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A recording of this presentation and the slide deck will be posted to denvergov.org/buildingcode
Collaboration for Success

Denver Community Goals, Energy, Codes, + Tools

Christy Collins, AIA LEED AP BD+C, Engineer/Architect Specialist | Green Buildings
Keith Fox, Mechanical/Plumbing Plan Review Engineer | IECC
City and County of Denver: Community Planning + Development, Development Services
<table>
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<th>Why?</th>
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<td><strong>Denver Community</strong> Climate Goals</td>
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<td>Mandatory 2018 IECC 2019 DBCA</td>
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Climate Work in Denver
Uncertainty + Denver Development
Denver Community Goals + Priorities

- Equity
- Respond to Climate Change
- Affordability
- Resiliency
- Health
- Inclusive
- Connected
- Safe
- Accessible
- Economically vibrant
- Active
- Authentic neighborhoods
Context of Building Performance Goals:
Denver’s Long Term Viability

- Economic
- Social
- Sustainable
  - Equitable
  - Viable
  - Affordable
- Environment
  - Viable
  - Affordable
Supporting Denver Community Goals

Community speaks ->
City responds

Stakeholder Committees + Community Engagement ->

Plans
- Denver 80x50 Plan
- Denver Climate Action 2020 Recommendations
- Net Zero Energy New Buildings Implementation Plan
- Denver Electric Vehicles (EV) Action Plan

Code Amendments
- Ordinances
- Regulations
- Policies
- Guidelines

Tools
- Energize Denver
- Benchmarking Ordinance
- I-Code Amendments
- Green Buildings Ordinance
- Denver Green Code
- Executive Order 123
Market + Regulations

Accountability + defined responsibilities
January 2020

Community + Mayor
created

Direct report to the
Mayor

Work = sales tax
funded by 2020 vote

Office of Climate Action,
Sustainability + Resiliency

12 people

Formerly Climate
Action Team

Climate Action, Sustainability & Resiliency

720-865-9028
sustainability@denvergov.org

Report a Problem | Ask a Question
Denver 80x50 Plan

GHG emissions 80% below 2005 levels by 2050
Homes + buildings = 63% of Denver’s GHG Emissions; 40% new by 2050
Transportation = 30% of Denver’s GHG Emissions

12% GHG

51% GHG

30% GHG

Electric vehicles = GHG emissions affected through regulations including building codes
Existing Buildings + Xcel Grid

Separate Efforts

60% renewably sourced grid 2030

100% 2050 with our help

Community stakeholders

Executive Order 123

City property requirements – new + existing

City leadership

Energize Denver Benchmarking Ordinance

Homes
Denver 2035 Net Zero Energy New Building
Implementation Plan

December 2020

1. Energy efficiency
2. Renewables
3. Electrification
4. Grid Stabilization

Collectively
Denver Climate Action 2020
Recommendations

Denver Climate Action 2020 Recommendations Report

Developed by the Denver Climate Action Task Force

with support by the Civic Consulting Collaborative
operated by Wallstone Collaborative Strategies

Technical support by Group14

Equity training and support by KAPWA Consulting
Eliminate GHG Emissions

1 Buildings + homes (new + existing)
2 Transportation
3 Electricity supply
4 Consumption emissions + waste

Adaptation + Resiliency
Denver Climate Action 2020

Recommendations: New Buildings

**2024**
Residential: ZNE designs
Commercial: all electric

**2027**
Commercial: ZNE designs

**2030**
Residential + Commercial: ZNE recorded outcomes

---

**Green Code A**: Create a new, more stringent Denver Green Code, which will then become base code in the next code cycle. In 2021, the Denver Green Code should require:
- Net zero new homes (highly efficient, all electric, renewable energy, grid-flexible).
- All-electric new buildings.

**Encourage usage of less steel, concrete, and other carbon-intensive materials where feasible.** Encourage building reuse for lower emissions and better urban vitality and character. The City will develop a process for evaluating material use in buildings to determine the most appropriate and least impactful material selections for building types.

**Require green infrastructure along with Denver Green Code, which would include efficient landscaping, tree canopy, green infrastructure, pervious paving, and open space.**

**Address parking and zoning in conjunction with transportation.**

**Incentivize affordable housing through zoning in coordination with Denver’s Department of Housing Stability (HiST).**

**Provide net-zero energy new buildings and homes training for developers, designers, and contractors.**

**New construction net-zero energy buildings and homes incentives.** In particular, building height incentives and developers providing net-zero energy buildings should be considered.

**Phase 2: 2023-2025**

**Base Code A**: The 2023 Denver Green Code becomes the base code in the 2024 building code.
- All new homes will be net zero (highly efficient, all electric, renewable energy, grid-flexible).
- All new buildings will be all-electric where feasible. The City will establish a process to determine if there are any building types or locations where the technology or cost would make electrification prohibitive.

**Green Code B**: In 2024 the Denver Green Code should require net-zero for all buildings (highly efficient, all electric, renewable energy, grid-flexible).

**Phase 3: 2026-2030**

**Base Code A**: The 2024 Denver Green Code becomes the base code in the 2027 building code.
- All new buildings will be net zero (highly efficient, all electric, renewable energy, grid-flexible).

**Green Code C**: In 2027 the Denver Green Code should require outcome-based codes for buildings – they must design to a specific efficiency, then ensure the building operates at that energy performance.

**Base Code A**: The 2027 Denver Green Code becomes the base code in the 2030 building code.
- Outcome-based codes for all new buildings.
Plan → Implementation

Community priorities + goals

Code amendments, ordinances, policies, regulations, guidelines, incentives

Collaboration -> Support -> Success
Mandatory 2018 International Energy Conservation Code
2019 Denver Building Code Amendments
Mandatory energy requirements

Enforcement – plan reviews + inspections

Checklist for project teams

Actual energy use not cost

Measured outcomes not designs in isolation

Process + engagement

IECC – Amendments, Policies, Tools
1. Codes
2. Retrocommissioning (existing)
3. Disclosure (existing)
4. Solar incentives
5. Utility incentives
6. Municipal portfolio
7. On bill finance (PACE)
8. Permit incentives
9. Zero energy pilot
Building Energy Use Intensity: pEUI + EUI

Close the gap

- Energy modeler
- Architects + Engineers
- Owner
- Contractor
- Facilities team
- Occupants
- Modeling accuracy
- Modeling assumptions
- Detailing
- Controls
- Construction quality
- Operations + behaviors
- Hours
- Maintenance
Voluntary 2019 Denver Green Code
## 2019 Denver Green Code - Basics

- Voluntary
- Five commercial projects
- Holistic sustainability; energy emphasis
- Achievable in Denver
- Leadership
- Incentives
- Preview
I-Code Amendment Process

City + development community, *together*: Write amendment proposals to achieve goals

**Community stakeholder committee review, vote**

*Present for public comment*

City Council adoption

---

**Process Details:**

1. Community states goals to City (CASR) *(done, Climate Action Task Force, January – July 2020)*
3. CASR leads City staff, consultant(s) + community stakeholders to draft regulatory (IECC amendment + DGC) proposals to support goals + achieve plans *(in progress through end of 2020)*
4. CASR invites applicants for 2021 IECC + DGC City staff + development community stakeholder committees *(early 2021)*
5. CASR leads 2021 IECC + DGC City staff + development community stakeholder committees through evaluation of amendment proposals *(mid-late 2021)*
6. CPD DS publishes recommended 2021 IECC + DGC amendments for public comment + leads public discussion *(late 2021)*
7. CPD DS presents recommended 2021 IECC + DGC amendments to City Council for adoption *(EO 2021)*
8. CPD DS supports concerned development team members with navigation of 2018 IECC 2019 DBCA, 2019 DGC, 2021 IECC + DBCA, 2021 DGC *(ongoing)*
Track I-Code Denver amendment process + opportunities to engage

Sign up
Addressing Community Concerns
<table>
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<th>2018 IECC 2019 DBCA</th>
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<td>City may not change substance of current City Council adopted codes + amendments</td>
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<th>Interpret</th>
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<td>Work <em>with</em> property owners + developers</td>
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<th>Welcome dialogue</th>
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<th>2021 IECC DBCA</th>
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<td>Opportunity to update Proposals</td>
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<th>New amendments</th>
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<td>Community Stakeholder Committee vote</td>
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<th>Public meetings</th>
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<td>Public comment</td>
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Top Take-aways

1. Amendments, requirements, tools support development community success achieving community’s goals
Top Take-aways

1. Amendments, requirements, tools support development community success achieving community’s goals

2. Voluntary Denver Green Code = preview of future mandatory code priorities
### Top Take-aways

1. Amendments, requirements, tools support *development* and *community success*, achieving *community’s goals*.


3. Community leads regulations + work.
Collaboration for Success

Denver Community Goals,
Energy,
Codes,
+ Tools

Christy Collins, AIA LEED AP BD+C, Engineer/Architect Specialist | Green Buildings
Keith Fox, Mechanical/Plumbing Plan Review Engineer | IECC
City and County of Denver: Community Planning + Development, Development Services
Keith Fox, P.E., LEED AP

University of Wyoming
1990-1995
BS
Architectural Engineer, Mechanical Emphasis

Cator Ruma Consulting Engineers
2005-2006
Mechanical Engineer
Project manager

MKK Consulting Engineers
1995-2005
Mechanical Engineer
Associate, project manager

City + County of Denver
2006-present
Community Planning + Development – Development Services
Mechanical/Plumbing Plan Review Engineer
IECC Lead Engineer
January 4, 2021

1. New Residential Building

Residential Projects requiring the IECC Checklist
1. New One- and Two-Family Dwellings and IRC Townhouses
2. One- and Two-Family Dwellings with new conditioned space
3. One- and Two-Family Dwellings with additions over 30% of floor area
New IECC checklist for all development projects

Working hand in hand with the Denver community, the city has defined and adopted bold climate goals. Adoption of more stringent building codes to achieve higher building performance is integral to attaining those goals. CPD’s new International Energy Conservation Code (IECC) checklist is designed to support project teams in navigating complexities of the IECC section of Denver’s 2019 Building and Fire Code, and succeeding in delivering projects that support our community’s expressed priorities.

Starting on January 4, 2021, this checklist will be required for all new commercial and multi-family residential construction projects; commercial tenant finish projects over 10,000 square feet; and single-family/duplex projects with new conditioned space or additions over 30% square feet.

Download the appropriate checklist based on your project type (all files open in Excel):

- Commercial IECC Prescriptive Checklist
- Commercial IECC Performance Checklist
- Commercial ASHRAE Prescriptive Checklist
- Commercial ASHRAE Performance Checklist
- Commercial Energy Modeling Report
- Residential IECC Prescriptive Checklist
- Residential IECC Performance Checklist
- Residential ERI Checklist

We’re here to help you learn how to fill out and submit the new IECC checklist. Join IECC specialist Keith Fox for a lunch-and-learn session Dec. 14 or 15 at noon. He’ll provide a brief overview of the checklist, walk you through filling it out, and answer any questions you may have. Learn more >>
Why the Checklist

• Support the Community Goals
• First step in moving to outcome based buildings
• Evolving IECC – Help City stay in alignment with the IECC
• Help design teams navigate the complexities of the IECC
• Increase the communication between the design team and plan review team.
• Increase transparency between design teams and plan review team
• Help plan review teams better understand your project
• Allow plan review teams to provide a more in depth review
Open Door Policy

- Hear all Concerns
- Answer all Questions
- Open Dialogue is Welcome and Encouraged

Keith Fox, P.E.
IECC Lead Engineer

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