

Planning for Extreme Heat

How to Use CIRCA's Climate Change Vulnerability Index

01 CCVI and Methods

02 Data in Heat CCVI

03 Demo

04 Applications of Heat
CCVI in Planning

05 Legal and Policy Tools

06 Zoning tools to reduce
urban heat

What legal/policy tools do municipalities have to address long term impacts of **increasing heat**?

Building Codes

Tree Ordinances

Zoning

Plans of Conservation and Development

Increasing Heat

Immediate needs

Defining the problem

Where is it hot?

Why is it hot?

Public Health response

Cooling, medical care

Outreach & education

Long term solutions

Mitigation

Energy efficiency

Reducing VMT

Renewable energy

Electrification

ZONING

Adaptation

Increasing tree cover

Vegetative protection zones

Reflective materials

Green and cool roofs

Protected public space

Design standards

Why focus on Zoning?

Zoning regulations can be targeted to protect natural buffering features and green infrastructure, incentivize development density in specific areas, and specify resilient design to reduce impacts of storms, sea level rise, and increasing heat.

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Zoning tools to reduce urban **heat**

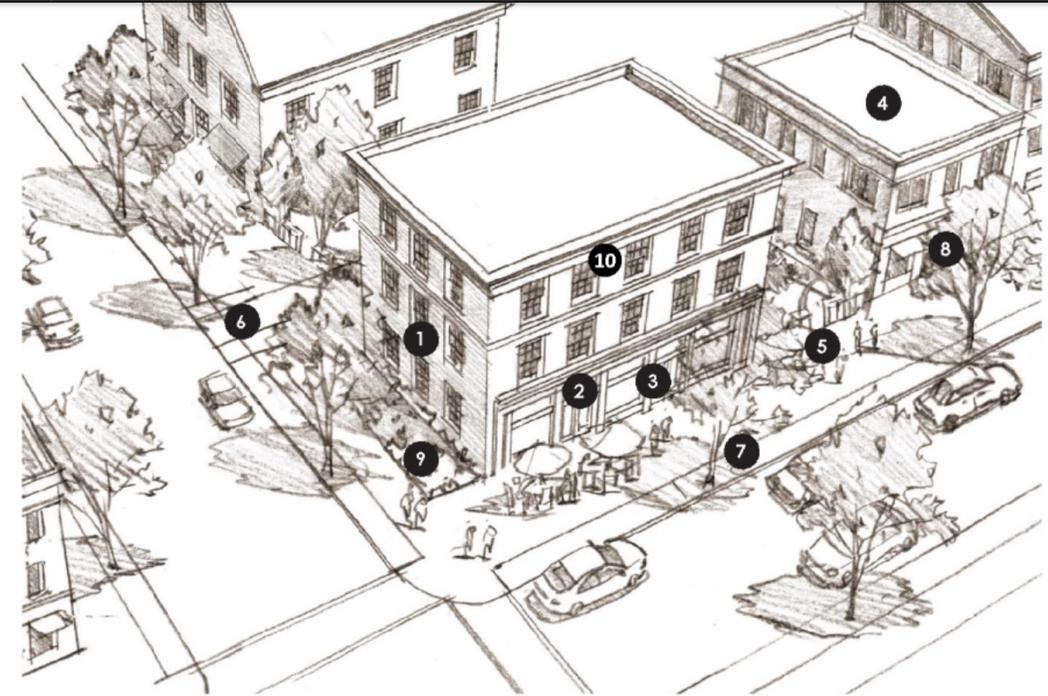
- Form Based Codes

Example: Canton, Hamden
Windsor, Simsbury, Hartford +

According to “Impacts of form and design policies on urban microclimate: Assessment of zoning and design guideline choices in urban redevelopment project” by Mehdi P. Heris, Ariane Middel, Brian Muller in Landscape and Urban Planning, 2020

- **Form-based zoning code** provides a more flexible framework to regulate building types and structures that could mitigate urban heat.
- Zoning for urban development can have sizeable impacts on resident comfort and health.

□ § 470-1303 Main frontage.



For Illustrative Purposes

1. Commercial or residential use.
2. Ground floor commercial use - required under main storefront and optional under main BFS
3. Storefront, where required, with larger windows.
4. Minimum two story.
5. Street wall where buildings do not abut
Rear alley access preferable for parking and loading (service access).
6. Street trees and street lighting in continuous tree lawn or tree grates
7. Optional awnings.
8. Build-to line tight to sidewalk providing limited door-yard
9. Required minimum fenestration; must have windows and doors facing street.
- 10.

Zoning tools to reduce urban **heat**

- Regulations for landscaping

Example: Hartford Zoning code

6.1.1 intent

d. To protect and preserve trees and landscaping that clean the air, calm traffic, **reduce the urban heat island** effect, provide shade that reduces energy costs, increase property values, reduce stormwater runoff, and otherwise enhance quality of life.

e. To mitigate the impacts of **climate change** through prudent management of natural resources and wildlife habitat.



6.0 SITEWORK & LANDSCAPE



SECTIONS

- 6.1 Introductory Provisions
- 6.2 General Installation Requirements
- 6.3 Ground Plane Vegetation
- 6.4 Tree Quantity, Types, & Spacing
- 6.5 General Maintenance Requirements
- 6.6 Tree Removal & Protection
- 6.7 Street Trees
- 6.8 Frontage Buffer
- 6.9 Side & Rear Buffer
- 6.10 Interior Parking Lot Landscape
- 6.11 Waterway Buffers
- 6.12 Screening of Necessary Appurtenances
- 6.13 Fence Requirements
- 6.14 Stormwater & Low Impact Development
- 6.15 Site Lighting
- 6.16 Soil & Excavation

Zoning tools to reduce urban **heat**

- Regulations for reflective Surfaces

Example: New Haven Zoning Code

40% cooler!



Section 60.2. - Reflective heat impact from hardscape or paved surfaces.

- (a) *Purpose.* The purpose of this section is to reduce the amount of heat reflected by hardscape or paved surfaces, reduce the temperature difference between developed and undeveloped areas and minimize the impact from such differences.

Zoning tools to reduce urban **heat**

- Green Roofs

Example-

New Haven, Stamford, Hartford

Buildings with a green roof can qualify for development bonus

- Floor Area Ratio bonus (New Haven)
- Extra stories (Hartford)
- Parking structures removed from FAR calculation (Stamford)



Zoning tools to reduce urban **heat**

- Protecting Public Spaces from Weather Conditions
 - require shading through trees or structures including shaded public transit stops
 - as incentives for development bonus
 - or through design standards or guidelines

Zoning tools to reduce urban **heat**

- Design standards or guidelines
 - Types of materials or reflectivity of surfaces
 - For landscaping or tree placement
 - Building spacing and height for air flow



Thank you!

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