

July 22, 2022

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

Re: **Public Hearing Testimony – Draft Stretch Code Language** (submitted for written record)

My name is Ellen Watts. I am an **architect** of net zero and high-performance buildings – one of three elected Boston Society of Architecture representatives on the AIA MA board, past president of the CREW Boston Commercial Real Estate Women, and past co-chair of the MA Governor’s Zero Net Buildings Task Force. Speaking on behalf of myself only, I offer four general observations followed by a handful of recommendations.

First, the majority of the 1,200 comment letters DOER received on the straw proposal indicated strong public support for a more strenuous Opt-In Net Zero Code -- one that requires electrification for ALL new construction and major renovations, regulates embodied carbon, expands solar energy generation, and enforces even greater energy efficiency. Further, the letter submitted by the MA Net Zero Building Coalition was signed by elected and appointed officials in 62 municipalities representing nearly 40% of the population, together with many leading building professionals and advocates, showing the Opt-In Net Zero Code is not just for wealthy communities. It is sought by a broad cross-section of Massachusetts citizens who stand ready to adopt it.

Second, the Attorney General has clarified that DOER can require electrification in the Opt-In Net Zero Code. The AG’s DOER straw proposal comment letter clearly states, *“DOER has the authority to promulgate a specialized stretch code that includes all-electric requirements.”* It also notes, *“The [Climate] Act requires that DOER’s actions be designed to achieve compliance with the Commonwealth’s statewide greenhouse gas emissions limits and sublimits.”*

Third, according to an updated study by Built Environment Plus, Massachusetts has 16 million square feet of new net zero buildings and another 17 million square feet planned or under construction. Net zero buildings are no longer experimental but rather practical and affordable, encompassing many project types and sizes. The study lists 200 design and construction firms that offer net zero experience.

Fourth, the Office of Energy and Environmental Affairs (EEA) recently finalized 2030 emissions limits. From 2020 to 2030, residential heating emissions will need to drop by 40% and commercial heating emissions will need to drop by 35%, notwithstanding the high growth forecast for this decade – a 46% residential increase and 21% commercial increase – according to the Next Generation Roadmap report. DOER has yet to show how its opt-in net zero code is designed to achieve compliance with these limits.

Considering these observations, I offer eight recommendations to optimize the Opt-In Net Zero Code:

1. Expand Electrification Requirements

Make electrification a requirement not just for buildings with more than 50% curtainwall but for ALL new buildings and major renovations. Not just for homes greater than 4,000 square feet but for ALL new and substantially renovated homes. Any building built today with fossil fuels will need to be retrofitted at greater cost and complexity before the end of its useful life, unnecessarily wasting money, burdening our energy infrastructure, and challenging our emissions reduction goals.

2. Restore Deleted Embodied Carbon Provisions

Reducing embodied carbon emissions this decade is critical as they will exceed operational carbon emissions on a short-term basis. MA does not currently track embodied carbon, but DOER should lead the way. Require ALL buildings (not just those with a certain amount of curtainwall), to meet prescriptive specifications for low-carbon concrete, aluminum, steel, insulation, carpet, and gypsum board. For larger buildings, additionally require Whole Building Life Cycle Analysis (LCA) modeling which is an emerging best practice and will encourage smart design choices, similar to energy modeling.

3. Accelerate Effective Dates

Allow municipal adoption by a vote that takes place any time before the Jan 1st or July 1st effective dates. Drop the six-month minimum lead time for which there is legal requirement. DOER plans to issue final code language on December 23, 2022. Municipalities should be free to vote whenever they choose – as early as the last week in December 2022 (by special session) – and to have the soonest effective date.

4. Clarify and Expand On-Site Solar Generation

For all buildings (not just those heated by fossil fuels), require on-site solar panels in proportion to gross square feet to the extent of available solar access.

5. Clarify Curtainwall & Electrification Requirements

Define curtainwall area as the entire system including framing, glazing, spandrel panels. Set curtainwall performance criteria such as a U value for the entire system as would encourage triple glazing, thermally broken frames, and insulated spandrel panels. Require electrification for ALL buildings, not just those with more than 50% curtainwall.

6. Pair TEDI with EUI Limits

DOER has a great idea to limit Thermal Energy Demand Intensity (TEDI) and yet this represents only a fraction of building energy demand. Research studies show Energy Use Intensity (EUI) is also important to regulate. Set EUI limits comparable to those in the 2021 Base Code Appendix (“Zero Code”) to prevent manipulation of TEDI calculations and to ensure better overall energy efficiency.

7. Show How 2030 Building Sector Limits Are Met

DOER and EEA should publicly demonstrate through scenario modeling how 2030 building sector emissions limits can be met. Based on DOER’s numbers, it seemed the Straw Proposal might reduce emissions by 10% by 2030. That’s not enough. Show us what it will take to meet the goal. The answer seems likely to be that all future growth must be net zero, neutralizing impact on emissions – AND – approximately 100,000 existing buildings must be electrified each year. If this is what it takes to accomplish the goal, let’s face it squarely and deliver results.

8. Correct Cost Studies & Minimize Life Cycle Costs

Cost studies should be revised to reflect current (not 2018) gas and electricity prices – AND – the significant costs associated with retrofitting new fossil fuel heated buildings before 2050. These adjustments will produce a very different cost picture, making an even stronger case for electrification.

In conclusion, it is high time for many Green Communities to take the next step and become Net Zero Communities. DOER, please give us the tool – a robust Opt-In Net Zero Code – and we will put it to use.