

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

[NZE Residential Homes Stakeholder Meeting](#)

Thu, Oct 22, 2020

1 pm – 3 pm

Agenda

1:00 pm – Introductions & Good News (10 min)

1:10 pm – Briefing on the current state of the plan (30 min)

1:40 pm – Breakout sessions (30 min):

Highly efficient, All electric, Renewable energy/electricity, Grid flexible

2:10 pm – Break (5 min)

2:15 pm – Report on breakout sessions (10 min)

2:25 pm – Feedback on “How it All Comes Together” (30 min)

2:55 pm – Thank you & Next Steps (5 min)

Attendance List

Amber Wood, CASR

Chuck Kutscher, CU

Boulder/NREL

Joel Champagne, CPD

Maria Thompson, CASR

Alicia Bock, CPD

Jarrett Vigil, CASR

Jenny Willford, Sierra Club

Josh Palmeri, CPD

Katrina Managan, CASR

Keith Fox, CPD

Mike Walton, CPD

Nathan Kahre, Energy Logic

Scott Prisco, CPD

Sean Denniston, NBI

Jan Keleher, CASR

Christy Collins, CPD

Matt Johnson, Namaste Solar

Johnny Rodgers, CASR

Robby Schwarz, Build Tank

Residential Denver NZE Breakout Room Notes

Highly Energy Efficient

Right Targets (barriers & costs)

- Are these the right targets?
 - Challenging for custom homes to get to 0 ERI even with PV
 - 3,000 sqft? Above, below, etc
 - This doesn't work well and is complicated to define
 - Additionally, many custom homes use the prescriptive path
 - 40 ERI for everybody
 - 2024 go for zero for everyone
 - See in production builders they've learned how they figure out the system to stay code compliant
 - Phase it in slower
 - ERI is 40 is arbitrary unless we have backup
 - Get people where we want to be in a thoughtful way
 - Solar panels allowed
 - Support scaled approach to sqft
 - Issue with sqft
 - Figure out 3,000 sqft above grade
 - 3,800 with a basement
 - Don't impact affordability
 - Need some backstop for envelope requirements
 - Backstop
 - Tie it to one cycle back as the base code
 - Or: go to the base code of 2021 unamended
 - Have the new code be the back stop
 - Making this decision and communicate the why
- Are there cost barriers?
 - Curious about the costs
 - If the 2021 IECC is followed to the full intent, ERI wasn't quite 40 (a bit higher)
 - Recommend transitioning entirely to ERI pathway will allow builders to take a hard look at where the costs are and the most cost-effective solution
 - Two solutions for builders:
 - A PPA could allow a builder to go from previous code to this, no cost, talking less than \$10k to go from current code to this (depending on the size of the house)
 - Eliminating prescriptive is a big jump
 - Is the jump for 2021 not to ratchet down ERI, if a site doesn't work for solar for whatever reason (wooded area)
 - If you can't have solar what happens?
 - Boulder allows offsite solar for a set period of time
 - As long as Xcel is on board they account on their end, not anything that the homeowner

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- Recommend a fund for the city to build solar gardens
 - Another option beyond offsite solar is contribution into green fund, paying into solar farms now that the city can build
 - One time up front payment
 - Cost study analysis
- The group recommends:
 - A maximum ERI allowed (for all homes) of 50 and then requiring solar
 - Max of 50 ERI
 - With solar to get to 40 ERI
 - Fund or onsite solar
 - Exception of ADUs & smaller homes
- Calibration is critical
 - Need to ensure that performance and prescriptive path align
 - A modeling analysis will allow this

Support it Takes

- What are the supports (marketing, training, education, incentives, etc) needed to meet these targets?
 - Training is needed
- Are there additional supports needed beyond those previously identified?
- Are there equity considerations in addition to these supports?

All Electric

- Are these the right targets?
 - What is the impact of non-designer designed homes
 - Don't want to get rid of that opportunity
 - But individual home-owner could find any additional regulations challenging
 - So they might need additional help
 - There are also unlicensed "professional" home designers
 - They probably need less help
 - This could cause challenges for plan review since people will push back against new practices
 - There is inconsistency among reviewers
 - There is therefore a need for submittal standards
 - There will need to be some hand-holding to get people through the transition
 - More for homeowners, less for professionals, less for production
 - Electrification ready vs all-electric
 - Denver is already pretty built out, so NC is not common
 - Open land is done more by production builders
 - Cost of gas is an issue for occupancy costs and equity
 - Need solutions like efficiency, PV, TOU
 - Might be better to incentivize it instead
- Supports
 - Incentives are probably needed

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- Training
 - There needs to be training of City staff
 - Not just on the public side
- The public generally do it unless they are forced to do it
- Denver may just not have enough expertise in place to make the transition without a lot of hurt
- Batteries could help with affordability if TOU pricing were good enough
 - The TOU rates in Denver might be good enough
 - But homeowner batteries are costly and not quite market-ready
 - We probably aren't where we need to be to make batteries a near-term solution.

Renewables

Right Targets (barriers & costs)

- Are these the right targets?
 - The sooner the better when trying to incorporate renewables
 - How would it impact new home builders?
 - Home remodels are required to meet these new codes to get permits
 - What level of ERI are renewables required? (ERI of 56 does not need solar)
 - The greater the sqft the lower the ERI must be
 - The closer to NZE the more renewables are needed

Are there cost barriers?

- Increased homeowner costs

Support it Takes

- What are the supports (marketing, training, education, incentives, etc) needed to meet these targets?
 - PVs can increase home value if PV systems are owned, front range is probably 75% owned
 - Potential city incentives
 - Federal tax credits available for PV
 - 26% of total system cost in 2020, 22% in 2021, after 2021 0%
 - PV is lobbying for extension on the tax credit
- Are there additional supports needed beyond those previously identified?
 - Xcel energy can be difficult to work with and navigate for builders
 - Can city help to ease working with Xcel

Grid Flexible

Right Targets (barriers & costs)

- Are these the right targets?
 - By 2027 sufficient battery storage should exist
 - market is driving costs down
 - Namaste solar is starting to work with energy storage
- Micro grids on homes and communities are current trend

- EV is also driving grid flexibility

How it All Comes Together

Goals for NZE

- The targets in the Implementation Plan meet the Climate Action Task Force recommendations.
 - Struggle because most custom most is prescriptive path
 - Hard to get there
 - Getting to 40 for custom builders is challenging
- How fast can we go?
- Can we make these Targets (with supports) our goals for Denver?
- Keep net zero energy
 - Not go to emissions...
 - Most people understand energy better
 - Embodied carbon, could be incorporated into green code
 - However, embodied carbon and source energy are not currently within the plan

Right Targets (barriers & costs)

- Are these the right targets?
- Can you give us specific reasons why these targets cannot be met?
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- Are there outstanding technical barriers?
- Are there costs that are prohibitive?
- Are there cost barriers?
 - Increased homeowner costs
 - Struggle to get there
 - Struggle because most custom most is prescriptive path
 - Hard to get there
 - Getting to 40 for custom builders is challenging
- Keep net zero energy
 - Not go to emissions...
 - Most people understand energy better
 - Embodied carbon, could be incorporated into green code
 - However, embodied carbon and source energy are not currently within the plan
- ERI 50 with solar to ratchet to 40, how do you quantify for prescriptive and how to you quantify the solar
 - Prescriptive path: need this to be equivalent
 - Points option with solar required based on an analysis
 - 1,500 sqft require xxx amount of solar
 - 1500-2000 sqft require xxx amount of solar

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- 2000-3000 sqft require xxx amount of solar
 - ADUs get exempt from the solar
 - Smaller homes could be exempt from solar as well
 - Reporting perspective: develop energy rating index with and without solar is important part to add to requirements
 - Get both requirements and supports
 - Great approach overall, seeing a model if we meet our 2024 goals, existing homes is another opportunity
 - Look at Boulder
 - Percentage improvement
 - All electric ready
 - Most economical way
 - Conduit run from gas stove/heating to panel, panel
 - 150-200 A panel sizes
 - Supports
 - Training and education
 - Need the tools to do this
 - If builder uses performance path, policy in place provides incentives from CPD
 - It is a support that we should include:
 - Additional incentivizes
 - 3rd party review that is incentivized
 - Get an ERI report, review is easier

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