

Finlayson, Ian (ENE)

From: Bob Higgins-Steele <rehigginssteele@gmail.com>
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To: STRETCHCODE (ENE)
Subject: BUILDING CODE COMMENTS

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August 12, 2022

Mr. Ian Finlayson
Department of Energy Resources (DOER)
100 Cambridge Street, Suite 1020
Boston, MA 02114

Building Code Comments

While I commend DOER on taking progressive steps in adding a zero-energy pathway to the Specialized Stretch Code and excluding homes over 4,000 sf from being able to follow the mixed fuel pathway, allowing a HERS 42 fossil fuel pathway still opens the door for carbon production in the building sector and does not meet a true definition of net zero buildings.

No mixed fuel pathway

Why not HERS 42 for all electric homes also?

The proposed Specialized Stretch Code does not differ significantly enough from the proposed Stretch Code updates. It needs improvement, such as adding prescriptive requirements to avoid thermal bridging in residential (i.e., require minimum R-5 continuous insulation at renovated walls (interior or exterior) and R-10 at roofs), and requiring weather sealing of renovated envelope components using materials, techniques, and processes that would achieve ACH 2.0 @ 50 Pascals in an entire building.

If HERS 42 is the rating that must be achieved to allow fossil fuel use in buildings, yet ratings at or under HERS 42 are more cost effective to achieve with electrification, why allow a fossil fuel option at all? **Is there another mechanism to primarily drive building electrification while allowing fossil fuel use in special need cases only?** Such as, requiring a

comparative cost analysis of all-electric vs. fossil fuel building and providing other evidence of hardships that would prevent an all-electric pathway from being achievable.

Additionally, according to your analysis from the

Residential Stretch Code Costs and Benefits Case Studies, not only are large single-family homes (4,000 sf) more cost-effective to build at HERS 42 all-electric vs. HERS 42 using natural gas, small single-family homes (2,100 sf), townhouses, 6-unit multifamily buildings, and 4-story multifamily buildings are as well. For this reason, **I request that the mixed fuel pathway be restricted across the board under both the Stretch and the Specialized Stretch Codes (for new construction, additions, or alterations) to evidence-based as-needed cases only.**

It would be my strong preference that there be no exceptions for additions or alterations of any size.

However, should exemptions remain that allow additions under 1,000 sf or under 100% of the total conditioned square footage of an existing building and Level 1 or Level 2 alterations to follow the base energy code, **I request a mechanism to limit homeowners from serially building small additions or Level 1 or Level 2 alterations in lieu of Level 3 alterations or Substantial Improvements to avoid compliance with HERS requirements** (i.e., a homeowner incrementally builds multiple additions under 1,000 sf in a relatively close timeframe). At the very least, **I request that the Stretch Energy Code Technical Advisory Committee model the emissions impact of small additions state-wide. I also request that end-of-service-life triggers be incorporated into the requirement of complying with the HERS rating in the Stretch Code -- such improvements as roof, side wall, window, HVAC, and DHW replacements, regardless of size.**

While cost-effectiveness and encouraging buy-in from the building community are important, achieving Net Zero Greenhouse gas emissions by 2050 is paramount as evidenced by the science and modeling efforts conducted as part of the MA 2050 Decarbonization Roadmap. Per the Roadmap, “the adoption of a net-zero on-site new construction code, however, would reduce 2050 emissions from residential and commercial new construction by 54% if implemented in 2030 and by 87% reduction if implemented in 2023, highlighting the benefit of early action in avoiding the lock-in of fossil fuel technologies.” The building community survived and has thrived under the original Stretch Code and subsequent updates. Educational and workforce development efforts could remedy the hesitation of the building community to move in a progressive direction. On the topic of the proposed code updates satisfying the Commonwealth’s ability to meet net zero carbon emissions by 2050, if the net zero definition is not based on a building’s site energy use but instead on the cumulative achievement of net zero greenhouse gas emissions statewide, **what assumptions were used to conclude that the options presented in the updated stretch code and Specialized Stretch Energy Code, particularly enabling the use of fossil fuels in buildings, would allow the Commonwealth to meet net zero carbon emissions by 2050?** Additionally, was analysis conducted to determine that HERS 42 combined with potential on-site renewables will enable DOER building typologies to become ZNE? E.g., will the roof area of a 2,000 sf home (small residential in DOER models) generate enough power to zero out

emissions? **I request that such modeling for large and small residential as well as small commercial (municipal) buildings be furnished before finalizing the code.**

Lastly, on the topic of adoption timeframes, if there is a phase-in period for adopting the Specialized Stretch Energy Code, **please clarify this statement from slide 25 of the informational webinar on July 7, 2022: “All requirements in effect without phase-in, except for Passive House mandate for multi-family buildings 12,000 square feet or more (see slide 19).”** Ideally, **I encourage a revision to the effective date language in the draft to allow for a 6-month concurrency period after town adoption enabling the code to become effective at the end of the concurrency period** instead of limiting the effective date to either January or July subsequent to the 6-month concurrency period.

In closing, **I urge DOER to adopt a net zero definition and associated pathways under the Specialized Stretch Energy Code that comprises energy efficiency strategies to minimize energy loads as practical, mandate all-electric HVAC and appliances, on-site renewable energy production to the extent possible and supplant any additional energy use with regionally generated renewable energy.**

Thank you for your consideration of my comments.

Sincerely,

Bob Higgins-Steele