



March 18, 2022

Patrick Woodcock, DOER Commissioner
Department of Energy Resources
Via email: stretchcode@mass.gov

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Re: Stretch Code Straw Poll Comments

Dear Commissioner Woodcock, et al:

Our office is looking forward to the implementation of the State's new energy/stretch code. We appreciate the opportunity to share some thoughts and comments, which follow below, regarding the latest straw poll.

Recommendations and Commentary:

1. Recommendation: The use of source energy should remain a flexible alternative for teams to use to demonstrate compliance even though this may not be utilized as often by design teams.

Commentary: The current proposal does not include an option to utilize source energy as an analytical metric as the past stretch codes allowed. Source energy is actually a more accurate measure of performance when it comes to evaluating GHG emissions. The use of site energy is a derivative of various green building rating systems; but it does not capture the full impact of energy consumption and corresponding GHG emissions. This actually skews the comparison of gas to electric utilization in the favor of all-electric when only site energy is referenced. We acknowledge that all-electric is often still the most energy efficient and lower emission option, but it may not be as impactful on GHG emissions as is portrayed in the straw poll literature.

2. Recommendation: The term 'net-zero energy building' should be defined based on one of the commonly accepted definitions currently used by the industry. Department of Energy definition of a zero-energy building is: "An energy-efficient building where, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy."

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https://www.energy.gov/sites/default/files/2015/09/f26/bto_common_definition_zero_energy_buildings_093015.pdf

Commentary: The proposal seems to try to address the definition in two ways. One, it references the long-range goals to meet the intent of the Climate Bill and Roadmap calling for specific GHG reductions by 2050. But it places the building industry as one item in a collection associated with GHG emissions. The second, vaguely requires a building be zero energy by maximizing the installation of PV (for residential with fossil fuels) while not requiring any renewable energy for all-electric buildings. This appears to assume that the utility grid will be providing 100% renewable energy to residential and commercial properties by 2050. This leaves the door open for individual municipalities who want to emphasize zero-energy buildings to add additional requirements.

3. Recommendation: More information needs to be provided to explain and clarify how 'TEDI' correlates to other known metrics for energy consumption.

Commentary: The units for TEDI seem to correspond with EUI. EUI values are determined by many factors – schedule being one of them. Presuming TEDI is similar, there will need to be a clear method for addressing fluctuations in value based on the schedule used in the energy model. This doesn't appear to be a standard term/metric in the United States, which would indicate more education of the design community will be needed.

4. Recommendation: More information will need to be provided to explain how projects will comply with thermal bridging limitations/accounting. What documentation will need to be submitted?

Commentary: This may be more important for projects that are not utilizing Passive House certification to comply with the code, because WUFI modeling has a method for tracking this. A defined metric will be needed.

5. Recommendation: Language needs to be included that addresses the situation when projects pursuing Passive House certification fail the infiltration testing during construction.

Commentary: Passive House certification is a great way to document a building meeting exceptional energy performance. For those instances when a project doesn't meet Passive House requirements, typically a certificate of occupancy can still be issued. If it now becomes a requirement for obtaining a C of O, it could be challenging for projects to find and resolve a problem that may require complex and costly methods. (e.g. find the leak causing the project to fail the infiltration test).

6. Commentary: There could be a shortage of people well-versed in the use of the specific energy modeling software (WUFI) required for Passive House certification – even with all of the professional training that is taking place in the Commonwealth.

7. Commentary: Passive House certification allows for portions of a building to be excluded from the envelope that defines what is to be calculated. It will need to be clarified whether these portions of the building should be included for the purposes of the energy/stretch code (e.g. laundry rooms for multi-family housing projects can be excluded).
8. Commentary: How will buildings with pool facilities be addressed (e.g. hotels)?
9. Commentary: How will buildings with larger process loads be addressed (e.g. manufacturing, vocational schools, etc.)?
10. Commentary: For projects that install PV to comply with code requirements, it could become an issue when a future project is built nearby that blocks the sunlight to the property preventing the owner from generating the power that they were effectively required to install as a PV system and then could no longer produce. This begins to creep into zoning issues and protection of solar rights.
11. Recommendation: Coordinate terminology/language between the stretch code and the building code.

Commentary: Inconsistent language referring to the same concepts/requirements leads to confusion for designers and building officials. Likewise, similar language referring to different concepts/requirements would be just as confusing.

12. Recommendation: “Curtainwall” needs to be specifically defined if this language remains in the code.

Commentary: Different systems may look like a curtainwall but technically not be one (e.g. storefront, window walls, etc.). They may also be just as bad or worse relative to thermal performance. These poorer performing systems may creep into smaller commercial projects that might have more glass and typically use curtainwall and choose one of these systems instead. Referencing r- and u-values along with percentage of window/wall or average thermal performance might be better for code language.

13. Recommendation: Unless it is addressed more holistically with well-defined baselines and methodologies, we don’t recommend using embodied carbon for this iteration of the energy/stretch code.

Commentary: We applaud the DOER for including a requirement in one compliance pathway that, “buildings must demonstrate embodied carbon reduction from the menu of options,” but in order to meet our state climate goals, we must reduce embodied carbon in all buildings, under all pathways. We have reviewed the straw proposal language and have found that embodied carbon is only mentioned under the pathway for commercial buildings and large-scale multifamily only, and within that pathway, only for curtainwall buildings.

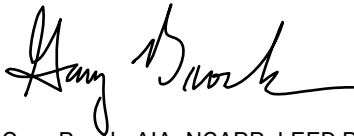
Several Massachusetts municipalities are currently drafting proposed policy language that requires analyzing, quantifying, and in some cases, reducing embodied carbon, often through zoning and special permit requirements.

Commonwealth of MA can and should lead by example by addressing embodied carbon for all buildings that are required to meet the Stretch Code. The path to a true zero-carbon built environment includes both reducing operating energy/carbon and the embodied energy/carbon in our buildings.

We will continue to follow the development of the new Stretch Code and Municipal Opt-In Option and will be discussing it in-house and with our consultants. We will likely have additional comments in the future, which we hope to share during the next round of public comments.

Very truly yours,

HMFH Architects

A handwritten signature in black ink, appearing to read "Gary Brock", with a stylized flourish at the end.

Gary Brock, AIA, NCARB, LEED BD+C
Associate

cc: Lori Cowles, AIA, Principal