Climate Resilience
Zoning Task Force

Report Briefing for the Health and Environment Committee
March 29, 2022
CRZTF Purpose

Recommend development standards for climate resilience to incorporate into the Cambridge Zoning Ordinance

Specific Climate Change Impacts to Discuss:
• Impacts of flooding from sea level rise, storm surge, and precipitation
• Rise in temperatures exacerbated by the urban heat island effect

Scope of Zoning Recommendations:
• Major new development subject to project review procedures
• Smaller-scale new development subject to as-of-right zoning
• Additions/alterations to existing buildings and uses
20 CRZTF Members

Residents
• Doug Brown – co-chair
• Ted Cohen *(Planning Board)*
• Conrad Crawford *(CRA Board)*
• Mike Nakagawa

Union/Trades Representative
• Louis Bacci, Jr. *(Laborers Local 151, Planning Board)*

Institutional/Non-Profit Representatives
• Brian Goldberg *(MIT)*
• Tom Lucey *(Harvard)*
• Margaret Moran *(Cambridge Housing Authority)*
• Craig Nicholson *(Just-a-Start)*

Business Representatives/Property Owners
• Jason Alves *(East Cambridge Business Association)*
• Nancy Donohue *(Cambridge Chamber of Commerce)*
• Mark Johnson/Tom Sullivan *(Divco West)*
• Joe Maguire/Rick Malmstrom *(Alexandria)*
• Mike Owu *(MITIMCo)*

Subject Matter Experts
• Tom Chase *(New Ecology)*
• Lauren Miller *(CDM Smith)*
• Jim Newman *(Linnaean Solutions)*

City Staff
• John Bolduc
• Iram Farooq – co-chair
• Kathy Watkins
Two-Year Process

**2019**
- January: Review climate resilience plans & studies, understand zoning basics.
- February: Examine flooding & heat impacts, formulate principles & objectives.
- March: Discuss potential range of zoning strategies.

**2020**
- April
- May
- June
- July
- August
- September
- October
- November
- December
- January
- February
- March

**2021**
- April
- May
- June
- July
- August
- September
- October
- November
- December
- January
- February
- March

Meetings suspended due to City policy on non-essential public meetings during the COVID-19 State of Emergency.

Formulate draft recommendation.

Come to consensus on final recommendations.
Guiding Ideas

Overarching goal: provide flexibility and choice to property owners while advancing the City's climate resilience adaptation and mitigation goals

8 principles and 13 objectives
Principles to Guide Zoning Strategies

1. Focus on people, communities, & equity
2. Account for differentiation & choice
3. Balance strategies to address new construction & existing development
4. Use performance-based standards as well as prescriptive standards
5. Allow flexibility in changing circumstances
6. Support actions with co-benefits
7. Seek effectiveness
8. Make decisions based on best available data & science
Principles to Guide Zoning Strategies

1. Focus on people, communities, & equity
2. Account for differentiation & choice
3. Balance strategies to address new construction & existing development
4. Use **performance-based standards** as well as **prescriptive standards**
5. Allow flexibility in changing circumstances
6. Support actions with **co-benefits**
7. Seek **effectiveness**
8. Make decisions based on **best available data & science**
Principles to Guide Zoning Strategies

4. Use **performance-based standards** as well as **prescriptive standards**
   - Balances benefits and drawbacks of both types of standards
   - Provides flexibility while focusing on interventions that have the most impact
Land Use & Development Objectives

1. Elevate & floodproof
2. Design to recover
3. Use green infrastructure
4. Preserve vegetation
5. Create vegetation
6. Limit paved areas
7. Provide shading
8. Use reflective surfaces
9. Promote passive resilience
10. Shelter in emergencies
11. Create emergency plans
12. Implement area-wide strategies
13. Produce co-benefits
Land Use & Development Objectives

1. Elevate & floodproof
2. Design to recover
3. Use green infrastructure
4. Preserve vegetation
5. Create vegetation
6. Limit paved areas
7. Provide shading
8. Use reflective surfaces
9. Promote passive resilience
10. Shelter in emergencies
11. Create emergency plans
12. Implement area-wide strategies
13. Produce co-benefits
Land Use & Development Objectives

2. Design to recover
CRZTF Zoning Recommendations

Five categories of recommendations:

1. Flood resilience standards
2. Heat resilience standards
3. Current zoning standards
4. Planning Board review
5. Future study
Why These Recommendations?

Ensure that new buildings are resilient throughout their lifetime

- Set flood resilience standards that are based on the future, not the past
- Promote high-impact cooling strategies that provide co-benefits
- Remove small zoning obstacles so property owners can make their properties more resilient
- Encourage developers to think holistically about resilience
- Adapt and change zoning, as needed
1. Flood Resilience Standards

Add **new standards** based on **2070 projected flooding** elevations that are consistent with current practices.
2. Heat Resilience Standards

Add **new standards** tailored to **achieve City policy** goals based on **best available science**
Why “Cool” Factor, Not “Green” Factor?

• There is no one “Green Factor” approach – precedents are tailored to community needs

• Cool Factor includes most elements of Green Factor precedents, but strategies & weighting are based on scientifically-proven cooling benefits

• Some Green Factor strategies are duplicative of existing stormwater standards – keeping them could lead to less overall site cooling
## Factor Comparison

<table>
<thead>
<tr>
<th>STRATEGIES</th>
<th>Somerville Green Score</th>
<th>Seattle Green Factor</th>
<th>Brown, et al. Green Factor</th>
<th>Proposed Cool Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscaped area</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vegetation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>New trees</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Preserved trees</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Green roofs</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Rain gardens &amp; bioswales</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Bioretention facilities</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Water features</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vegetated walls</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Turfgrass &amp; mulch</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pervious paving</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Structural soil systems</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>High-SRI paving</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>High-SRI shade structure</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
3. Current Zoning Standards

Remove impediments to resilient building and site design that currently exist in base zoning

- Shade structures
- Stairs & ramps
- Green roofs
- Basements
- Height
4. Planning Board Review

Require **large development projects** to submit a **resilience narrative** and meet resilience objectives
5. Future Study

Evaluate the effectiveness of these zoning amendments and revise them as climate science evolves.

Incorporate climate resilience principles when updating urban design guidelines.

Study eliminating minimum parking requirements, lowering maximum parking requirements, and reducing parking ratios to promote multiple environmental goals.
Next Steps

Discuss report and recommendations with Planning Board

Draft a **zoning petition** that reflects the Task Force's recommendations