LEED and Decarbonization at the Building and City Scale

Monique Owens

Regional Director

U.S. Green Building Council

Session Description

As the building sector accounts for significant global greenhouse gas emissions, prioritizing decarbonization directly serves the public interest. Through its certifications, the U.S. Green Building Council has always pushed development to exceed existing codes. With offerings now expanding beyond the single building, USGBC seeks to reach beyond traditional networks and inspire decarbonization at scale.

LEED for Cities is a comprehensive framework and certification program for sustainability built upon local government experience and engagement with diverse stakeholders. The program promotes expanded public-private networks to decarbonize cities, towns, and counties jurisdiction-wide. Through its PERFORM program, USGBC offers a portfolio-wide approach to planning, improving and verifying sustainability and resilience, including GHG emissions. Finally, decarbonization is a central focus of the soon-to-be-released LEED v5 for both new and existing buildings.

This session will highlight the decarbonization efforts of two LEED for Cities communities in, Nashua, New Hampshire and Northampton, Massachusetts and will explore how USGBC is growing the movement of decarbonized and sustainable development.

Learning Objectives

1. Understand how USGBC certifications promote carbon-reduction strategies
2. Explore the LEED for Cities framework and its role in promoting sustainability through local government engagement, public-private partnerships, and city-wide decarbonization efforts.
3. Learn about the decarbonization initiatives in Nashua, New Hampshire, and Northampton, Massachusetts.
4. Explain how USGBC tools can support different approaches to building, portfolio, and city decarbonization

Learning Level: Basic

Course #: 0920031803

Panelists

Paul Wessel (Moderator)
DIRECTOR
U.S GREEN BUILDING COUNCIL

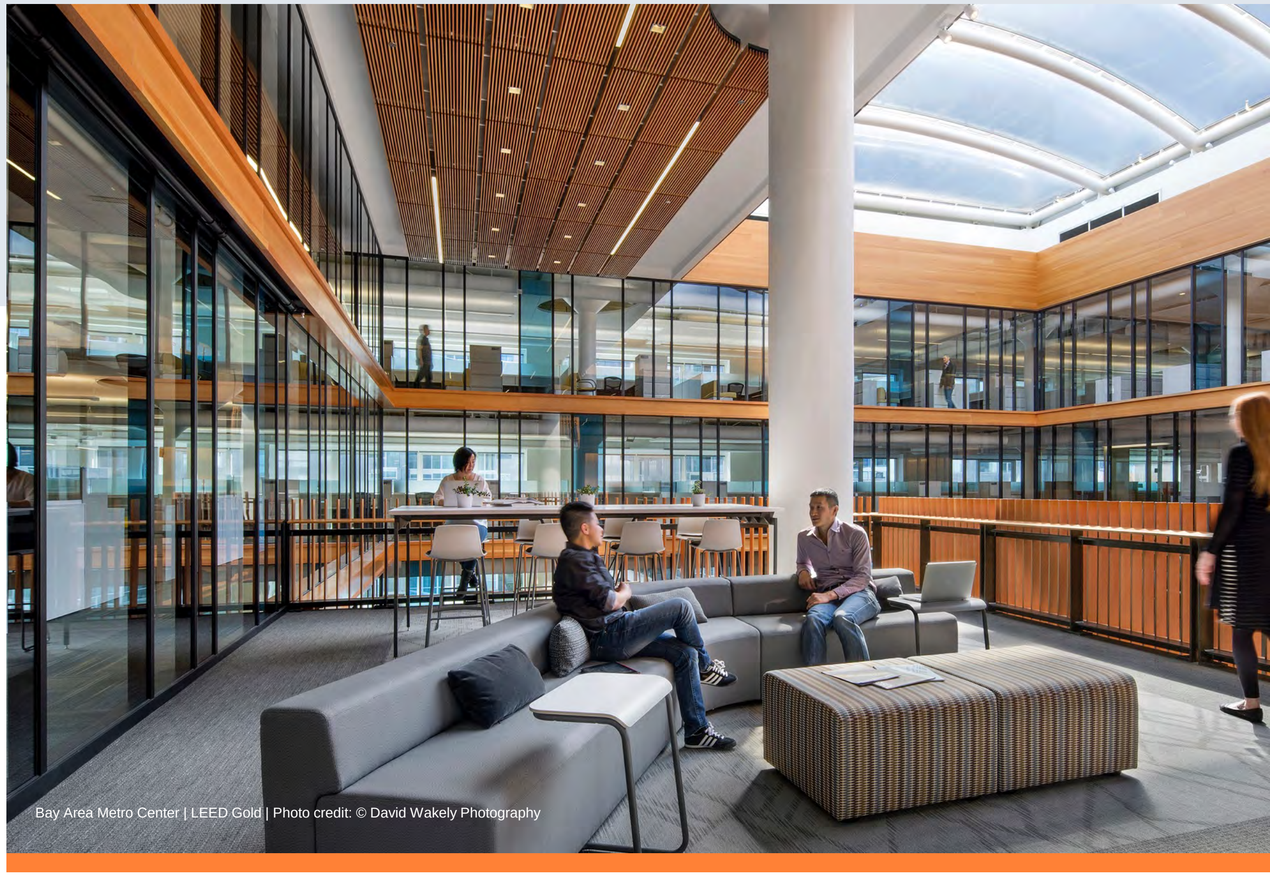
Doria Brown
ENERGY MANAGER
CITY OF NASHUA NH

Carolyn Misch
DIRECTOR - OFFICE OF PLANNING & SUSTAINABILITY
CITY OF NORTHAMPTON

Ben Weil
DIRECTOR OF CLIMATE ACTION AND PROJECT ADMINISTRATION
CITY OF NORTHAMPTON

We believe every person deserves a healthier, more sustainable life.

For over 30 years, USGBC has been committed to transforming how our buildings, cities, and communities are designed, constructed, and operated.



Bay Area Metro Center | LEED Gold | Photo credit: © David Wakely Photography

USGBC’s community network

Local opportunities for involvement and leadership through learning, networking, and professional development.

As a community member, you can support USGBC's mission of transforming local markets through education, advocacy, and outreach.


SAVE THE DATE
Greenbuild
NOVEMBER 4-7, 2025
LOS ANGELES CONVENTION CENTER
LOS ANGELES, CA

From Vision to Action:
USGBC Advancing Building Decarbonization

LEED V5

USGBC

LEED V5

A market ready rating system that will drive the built environment toward a near zero carbon future that is equitable, resilient, and promotes the wise, safe utilization of all resources.

Impact Areas

- **DECARBONIZATION** drives the industry towards a decarbonized built environment across all major sources of emissions: operational, embodied and transportation.

- **QUALITY OF LIFE** uses human-centric strategies to address crucial aspects of sustainable building, including human health and well-being, resilience, equity and inclusion, and community wellbeing.

- **ECOLOGICAL CONSERVATION AND RESTORATION** emphasizes strategies and actions that can be implemented at the individual asset level that limit environmental degradation and seek to rehabilitate and restore ecosystems.

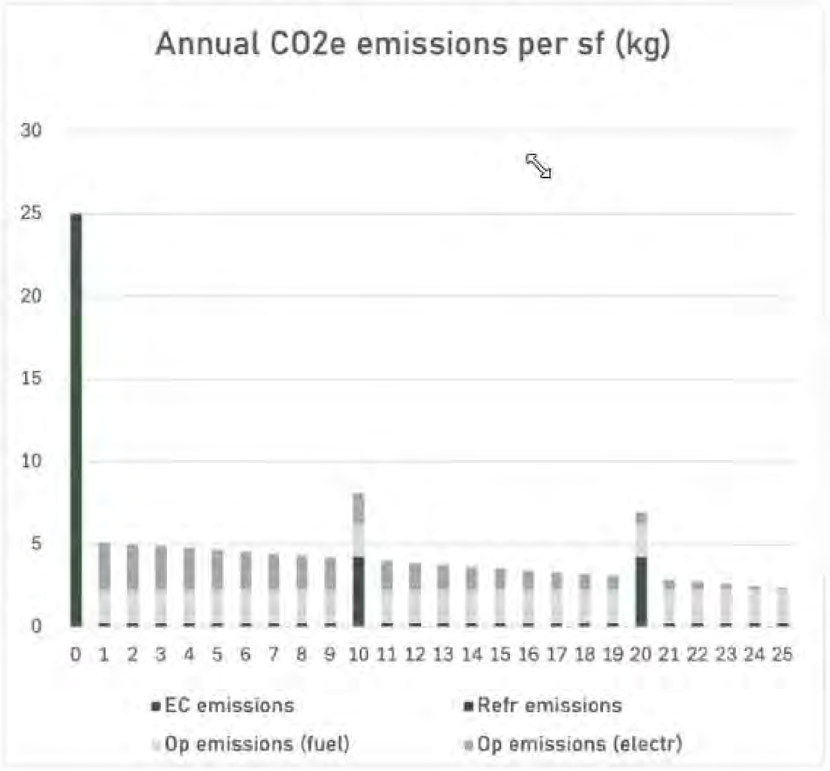
DECARBONIZATION

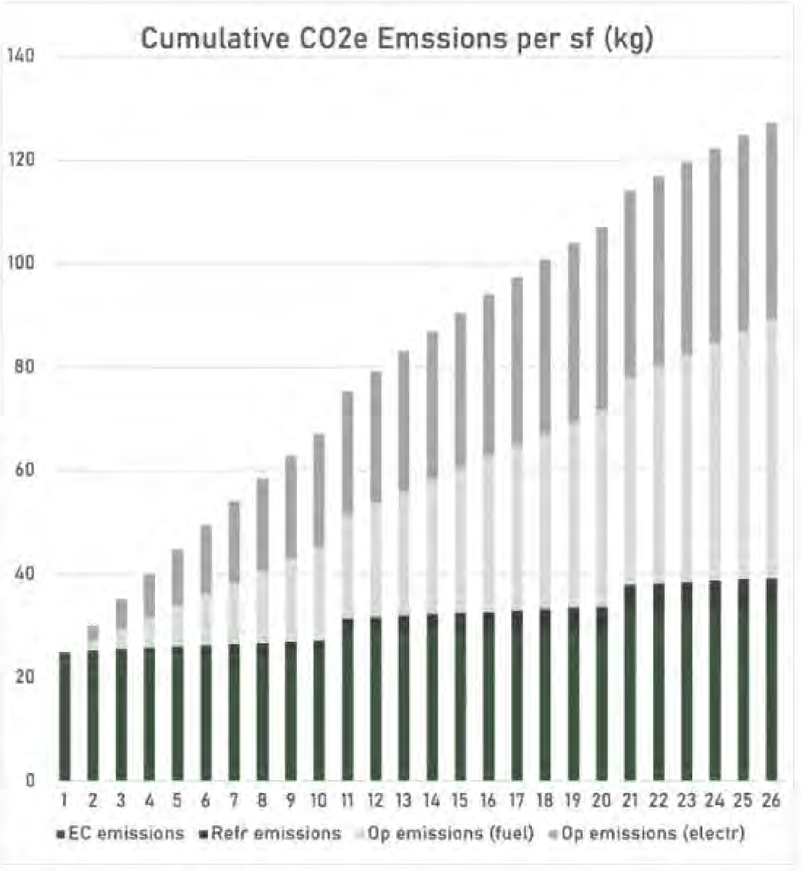
LEED v5 provides a clear framework for delivering ultra-low carbon buildings.

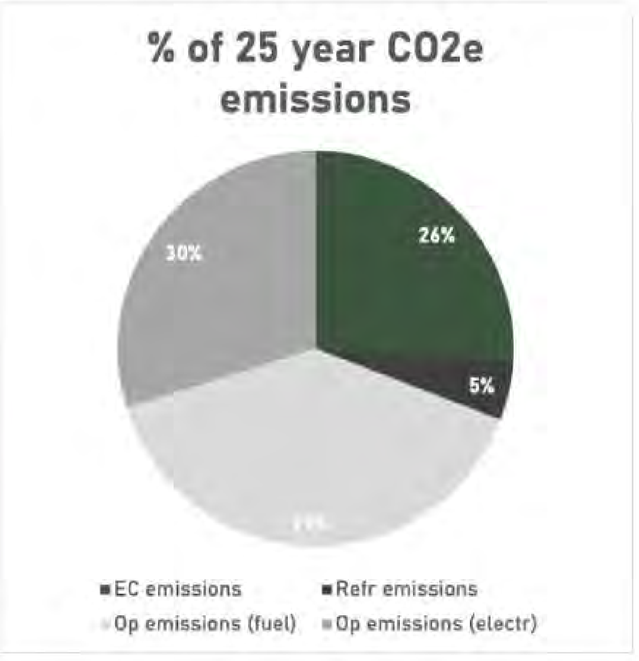
All major sources of carbon are addressed:

- **Operational carbon**
    - Energy efficiency
    - Electrification
    - Reduced peak loads
    - Renewable energy
    - Refrigerants
- **Embodied carbon**
    - Structure and enclosure, products
- **Transportation**
    - Compact, connected, transit-orient, TDM, electric vehicles

LEED v5 BD+C AND ID+C: CROSS-CATEGORICAL CARBON ASSESSMENT (25 YEARS)







LEED V5

USGBC

Performance. Verified.

Why PERFORM?

Track and improve the sustainability performance of entire real-estate portfolios.

Set goals and measure progress on portfolio-wide performance

View guidance & access tools to improve performance

Receive third-party Verification of performance, if desired

Communicate progress to stakeholders & enhance credibility

Technology Partners

Access portfolio-level improvement tools from partner providers.

EcoStruxure Schneider Electric

ClimateFirst

Carbonsight

kodelabs

Data Integrations

(Coming 2025) Enhance data sharing for verification of portfolio-level sustainability metrics.

measurabl

ENERGY STAR® PortfolioManager®

arc PERFORM Performance Metrics

EMISSIONS
- Total GHG Emissions
- GHG Emissions Intensity

ENERGY
- Total Energy Use
- Energy Use Intensity
- Renewable Energy Use

WATER
- Total Water Use
- Water Use Intensity

WASTE
- Total Waste Diversion

HEALTH
- Occupant Satisfaction Survey
- Indoor Air Quality (IAQ) Monitoring
- IAQ Testing
- Worker Health & Safety Plan

BIODIVERSITY
- Protected and/or Restored Biodiverse Habitat

RESILIENCE
- Physical Climate Risk
- Climate Transition Risk Assessment
- Operational Planning for Resilience, Emergency Response and/or Business Continuity

SOCIAL IMPACT
- Social & Community Impact Assessment
- Area Designated for Community Use
- Community Investment

Emissions Performance Metrics

- Total GHG emissions emitted by a real estate portfolio over a specific period

- Total GHG emissions per unit area across the real estate portfolio for a specific period

LEED for Cities

Set Goals. Measure Progress. Continuously Improve.

USGBC

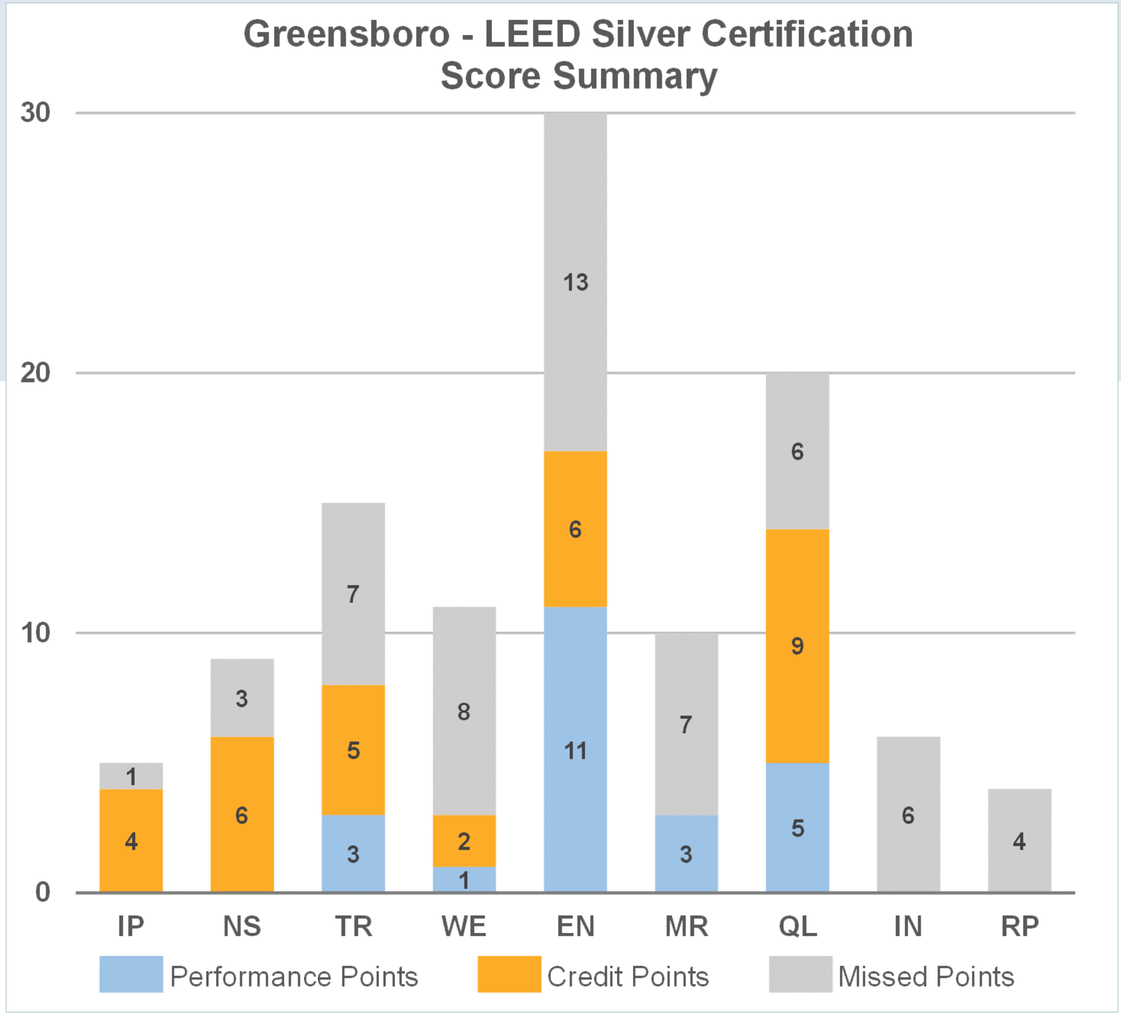
Green Building Policy & Incentives

Net Zero Carbon & Climate Action Plan

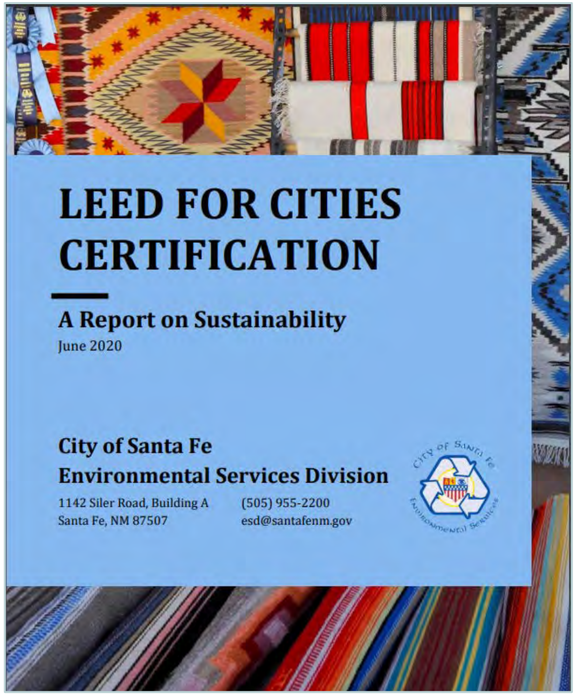
Energy Efficiency & Renewable Energy

Compact, Mixed Use and Transit Oriented Development

A baseline assessment revealing strengths, weaknesses, and opportunities.



Catalyze action, engage new stakeholders, and grow local capacity



USGBC

Boston – Sept. 30th

Audience:

- city and county planners
- sustainability and resilience teams
- building and facility managers
- city/county managers
- board and commission members
- elected officials
- federal, state and regional governments
- NGOs
- consultants

Topics

- building decarbonization
- climate action plans
- LEED for Cities
- sustainability education
- green building policy

Info: pwessel@usgbc.org

usgbc.org/leed/v5

usgbc.org/perform

bit.ly/LEEDcities

Link to this slide deck:

THE CITY OF NASHUA

The Path to Livable Nashua

March 2025

Livable Nashua

Working Together for a Resilient Future

About Our Community

The City of Nashua, NH, is dedicated to sustainability, innovation, and quality of life. As the second-largest city in New Hampshire, with a population of nearly 92,000 residents, Nashua serves as an economic and cultural hub for the region. The city is committed to environmental stewardship, with initiatives such as community power aggregation, hydro/solar energy investments, and energy efficiency programs designed to reduce emissions and promote long-term resilliency. Nashua also boasts over 325 acres of preserved green space in Mine Falls Park, providing residents with access to outdoor recreation while maintaining ecological balance. As the city grows, Nashua continues to explore new ways to integrate clean energy, climate resilience, and smart urban planning into its future.

Sustainability Journey

Environment and Energy Committee

The Environment and Energy Committee (founded in 2017) promotes sustainability by supporting environmental stewardship, renewable energy, and green initiatives for both the municipality and the wider community. It identifies and recommends energy and efficiency projects that can help the City save costs while reducing environmental impacts. Additionally, the committee advises the Mayor and Board of Aldermen on key environmental and energy-related issues.

Creating Sustainability Department

Established in 2023, Nashua's Sustainability Department has expanded to a team of three dedicated professionals overseeing the city's sustainability initiatives. Their responsibilities encompass clean energy projects—such as managing the city's two hydroelectric dams and rooftop solar installations—enhancing energy efficiency, improving transportation systems, and preserving natural ecosystems. These efforts align with the goals outlined in the 'Livable Nashua' Sustainability and Resilience Plan, which aims to promote environmental stewardship and resilience throughout the community.

Mission

Nashua is laying the foundation for a resilient community by promoting renewable energy, managing stormwater, protecting natural areas, and more.

Livable Nashua Plan

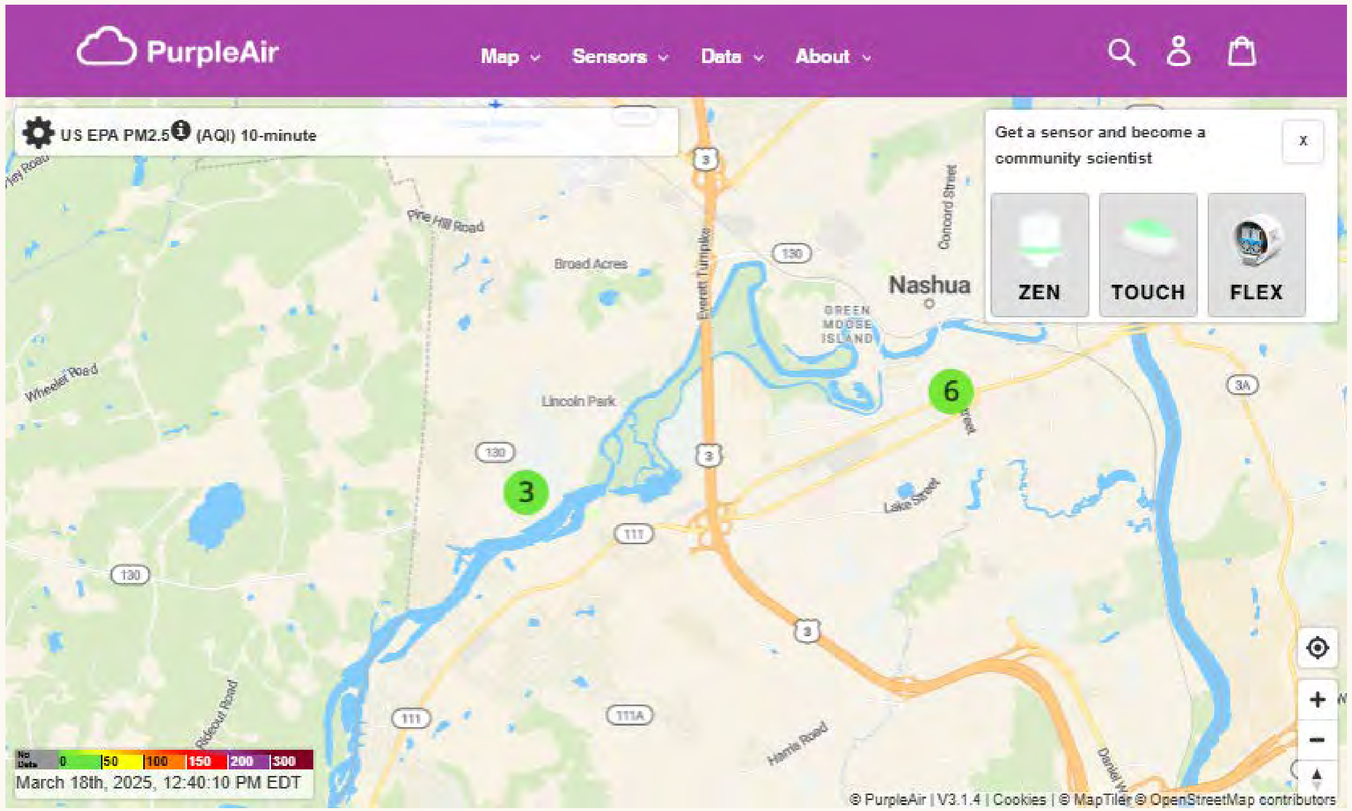
What's in the Plan?

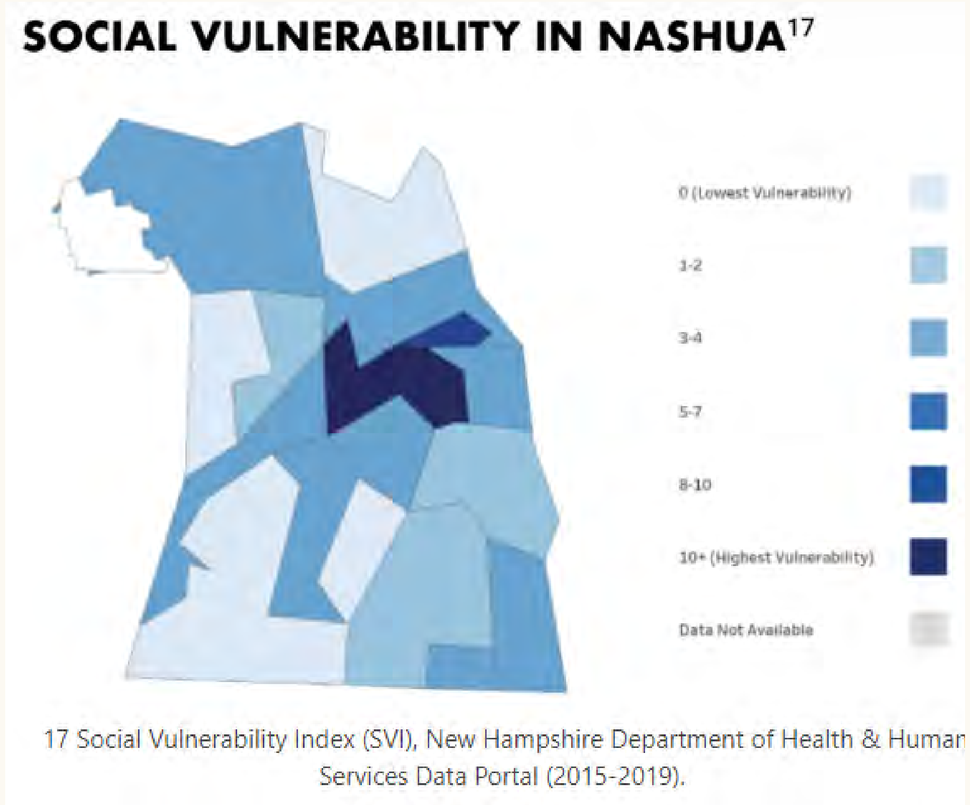
Ensuring a high quality of life for everyone in Nashua means creating accessible green spaces, reducing waste, expanding public transit options, and so much more.

Goals, strategies, and actions in the Livable Nashua Plan relate to five areas of everyday life:

- Clean Energy & Efficient Buildings
- Resilient & Healthy Community
- Smart Waste & Water Management
- Sustainable Transportation & Land Use
- Thriving Natural Resources

Resiliency





17 Social Vulnerability Index (SVI), New Hampshire Department of Health & Human Services Data Portal (2015-2019).

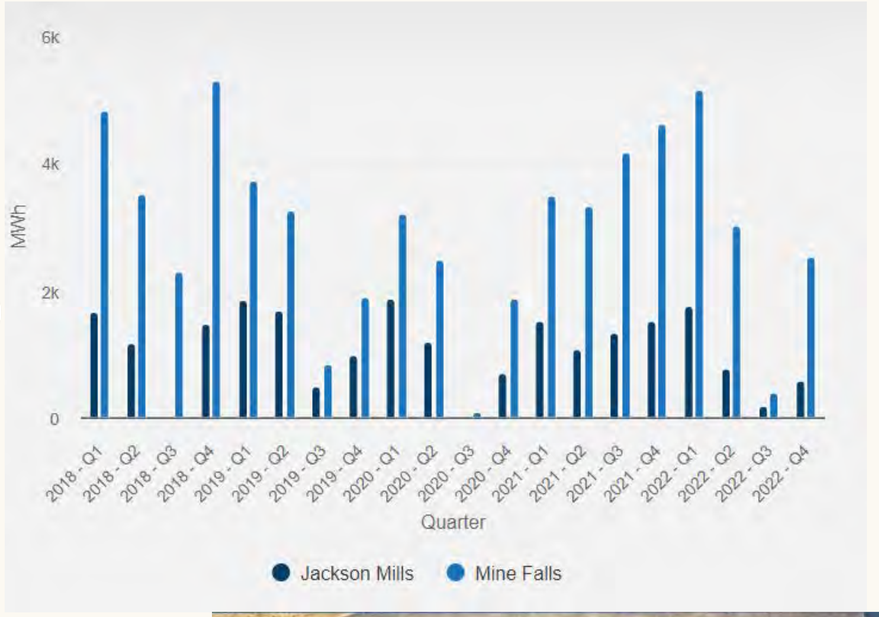
City Initiatives

Your Air, Your Health

Nashua's Local Air Monitoring Sensor Program is designed to complement the state's air quality monitoring efforts. By strategically placing air quality sensors throughout the city, this program provides Nashua residents with real-time, localized data on air pollution levels. This data empowers residents to make informed decisions about outdoor activities, protect their health, and contribute to a healthier environment for everyone.

- Understand the air quality index.
- Air pollution and your health.

Energy Portfolio: Hydropower and Solar



The City Owns and Operates Two Hydroelectric Plants: Jackson Mills (1MW) and Mine Falls (3MW).

The graph on the left illustrates the energy output of these hydro dams by quarter. Maintaining and operating these assets is crucial for Nashua's renewable energy production and its dedication to creating a more sustainable and resilient future.

The City Has Made It A Point To Invest In Solar Energy. Nashua Has Six Rooftop Arrays on City and School Buildings.

Pictured is the City’s array on the Lake Street Fire Station. Installed in 2019 using a Power Purchase Agreement with and impact investor.

Energy In The Works

Landfill Gas To Energy Microgrid For The Department of Public Works Potfolio

About the Project

Our goal is to establish a microgrid at the Nashua Department of Public Works site, connecting the entire facility portfolio to the landfill gas to energy power plant. This project will ensure 100% renewable electricity for the facility, reduce operational costs, and enhance energy resilient infrastructure.

Project Silos

- The Nashua Department of Public Works building and future garage site currently relies on traditional energy sources, resulting in high operational costs and an increased carbon footprint.
- Utility/Generating Partner corporation to purchase the electric lines at and around the landfill to establish the microgrid
- Financing the project

Questions?

Email:

BROWND@NASHUANH.GOV

City of Northampton, MA
Toward Community Sustainability, Resilience, & Decarbonization

Carolyn Misch, Director

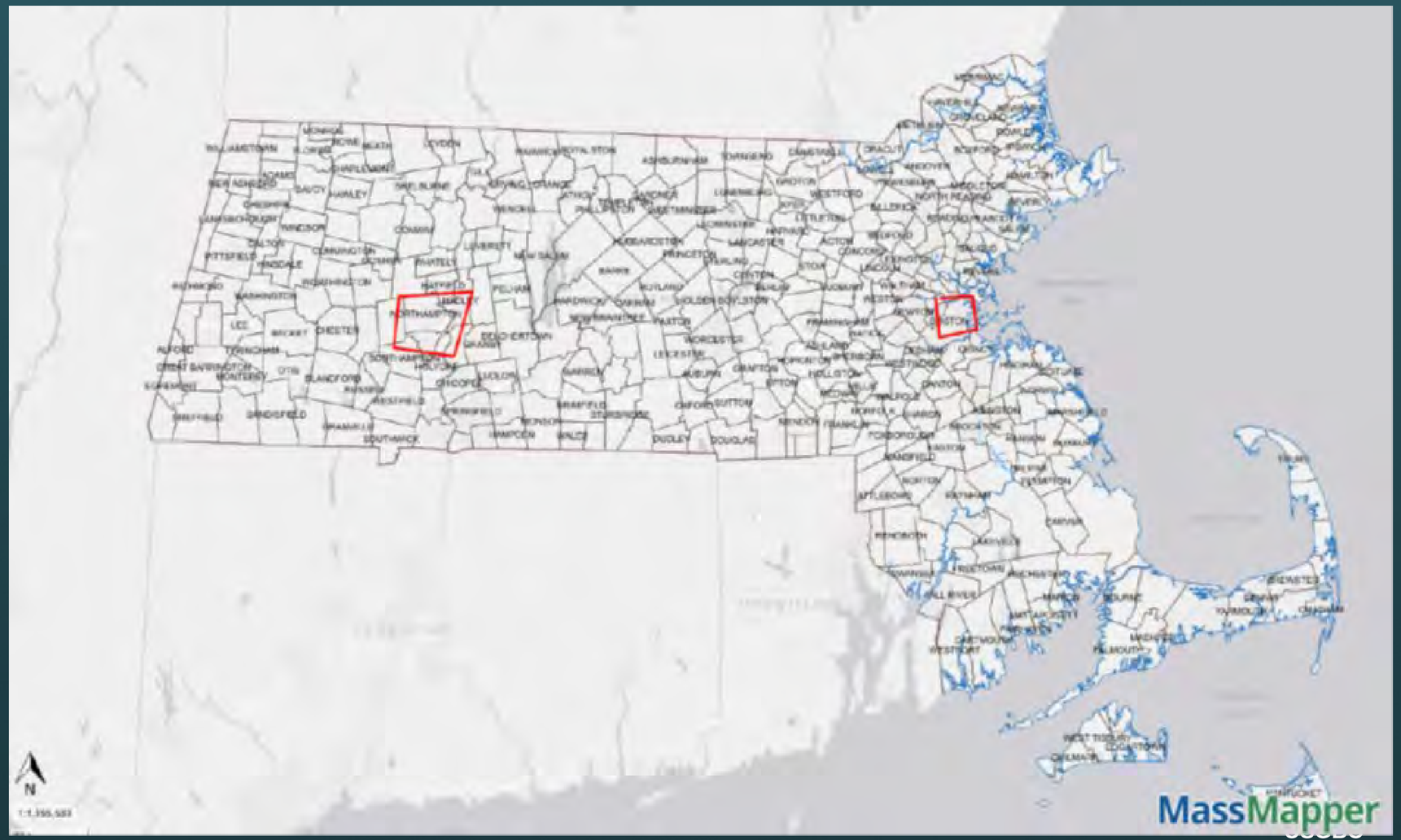
Office of Planning & Sustainability

cmisch@northamptonma.gov

Ben Weil, Director

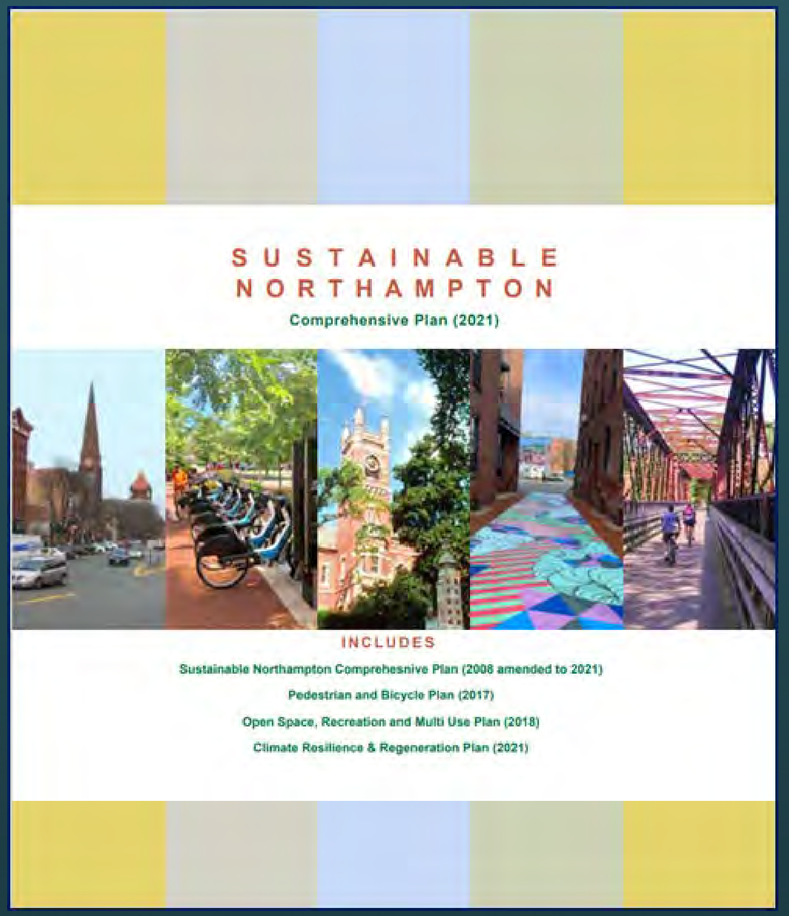
Climate Action & Project Administration

bweil@northamptonma.gov



Overview

- History of Planning & Path To Sustainability and Decarbonization
- Land Use & Affordable Housing
- Transportation & Stormwater
- Downtown Heat Recovery Project
- Integrate Forces to Achieve Goals



Northampton's Journey to Carbon Neutrality

Community Climate Resilience Actions- Housing & Support Services

- Resilience Hub
  - coordinated access
  - climate resilience
  - community/equity
- Non-Profit Service Community, City Depts, Health Care Providers
- Equity in Housing-Housing for most vulnerable

USGBC

Community Climate Resilience Actions- Transportation

- Equity
- Bike Share
- Infrastructure investment (SFRTS, CDBG, MassDOT)
- Complete Streets
- Regulations-Connections

USGBC

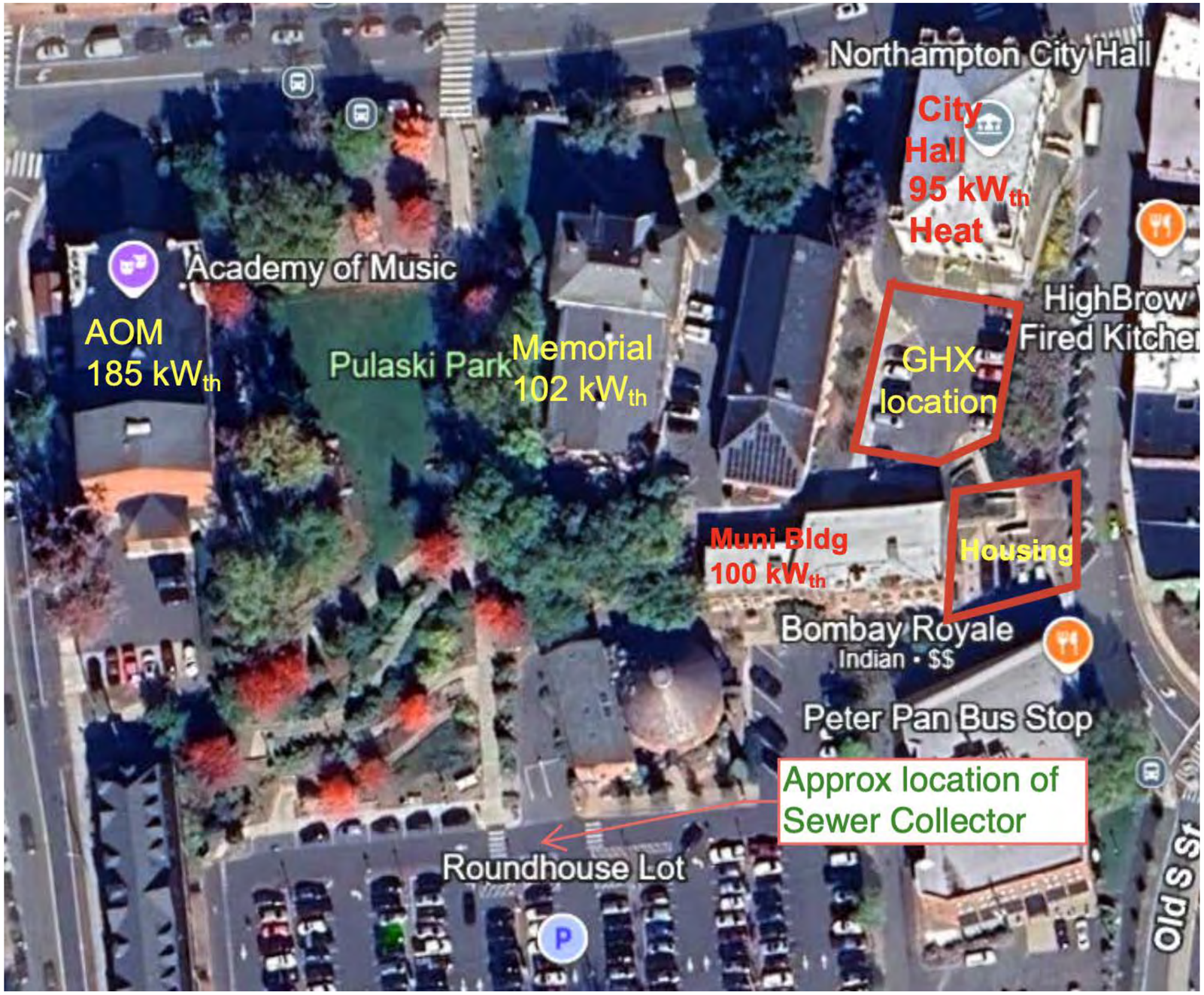
Community Climate Resilience Actions-Stormwater/Flooding

- Designs with Nature
- Carbon sink by reforesting golf course
- Piece together funding support: local, state, (previously) federal
- Cross cutting goals- Flood resilience/Emergency Preparedness & Ecological Benefits & Cooling heat island impacts
- Requires Interdisciplinary Work – DPW, Planning, Emergency Response, Conservation

Downtown Campus Thermal Energy Network

Wastewater Heat Recovery
Sewer Flow rate: 3 M gpd
Heat TX des: 0.58 MW $_{th}$
Required: 0.49 MW $_{th}$

Ground Heat Exchanger
9 bore holes



Forbes Library / Resilience Hub thermal network

Borehole field can provide heating and cooling for library and Resilience Hub.

Integrated into planning for Forbes upgrades.

Current System

Interim System FY 2026

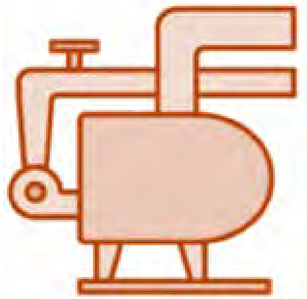
Final System

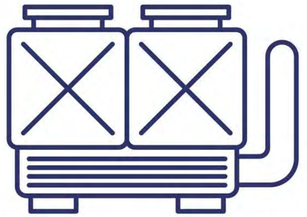
First Floor Ventilation

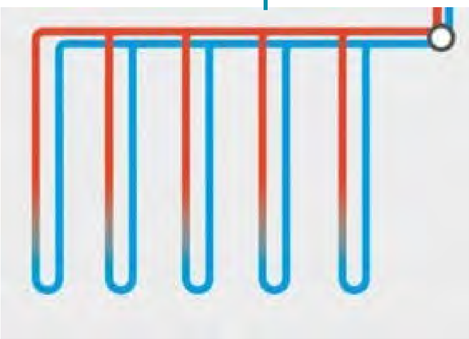
Children's Section and Basement

Heating

Cooling







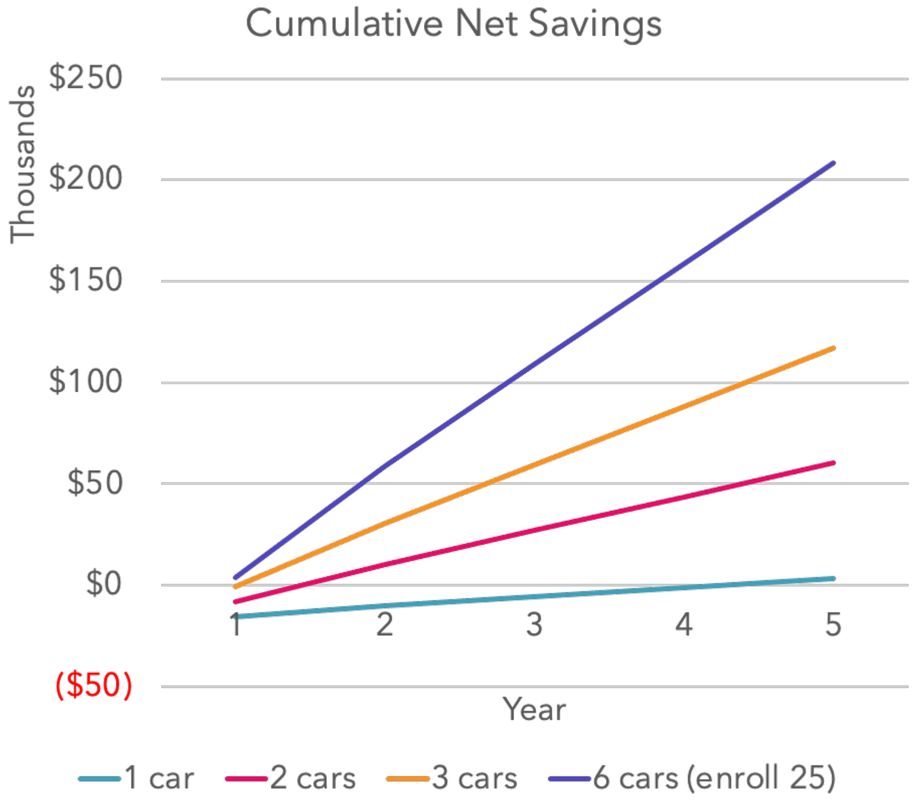
Fossil Fuel Free New Construction and Major Renovations

	Specialized Stretch Code	Fossil Fuel Free
All Electric	HERS 45 or Passivehouse	
Mixed Fuel under 4000 sf	HERS 42 + Solar >4kW + wiring for electrification	Not permitted, but exemptions may apply
Mixed Fuel over 4000 sf	HERS 42 + Solar to net zero + wiring for electrification	Not permitted, but exemptions may apply
Additions & Alterations	Same as Stretch code	Only must comply if adding heating or hot water equipment
Historic or Existing	Energy Code exemption if it would change the historic fabric of the building	

Shared Municipal Vehicle Pool

Right Size. Right Type. Every Trip

- Data
- Enhanced availability
- Reduced capital expenditures (potential)
- matching vehicle capabilities to revealed requirements
- Increase proportion of EVs through vehicle turnover
- Substitute bike trips for car trips



Questions?

Thank You.