



Are you on board?

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June 29, 2017

John Dalzell
Senior Architect for Sustainable Development
Boston Planning and Development Agency
1 City Hall Square, 9th Floor
Boston, MA 02210

Re: Climate Change Checklist Update

Dear Mr. Dalzell,

Thank you for the opportunity to comment on the Boston Planning and Development Agency's (BPDA) drafts of the Climate Change Checklist Guidance, Review Policy, and Checklist.

Boston Harbor Now and the members of its Climate Task Force meet regularly to discuss harbor-related policies and regulations that may help advance the City of Boston's adoption of climate resilient regulations. Our group actively participated in the BPDA Climate Checklist review process and attended the June 21st public meeting. In general, we find the proposed documents to be well done. The material nicely integrates the findings from Climate Ready Boston and provides useful guidance for encouraging adoption of resilience measures in large development projects. We support and applaud the City's continued efforts to prepare for climate-related impacts. Our specific comments follow:

Checklist

1. Page 1, Section A.2: This is mislabeled as Section A.3.

2. Page 3, Section C: While building lifespans are long, and it makes sense to design a building's structure to be resilient to the year 2100, the lifespan of building systems is much shorter. This has significant implications for resiliency design measures, and should be acknowledged in this section.
3. Page 2, Section B.2: This section should add superinsulation and passivehouse design as strategies that can significantly reduce energy use and allow buildings to function during extended power outages.
4. Page 2, Section B.2: The checklist should include the use of trees and plants as protective barriers to reduce salt water wave velocity and wind speeds.
5. Page 4, Section E: The "One-Percent Annual Flood Area with 36 inches of Sea-Level Rise Map" should have another name so it can be referred to more easily. We suggest: "Future Floodplain Map," "Future Flood Risk Map," or "SLR Impact Zone Map."
6. Page 4, Section E.1: While the provision for adding one foot or two feet of freeboard may be generally acceptable, it would be useful to ask applicants to consider whether their project includes classes of buildings and structures that may require greater levels of freeboard. See ASCE 24-14, which is proposed to be adopted into the Massachusetts State Building Code 9th Edition to become effective January 1, 2018, on standards addressing the concept of "Flood Design Class," which addresses the need to design for different freeboard standards (including a 500-year flood elevation plus freeboard for class 4 buildings) based on the function of a building and its importance to public health and safety.
7. Page 4, Section E.1: Is the checklist suggesting that a voluntary $DFE = BFE + SLR + \text{Freeboard}$, or is the voluntary $DFE = BFE$? This needs to be clarified in the guidance document (see below for suggestions).
8. Page 4, Section E.1: Existing & proposed site elevations are included in section A.3. Is Section E.1 requesting the elevation adjacent to the building? Is this an average, or a range? Is this the same elevation that is used to measure zoning height?
9. Page 4, Section E.1: What does Accessible route elevation refer to? Is this related to ADA, emergency egress, or vehicular evacuation route?
10. Page 4, Section E.2: The NFIP & Building Code specifically do not allow for sheltering in place. Are you suggesting that buildings should be designed to allow sheltering in place during a flood event or rather during a power outage in periods of extreme cold or heat (passive survivability)? According to ASCE/SEI 24-05 and ASCE/SEI 24-14:

- C6.2.2 Dry Floodproofing Requirements: For safety, dry floodproofed buildings should not remain occupied during conditions of flooding.
- C8.1 General: Buildings in flood hazard areas, even if designed to resist flood loads, are not intended to be occupied during flooding events.

Review Policy

1. Clarify that you are looking for information on how future climate conditions will affect the project, not just how the project will impact the environment under future climate conditions, particularly in the first paragraph and in paragraph C (This was unclear in the draft MEPA policy as well.)
2. Page 1 paragraph 2 line 3, correct typo on word “sever,” should be “severe.”

Guidance Document

1. The following terms from the checklist should be defined in this document and/or in the BPDA’s online glossary. Where possible, these definitions should be consistent with similar guidance provided by the State Building Code, IBC, Commonwealth, FEMA, NOAA, and/or USACE:
 - a. Critical Infrastructure: Systems and assets so vital to the City, Commonwealth, or United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, economic security, public health or safety, or any combination of those matters.
 - b. Design Flood Elevation: Note the definition of DFE from ASCE/SEI 24-05, which is the definition applicable to the current building code, which is subject to be updated with ASCE/SEI 24-14 after July 1, 2017 and effective on January 1, 2018: *The DFE is the elevation of the design flood, including wave height, relative to the datum specified on the community’s flood hazard map.... This term is used to refer to the locally adopted regulatory flood and its associated water surface elevation. If the authority having jurisdiction regulates to NFIP minimum requirements, then the design flood and design flood elevation will be identical to the base flood and base flood elevation.*

If the BPDA wants to define DFE otherwise, it should provide a different definition, and combine that definition with guidance on how to set the DFE. For example:

- For sites currently in the floodplain: Add 48” to current BFE (3’ SLR + 1’ Freeboard)?
- For sites not in the current floodplain, but in the 36” sea level rise map” area:
 - Add Storm Surge + SLR + Freeboard to MHHW; or

- Add Storm Surge + SLR + Freeboard to Max High Tide; or
 - Add 3 feet of SLR to the applicable DFE per ASCE/SEI 24-14 per the MA State Building Code.
- c. Freeboard: FEMA defines Freeboard as *a factor of safety usually expressed in feet above a flood level for purposes of floodplain management*.
 - d. Resilience: The ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies.
 - e. Sustainability: Meeting the needs of the present without compromising the ability of future generations to meet their own needs.
2. Page 4, second paragraph, should be Annual *Flood Area*.
 3. Page 4, second paragraph, define SLR at first use.
 4. LEED Pilot Credits for Resilient Design: A link to information on this LEED Pilot Credit program, adopted in November 2015 and under revision in 2017, should be included in the Guidance. See www.ugbc.org/articles/leed-pilot-credits-resilient-design-adopted
 5. 1% Special Flood Hazard Area: It would be useful to note in the guidance that the FEMA 1% base flood has a 26% chance of occurring over a 30-year period.
 6. Sea Level Rise: We support using 3 feet of SLR as the risk standard for the checklist. The Guidance's description should do more to explain the rationale for selecting this as the risk standard. We suggest, "The BRAG report indicates that the probability of sea level rising from 1.7 to 2.2 feet by 2070 and 2.8 to 4.9 feet by 2100 will exceed 50% - under global emission scenarios ranging from low to high, all relative to the level in the 2000 base year. Thus, based on what is known today, it seems reasonable to plan for at least 3 feet of sea level rise, with the understanding that more severe increases are plausible." See table 1-1 in the BRAG report.

Additional Comments

1. Sources: Any forecasted changes in temperature or sea level rise in Boston and any associated charts and graphs included for reference in the guidance, policy and checklist should include the author, year of research and online source of the scientific research information so that applicants can easily locate, review and verify the information using online search methods for evaluating their property's vulnerability. The source of information for the extreme temperature chart on page 2 (Rossi et al. 2015) and page 3 (Boston Water & Sewer

Commission, assumed 2015) of the Guidance could not be located online or by reviewing the Climate Ready Boston Reports and website.

2. To signal to developers climate preparedness is constantly evolving with climate science advances and natural events, it may be useful to consider changing the title of the checklist to “Climate Ready Summary” or “Climate Ready Notification Form” (parallel with “Project Notification Form”).
3. The City should use the EIR scoping process to require each proponent to study multiple climate ready options, similar to what might be required in a traffic mitigation study or shadow mitigation study. These options should be aimed at exploring how to optimize project performance with respect to extreme heat, extreme precipitation and sea level rise. These options should also be examined over the timeframes 2030 (near-term), 2050 (mid-term), and 2070 (long-term). Impacts to the project structures, occupants and jobs should be assessed.
4. Tidal Flooding: Projects that will be exposed to chronic tidal flooding during the latter half of the century should consider needs for resiliency measures that may differ from those that would be employed to protect against flooding associated with storms through 2050. This longer-term risk should be considered and not be overlooked in the Checklist.
5. Building resilience and adaptability sections should encourage project proponents to consider the impact of their mitigation measures on surrounding properties. Hard barriers and elevated sites have the potential to shift and deflect floodwaters and exacerbate flooding at neighboring properties. Floodwaters are not limited by property boundaries and district-scale solutions may be a more resilient solution. We suggest adding a new category for neighborhood/district solutions with the following questions:
 - a. What analysis have you completed and what mitigation measures have you proposed to minimize the likelihood that your solutions (e.g. hard flood barriers, berms, raised elevation) could exacerbate flooding at neighboring properties?
 - b. To what extent have you collaborated with neighboring property owners to develop district-wide solutions such as use of open space at one property to store district-wide flood water from other properties, or berms or barriers that protect several properties and that may have related or unrelated owners?
6. Online Filing of Data: The filing of online data should provide BPDA with the capability to track the data and compile information on the actual resilience

measures that are being incorporated in large projects. As this information would be very useful to future, district-wide resilience planning, we encourage BPDA to develop an online data base that will be accessible to planning and infrastructure agencies, as well as interested members of the public.

Thank you for the opportunity to comment.

Sincerely,

Jill Valdes Horwood
Director of Policy

Climate Task Force contributing members: *Wayne Cobleigh, Julie Conroy, Stephanie Krueel, Barbara Landau, Bud Ris, and Ellen Watts*