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

Date: 12 August 2022

Subject:

Comments on MA 2023 Commercial Stretch code and Specialized Opt-in code; DOER Draft 6-24-2022

Dear Members of DOER Stretch Energy Code Team:

In response to DOER's release of the Stretch Energy Code Draft in June, I offer the following comments on certain of the technical requirements and definitions proposed in the document. I very much appreciate the development of this code structure to address the goals of the Commonwealth in addressing climate change. To move toward "net zero" in 2050, improvements like the ones you are proposing are truly needed in the building code.

Chapter 2 [CE] DEFINITIONS

The accurate term for the type of wall or fenestration system being addressed in the proposed amendments to IECC 2021 is *Glazed Curtain Wall*, not *Curtain Wall*. *Curtain Wall* is a more general term that refers to any façade system that does not carry any load other than its own weight, which is tied back to the building structure and passes by the edges of structural slabs. The major visual component of such façade systems may be glass, stone or other panel materials. *Glazed Curtain Wall* is a more specific term that is used to mean curtain walls in which glass is the major visual component. It is not a product, it is an assembly or system.

These are the terms that need to be defined for the Energy Code, in place of "curtain wall" or "spandrel section".

Glazed Curtain Wall: A non-load-bearing façade system comprising glass panels supported by framing elements secured to the building structure. The glass panels may be vision glass or opaque glazing assemblies.

Spandrel Panel: An opaque panel or glazing assembly within a glazed curtain wall system that is positioned to conceal structural elements or internal construction from view to the exterior. A spandrel panel supported by glazed curtain wall framing will be considered part of the fenestration area, not part of the opaque wall.

Chapter 4 [CE] COMMERCIAL ENERGY EFFICIENCY

The code must always be clear on what edition of each standard it is referring to.

C401.2.2 Certified performance standards: In making reference to PassiveHouse and HERS standards, amend the proposed language to state which edition of each standard is applicable for the current edition of the Code, since they may be updated on different cycles than IECC and MA Codes.

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In the comments I sent in March 2022, I suggested the use of area-weighted U-factors for the building enclosure. I concur with efforts to control the extent of glazed curtain wall on building facades, but believe this same effort should be made to control all types of fenestration, including aluminum-framed storefront, windows and skylights. I see that this approach is addressed in IECC C402.1.5.

C402.1.5 Component performance alternative: I consider the equation *as written* in IECC 2021 an excellent way to control the extensive use of curtain wall and all types of fenestration. Using this type of calculation, the relative areas of fenestration will be controlled by the amount of energy they waste. Therefore, I suggest that the proposed amendments be eliminated from this article of the proposed MA energy code. There should be no reason to define “curtain wall building” and “non curtain wall building”, and this distinction adds an unnecessary complication to design and enforcement efforts.

Because various types of permeable and non-permeable fluid-applied and solid membranes are used to serve as air barriers, it is critical to make sure that their position within the exterior enclosure will not trap moisture in such a way as to promote corrosion, mold and other moisture-related damage.

C402.5.1. Air barriers: modify second sentence to read: “The continuous air barrier shall be located in such a position as to eliminate the likelihood of trapping water vapor and causing condensation within the building thermal envelope.”

C402.5.1.1 Air barrier design and documentation requirements: Add the following subparagraph:

6. Specifications for air barrier materials shall include technical requirements for material and assembly performance that meet or exceed performance requirements set forth in the Code.

Appendix CC – MASSACHUSETTS MUNICIPAL OPT-IN SPECIALIZED ENERGY CODE 2023

Thank you for avoiding the use of the word “carbon”, and for omitting the concepts of “embodied carbon” and “carbon offset” in the language of the 6-24-2022 Draft. I do see that the word carbon occurs just once in the text.

CC101.1 Purpose. For consistency I suggest that the end of the last sentence in this paragraph read: “....adequate capacity to achieve net zero energy.”

As I wrote in my comments on the straw proposal, I suggest that to avoid confusion, our Energy Code harmonize its definitions of “net zero” with an industry standard, and define a Massachusetts-specific term that will not be confused with the industry standard. Therefore I propose the following two definitions in place of “Net Zero Emissions Building” and “Zero Energy Building”:

CC102.1 Definitions

Zero Energy Building (ZEB): 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. *(This definition was developed by the U.S. Department of Energy (DOE) and the National Institute for Building Sciences in consultation with a wide range of members of the design, construction, manufacturing and building ownership community.)*

Net Zero Economy (NZE): A state-wide community of energy users which together on an annual basis produce a quantity of greenhouse gas emissions no greater than the amount that can be absorbed by the natural environment within that community. The following strategies will be employed in the building sector to achieve NZE:

Energy efficiency: Minimum energy efficiency requirements will apply to all building construction, including additions to existing buildings, without exception and without trade-offs.

Zero Energy Buildings: To the greatest extent possible, incentives and locally adopted specialized code requirements will produce Zero Energy Buildings.

Electrification: Heating and cooling for new construction and retrofits will be powered by electricity, and fossil fuel-burning equipment and appliances will be phased out, as the electric grid moves toward 100 percent reliance on renewable energy.

(I have drafted this definition based on my reading of MA climate legislation and the excellent Massachusetts 2050 Decarbonization Roadmap. If you agree with my basic idea for the definition, I am sure the wording can be refined to more precisely reflect the Commonwealths' goals. Requirements for retrofitting existing buildings to meet minimum energy efficiency goals need to be developed by DOER.)

Thank you very much for your work, and for your systematic efforts to obtain public comments.

Sincerely,

Greta

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POSTSCRIPT

I am an Architect Emeritus in Massachusetts with expertise in building science. After retiring in 2021 from full-time employment as an architectural specifier, I have continued to be active in the Building Enclosure Council at Boston Society for Architecture and I serve on the AIA Building Performance Knowledge Committee; however, these comments reflect my own opinions. .