

COMMENTS submitted by Hingham Net Zero

NOTE: Hingham Net Zero is a voluntary association, please slot these comments under “Associations,” not Municipalities.

I am submitting these Comments on behalf of Hingham Net Zero, a grass roots climate action voluntary association in Hingham, MA. We were instrumental in 2021 in persuading the Town to commit to the goal of net zero carbon emissions by 2040. Hingham is a Green Community and as such will, at a minimum, adopt the newest stretch code. We anticipate that we will advocate that the Town opt-in to the new “specialized, opt-in (net zero)” stretch code, probably at its 2023 Town Meeting. For your convenience, I also attaching the Final Comments in pdf format.

I. Introduction

Hingham, like many small Massachusetts towns, is predominantly a residential community. HVAC is our biggest source of emissions and our biggest challenge. Electrification of HVAC is essential to success. In order to meet our aggressive net zero by 2040 goal, it is urgent that we have the support of strong energy codes standardized across the Commonwealth that minimize installation of new fossil fuel HVAC systems. The DOER has previously asserted that new buildings constructed between 2024 and 2050 will comprise **27% of the built environment by 2050**; these are the easiest to make net zero compliant and **the new stretch codes must mandate that**. However, by subtraction, this also means that fully **73% of the built environment will be older structures**. In Massachusetts, much of our housing stock ranges from antique to simply old. These structures, which must be optimally weatherized and retrofitted with non-fossil-fuel technology, are in many ways the bigger challenge for the Commonwealth’s 2030 and 2050 Roadmap goals. Unlike the more easily monitored large projects, these small retrofits will involve hundreds of thousands of local renovations and hundreds of independent contractors. The DOER’s new stretch codes must address these challenges head-on, not evade them. Comments below will provide more detail.

II. Comments:

- a. It is not consistent with the purpose and intent of the Commonwealth’s climate policy Roadmap to limit the **scope** of the new stretch codes by excluding existing residential buildings of less than 4,000 square feet. **The codes must address both new construction and renovations of existing homes, regardless of size.**
- b. **The real goal of the new stretch codes should be to stop investment in fossil fuel-based HVAC - period.** Codes that are triggered by renovations will not accomplish the goal. A homeowner with an old oil-burning forced hot water system can replace it with a natural gas-fired system. As long as they do not implement a renovation of the specified size, or of any size, they do not trigger the code. But that still means an investment in a new fossil fuel HVAC system with a useful life of many years.

A few simple metrics will illustrate the challenge facing Hingham and **why the new codes must effectively address significant repair, upgrading or replacement of existing fossil fuel--fired HVAC in existing buildings:**

- There are roughly 7,200 one-to-four-unit homes in Hingham; the vast majority currently have either oil or gas-fired heating systems; more than half of these are oil-fired.
- To reach our goal of net zero by 2040, these fossil fuel systems must be converted to electric heat pumps by 2040.
- Total conversion to heat pumps by 2040 (i.e., in 17.5 years) implies a rate of more than 400 installations per year ($7,200/17.5 = 411$).
- In 2021, HMLP awarded 33 heat pump rebates for its customers converting oil systems.
- At the mid-point for 2022, few than 20 have been awarded.
- Rebates awarded to natural gas customers under MassSave proceed at a similar rate. Obviously, the rate of conversions to heat pumps must be dramatically increased. If the DOER's new energy stretch codes continue to allow installation of new fossil fuel systems, the status quo will persist. We will fall further and further behind, since every new fossil fuel system newly installed will likely remain in place for its useful life, which can run anywhere from 8 to as long as 15 years or more. The current pace means that each year, the number of heat pump installations will have to increase geometrically. The math is inexorable and daunting. The DOER must step up.

c. The new specialized opt-in stretch codes should mandate that, **prior to installing any new HVAC system, an energy efficiency assessment be done by a qualified entity (e.g., MassSave, or Energy New England) and that the resultant weatherization and insulation upgrades be completed.**

d. **The DOER must develop programs aimed at persuading and enabling HVAC contractors to revamp their business model to stop installing fossil fuel systems and begin installing electric heat pump systems.** Some contractors, even MassSave-approved firms, continue to actively de-market heat pump technology with outdated information that is decades old. Some of the areas that need to be addressed include:

- i. Learning about and staying current with the rapidly evolving heat pump products that can be installed as stand-alone whole house solutions (ductless mini splits), as well as heat pump "engines" that can replace fossil fuel burning devices and interfaced with existing HVAC infrastructure such as radiators and air ducting systems.
- ii. Training crews on these new products/technologies.

- iii. Guiding HVAC companies to sources of low interest financing to fund the transition, with state sponsorship and partnerships with banks and other financial institutions.
- iv. Providing access to Schedule J methodologies for fine-tuning design of the heat pump-based HVAC systems to the unique needs of each home.
- v. Providing direct support of consumers who are receiving conflicting and confusing information from HVAC contractors.
- vi. Conducting ongoing coordination with local building inspectors to ensure compliance.

III. The DOER's "definition" of a net zero building is circular and ultimately confusing and needs to be revised to offer real guidance.

The DOER finesses the definition of a net zero building by elliptically making reference to the vague definition included in the EOEAA draft regulations, which predicates its definition of "net zero new construction" as that which is "compatible, as-built, with the Commonwealth's net-zero emissions economy in 2050" and predicates compatibility with "being consistent with "electrification and deep efficiency benchmarks described in the All Options pathway." This vague definition is in turn predicated on "assumptions"...about the future which "include enhanced energy efficiency compared to current code and effective elimination of on-site emissions from space heating, domestic hot water, cooking and other process uses."

In other words, the DOER's definition of a net zero building is based essentially on optimistic assumptions about future energy efficiency and reductions in emissions that will be implemented due to unspecified forces. Furthermore, we're told that the "focus" of this extremely pliable definition is "on-site emissions" and that "it does not necessitate onsite or offsite renewables, nor the assumption that a building is net-zero energy..."

After parsing this labyrinthine, relentlessly recursive verbiage, what we end up with is the following definition of a net zero building:

*A building **which is consistent with achievement of MA 2050 net zero emissions**, through a combination of highly energy efficient design together with being an all-electric or Zero Energy Building, or where fossil fuels are utilized, a building fully pre-wired for future electrification and that generates solar power on-site from the available Potential Solar Zone Area.*

Note that that this is a **conveniently circular definition**. We can only get to net zero emissions by 2050 in MA if we have a strong set of energy codes that mandate net zero buildings. But the DOER proposed energy codes **define a net zero building as one "which is consistent with achievement of MA 2050 net zero emissions"!**

Plus, the new codes, even the opt-in code, still **allow the continued use of fossil fuels** as long as 1. the building is pre-wired for **electrification** and 2. it generates solar power on-site at a level of capacity that depends on the characteristics of the building. **The new opt-in codes should not allow the use of fossil fuels.**

At a minimum, the DOER must promulgate new specialized, opt-in net zero stretch codes that actually enforce net zero or net zero-ready standards for both existing and new work. Allowing continued fossil fuel installations if accompanied by “pre-wiring” at an unspecified level of capacity, together with be token installations of solar panels, only delays the required transitions and builds in greater expense.

Thank you for the opportunity to comment.