

## Finlayson, Ian (ENE)

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**Sent:** Friday, 12 August 2022 2:19 PM  
**To:** STRETCHCODE (ENE)  
**Subject:** BUILDING CODE COMMENTS

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Below are my comments on the current public draft of the new MASS Stretch Code proposal. While my employer practices architecture in the Commonwealth of Massachusetts, the comments below are my personal comments, hence my use of personal email to communicate these opinions. I appreciate the ability to provide you with comments that can hopefully result in a stronger stretch code for the commonwealth.

- Recommend inclusion of a prescriptive path for commercial buildings > 20,000 SF under C401.2.1. Having a simple path that does not require TEDI/simulations will be beneficial for the industry and developers as it gives a clearer compliance pathway.
- C401.2.1.2 TEDI definition and calculation approach is not defined in the code. Many commonly used whole building energy simulation software tools do not automatically calculate TEDI and thus explicit definitions and guidance is required, especially with respect to indoor temperature setpoints and schedules and ventilation rates and schedules.
- C401.4.1 Not all commercial scale heat pumps have HSPF ratings. Provide equivalents for all types of air source heat pumps, including air-water heat pumps, that utilize national standard testing approaches that are common for that equipment
- C401.4.1 Is the State allowed to regulate equipment efficiency beyond the federal level?
- C401.4.3 Commercial scale domestic water heating heat pumps often include separate air to water heat pumps, storage tanks, and supplemental electric heating elements that as a system are not tested to UEF efficiency. Recommend providing an alternate for these system solutions that allows for individual component national testing standards.
- C402.1.5.1
  - Definition of curtainwall is vague and does not sufficiently describe the industry definition of "curtainwall" construction.
  - Recommend replacing "glass" with "glazing assembly" for u-factor definition. Recommend clarifying that this is center of glass u-factor for the glazing assembly and not window system u-factor including frame effects.
  - I do not agree with separation of performance requirements for curtainwall and non-curtainwall building envelopes. All buildings should be held to the same envelope performance standard regardless of the construction method and materials chosen. Instead, I suggest that different envelope performance criteria could be required depending on the level of building electrification, with more envelope performance leniency for all electric buildings.
  - The UA Dif equation does not make sense to me. Given the variability of area within a UA proposed calculation, how can you simply subtract a static, small value to achieve a result that can be <= zero? For example, a building with a 10,000 SF envelope and a U-factor of 0.02 (R-50) would have a UA proposed of 200 and a UA Dif of 200 - 0.16 (or 0.1285). Something seems to be missing in the equation definition - typically I would expect to see UA diff being the difference between the UA proposed and the UA baseline. Should the equation instead be:  $UA(dif) = UA(proposed) - A(proposed) * 0.16 (or 0.1285)$ ?

- C402.5.2
  - Other successful codes are using lower air infiltration requirements. I suggest this code go beyond 0.35 cfm/SF at 75 Pa - 0.25 cfm/SF should be achievable without undo hardship and is more aligned with the performance goals of the code.
- Table C402.4
  - I recommend greater leniency on the U-factor of operable windows in order to not discourage their installation. Operable windows have a proven track record in increasing a building's resiliency, creating greater occupant comfort, and reducing the need for mechanical cooling and ventilation. The low u-factor proposed is likely to create a barrier to use that will see fewer projects using operable windows, to the detriment of the community and occupants.
- C402.5.10
  - It is unclear how "occupancy" is defined for the purposes of calculation of the 40 SF operable opening calculation. The requirement seems reasonable if a given **room** has > 40 SF of operable openings but unreasonable for a whole floor, residential unit, or building. If applied at the residential unit, floor, or building scale, this requirement will discourage the use of operable windows that have multiple community and occupant health and resiliency benefits.
- C403.7.1
  - I do not support a limit to the amount of ventilation air over ASHRAE Standard 62.1-2019. ASHRAE Standard 62.1 has been shown to not result in optimal indoor air quality and events like the recent COVID-19 pandemic have shown the importance of increased ventilation rates on occupant health and safety. Building owners should be allowed to exceed ASHRAE Standard 62.1-2019 by any amount provided they still comply with the TEDI or whole building performance requirements of the code. Perhaps a hard limit in the prescriptive path, but no restriction in a TEDI/relative performance path?
- C502.1
  - Small additions less than 20,000 SF often connect to existing systems without the modification to central air handling units, heating and cooling plant equipment. Such additions should be allowed to comply without requiring modifications to existing systems or equipment that are used to service the addition.