The Cambridge Cool Factor introduces performance-driven standards which contribute to public realm cooling, the mitigation of heat island effects and a greener Cambridge.
Origins of Cool Factor

Brown, et al. Zoning Petition

CRZTF Goals and Objectives

Existing City standards and requirements
Brown, et al. Zoning Petition

• Advocated to amend the Zoning Ordinance to require the calculation of a “Green Factor Score” for all development subject to the Project Review Special Permit requirements
• Proposed an accounting system that would evaluate green space (of varying soil depth), plantings, trees, green roofs, vegetated walls, native species, pervious paving, harvested rainwater irrigation, rain gardens and bioretention areas, and urban agriculture
• Performance-based approach of the Green Factor positively received by staff, Planning Board, and City Council with suggestions for further study and testing
The Cool Factor builds on CRZTF Goals

- **Effectiveness**
  value strategies that have demonstrated temperature reduction

- **Differentiation and Choice**
  favor performance driven criteria over prescriptive codes

- **People, Communities and Equity**
  encourage public realm enhancements

- **Flexibility**
  shape an easily implementable and adjustable tool

- **Quality**
  encourage greener open space and site design
The Cool Factor responds to CRZTF Objectives

1. Elevate and Floodproof
2. Design to Protect/Recover
3. Promote Passive Resilience

RESILIENT BUILDINGS
4. Green Infrastructure
5. Preserve Vegetation
6. Create Vegetation
7. Limit Paved Areas
8. Provide Shading
9. Use Reflective Surfaces

SITE/COOL FACTOR
10. Shelter in Emergencies
11. Create Emergency Plans
12. Implement Area-Wide Strategies (Social Resilience)

EMERGENCY RESPONSE PLANNING
13. Implement Area-Wide Strategies (Hazards)
Existing City standards and requirements

Flooding
• **Existing City stormwater requirements** include the Massachusetts Stormwater Management Policy and Standards, Cambridge’s Concord-Alewife Stormwater Management Guidelines, Land Disturbance Regulations, Wastewater and Stormwater Drainage Regulations, and Stormwater Quality Best Management Practices
• Conservation Commission administers the **Massachusetts Wetlands Protection Act**
• **Green Building Review** zoning requirements tied to development review

Heat
• Requirements for **green area and/or permeable open space** through the base or overlay zoning district requirements
• Requirement for a Tree Study and compliance with the **Tree Protection Ordinance** for development subject to certain reviews
How We Arrived Here
Testing + Fine Tuning

FLEXIBLE + SCALABLE
Added more options, including green walls and shade structures

RESIDENTIAL C-3
OS Requirement 10%, Cool Factor uses 20%

INDUSTRY B
OS Requirement 0%, Cool Factor uses 20%

BUSINESS A-2
OS Requirement 0%, Cool Factor uses 20%
How We Arrived Here
Testing + Fine Tuning

**IMPACTFUL**
*Increased minimums to ensure improvement*

**EQUITABLE**
*Confirmed scores could be achieved on small lots*
How We Arrived Here
Testing + Fine Tuning

**ENHANCES PUBLIC REALM**

- Increased value of multiplier
- More shade
- Green roof
- Light color paving
- More planting
- Trees near public realm

**VALUES GREEN OVER GRAY**

- Reduced value of paving and hard elements

- Cool Factor Score
  - High-SRI paving: 0.15
  - High-SRI paving + turf: 0.28
  - High-SRI paving + turf + planting area + medium tree + large tree: 1.02
Testing Cool Factor consensus

Calculating Cool Factor

Applying Cool Factor
Calculating Cool Factor

Recent Changes
• Reduced D2 High-SRI Paving multiplier
• Revised D3 High-SRI Shade Structure multiplier

Outstanding Questions
• Weight of green roofs relative to high-SRI shade structures
• Calculating portion of lot area utilizing green strategies
• Cap on percentage of score coming from D2 High SRI-Paving strategy
## Applying Cool Factor

<table>
<thead>
<tr>
<th></th>
<th>Article 19</th>
<th>OS Base Zoning</th>
<th>Parking Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target %</strong></td>
<td>20%</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td><strong>Geography</strong></td>
<td>Citywide</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td><strong>Trigger</strong></td>
<td>25,000+ sf</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>