric homes and buildings have lower operating cost by 2-10%.

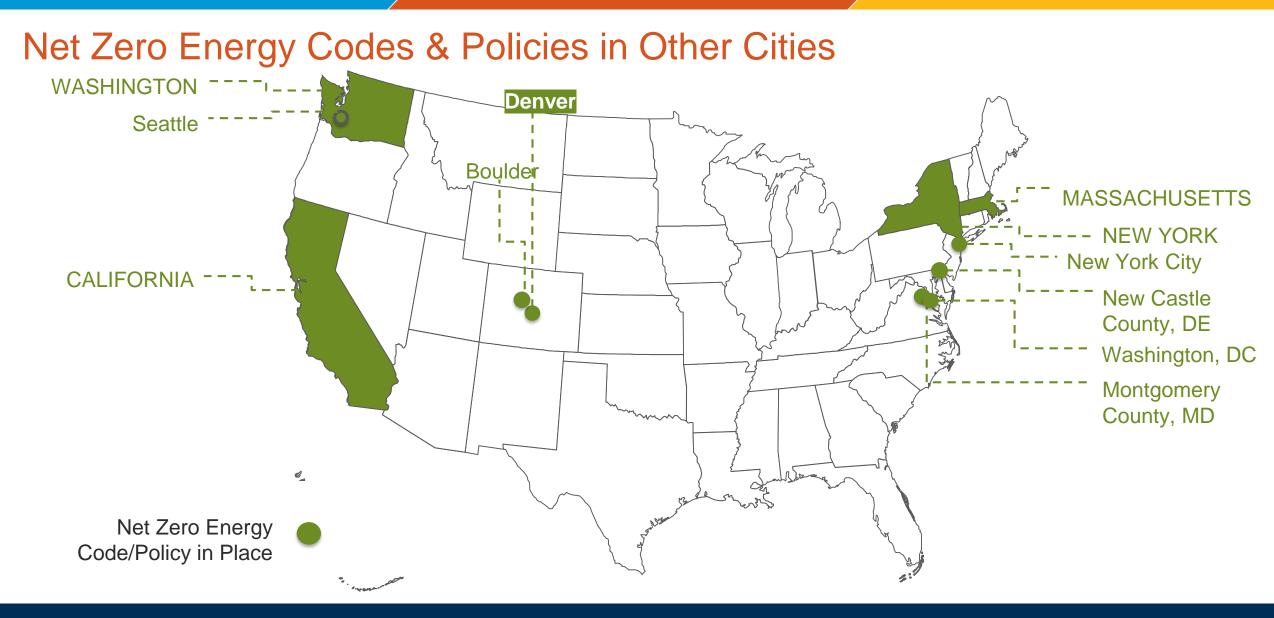


Next Step: 2021 Code Update



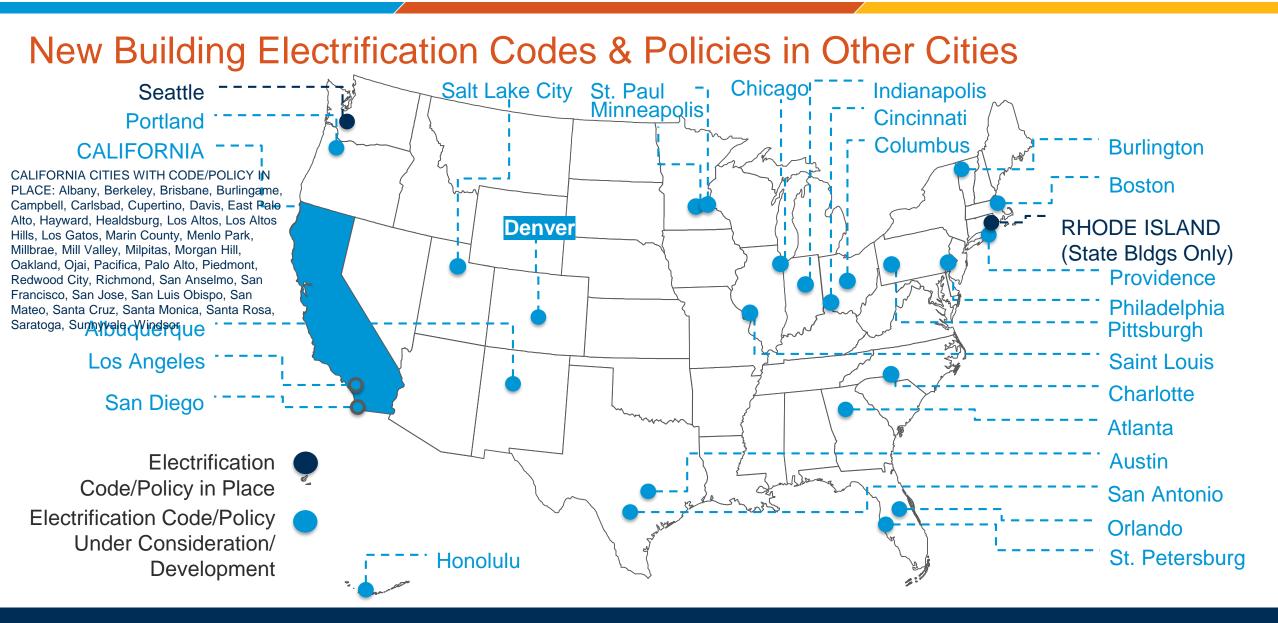


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Thank you!



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