

Extreme Heat in Groton, CT

Alessandra Pinto

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01

Introduction

Importance

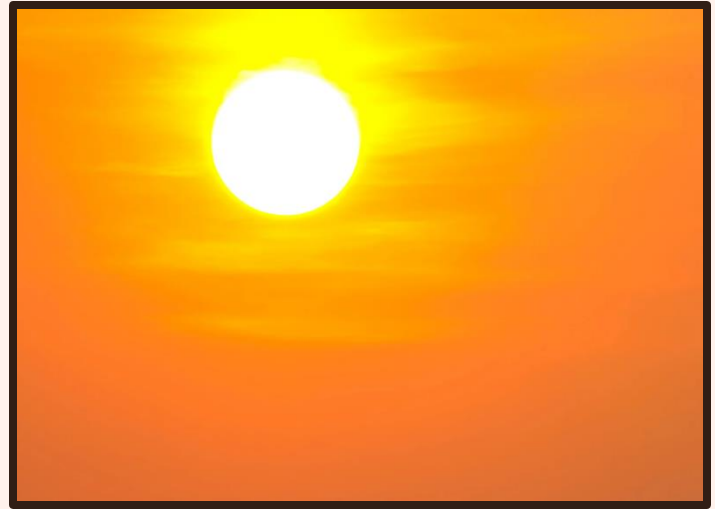
- Global temperatures are rising.
- The Town of Groton is already experiencing the effects of extreme heat.



Groton, CT (TripAdvisor)

Questions to Answer

- How have other communities adapted to extreme heat?
- What are Groton's current vulnerabilities?
- How can we apply this moving forward?



Extreme Heat (AccuWeather)

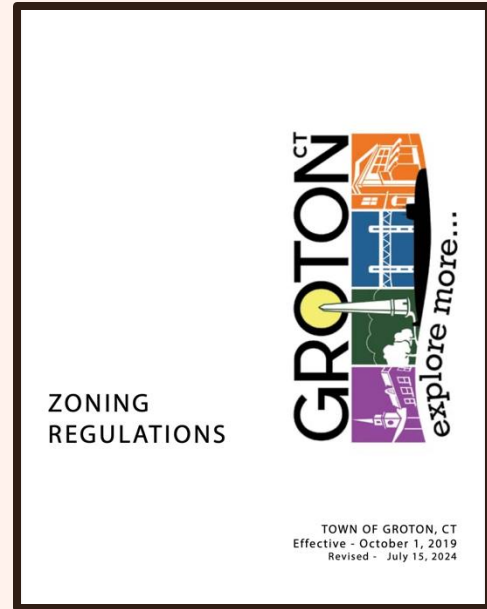


02

Methodology

Data Collection and Policy Research

- Review background information.
- Research three similar municipalities.
- Evaluate Groton's zoning policies.



Groton's Zoning Regulations
(Groton, CT)

Objective

- By understanding Groton's specific needs and zoning policies, I can apply information from other municipalities to create a well-rounded plan for Groton.



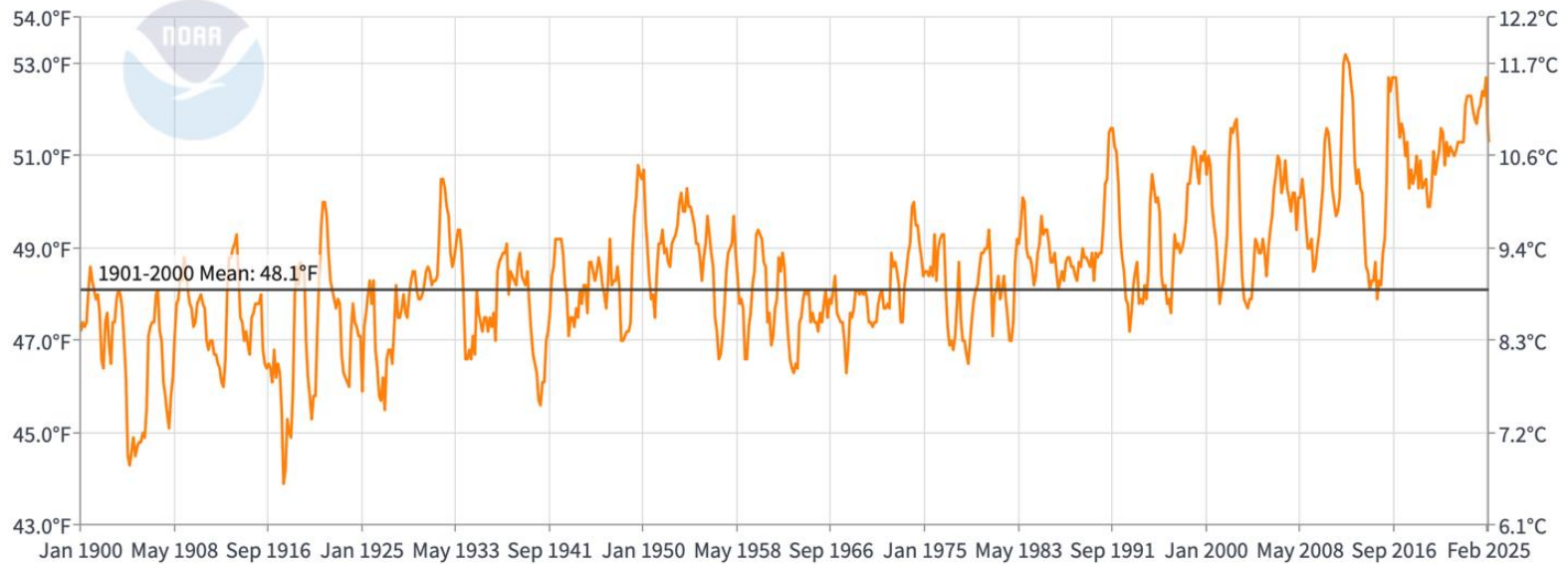
03

Literature Review

Extreme Heat

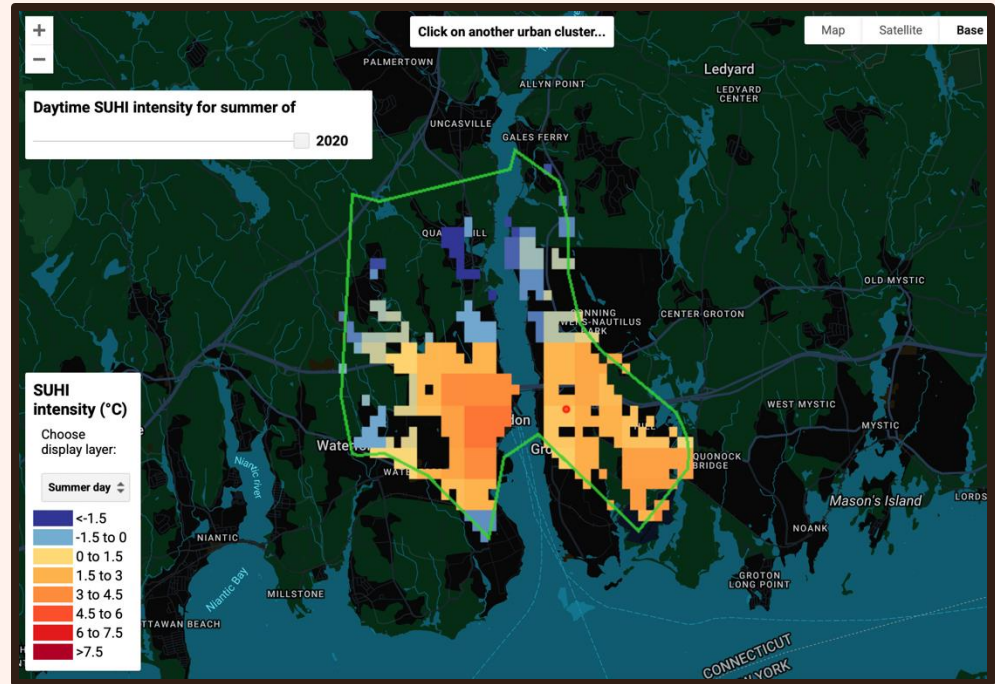
Connecticut Average Temperature

12-Month Period

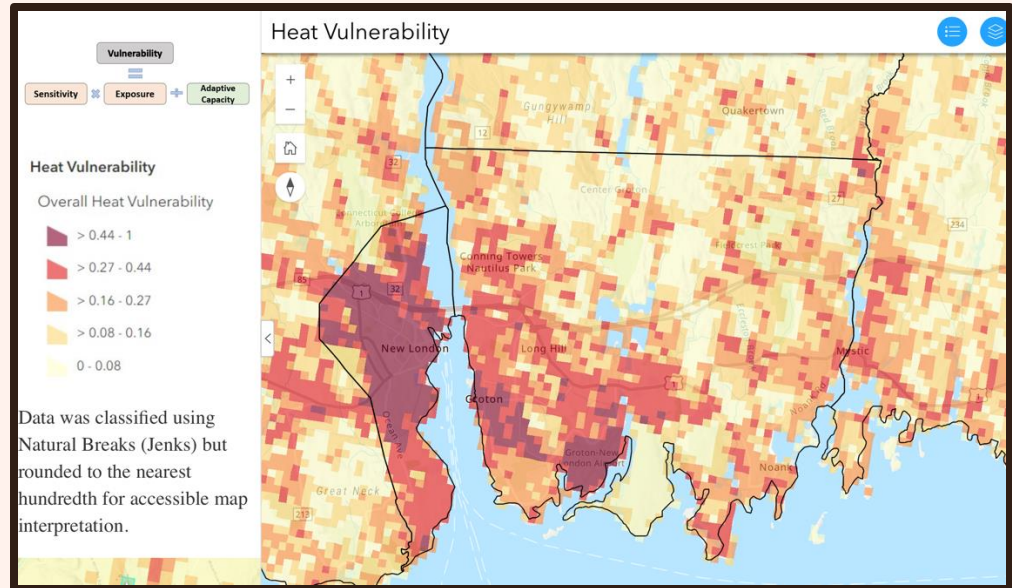
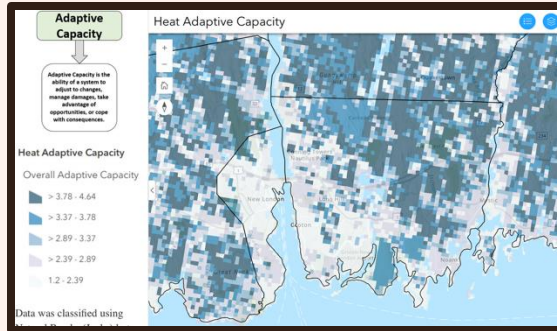
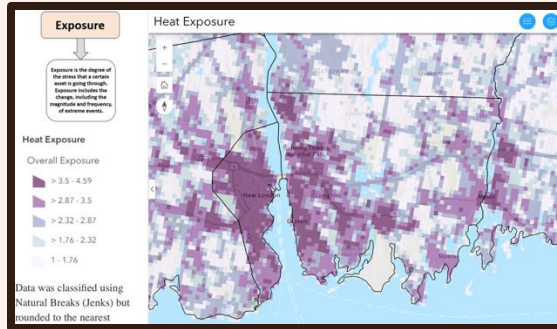


Summer UHI Intensity

Urban Heat Island (UHI) effect: phenomenon where developed areas become warmer than rural areas due to retaining properties of buildings, roads, and other infrastructure.



Heat Vulnerability



Environmental Justice

- Lower-income and minority communities are disproportionately impacted from extreme heat.
- Extreme heat is a threat to human health.
- Solution must integrate mitigation and adaptation.



Environmental Justice
(Columbia University)



04

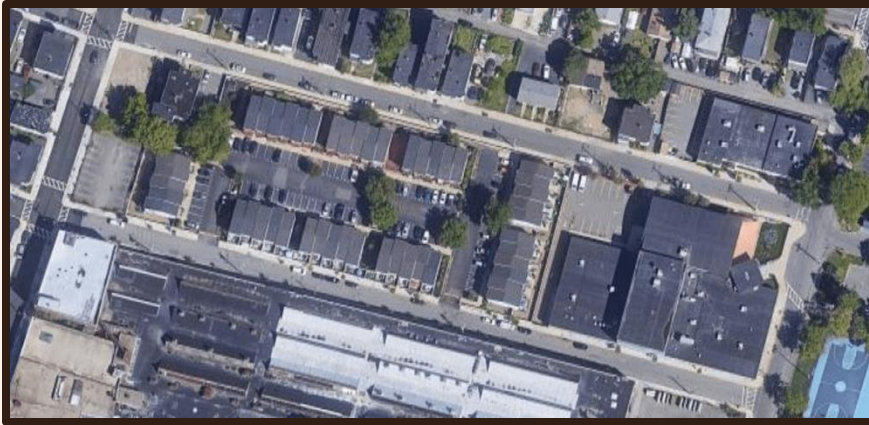
Findings

Heat Resilience: Boston, MA



Cool Spot Pop-Ups (Sasaki)

Heat Resilience: Chelsea, MA



Cool Block Project (WBUR)



Heat Resilience: New York City, NY



NYC CoolRoofs (NYC Mayor's Office of Climate & Environmental Justice)



NYC CoolRoofs (Fordham University)

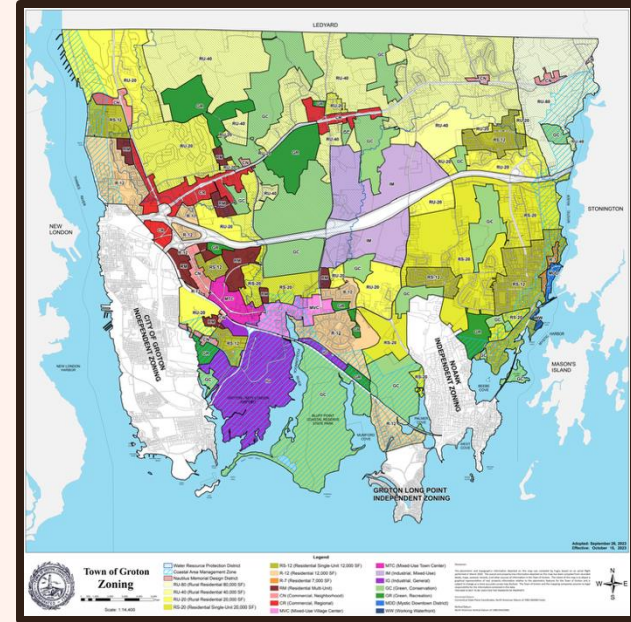


05

Discussion

Groton's Zoning Regulations

- Most of the land is zoned for residential use.
- Low to medium building density.
- Opportunities and challenges to mitigate extreme heat.



Groton Zoning Map (Groton, CT)

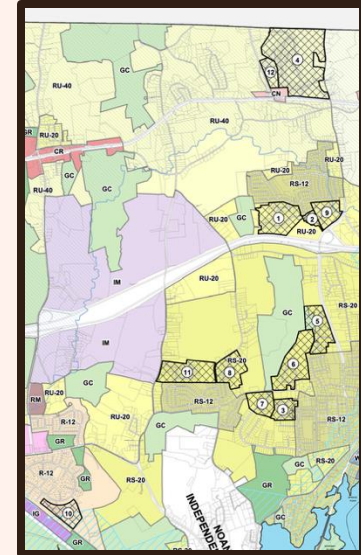
Open Space Subdivisions

6.3 OPEN SPACE SUBDIVISIONS

6.3-1 PURPOSE

Development under this provision is optional and is intended to promote imaginative, well designed subdivisions which preserve open space, respect the physical qualities of the land, and reduce the overall development and long-term maintenance costs of a subdivision.

Open Space Subdivisions (Groton, CT)



Open Space Subdivisions (cont.)

Solutions

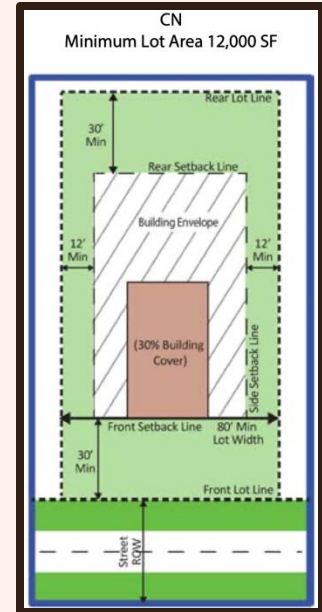
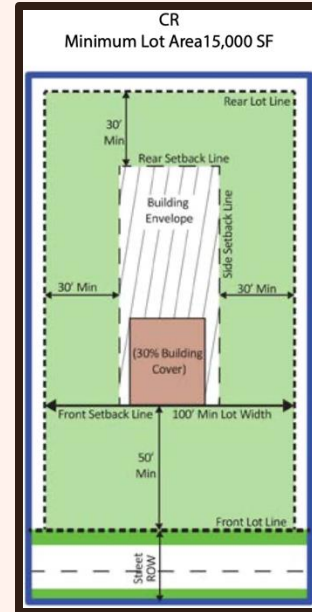
- Require at least 30% canopy coverage.
- Denser zones (R-7, R-12): 2 trees per lot.
- Implementation: GIS to monitor compliance.

- 



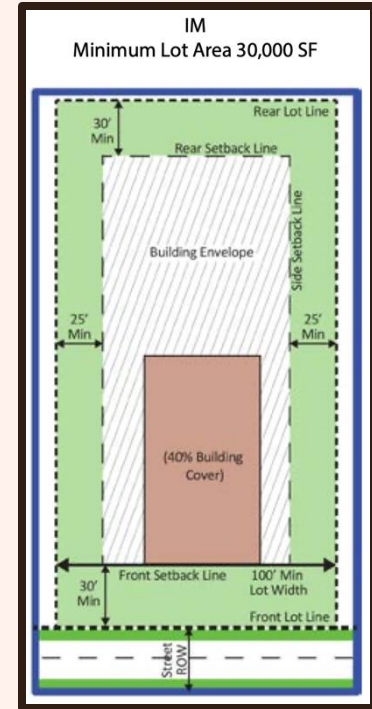
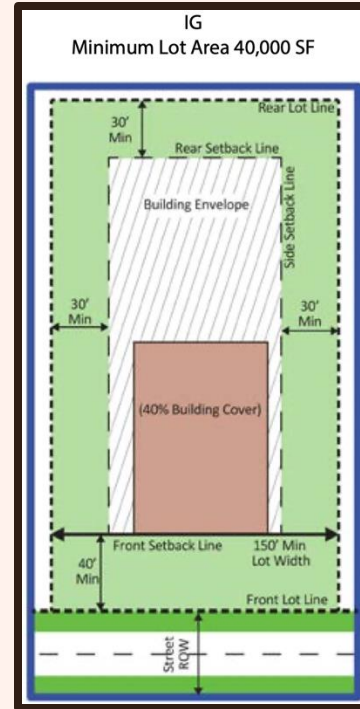
Commercial Districts (cont.)

- Commercial, Regional (CR)
- Commercial, Neighborhood (CN)
- Solution: introduce incentives for cool roofs, green roofs, and permeable pavement.



Commercial Districts (cont.)

- Industrial, General (IG)
- Industrial, Mixed-Use (IM)
- Solution: requirement for heat mitigation plan (shaded loading zones, vegetated buffers, and reflective roofing).





06

Conclusion

Groton, CT

- Climate trends show that it is becoming more essential to modify infrastructure and policies in the face of extreme heat.

Groton's Zoning Policies

- Foundation for creating a climate-resilient town.
- Positive: open-space requirement, pollution restriction.
- Limitation: no acknowledgement of UHI and no requirement for tree retention.

Recommendations

1. Mandate tree preservation and tree planting in all residential and commercial districts.
2. Update materials standards to encourage reflective roofing, permeable paving, and light-colored streets.
3. Implement green or cool roof standards for all new commercial, mixed use, and industrial buildings.
4. Integrate UHI considerations into zoning considerations.
5. Use zoning incentives to encourage shared community green spaces and shaded areas in commercial centers

Final Notes

- Groton's rural areas provide natural buffers.
- The Town is becoming more urban.
- We can adjust zoning regulations and learn from similar communities.



Groton, CT (The Philadelphia Inquirer)



Thank you!

Questions? Comments?