

Finlayson, Ian (ENE)

Subject: BUILDING CODE COMMENTS

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To: STRETCHCODE (ENE)

Subject: BUILDING CODE COMMENTS

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Department of Energy Resources (DOER)

100 Cambridge Street, Suite 1020

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Dear Commissioner Woodcock, Secretary Card, and Secretary Kennealy,

I am writing to support DOER to develop a specialized stretch energy code that ensures the Commonwealth can meet building sector emissions targets while also making buildings a core climate mitigator and protector of our health and safety.

First, I want to thank DOER for **the revisions that were made to the specialized stretch energy code after the 1200 comments that were submitted in March on the straw proposal**. Thank you for listening to the Commonwealth residents by making several key improvements in the revised code language which include:

- Incorporating the industry-standard definition of net zero building and the optional pathway found in 2021 Base Code Appendix, also known as the Zero Code, advanced by AIA 2030 and endorsed by the national AIA.
- Requiring multi-family projects greater than 12,000 square feet to meet Passive House standards.
- Forming a Technical Advisory Committee with expertise in building codes and climate resilient buildings.

The climate bill sitting on the Governor's desk is necessary but insufficient to accelerate the scale of net zero construction and renovations. A statewide opt-in net zero building code is urgently needed to transform buildings from polluters to protectors of our health, safety, and the climate. **A robust opt-in specialized stretch code is needed to electrify ALL buildings, new construction, and renovations.**

Personal Background

We built an energy-efficient house in Bolton during 1978. Over the years, we had thermal Solar Hot water in the 1980s, then replaced it with Solar Photovoltaic (PV) and a Heat Pump Water Heater in 2013. Additional Solar PV, via Solarize Mass Bolton, was added on the garage later. The original oil-fired forced-hot air furnace and central air were replaced initially with Air Source Heat Pumps. Under HeatSmart Bolton Harvard, the Central Air Source Heat Pump was replaced by a Ground Source Heat Pump. That improved our heating seasonal Coefficient of Performance from 2.7 to 4.5 (4 year average). In 2020, one car was replaced by an Electric Vehicle, while gas powered tools are being replaced by cordless electric. We are also transitioning from electric to induction cooking. These enhancements, combined with energy conservation measures, over 4 decades and with generous help from Government incentives, have resulted in an electrified net-zero house. Now we want to help others achieve that, maximizing efficiency to reduce operating costs, waste, and carbon footprint.

Below are my specific recommendations

Eliminate all fossil fuel pathways for new construction and renovations

- We need a opt-in specialized stretch energy code that protects the health and safety of our most vulnerable residents, by eliminating fossil fuel pathways for new construction and requiring all building types be all-electric. Any building built today with fossil fuels will need to be retrofitted at greater cost and complexity before the end of its useful life, wasting money, burdening our energy infrastructure and prolonging dangerous greenhouse gas emissions.

Restore Deleted Embodied Carbon Provisions

- Reducing embodied carbon emissions this decade is critical as short-term they will exceed operational carbon emissions.
- Massachusetts does not currently track embodied carbon, but DOER should lead the way.
- ALL buildings need to meet prescriptive specifications for low-carbon construction materials.
- Require Whole Building Life Cycle Analysis, an emerging practice that encourages smart design choices.

Accelerate Effective Dates

- Allow municipal adoption by a vote that takes place any time before the 2023 Jan 1st or July 1st effective dates.
- Drop the six-month minimum lead time.



DOER plans to issue final code language on December 23, 2022. Municipalities should be free to vote whenever they choose to expedite implementation.

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, taking into account solar access.

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, the Straw Proposal might reduce emissions by only 10% by 2030. DOER must be transparent and show the public and the legislature what it will take to meet 2030 emissions goals.



The answer appears to be that all future growth must be net zero and approximately 100,000 existing buildings must be electrified each year. If this is what it takes to accomplish the goal, let's ensure that the opt-in net zero code will deliver these results.

Myths Debunked



MYTH: Fossil fuels are needed to ensure a smooth transition to all electric buildings. **TRUTH:** Preserving the fossil fuel pathway in the specialized stretch energy code only kicks the cost of expensive retrofits down the line, and makes reaching state mandated emissions goals unattainable. And, as was recently demonstrated in the Merrimack Valley gas explosions and in cases throughout the world, gas is dangerous. And the aging distribution network is fraught with leaks that have 25 times the Global Warming Potential of burned gas. We need to phase it out ASAP, perhaps re-using the network for Geo Micro Grids.



MYTH: All-electric buildings will draw more energy off the grid, and with increasingly hot summers, net zero homes and apartment buildings will create blackouts and brownouts. **TRUTH:** A true net zero building is super energy efficient, all-electric with renewable energy generated on-site or purchased off-site. On average, properly sized on-site PV generation puts the same or even greater power back into the grid. Because net zero buildings consume less energy thanks to renewable energy, they draw less energy from the grid compared to buildings powered with fossil fuels. In addition, as more net zero homes are constructed, the amount of renewable energy available in the New England grid is expected to significantly increase.



MYTH: Propane is a clean energy option (the propane lobby actually promotes propane as a non-emitting fuel and stated as much in DOER public sessions) and because it does not experience volatile price fluctuations, it plays a vital role in the clean energy transition for buildings. **TRUTH:** Propane does emit carbon dioxide (check out this website: https://www.eia.gov/environment/emissions/co2_vol_mass.php) and therefore does *not* offer the same health benefits that an air source heat pump offers. Propane is also the most expensive fuel choice for homeowners, and these prices are consistently high. Propane -- like all fossil fuels -- has no technical equality relative to heat pumps in net zero buildings. Propane, like natural gas, greatly

increases chances of explosion or fire compared to all-electric heating and emits poisonous gasses when cooking. We need a building code that requires net zero buildings now.

● **MYTH:** All-electric net zero buildings are more vulnerable to power outages. **TRUTH:** Conventional gas, propane, or oil boilers or furnaces also need electrical power to run. A modern Ground Source Heat Pump system with variable speed (Modulating) compressor can easily run from a typical whole-house backup generator provided the backup resistive heater is kept off. And the exceptional weatherization (tight sealing and high R-value insulation) in net zero homes allows them to “coast” much longer i.e. cool more slowly while power is out.

The Commonwealth needs the most robust opt-in specialized stretch code to regulate and electrify ALL buildings, new construction and renovations, available to ALL communities. We cannot afford to wait any longer to transform our buildings into protectors of our health, communities and the climate.

Sincerely,

Anthony Jagodnik

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