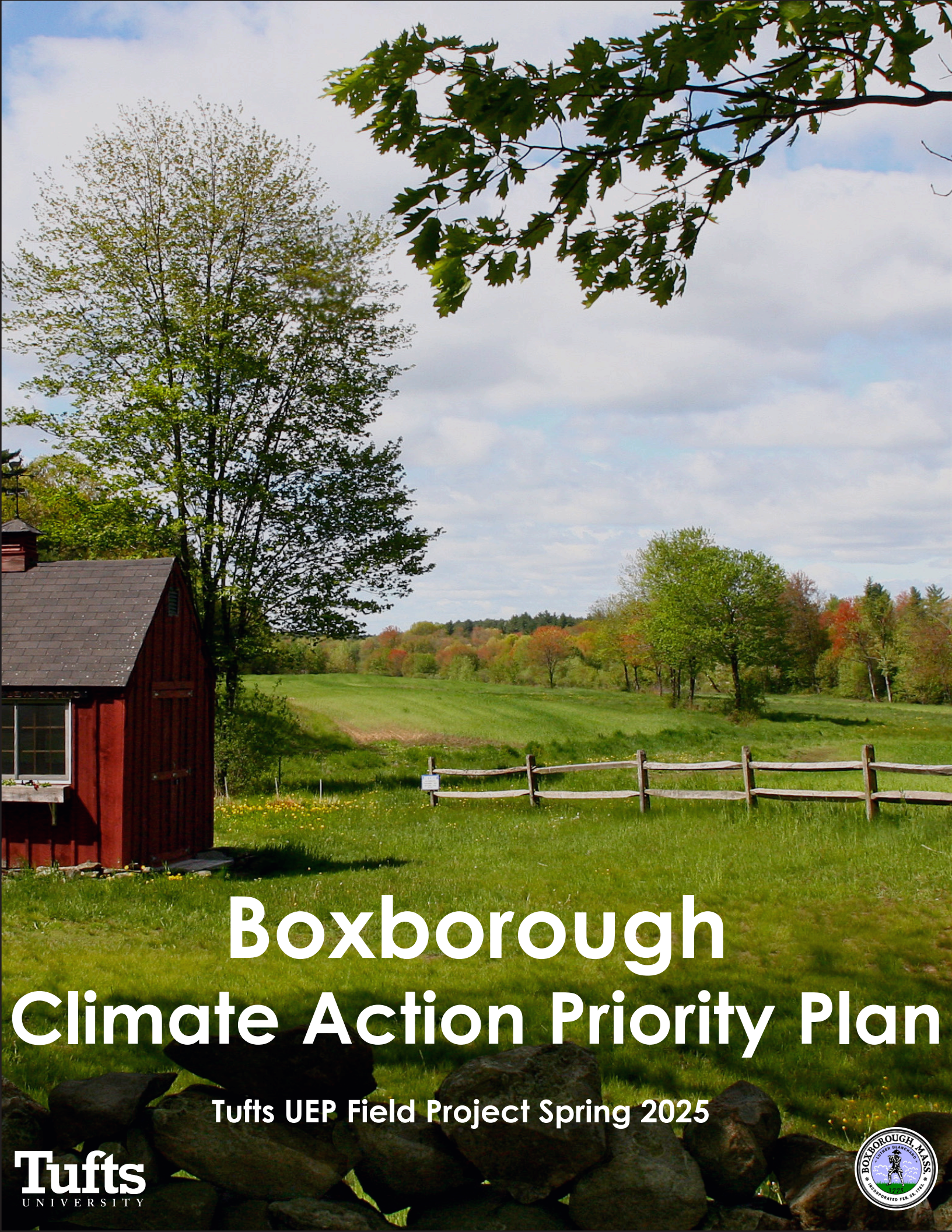

Boxborough Climate Action Priority Plan

Tufts UEP Field Project Spring 2025

Tufts UNIVERSITY

Boxborough
Climate Action Priorty Plan

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Cover Photo: (West 2008c)

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List of Acronyms

A-CAP	Acton Climate Action Plan
B-CAP	Boxborough Climate Action Plan
B-CAPP	Boxborough Climate Action Priority Plan
BSC	Boxborough Sustainability Committee
CAL	Climate Action Lincoln
CAP	Climate Action Plan
CEJST	Climate and Economic Justice Screening Tool
CMRPC	Central Massachusetts Regional Planning Commission
CPRG	Climate Pollution Reduction Grant
DOE	U.S. Department of Energy
DOER	Department of Energy Resources
EEA	Executive Office of Energy and Environmental Affairs
EJ	Environmental Justice
EVs	Electric Vehicles
GAC	Green Advisory Committee
GEC	Green Energy Committee
GHG	Greenhouse Gas
GWP-CAP	Greater Worcester Priority Climate Action Plan
L-CAP	Lincoln Climate Action Plan
LIDACs	Low-Income Disadvantaged Communities
MA-CT	Massachusetts-Connecticut
MAPC	Metropolitan Area Planning Council
MART	Montachusett Regional Transit Authority
MassCEC	Massachusetts Clean Energy Center
MSA	Metropolitan Statistical Area
MVP	Municipal Vulnerability Preparedness
NECCOG	Northeast Connecticut Council of Governments
NHA	National Heritage Area
S-CAP	Stow Climate Action Plan
UEP	Urban and Environmental Policy and Planning
US EPA	U.S. Environmental Protection Agency

Executive Summary

The Boxborough Climate Action Priority Plan (B-CAPP) provides a data-driven, community-informed framework to guide the town of Boxborough, Massachusetts, toward climate resilience and environmental sustainability. Developed in partnership with Boxborough's Office of Land Use and Permitting and Tufts University's Urban and Environmental Policy and Planning (UEP) department, the B-CAPP identifies the town's strategic climate priorities and offers practical, scalable recommendations to shape a comprehensive Climate Action Plan (CAP).

As a small, rural town, Boxborough faces mounting climate risks, including extreme weather events, water supply challenges, energy transition concerns, and environmental injustices. Conservation land, single-family homes, and strong civic engagement define Boxborough's character. However, these same features pose challenges, heavy dependence on personal vehicles, aging infrastructure, and decentralized utilities contribute to high per-capita emissions and adaptive capacity concerns.

The purpose of the B-CAPP is to equip Boxborough with a clear, locally grounded set of priorities and strategies that will inform the development of the town's CAP. It is centered on five strategic pillars: Energy, Water, Transportation, Waste, and Climate Preparedness. Through stakeholder engagement, survey research, and comparative case study analysis, the plan distills actionable insights into ten key recommendations, each with short, medium, or long-term implementation timelines. The B-CAPP was developed through a multi-phase research process, which included:

1. **Community Survey and Data Analysis:** A town-wide survey received 140 valid responses and assessed perceptions of climate change, sustainability priorities, and barriers to action across five focal areas. Key insights included strong support for walkability and bikeability improvements, climate education, water management concerns, and energy efficiency incentives.
2. **Case Study Analysis:** CAPs from three comparable municipalities - Acton, Stow, and Lincoln - were analyzed for best practices, implementation strategies, and equity considerations. The analysis was also supplemented with the Greater Worcester Climate Action Priority Plan. These communities served as benchmarks for realistic and context-appropriate climate planning in small towns.
3. **Demographic Analysis:** Boxborough's geographic characteristics, land use, socioeconomic data, and environmental justice indicators were examined to ensure recommendations were equitable and grounded in local realities.
4. **Synthesis and Stakeholder Engagement:** Insights from all data streams were ultimately synthesized into a set of strategic recommendations. Throughout the process, findings and implementation possibilities were refined through consultation with the Town Office, Tufts Field Projects teaching team, and the Boxborough Sustainability Committee (BSC).

Key Findings by Focal Areas:

- **Energy:** The town lacks a baseline greenhouse gas inventory, which limits its ability to set and track emissions goals. Survey responses indicate support for energy efficiency upgrades, but barriers such as relatively high upfront costs and information gaps persist.
- **Water:** With no centralized water system, Boxborough residents rely heavily on private wells. Concerns around drought, contamination, and water testing access are prominent. There is a need for education and incentives around well maintenance and water security.
- **Transportation:** A majority of Boxborough's residents depend on cars, but survey respondents expressed much stronger interest in the expansion of pedestrian and bike infrastructure, compared to public transit. Electric vehicle adoption also received less support, suggesting that a phased approach to zero-emission transit mode is more viable.
- **Waste:** Residents actively use the Transfer Station and support sustainable practices like reuse and composting. Programs like a proposed Swap Shed and Pay-As-You-Throw model are seen as opportunities to reduce landfill waste and emissions.
- **Climate Preparedness:** The town benefits from an engaged volunteer network but lacks full-time sustainability staff. Institutional capacity, regional partnerships, and targeted education were identified as critical gaps.

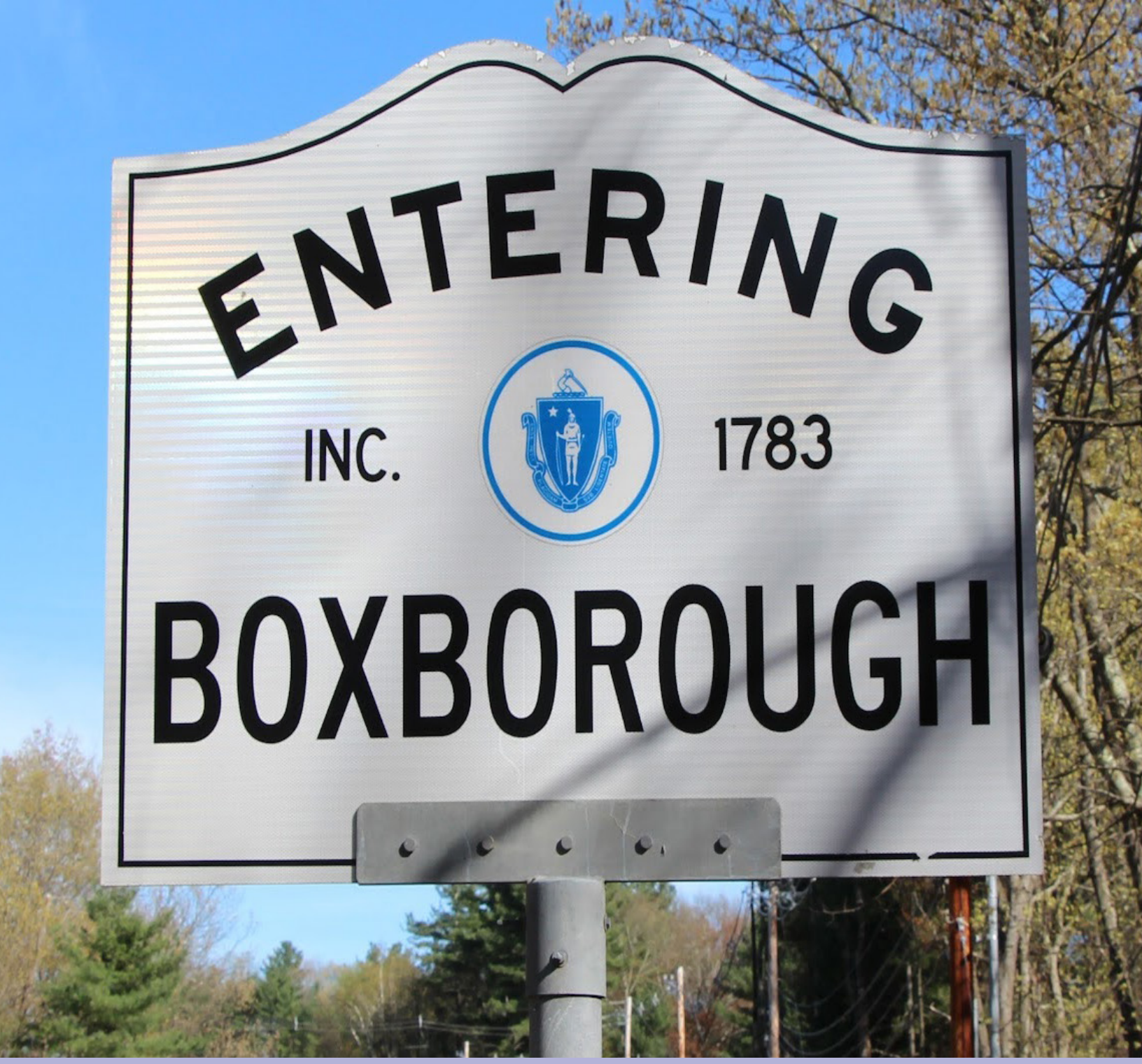
The B-CAPP suggests ten recommendations among the five strategic pillars for Boxborough to consider when implementing the B-CAP:

- **Energy Goals and Opportunities**
  - Establish a Greenhouse Gas Inventory
    Implementation Timeline: Medium Term
  - Incorporate the Massachusetts Specialized Stretch Code
    Implementation Timeline: Long Term
- **Water Conservation**
  - Incentivize Community Participation and Local Education Around Private Well Water
    Implementation Timeline: Medium Term
- **Sustainable Transportation**
  - Expand Zero-Emission Mobility Options
    Implementation Timeline: Long Term
- **Sustainable Transportation**
  - Utilize Regionalization and Collaboration with Nearby Communities
    Implementation Timeline: Very Long Term
  - Expand Educational Efforts on Climate Change and the Environment
    Implementation Timeline: Short Term
  - Conduct More Widespread Research on Community Priorities that Accurately Represent Community Demographics
    Implementation Timeline: Short Term

- Implement Financial Incentives and Rebates for Households and Businesses to Achieve Town Climate Priorities, Energy Efficiency Standards, and Goals
  Implementation Timeline: Medium Term
- Invest in Institutional Capacity to Support Climate Action
  Implementation Timeline: Short Term

None of the ten recommendations described above can fix the climate crisis alone and secure a sustainable future for Boxborough. It is essential to view these recommendations as mutually reinforcing, complementary components of a cohesive climate strategy.

Ultimately, the B-CAPP positions Boxborough to take meaningful, measurable, and equitable steps towards climate resilience with local action aligned with forward-thinking strategies for a sustainable, climate-resilient future for Boxborough. The plan offers a clear, phased roadmap to air in the creation and early-stage implementation of the B-CAP, thus demonstrating how even small communities can confront the climate crisis.



(St. Denis 2019)

Chapter 1
Introduction

Project Overview

The Boxborough Climate Action Priority Plan – Phase II is a semester-long Urban and Environmental Policy and Planning (UEP) field project aimed at supporting the Town of Boxborough, Massachusetts, to move towards a more sustainable and climate-resilient future. As climate change continues to pose risks to communities worldwide, Boxborough recognizes the need to develop a comprehensive strategy that both mitigates environmental impacts and adapts to ongoing climate shifts. This project builds upon prior efforts, including the Town's Phase I data collection and community engagement, to develop a Climate Action Plan (CAP) that is applicable, equitable, and community-driven.

The project partner is the Town of Boxborough's Office of Land Use and Permitting, led by Town Planner/ Land Use Director Alexander Wade. The Office oversees Boxborough's sustainable development, zoning regulations, and long-term planning initiatives to embrace forward-thinking policies.

The Boxborough Sustainability Committee (BSC), a volunteer-based advisory group, plays a key role in shaping the town's climate initiatives. Their mission is to foster sustainability through policies that promote renewable energy, efficient buildings, sustainable transportation, waste reduction, and land use. The BSC's involvement in Phase I data collection, and its continued engagement with Phase II and the town's general environmental/sustainability space, makes it a key source of support, information, and guidance.

Project Goals and Research Questions

The primary goal of this project is to create evidence-based suggestions to be utilized in the CAP that provide clear, actionable strategies for Boxborough to reduce greenhouse gas emissions, increase climate resilience, and engage the community in sustainable practices. To achieve this, the research is guided by the following key questions:

1. **What are the most effective climate action strategies for small suburban communities like Boxborough?**
2. **How can community engagement be leveraged to encourage climate-conscious behavior and policy adoption?**
3. **Which case study examples provide the best models for Boxborough's unique needs and constraints?**
4. **How can Boxborough implement sustainable practices while balancing economic, social, and environmental factors?**

By addressing these questions, the project will offer implementation strategies, data-driven insights, and policy recommendations to help Boxborough take decisive steps toward climate resilience.

Description of the Issue

Like many suburban communities, Boxborough is increasingly vulnerable to the effects of climate change. Extreme weather events, rising temperatures, and disruptions to local ecosystems threaten both the natural environment and the well-being of residents. While Boxborough has historically made strides in hazard mitigation, existing efforts do not fully address the root causes of climate change, such as fossil fuel dependence, unsustainable land use, and insufficient carbon sequestration efforts ("Town of Boxborough, MA Hazard Mitigation Plan Update" 2024 and "Municipal Vulnerability Preparedness (MVP) Community Resilience Building Workshop Summary of Findings" 2021).

Boxborough's geographic and demographic characteristics present unique challenges and opportunities in the fight against climate change. The town's large-lot single-family homes, reliance on personal vehicles, and limited public transportation options contribute to higher per-capita carbon emissions. However, Boxborough's strong sense of community, engaged local government, and commitment to sustainability provide a foundation for meaningful action.

Through a combination of survey-based research, case studies, data analysis, and community input, this project aims to develop tailored strategies to reduce emissions, improve resilience, and foster a culture of sustainability in Boxborough. Thus, the Boxborough Climate Action Priority Plan – Phase II project represents a crucial step in the town's long-term sustainability efforts. By leveraging data-driven insights, comparative case studies, and community engagement, this initiative will produce a roadmap for tangible climate action.

With the combined efforts of the Tufts Urban and Environmental Policy and Planning student team, the Town of Boxborough, and the Sustainability Committee, this project will lay the foundation for the Boxborough Climate Action Plan (B-CAP), which will inform 10-year policies and measurable targets, guiding the town towards a sustainable future that meets both environmental and community-driven goals. The forthcoming sections of this report will delve deeper into methodologies, case studies, and data analysis, culminating in recommendations that can guide Boxborough's climate trajectory for years to come.

(West 2008a)

Chapter 2
Methods

This section outlines the structured approach undertaken to develop the Boxborough Climate Action Priority Plan – Phase II. The methodology integrates background research, case study analyses, community surveying, stakeholder engagement, and quantitative and qualitative data analysis to produce a final plan that reflects the community's climate priorities, while also aligning with contextually appropriate practices in local sustainability planning. All described activities have been completed, and their resulting findings can be found in their respective sections within this report.

Background

The project began by compiling a comprehensive demographic and geographic profile of the Town of Boxborough to situate the B-CAP within the local context. The resulting document forms Chapter 3 of this report.

The Background chapter was developed through an analysis of several secondary data sources and reports, including the U.S. Census data, MassGIS datasets, and previously completed municipal plans, such as the Hazard Mitigation Plan and the Municipal Vulnerability Preparedness Plan. Supplemental information was obtained by conducting direct outreach to local stakeholders, including to the BSC and parents of students enrolled in the Acton-Boxborough Regional School District.

This research provided insights into Boxborough's socio-economic indicators, land use patterns, and environmental challenges. Boxborough's unique features, including its rural charm, conservation areas, and growing diversity, were examined to better understand the town's climate vulnerabilities and opportunities. This foundational knowledge informed the development of the survey, case study analysis, and ultimately, the recommendations.

Community Survey

The Boxborough Climate Action Plan Community Survey was developed to assess community awareness of climate change, gather input on sustainability priorities, and understand barriers to climate-friendly behavior. Additionally, the survey sought to identify key focus areas for the B-CAP with optional demographic questions to enable the analysis of climate perceptions and priorities across sub-populations of the community. The focus areas were developed following thorough discussions with the Town of Boxborough and the BSC, in alignment with the background and demographic research, and in reference to the CAPs of Acton, Stow, Lincoln, and the Greater Worcester region. Each CAP's key themes, data collection methods, and survey structures were examined to shape the question design and structure of the Boxborough survey. The survey was organized into six sections:

1. **General Climate Concerns and Awareness**
2. **Water Resource Management**
3. **Community Education and Engagement**
4. **Buildings and Energy Efficiency**
5. **Transportation and Mobility**
6. **Feedback and Demographics**

The survey featured an assortment of question types, including Likert scale items, multiple-choice questions, and open-ended responses. This structure allowed for both quantitative trends and qualitative insights to be captured. Questions were refined over multiple iterations with input from a variety of stakeholders. Feedback was solicited from Tufts UEP faculty and the teaching team of the Field Projects course, members of the BSC, and other student groups working on similar projects. Revisions to the survey focused on improving question clarity, eliminating redundancy, and ensuring that the tone was inclusive and accessible. The survey question can be reviewed in detail in Appendix A of this report.

The community survey was administered through Google Forms, and responses were collected anonymously to encourage broad participation. As described above, respondents were given the option to provide demographic information, though this was not required. To incentivize participation, residents could choose to enter a raffle for a $50 gift card funded and distributed by the BSC.

A multi-pronged distribution strategy was used to maximize outreach. A flyer featuring a QR code that linked directly to the survey was created (Appendix B). It was then shared through the town's social media platforms, directly distributed to community members in person, email lists managed by committee chairs, the local newspaper, and the local TV network.

While the survey succeeded in gathering valuable community input, certain limitations should be acknowledged. Because the survey was conducted online over eight weeks, residents without regular internet access or digital literacy may have been underrepresented. Furthermore, as participation was voluntary, self-selection bias may have occurred, potentially skewing the sample toward residents already engaged with or concerned about climate issues.

Case Study Analyses

An in-depth analysis of the CAPs from Acton, Stow, Lincoln, and Greater Worcester was conducted to help guide recommendations for the B-CAP. These case studies were preselected by the Town of Boxborough and the BSC due to their geographic proximity, demographic similarities, and the relevance of their focus areas to Boxborough's goals.

The case study analyses were conducted in two phases. In the first phase, each CAP was reviewed individually, using the plan itself as the primary source. Other resources, datasets, and studies were used as secondary sources as needed to supplement this research.

The overall structure, key focus areas, implementation mechanisms, and language of each plan were studied, which allowed for a deep understanding of the approach each town used to tackle climate change.

This first phase of the case study analysis formed the first four subsections of Chapter 4 of this report.

The second phase involved a comparative analysis, in which the four case studies were analyzed side-by-side. Each plan's thematic scope, stated priorities, recommended actions, and community engagement strategies were contrasted against the others. This cross-case analysis was synthesized using a comparative analysis matrix, which made it easier to identify shared patterns, overlapping practices, and opportunities for adaptation in Boxborough.

The cells of the matrix were then color-coded for each community to reflect the relative level of prioritization, actionable policies, and implementation with the other three communities and their relevance to Boxborough. While the dark purple represents high-priority themes, clearly established goals, and explicitly defined focus areas, the lighter shades represent areas of less prioritization. The lightest shaded cells represent areas wherein the corresponding communities were determined to have either not made any mention of the topic in question or did not include any relevant strategy. The darkest shaded cells are backed by data points, which include Greenhouse Gas (GHG) emissions data, survey responses, and workshop feedback. The medium shade cells are tangible and can be completed on the plan's established deadlines, but are not backed by supplementary data.

By reviewing these existing plans, patterns in community priorities and best practices that could be adapted to the Boxborough context were identified. The case studies provided a valuable reference for both survey design and recommendation development, helping to align Boxborough's proposed actions with proven strategies from comparable towns.

Data Analysis

After the survey closed on March 17, 2025, with a total of 151 responses, the raw data was thoroughly cleaned to remove responses from non-Boxborough residents and eliminate any potential duplicates. This process resulted in a refined dataset consisting of 140 valid respondents, which was then prepared for analysis.

To ensure a rigorous contextual examination of the survey results, the analysis focused on five themes prioritized by the BSC and used to guide the organization of the survey. These themes are:

1. General Climate Concerns and Awareness
2. Water Resource Management
3. Community Education and Engagement
4. Buildings and Energy Efficiency, and
5. Transportation and Mobility

These themes were derived from a structured review of community priorities, ensuring alignment with the town's sustainability goals. A mixed-methods approach was employed to provide a comprehensive evaluation, integrating four key analytical techniques.

First, coding and thematic analysis were conducted by systematically reviewing open-ended survey responses and grouping them into recurring themes. Keywords such as "storm preparedness," "energy costs," and "bike lanes" were identified to categorize responses. Climate concerns were further classified

into subtopics such as extreme weather, infrastructure resilience, and individual sustainability efforts. For example, responses mentioning concerns about flooding and heat waves were grouped under "Extreme Weather Impacts."

Next, descriptive statistics were utilized to analyze numeric rating scales related to climate concern levels using measures of central tendency, including mean, median, and mode. Additionally, frequency distributions provided percentage breakdowns to quantify categorical responses. For instance, 56% of respondents rated climate change as a major concern.

Third, crosstab analysis was used to examine correlations between various demographic factors and climate-related perspectives. To better comprehend the survey data, data visualization and interpretation were incorporated into the analysis. A table was utilized to summarize demographic information about Boxborough respondents, providing a structured overview of key community characteristics. To enhance the credibility of the findings, some survey results were triangulated with additional data sources, including feedback from stakeholder meetings and insights drawn from four case study communities. This comprehensive approach ensured that the analysis was contextualized and grounded in both local and regional understandings of climate action.

Synthesis

The findings from the background research, community survey, and case study analysis were synthesized to identify key opportunities for climate action in Boxborough.

Key recommendations were then developed through a careful process that considered feasibility, equity, and alignment with existing town goals.
Key recommendations were then developed through a careful process that considered feasibility, equity, and alignment with existing town goals.

When formulating each proposed action, its implementation capacity, funding availability, and political feasibility were studied in absolute and relative terms. Equity considerations were central to this process, ensuring that recommendations addressed barriers faced by underrepresented or vulnerable community groups.

Draft recommendations were shared with the project partner and revised based on the feedback received. The final recommendations are actionable, measurable, and designed to support phased implementation over the short, medium, and long term.

The recommendations were compiled into a comprehensive report and presented to Boxborough's town leadership, stakeholders at the BSC, and the Tufts UEP Field Projects teaching team. The aim was to provide a practical and aspirational roadmap to empower the Town of Boxborough to take bold and inclusive steps toward climate resilience.

(Lafferty 2025)

Chapter 3
Background

Introduction

Boxborough, Massachusetts is a suburban town located approximately 30 miles northwest of Boston, at the intersection of State Route 111 and Interstate Route 495. Characterized by its scenic landscapes, rural character, and community connectedness, Boxborough is home to a growing and diverse population. This section provides an overview of Boxborough's historical development, geographic characteristics, demographics, economic indicators, and ongoing sustainability initiatives that shape the foundation of Boxborough's CAP.

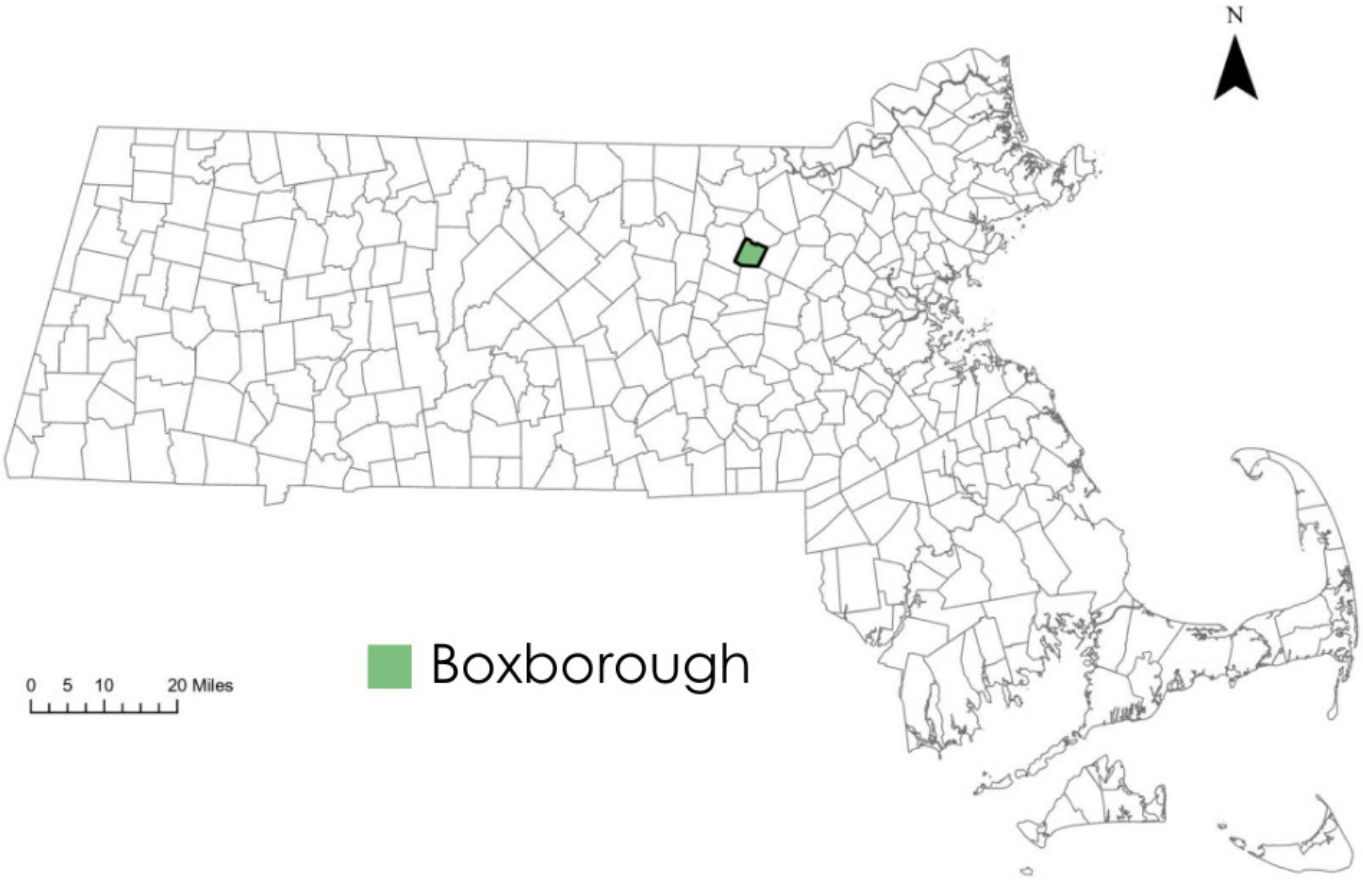


Fig 1. Map of Boxborough, MA (Using data from MassGIS)

History

For the past 242 years, Boxborough has been known for its quaint New England charm, farming background, and natural beauty. Boxborough was incorporated on February 25, 1783, separating from parts of neighboring Acton, Littleton, and Stow. Prior to European colonization, the land was inhabited by the Massadchueset, Pennacook, Pawtucket, and Nipmuc tribes (Bhatia, Lasker, and Liano, n.d.). The influence of these indigenous peoples can still be found throughout the town, particularly through the many stone structures in Boxborough and surrounding communities (Acton Conservation 2021).

Initially a farming community, the town's economy was historically centered around agriculture, particularly apple orchards and dairy farms. In the 20th century, Boxborough saw gradual suburbanization, influenced primarily

by the construction of major highways that improved connectivity to Greater Boston.

Today, the town balances residential, commercial, and industrial developments with conservation efforts to preserve its rural character while retaining its historical charm ("Boxborough Historical Society," n.d.).

Boxborough is located in the Freedom's Way National Heritage Area (NHA), a historical region that includes parts of Southern New Hampshire and Central Massachusetts (U.S. National Park Service 2019). The NHA records historical events, cultural practices, the American Revolution, and Native American history in Boxborough and the region at large. Ridge Hill Farm in Boxborough is considered the oldest continuously operating farm within the region, with records of farmland usage dating back to at least 1682 ("Ridge Hill Farm," n.d.). Today, descendants of the farm's first owner, Zebediah Wheeler, continue to farm and make use of the land.

In the early to mid-19th century, Boxborough produced much of New England's supply of Hops ("Boxborough Historical Society," n.d.). Hops are a primary ingredient in many beers, an important export across the region (Boeckmann 2024). From the commencement of the Civil War through the 1940s, Boxborough exported apples to Boston and beyond ("Boxborough Historical Society," n.d.). Today, Boxborough's top crop is rocks, specifically bedrock wells from the Nashoba Terrane. "Rocksborough," as the town is endearingly nicknamed, sits on the Nashoba Terrane, a tiny sliver of Earth's crust that comes together between the Bloody Bluff and Clinton-Newbury Faults (Boxborough Conservation Trust 2004). Boxborough is a strong example of a historic town that works to highlight the historical, social, and cultural significance of small towns in New England (Kent and Madden 2021).

Geography and Land Use

The town of Boxborough contains 10.4 square miles of land. It is located approximately 25 miles northwest of Boston and is immediately surrounded by Littleton, Acton, Stow, and Harvard. Boxborough is placed within the central highlands at the headwaters of the Merrimack River and Concord River. The town's gently hilly terrain and dense forest cover give it a distinctive natural setting. The third highest hill in Boxborough (459 feet above mean sea level) is home to the historic town center where the first meeting house and town hall were located. Today, the hill is occupied by the Boxborough Museums and the Old Town Common.

Boxborough is considered to be a 'Country Suburb' according to the Metropolitan Area Planning Council (MAPC) (Metropolitan Area Planning Council 2008). Country Suburbs are identified by low density, lots of room to grow, and a distinctly country character. Many residents of Boxborough believe that the town's rural character is an important asset that informs a large part of the town's identity. This notion is reflected in the town's zoning laws and ample open space.

While farming has historically been a large part of Boxborough's identity, the agricultural industry saw a massive decline following World War II. Today, agriculture and farmland encompass just over 3% of total land use, leading to renewed interest in the preservation of agricultural lands (figure 2). Boxborough is rapidly expanding, yet most growth is in the form of low-density subdivisions and auto-oriented office and industrial parks (Metropolitan Area Planning Council 2016 and Comprehensive Environmental Inc. 2023).

Boxborough's land is divided into seven zoning districts: Agricultural-Residential, Residential-1, Business, Business-1, Office Park, Town Center, and Industrial-Commercial (figure 3). Its perimeter primarily consists of large single-family homes on spacious lots, making up 33.1% of the town's land use, interspersed with protected open spaces and conserved woodlands, which account for 30% of total land use.

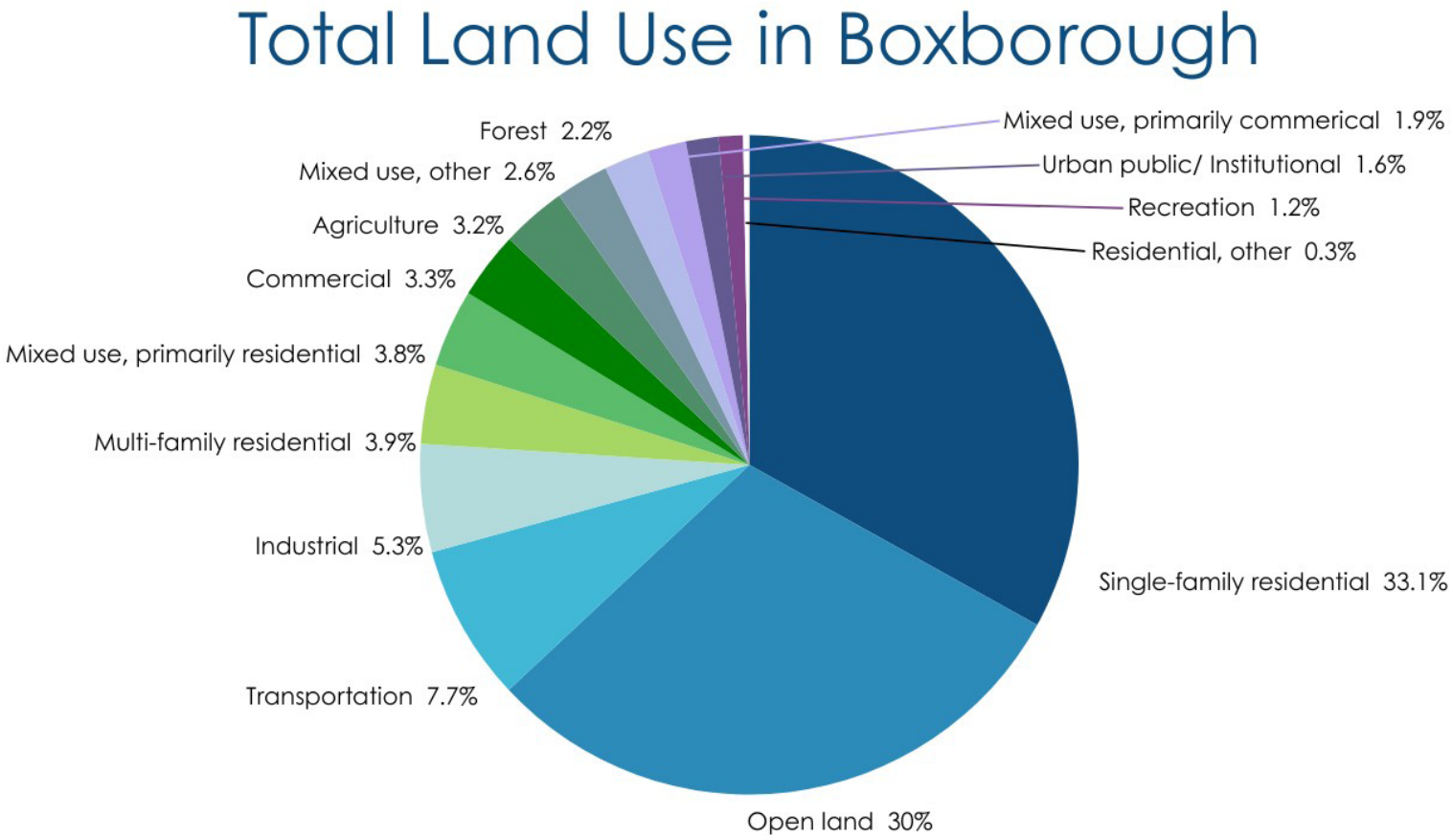


Fig 2. Total Land Use in Boxborough (Comprehensive Environmental Inc. 2023)

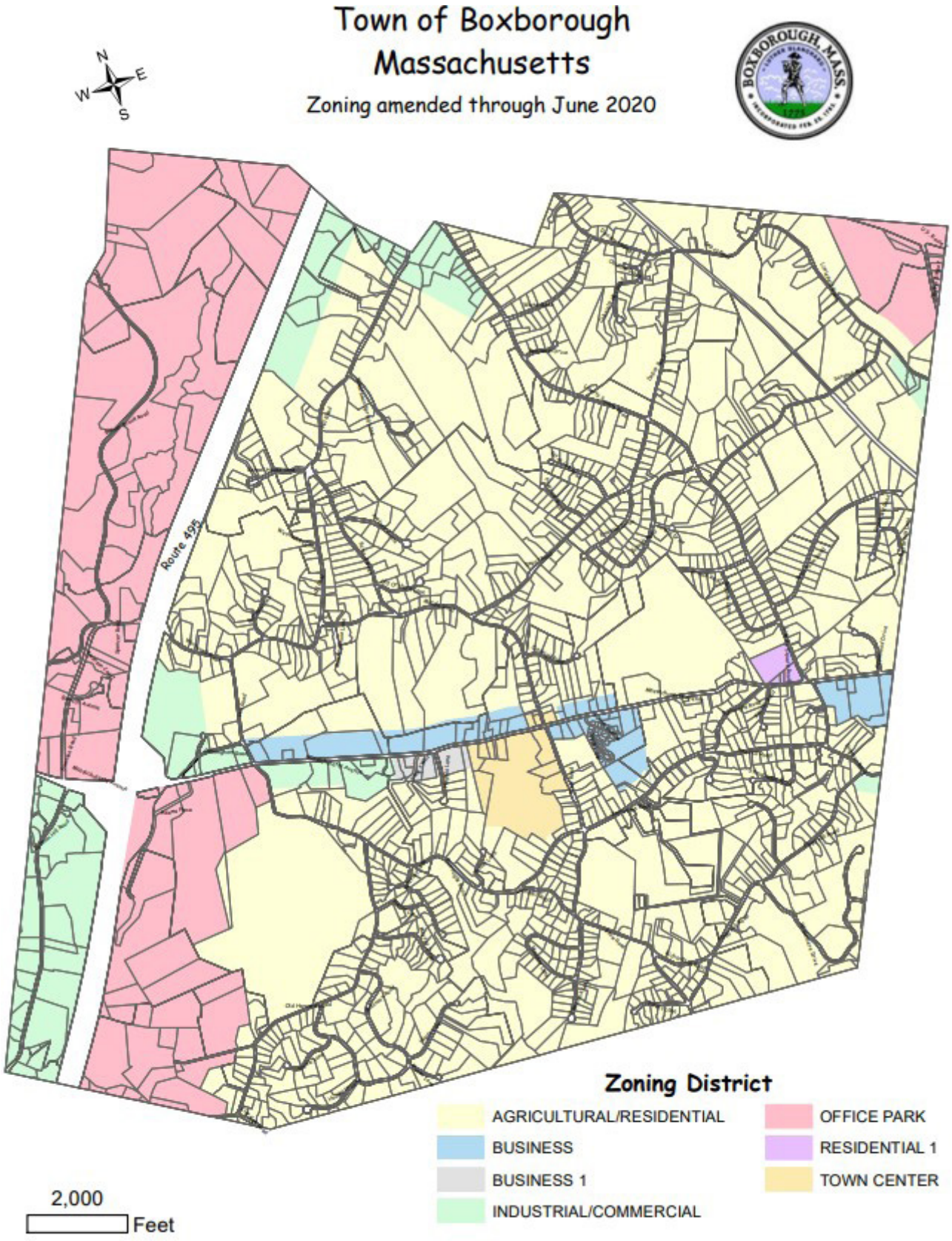


Fig 3. Zoning Map of Boxborough (Boxborough Town Hall 2020)

Demographics and Economic Indicators

At the time of the 2020 Census, the population of Boxborough was 5,506, of which 68.0% identified as white, non-Hispanic (U.S. Census Bureau, n.d.). 53.1% of Boxborough identifies as female, which aligns with the 53.1% of Massachusetts that identifies as such (figure 4). Residents of Boxborough tend to attain high levels of education, as 96.6% of individuals who are 25 years old and above hold a high school diploma or higher, while 77.8% hold a bachelor's degree or higher.

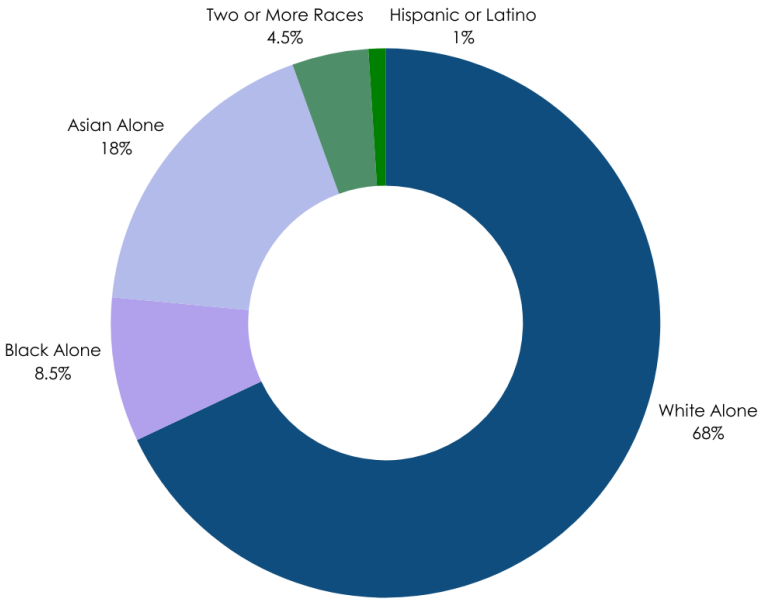


Fig 4. Boxborough's Racial Composition (U.S. Census Bureau, n.d.)

Many Boxborough residents are employed in the fields of education, healthcare and social assistance, and professional, scientific, and technical services (U.S. Census Bureau 2022). The median household income is $150,000, which is higher than the Middlesex County median household income of $126,779 and 1.5 times greater than the Massachusetts average of $101,341 (U.S. Census Bureau, n.d.). Furthermore, only 3.6% of the entire Boxborough population is below the poverty line (figure 5). For comparison, 11.1% of the total United States population and 10.4% of the total Massachusetts population are considered to be in poverty ("U.S. Census Bureau QuickFacts: Massachusetts," n.d. and US Census Bureau 2025).

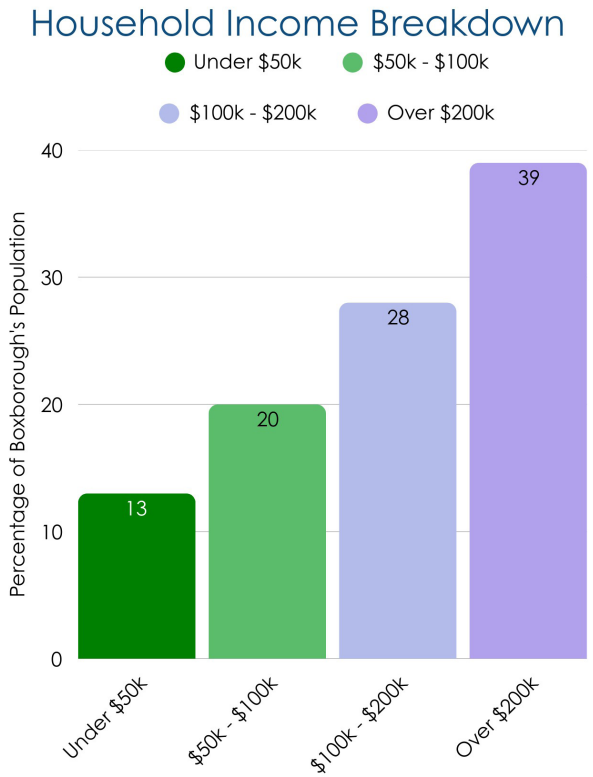


Fig 5. Boxborough Household Income Breakdown MA ("U.S. Census Bureau QuickFacts: Massachusetts," n.d.)

Many homes in Boxborough are single-family dwellings. 77.3% of homes in Boxborough are owner-occupied, with an average of 2.47 residents per home (U.S. Census Bureau, n.d.). As of 2023, 93.1% of residents live in the same home they lived in one year ago. The average home value in Boxborough has increased by 5% since 2023, standing currently at $727,581.Boxborough residents spend, on average, 30 minutes commuting to work, which is similar to the Massachusetts mean of 29.3 minutes (U.S. Census Bureau, n.d.). Only 2.2% of Boxborough residents under 65 years of age have a disability, while 4.2% of Boxborough's total population lacks health insurance (U.S. Census Bureau, n.d.).

Environmental Justice Designation

The Massachusetts Executive Office of Energy and Environmental Affairs (EEA) is committed to identifying communities where residents may be more vulnerable to environmental burdens by establishing four criteria to qualify communities as an environmental justice (EJ) population based on demographic requirements. As long as a single census-defined block group fulfills one of the criteria, the town is classified as an EJ community. As of 2020, two of Boxborough's three block groups meet the EJ designation requirement of the minority population exceeding 25% of the total block group's population and the median household income in the community failing to exceed 150% of the statewide median (Executive Office of Energy and Environmental Affairs, n.d.).

Boxborough's EJ designation provides access to specific state resources and funding opportunities aimed at addressing environmental and public health concerns. By acknowledging and integrating the needs of EJ populations, Boxborough can develop more inclusive strategies to combat climate change, ensuring that all residents benefit from its CAP initiatives.

The EJ designation allows Boxborough to benefit from grants and loans with favorable terms, designed specifically to alleviate financial burdens on residents. For example, this designation has unlocked the potential for interconnecting with neighboring water systems to resolve contamination issues more effectively (The Commonwealth of Massachusetts Water Resources Commission 2024). Additionally, projects within or near designated EJ populations are also subject to enhanced public involvement requirements and assessments to ensure that environmental benefits and burdens are distributed equitably, in accordance with "Environmental Justice Principles" as defined in 301 CMR 11.02 ("Town of Boxborough Planning Board Meeting" 2022).

Education and Community Life

Boxborough has a vibrant community life, with numerous events, local organizations, and recreational facilities that foster engagement among residents. The town has over forty boards and commissions for residents to serve on and amplify the voices of their fellow community members. The Boxborough Department of Human Services offers free referrals to social services for residents of all ages. Some social services offered to residents include screening and application assistance for government aid programs, access to resource lists for child care, elderly residents, disability advocacy, mental and physical health providers, regional transportation services, and referrals to local food pantries and furniture banks ("Community & Social Services," n.d. and "Boards & Commissions," n.d.).

Boxborough is known across the region for its outstanding school system, which is part of the larger Acton-Boxborough Regional School District. This district includes nine highly regarded schools. While the average student-to-teacher ratio in Massachusetts is around 12:1, Boxborough's ratio is just slightly higher at 13:1. The district also has a strong support system in place, employing 19 counselors, 4 social workers, and 15 psychologists to provide tailored support to students ("Teacher Data (2021-22) - Acton-Boxborough" 2022).

In 2023, the Acton-Boxborough district spent about $20,699 per student, with most of the funding (83.2%) coming from a local level ("Finance - Acton-Boxborough" 2023). A significant portion of the budget is directed toward instruction and support services. The district consistently performs well on academic metrics (figure 8). In 2024, 64% of students in grades 3-8 met or exceeded expectations in English Language Arts and 69% met or exceeded expectations in Mathematics on state-wide assessments. The numbers are even stronger at the high school level, with 87% of students meeting or exceeding expectations in English Language Arts and 86% in math ("MCAS Tests of Spring 2024 - Acton-Boxborough" 2024 and "Schools Boxborough, MA," n.d.).

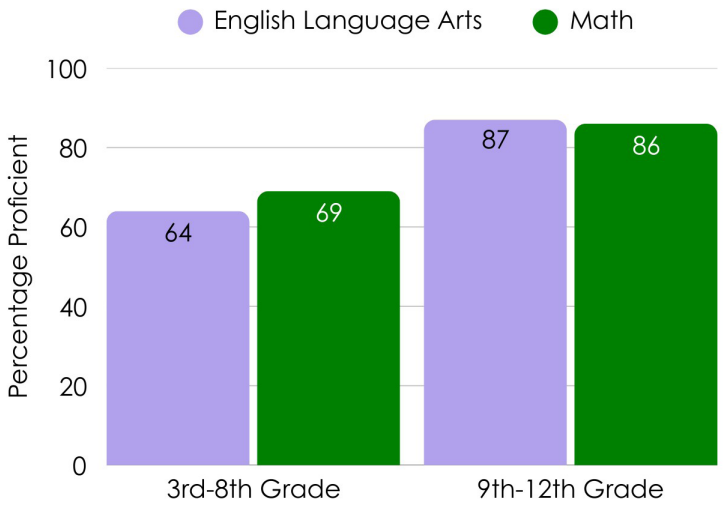


Fig 6. Student Proficiency Percentages ("MCAS Tests of Spring 2024 - Acton-Boxborough" 2024 and "Schools Boxborough, MA," n.d.)

Plant and Animal Species

Boxborough is an ecologically rich and biodiverse town. The 2021 Acton-Boxborough Bioblitz - an event where individuals work together to identify as many species as possible within a specified area -uncovered a plethora of plant and animal species. These include:

- 336 flora and fauna,
- 73 birds,

- 10 amphibians,
- 24 mammals, and
- 7 reptile species (Boxborough Conservation Trust 2022).

BioMap, a Massachusetts initiative that labels core habitat and critical nature landscapes across the state, demonstrates Boxborough's rich ecological diversity (MassWildlife 2023). The BioMap is a tool that can support and increase Boxborough's many unique species and create more resilient ecosystems.

Fig 7. Boxborough BioMap (MassWildlife 2023)

Two species are particularly important to the town: Bees and Poison Ivy. Both species hold special connections to the town. Massachusetts has approximately 390 bee species, many of which can be found in Boxborough ("Wild Bee Conservation," n.d.). Bees, in particular, hold great significance, as they act as the unofficial mascot. A six-foot bee statue can be found at the Boxborough Museum ("Boxborough Historical Society," n.d.). On the other hand, the town plant of Poison Ivy is a tribute to the ever-growing weed, noting the sentimental value of even the most bothersome plant species.

Nonetheless, there is still work to be done in Boxborough and beyond. The Nature Conservancy's Resilient Land Mapping Tool indicates few areas of Recognized Biodiversity Value and acknowledges just average Terrestrial Resilience townwide (The Nature Conservancy, n.d.). To further support biodiversity in Boxborough, it is essential to utilize these tools to craft stronger sustainability and conservation policies.

Sustainability and Climate Initiatives

Boxborough has made significant strides in promoting sustainability and reducing its carbon footprint. The town's Sustainability Committee plays a crucial role in advancing initiatives such as:

Energize Boxborough Initiative

Energize Boxborough is a community-led program aiming to reduce carbon emissions by 50% by 2030. The BSC joined its web platform in November 2021 with funding from the Littleton Electric Light Department and after collaboration with other communities and organizations across the state ("Energize Boxborough," n.d.). The program looks to accomplish this goal by providing an educational platform that encourages individuals to improve energy efficiency, adopt renewable energy options, and change behaviors. Energize Boxborough is described in greater detail in the Boxborough 2030 Master Plan. It strives to establish strategies for energy conservation, climate change resiliency, and the reduction of Boxborough's carbon footprint ("Energize Boxborough," n.d.).

Green Building and Energy Conservation

Boxborough was designated as a "Green Community" by the Massachusetts Department of Energy Resources (DOER) in 2024 ("Senator Eldridge and Representative Sena Announce the Passage of the Green Communities Bill" 2022).

After receiving this qualification, the town has emphasized the importance of energy-efficient home and commercial building construction, as the designation allows for the town to take advantage of resources that are designed to incentivize a transition to clean energy sources (Boxborough Sustainability Committee 2023). Such programs are particularly relevant to Boxborough as low status-quo electricity prices have the undesired effect of disincentivizing a proactive transition toward energy efficiency. The U.S. Environmental Protection Agency (EPA) states that a "Green Building" must include: energy efficiency and renewable energy, water efficiency, environmentally safe building materials and specifications, strong indoor air quality, waste and toxics reduction technologies, smart growth, and sustainable development (2016). Boxborough intends to align itself with these components to support energy efficiency and climate action using the Energize Boxborough initiative and through its designation as a Green Community.

Transportation Initiatives

Boxborough has already made progress toward increasing public transportation access by seeking to increase public transit options and promote the use of electric vehicles and bike-friendly infrastructure. In May 2024, the Montachusett Regional Transit Authority (MART) established a cost-effective and comprehensive bus route that allows riders to access locations townwide at just $1 per ride ("Transportation in Boxborough - Boxborough Connects," n.d.). While many travel by car in and around Boxborough, the town and surrounding region are looking to expand public knowledge and usage of public transportation. The South Acton Commuter Rail Station is just four miles, an approximately ten-minute drive, from Boxborough's town center, and can be reached on the MART bus. Commuters can take the Commuter Rail directly into Boston, making it a simple way to get to and from obligations in the city ("Transportation in Boxborough - Boxborough Connects," n.d.). Additionally, Boxborough offers an extensive network of over 30 miles of multi-use conservation trails with varied surfaces. These trails are used both as forms of short-distance transportation as well as recreation and can facilitate non-motorized transportation options such as walking and cycling throughout the town, with some segments designed for wheelchair accessibility ("Conservation Trail Maps," n.d.).

Waste Reduction and Recycling Programs

Strengthening composting efforts and minimizing landfill waste contributes to creating a more sustainable community. The US EPA notes that

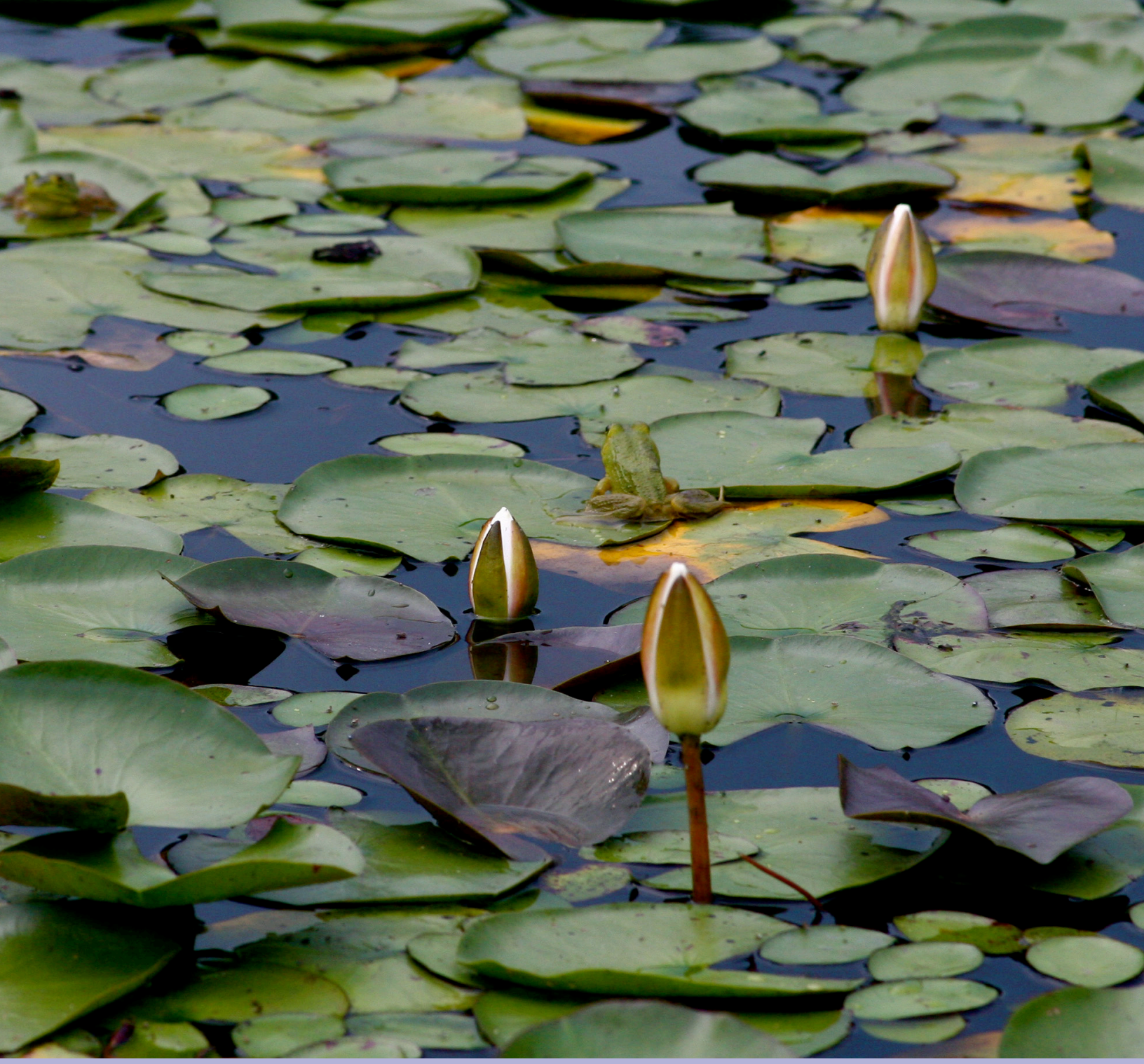
recycling reduces greenhouse gas emissions and the impacts of pollution and emissions, preserves natural resources, and conserves energy (U.S. Environmental Protection Agency 2013). Approximately 90 percent of plastics are dumped in landfills or into the ocean, highlighting a need to find methods of repurposing plastics and other waste in Boxborough (Sinha, n.d.). The Boxborough Transfer Station is broken up into eight sections, including trash, recycling, compost, wood, metal, appliances, mattresses, batteries, and CRT screens (Sinha and Sinha, n.d.). The Boxborough Sustainability Committee's 2024 Waste and Recycling Survey highlighted the desire of many residents to further develop recycling and waste infrastructure in their homes and across town, reflecting the town's proactive engagement on the matter. In 2025, Boxborough received a MassDEP technical assistance grant to explore a Pay-As-You-Throw program (Davies et al. 2024).

In May 2025, Boxborough plans to introduce a swap shed at its transfer station, as outlined in the Annual Town Meeting consent agenda (Boxborough Select Board 2024). This initiative aims to promote the reuse of items in good condition, allowing residents to exchange goods and thereby reduce waste, thus contributing to the town's continued sustainability efforts and fostering a culture of environmental responsibility among community members.

Finally, Boxborough currently lacks a baseline GHG inventory system, resulting in the absence of context-specific, primary data and statistics on its emissions profile. Establishing a comprehensive GHG inventory is a crucial foundational step for effective climate action planning and the development of targeted mitigation strategies.

Synthesis

Boxborough's strong connection to its historical identity, diverse population, sturdy economic base, and commitment to environmental initiatives set the stage for an effective CAP. However, Boxborough currently lacks a baseline GHG inventory system, resulting in the absence of context-specific, primary data and statistics on its emissions profile. Establishing a comprehensive GHG inventory is a crucial foundational step for effective climate action planning and the development of targeted mitigation strategies. Boxborough effectively balances the duality of tradition and progress. In doing so, the town fosters a strong sense of community while actively working toward a more sustainable future for all. The background and demographic analysis presented here establish a foundation for understanding Boxborough's unique challenges and opportunities in addressing climate change.



(West 2007b)

Chapter 4
Case Studies

The purpose of this case study analysis is to evaluate and extract best practices from four CAPs implemented by Massachusetts communities that were determined to be comparably similar to Boxborough. Contrarily, the case of Greater Worcester, determined to provide insightful learning opportunities. The four communities are Acton, Stow, Lincoln, and Greater Worcester. Developed in close consultation with the Town Planner and the BSC, this analysis reflects a collaborative effort to ground the B-CAP in strategies that are both contextually relevant and practically achievable. By analyzing their goals, strategies, implementation approaches, and unique features, this report aims to identify key lessons that can inform the development of the B-CAP. This comparative study will provide Boxborough with practical, data-driven insights into how municipalities of different sizes and structures approach sustainability, resilience, and community engagement.

The four communities were preselected by the Town of Boxborough and the BSC based on their geographic proximity to Boxborough, their existing climate action efforts, and their relevance to Boxborough's contextual concerns and priorities. Each town has taken its unique approach to climate action planning:

- Acton has adopted an ambitious net-zero emissions goal by 2030 with a strong focus on advocacy and electrification.
- Stow integrates progressive climate strategies with existing municipal policies, with a strong focus on encouraging household-level action.
- Lincoln takes a highly community-centered approach, emphasizing social equity, local engagement, and nature-based solutions.
- Greater Worcester represents a larger regional, multi-municipal initiative with significant funding and a strong emphasis on climate equity.

Together, each of these communities provides a diverse range of approaches, from small suburban initiatives to regional-scale planning, allowing Boxborough to cumulatively draw from a variety of strategies to develop its own CAP that is aligned with its own goals, resources, and values. This analysis assesses each CAP across the following key dimensions:

1. **Goals and Targets: Greenhouse Gas (GHG) emissions reduction commitments, vision, and timeline.**
2. **Key Strategies: Core policies used to achieve climate objectives, including waste management, water conservation, renewable energy adoption, sustainable transportation, and climate resilience and preparedness.**
3. **Implementation Approach: Structure of each community's CAP, including concerns of governance, stakeholder engagement, and funding sources.**

At the end, a 'Relevance for Boxborough' section outlines the lessons learned from each CAP that can be applied to the final B-CAP. It includes the notable aspects that distinguish each plan, such as innovative funding mechanisms, public participation models, or specialized tracking tools. This structured approach ensures that Boxborough can adapt proven climate strategies while considering its specific needs, community priorities, and available resources.

Acton Climate Action Plan

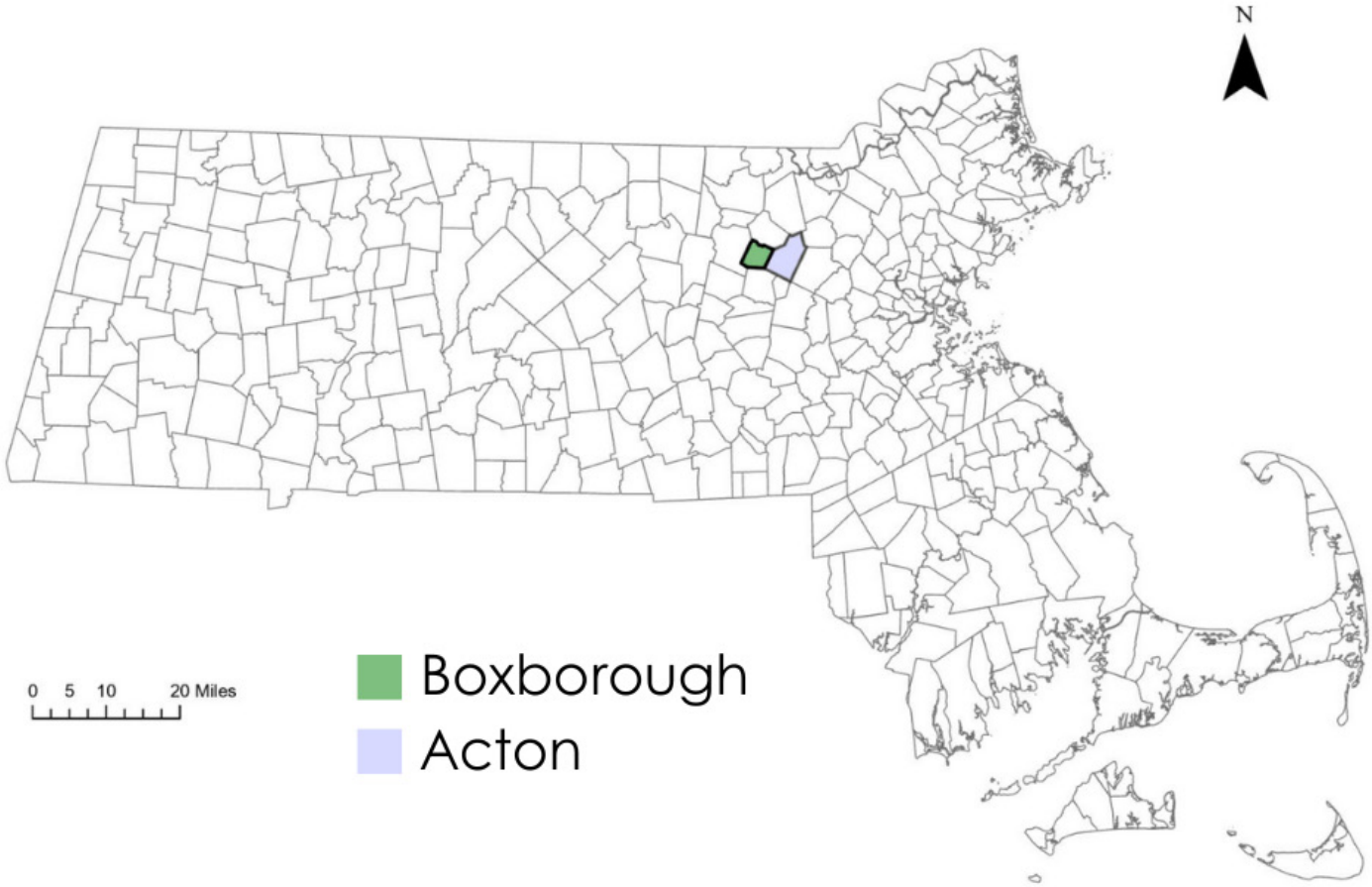


Fig 8. Map of Acton (Using data from MassGIS)

Demographic Context and Community Profile

The Acton Climate Action Plan (A-CAP) was adopted in July 2022 as a comprehensive framework to guide the Town of Acton's transition to net-zero greenhouse gas emissions by 2030 (Acton Sustainability Office, 2022, p. 1). Acton is a suburban community in Massachusetts with a population of approximately 23,627 residents and a median household income of $141,665, based on U.S. Census Bureau and American Community Survey data (Acton Sustainability Office, 2022, p. 12). Approximately 3.3% of residents live below the poverty level (Acton Sustainability Office, 2022, p. 12). Acton's relatively large size and economic resources have enabled the town to pursue ambitious climate strategies, many of which may require adaptation to fit the smaller scale and financial capacity of neighboring communities like Boxborough.

Goals and Targets

The A-CAP sets an ambitious goal of achieving net-zero GHG emissions by 2030 (p. 3, 7, 8). This target exceeds the Commonwealth of Massachusetts' legally binding target of 50% emissions reduction by 2030 and net-zero by 2050 (p. 8). Acton's goal is formalized in the 2020 Climate Emergency Declaration, which calls for a community-wide

climate mobilization effort to achieve net-zero emissions "as quickly as possible," with a target date of 2030 (p. 3, 7).

The A-CAP specifically focuses on three sectors: buildings, transportation, and energy use, which are identified as the largest sources of GHG emissions in Acton. According to the town's 2017 GHG Inventory, the most recent baseline assessment, the transportation sector alone accounted for 50% of community-wide emissions, followed by residential energy use (22%) and commercial energy use (16%) (p. 18). After implementing all planned mitigation strategies, over 90% of Acton's remaining emissions in 2030 are projected to come from transportation (73%) and buildings (23%) (p. 24). To address these sectors, the A-CAP establishes specific targets and strategic priorities, including:

- Providing 100% carbon-free electricity to all residents by 2030 (Acton Sustainability Office, 2022, p. 51)
- Achieving a 49% reduction in total energy use in existing buildings through electrification, insulation, weatherization, and adoption of clean heating and cooling technologies, as assumed in the plan's technical analysis (p. 34)
- Electrifying all municipal and school buildings by 2030 to transition the public building stock to net-zero emissions (p. 44)
- Increasing the adoption of electric vehicles (EVs) within the community and electrifying the municipal fleet and school buses, although the plan does not specify a numeric target or timeline (p. 65-73)
- Expanding EV charging infrastructure and promoting zero-emission mobility options, such as walking and biking, as key strategies to reduce transportation emissions, without setting explicit quantitative targets (p. 73-77)

In addition to reducing emissions, the CAP establishes qualitative goals to strengthen climate resilience and adaptation, such as protecting and restoring natural carbon sinks, improving flood resilience, and preparing the community for extreme weather events (p. 31). However, the plan does not set specific, measurable targets for these resilience objectives. Similarly, the CAP emphasizes the importance of climate equity, aiming to ensure that the benefits of climate action are distributed fairly, particularly to vulnerable populations, including low-income residents, renters, seniors, and non-English-speaking communities (p. 12, 35). These equity considerations are integrated as overarching principles and strategic priorities rather than formal, measurable targets.

Key Strategies

The A-CAP outlines several key strategies aimed at achieving its climate goals and targets, focusing on reducing greenhouse gas emissions, enhancing climate resilience, and promoting sustainability (p. 29-33).

In terms of Buildings and Energy, the plan emphasizes the electrification of buildings, transitioning from fossil fuel-based heating and cooling systems to electric heat pumps and other clean technologies, to provide 100% carbon-free electricity by 2030. Additionally, the plan calls for energy efficiency improvements such as promoting energy-efficient appliances, insulation,

and retrofitting existing buildings. Solar energy adoption is also a key focus, with incentives and rebates designed to increase solar installations on homes and public buildings (p. 29).

For Mobility and Transportation, the plan aims to promote EVs by expanding charging infrastructure and offering incentives, while also ensuring that new public fleets are electric. It also encourages public transportation improvements and expands active transportation options like biking and walking by developing better infrastructure such as bike lanes (p. 30).

In the area of Climate Resilience and Adaptation, the plan proposes measures to improve flood resilience, such as better stormwater management and elevating critical infrastructure, while also protecting and restoring natural carbon sinks like forests and wetlands. To mitigate the urban heat island effect, the plan includes strategies like tree planting, cool roofs, and green infrastructure (p. 31).

For Waste Reduction and Circular Economy, the plan focuses on reducing waste, particularly organic waste, and increasing recycling rates, while encouraging circular economy practices such as reusing and repurposing materials to lower the carbon footprint (p. 32).

In terms of Equity and Community Engagement, Acton's strategy ensures that climate action benefits are equitably distributed, especially to marginalized and low-income communities, and stresses the importance of community engagement in planning and implementation (p. 32). The plan also supports local food systems by promoting sustainable agriculture practices that reduce emissions and improve food security, along with regenerative agriculture to sequester carbon and improve soil health (p. 33).

In the area of Green Infrastructure and Urban Planning, Acton seeks to integrate nature into urban spaces through infrastructure such as rain gardens and permeable pavements, while ensuring sustainable land use that minimizes environmental impacts (p. 33). Finally, the plan advocates for carbon pricing to incentivize emission reductions and provides incentives for sustainability, such as subsidies for adopting solar panels, EVs, and energy-efficient appliances (p. 33).

Implementation Approach

The implementation of the A-CAP is grounded in a collaborative, adaptive, and community-driven approach, supported by dedicated municipal leadership and external partnerships.

In 2021, Acton appointed its first Sustainability Director, leading the efforts of the town's Sustainability Office to oversee and coordinate climate action implementation (p. 3, 7). The town's work is further supported by the Green Advisory Board, established in 2008 to promote energy efficiency and renewable energy initiatives at the local level (p. 6), as well as by municipal departments, local boards, and community stakeholders who contributed to the development of the plan (p. 4).

While the A-CAP outlines a range of strategies across sectors, these are largely voluntary and incentive-based, relying on community participation, education, and financial support rather than mandatory requirements. Implementation efforts are supported by a policy framework that aligns local action with key state programs and policies.

Acton has been part of the Massachusetts Green Communities Program since 2010 and, as an early adopter, has secured substantial grant funding to advance energy efficiency and clean energy projects, significantly accelerating implementation and capacity-building (p. 6, 70, 71 and EEA Office of Grants and Technical Assistance 2025). The town has also adopted the Specialized Opt-In Stretch Energy Code, which imposes more stringent energy performance standards for new buildings compared to the state's base code (p. 8, 49 and Massachusetts Department of Energy Resources, n.d. and Town of Acton Building Department, n.d.). These efforts are situated within the broader context of the 2021 Next-Generation Roadmap for Massachusetts Climate Policy, which mandates statewide GHG emissions reductions of 50% by 2030 and net-zero emissions by 2050, increases the Renewable Portfolio Standard, and introduces equity and community engagement requirements (p. 8).

In addition to mitigation strategies, Acton's implementation approach includes resilience planning supported by the Municipal Vulnerability Preparedness (MVP) Program, which provided funding and technical assistance for a Community Resilience Building Workshop held in 2018 (p. 10). The town is also preparing a Hazard Mitigation Plan Update to maintain eligibility for FEMA funding to address climate risks and natural hazards (p. 10).

Funding for the implementation of the A-CAP is drawn from a combination of state and federal grants, utility-administered programs, private-sector partnerships, and local investments. Key funding sources include the Green Communities Program (p. 8, 40), the MVP Program (p. 10, 35), and the Mass Save program, which offers energy efficiency incentives and rebates to residents, businesses, and municipalities (p. 35). The plan also anticipates leveraging additional state programs and private funding to support large-scale retrofits, renewable energy development, and transportation electrification. To reduce financial barriers, Acton provides incentives and rebates to encourage the adoption of clean technologies, such as energy-efficient appliances, electric vehicles, and solar installations (p. 35).

Although the A-CAP does not establish a formal, comprehensive monitoring and evaluation framework, it references the Energize Acton platform, an online community engagement tool that includes an Climate Action Tracker to estimate GHG emissions reductions achieved by residents and teams through voluntary actions (p. 117 and "Energize Acton," n.d. and Town of Acton 2024). Notably, this is the same model used for Energize Boxborough,

indicating that Boxborough is already aligned with Acton in its use of digital tools to promote local climate action ("Energize Boxborough," n.d.). Broader accountability is supported through continued public engagement, stakeholder collaboration, and transparency throughout the implementation process (p. 34–35).

One unique feature of the A-CAP is the Acton Climate Action Tracker, a real-time monitoring tool that tracks the progress of policy-prescribed actions, ensuring transparency and accountability in meeting the the town's climate targets (p. 36 and Town of Acton 2024).

At a special Town Meeting in 2020, the residents voted, nearly unanimously, to declare a Climate Emergency, stating "members of Acton Town Meeting call on Town government and staff, and all Acton civic groups, businesses, and residents to commit to a climate mobilization effort, with appropriate support from the state and federal governments, to bring net Town-wide carbon emissions to zero as quickly as possible, with a target date of 2030." (p. 9) This declaration underscores the town's strong commitment to urgent action, with a focus not only on mitigation but also on adaptation and building resilience against climate impacts, and thus sets the stage for the development and implementation of its A-CAP. (p. 37).

Finally, local collaboration is central to the plan, with partnerships with regional, state, and federal agencies, as well as involvement from the Acton-Boxborough Regional School District, particularly in the electrification efforts (p. 37). This commitment highlights potential areas of collaboration in the development of Boxborough's own CAP.

Stow Climate Action Plan

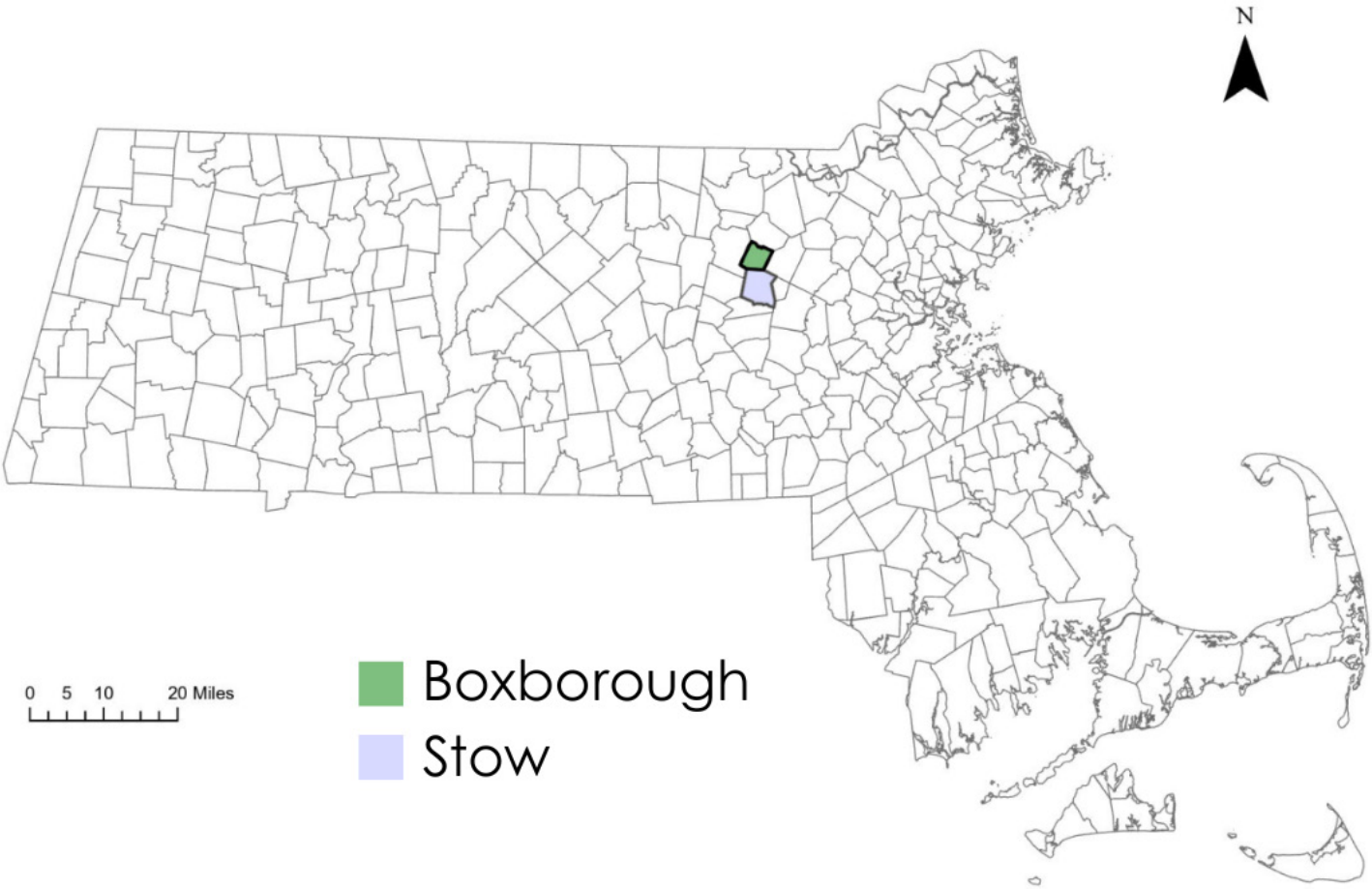


Fig 9. Map of Stow (Using data from MassGIS)

Demographic Context and Community Profile

Much like Boxborough, the town of Stow is a small, rural community that prides itself on its rural nature. About 38% of its territory is designated as conservation land, or otherwise restricted from building. Stow has ten distinct farms and orchards, and several of its residents also raise cattle, horses, and sheep, while others use their acreage to grow and harvest hay (p. 14). There are 7,190 residents in Stow, and the town has a median age of 40, which is slightly higher in population than Boxborough and lower in median age.

Stow is 95.7% white, 5.7 % Asian, 3.6% Hispanic, and 1.4% Black in approximate estimates based on the 2021 American Community Survey 5-year estimate (p. 15). The town does not meet any of Massachusetts's criteria to be considered an EJ Community (Executive Office of Energy and Environmental Affairs, n.d.).

There are 2,646 households in Stow, with an average household income of $168,973 and a median household income of $147,841. According to a 2022 Statista report, 3% of its residents live below the state-defined poverty line, starkly contrasted with the state-wide approximate of 10.4% in Massachusetts (Statista Research

Department 2024). A vast majority of the households are owner-occupied, with an estimated 14% of the population being renters (p. 15).

Goals and Targets

The Stow Climate Action Plan (S-CAP) outlines a clear and locally grounded pathway to reduce GHG emissions and strengthen climate resilience, in alignment with the Massachusetts 2021 Climate Roadmap Act. While the state's legally binding targets require a 50% reduction in emissions by 2030 and net-zero by 2050, Stow's CAP focuses specifically on the interim 2030 milestone to ensure concrete action in the near term (p. 10).

Given the town's smaller size and rural character, the S-CAP uses Stow's 2017 GHG inventory as its baseline, as no 1990 emissions data is available at the municipal level. In 2017, Stow's total emissions were estimated at 57,145 metric tons of carbon dioxide equivalent (MTCO2e), with transportation (52%) and buildings (44%) identified as the largest sources (p. 10–11). Consistent with state targets, the S-CAP sets a goal of reducing emissions by 36% from the 2017 baseline by 2030 (p. 10). The plan further acknowledges that Stow's long-term objective is to achieve net-zero emissions by 2050, offsetting any residual emissions through carbon sequestration and other mitigation strategies (p. 10). To achieve these objectives, the S-CAP sets the following sector-specific targets for 2030:

- Buildings: Reduce emissions by 37% from 2017 levels, primarily by increasing heat pump adoption, improving building efficiency, and expanding weatherization efforts (p. 19).
- Transportation: Cut emissions by 35%, with a specific target of increasing electric and hybrid vehicles to 19% of all registered vehicles and improving pedestrian and cycling infrastructure (p. 19).
- Energy: Advocate for continued provision of affordable, clean electricity through Hudson Light & Power, and support renewable energy and storage expansion (p. 19).
- Natural Solutions: Preserve and restore natural resources such as forests, wetlands, and agricultural land to enhance carbon sequestration and biodiversity (p. 19).
- Adaptation and Resilience: Improve the resilience of critical infrastructure, maintain the health of wetlands and soils, and strengthen water resource management (p. 19).

The plan adopts a community-driven approach, emphasizing that local action is essential to meet these goals: "The town can provide guidance, but achieving our goals is up to each of us. Our homes and vehicles are responsible for most of the town's greenhouse gas emissions. If Stow is to reduce emissions to a carbon-neutral level, every individual needs to make decisions starting now to reduce their reliance on fossil fuels." (p. 1).

While the S-CAP does not establish formal implementation phases, it prioritizes immediate and sustained action to meet the 2030 target, recognizing the need for continued progress beyond this milestone (p. 19–20). Progress monitoring is overseen by the Green Advisory Committee (GAC), which reports annually to the Select Board and Town Administrator (p. 20). Additionally, the town promotes resident engagement through the Energize Stow platform, an online tool that tracks individual contributions to the community's climate goals and encourages voluntary actions (p. 2 and "EnergizeStow," n.d.).

Key Strategies

The S-CAP builds on existing municipal planning efforts, integrating strategies from Stow's Master Plan, Open Space and Recreation Plan, Municipal Vulnerability Preparedness (MVP) Plan, Complete Streets Plan, and Housing Production Plan, ensuring that climate action aligns with broader town policies and development goals (p. 5). Recognizing the increasing risks posed by rising temperatures, extreme storms, flooding, and seasonal disruptions, the S-CAP prioritizes sector-based strategies that address both mitigation and adaptation to protect public health, infrastructure, and ecosystems (p. 8).

These priorities reflect Stow's rural character, demographic composition, and local climate vulnerabilities, reinforcing the need for targeted, community-driven solutions (p. 14).

Community engagement played a central role in shaping the S-CAP, as reflected in the 2022 community survey, which revealed that two-thirds of respondents expressed concern about climate change, identifying home weatherization, electric vehicle adoption, and enhanced recycling programs as top priorities (p. 17). However, the survey also highlighted cost as the main barrier to adopting climate-friendly measures, shaping the S-CAP's emphasis on affordability and accessibility in implementing solutions. The feedback collected from residents informed the plan's strategies, ensuring that proposed actions align with local concerns and capabilities.

A key aspect of Stow's strategy is its integrated approach to emissions reduction and climate resilience, ensuring that solutions are both technically feasible and financially accessible.

To achieve its 2030 emissions reduction target, the S-CAP focuses on five key areas, as previewed in the Plan at a Glance (p. 19) and detailed in the sector strategies (p. 21-40). For Buildings, the plan prioritizes scaling up electrification through targeted incentives and community outreach to accelerate the adoption of heat pumps, weatherization improvements, and energy-efficient retrofits (p. 21). In Transportation, the strategy focuses on reducing reliance on fossil fuel vehicles by expanding local support for EV charging infrastructure, enhancing alternative transit options, and guiding

municipal fleet transitions (p. 26). For Energy, rather than relying solely on state-driven energy policies, Stow is leveraging its municipal utility, Hudson Light & Power, to facilitate a community-driven clean energy transition, incorporating localized solar and storage solutions (p. 30). The plan also reinforces the role of Nature-based Solutions, emphasizing the preservation of forests, wetlands, and open spaces not only for carbon sequestration but also for flood mitigation and biodiversity protection (p. 34). Beyond GHG emission reduction, the S-CAP integrates Climate Adaptation by ensuring that critical infrastructure improvements, wetland restoration, and water resource management are embedded within the town's broader resilience planning (p. 39).

The GAC is responsible for overseeing the implementation of these strategies, ensuring they remain adaptable to emerging technologies, evolving policies, and community needs (p. 20). The S-CAP's emphasis on community participation, financial accessibility, and nature-based solutions distinguishes Stow's approach, positioning the town for a sustainable and resilient future while making climate action practical and inclusive.

Implementation Approach

The successful implementation of the S-CAP relies on the collaborative efforts of town leadership, local organizations, and community members, ensuring accountability and adaptability over time. The GAC, under the direction of the Select Board and Town Administrator, is responsible for monitoring progress, measuring impact, and updating the S-CAP as needed. The plan also acknowledges the potential need for a full-time Sustainability Director to manage and coordinate implementation efforts as Stow's climate initiatives expand (p. 20). Implementation is structured around sector-specific Action Plans, which provide a practical framework for advancing climate action by outlining clear responsibilities, funding mechanisms, and equity considerations (p. 41-67).

Each sector — Buildings, Transportation, Energy, Natural Solutions, and Adaptation and Resilience — has an individualized approach to executing key climate initiatives while addressing local constraints and opportunities. For buildings, implementation focuses on promoting heat pump adoption, expanding energy efficiency programs, and tracking participation in electrification efforts (p. 42). Challenges include upfront costs, homeowner awareness, and the availability of skilled labor, which the plan seeks to address through state and federal incentives. Equity considerations prioritize ensuring low-income households can access financial assistance for building upgrades.

In the Transportation sector, implementation efforts include supporting EV adoption, expanding public charging infrastructure, and developing a transition plan for municipal fleet electrification (p. 52). Barriers such as the high cost of EVs and limited charging access are addressed through state rebate programs and infrastructure expansion initiatives. The S-CAP also highlights the importance of increasing biking and public transit options to reduce overall vehicle emissions.

For Energy, Stow's municipal utility, Hudson Light & Power, plays a critical role in maintaining affordable, clean electricity while supporting renewable energy development, grid modernization, and energy storage solutions (p. 58). The implementation strategy includes advocating for increased renewable energy procurement and strengthening local grid resilience.

The Natural Solutions sector emphasizes preserving forests, wetlands, and agricultural land to enhance carbon sequestration and biodiversity (p. 63). Strategies include zoning protections, conservation easements, and incentives for sustainable land management. However, challenges such as development pressures and private land ownership constraints necessitate collaboration with local conservation groups and policy adjustments.

Finally, the Adaptation and Resilience sector focuses on enhancing infrastructure, improving water resource management, and restoring wetland ecosystems to mitigate climate-related risks (p. 67). The S-CAP highlights the importance of ensuring vulnerable populations have access to cooling centers, flood protections, and emergency preparedness resources to address climate impacts equitably.

Unlike many climate plans that focus predominantly on municipal actions, S-CAP places significant responsibility on individual residents, recognizing that most emissions come from privately owned buildings and vehicles (p. 2).

This bottom-up approach is reinforced by the mobilization of the Energize Stow platform, which enables residents to track their personal contributions to emissions reductions and access resources for adopting sustainable practices (p. 2 and "EnergizeStow," n.d.).

Stow has also demonstrated leadership in advancing local energy policies, being among the first Massachusetts towns to adopt the Specialized Opt-In Stretch Energy Code, which mandates high-efficiency, all-electric new construction (p. 46). Additionally, the town has secured major state and federal grants, such as a $500,000 building decarbonization grant for the Randall Library renovation, showcasing its ability to leverage funding opportunities for climate action (p. 17). These efforts highlight Stow's commitment to tangible, well-funded, and forward-thinking climate strategies that integrate both policy innovation and community engagement.

Lincoln Climate Action Plan

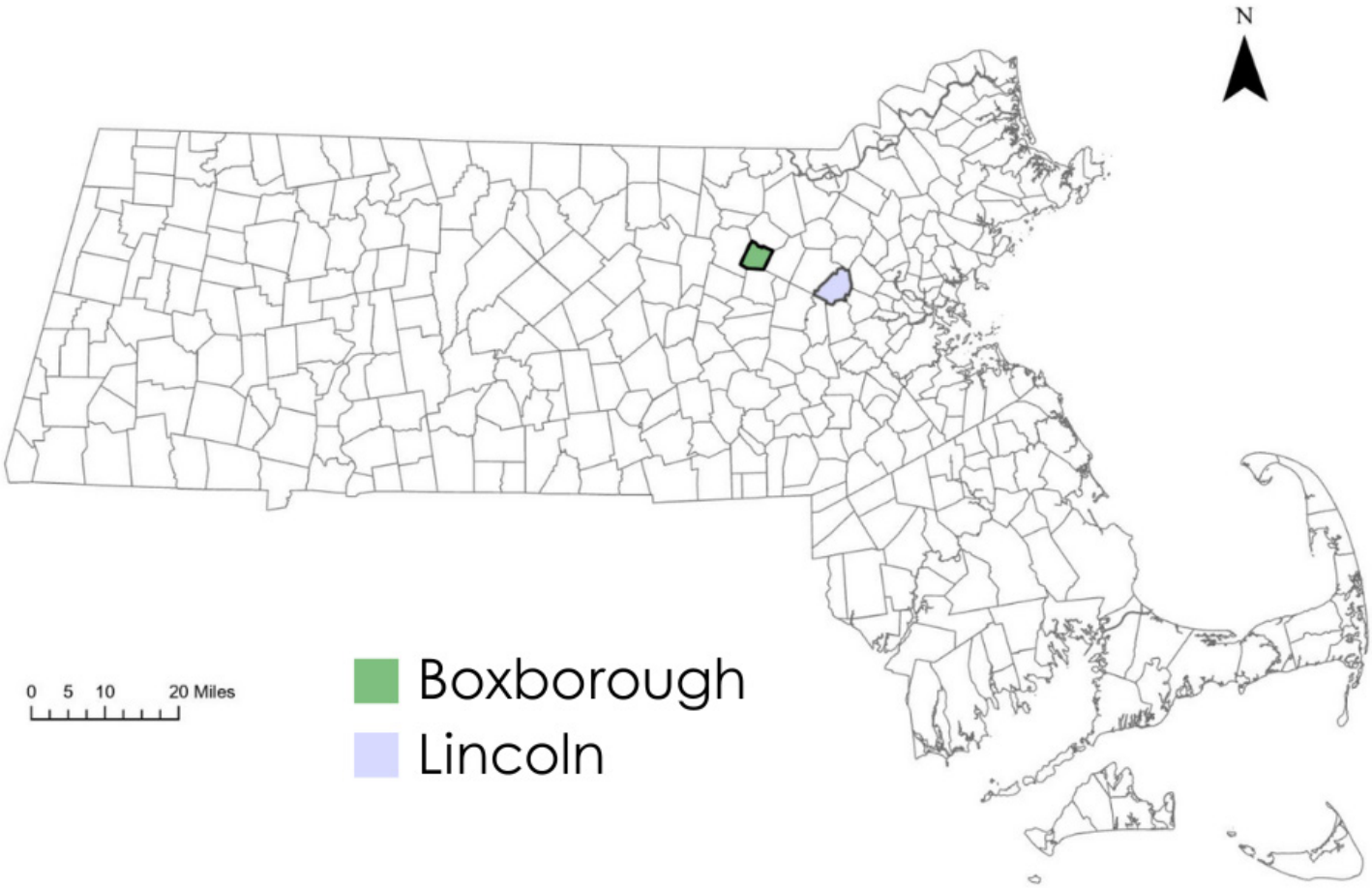


Fig 10. Map of Lincoln (Using data from MassGIS)

Demographic Context and Community Profile

Similar to Boxborough and Stow, Lincoln is also a small, rural community in Massachusetts that values its natural landscapes and open spaces. According to the Census Bureau, the town has a population of approximately 6,946 residents, with a median age of 43.2 years, which is higher than both Middlesex County's median age of 38.9 years and the state's median age of 40 years.

The racial composition of Lincoln is predominantly White at 73%, followed by Hispanic at 13%, Asian at 8%, individuals identifying with two or more races at 4%, African American at 1%, and other races at 1% ("Lincoln Demographics and Statistics," n.d.). The town consists of approximately 2,670 households, and has a median household income of $180,750, higher than both Middlesex County's median of $126,779 and the state's median of $101,341. Its income composition is captured again by a high per capita income of $107,437. Approximately 3.9% of residents live below the poverty line, which is lower than the county's rate of 7.5% and the state's rate of 10% ("Census Profile: Lincoln Town, Middlesex County, MA," n.d.).

The majority of housing units in Lincoln are owner-occupied, with a homeownership rate of 67.9%. According to the Census Bureau, the median value of these owner-occupied housing units is $1,180,100.

Goals and Targets

The Lincoln Comprehensive Climate Action Plan (L-CAP) establishes a strategic framework to reduce GHG emissions, enhance climate resilience, and promote equity in climate action. The plan adopts an integrated approach, addressing both mitigation and adaptation, and recognizes that climate change poses risks to the town's built and natural environments, as well as to the health and well-being of its residents, particularly vulnerable populations (p. 14).

The L-CAP aligns with the Commonwealth of Massachusetts' legally binding targets established by the 2021 Next-Generation Roadmap for Massachusetts Climate Policy, which mandates a 50% reduction in GHG emissions from 1990 levels by 2030, a 75% reduction by 2040, and net-zero emissions by 2050 (p. 14). While Lincoln does not establish separate numeric reduction targets at the municipal level, the plan's overarching goal is to ensure local action contributes to achieving the state's milestones.

The plan outlines seven key goals to guide Lincoln's climate initiatives:

1. Transition to clean energy to support the town's path to carbon neutrality
2. Enhance transportation accessibility and connectivity, prioritizing walkability, multimodal transit options, and affordability.
3. Protect agricultural, historic, and environmental resources from climate change impacts.
4. Improve climate hazard preparedness, particularly for underserved and vulnerable residents.
5. Increase waste diversion through reduction, composting, and recycling programs.
6. Support residents and businesses in making buildings more sustainable, resilient, and energy-efficient in an equitable and affordable manner.
7. Align local efforts with state climate goals, collaborating with regional and state partners to advocate for effective climate solutions (p. 14).

Equity and climate justice are central to the L-CAP. The plan acknowledges that seniors, renters, low-income individuals, and non-English-speaking residents face disproportionate climate risks and require targeted support (p. 6). This approach reflects the Environmental Justice (EJ) provisions of the state's Roadmap Act, which define EJ populations and require equitable outreach, engagement, and protections (p. 14).

The L-CAP does not include quantitative, time-bound emissions reduction targets at the local level but emphasizes a comprehensive and adaptive strategy. Proposed actions were evaluated based on their potential for GHG reduction, equity impacts, co-benefits, resilience capacity, and

feasibility (p. 15). The plan stresses the need for flexibility to incorporate new technologies, funding opportunities, and community needs over time (p. 15). In parallel, it acknowledges the urgency of addressing climate risks already affecting Lincoln, including increased flooding, drought, and extreme heat events (p. 9).

By embedding mitigation, adaptation, and equity considerations throughout the plan, Lincoln aims to contribute to statewide climate goals while ensuring local strategies are responsive, inclusive, and resilient.

Key Strategies

The L-CAP establishes sector-based priorities that integrate emissions reduction, climate adaptation, and community resilience, ensuring a well-rounded and applicable approach to climate action. Developed through extensive public engagement, the L-CAP reflects input from residents, businesses, and local organizations, building upon Lincoln's long-standing commitment to sustainability. Recognizing the urgency of climate action alongside the need for long-term resilience, the plan outlines strategies across six key areas:

1. Energy (p. 17-23) – Expanding solar infrastructure, promoting Lincoln Green Energy Choice, and helping residents access clean energy incentives.
2. Mobility (p. 24-34) – Cutting transportation emissions through improved public transit, electric vehicle adoption, and enhanced pedestrian and cyclist infrastructure
3. Built Environment (p. 35-44) – Supporting deep energy retrofits, building decarbonization, and requiring renewable energy assessments for new developments
4. Working Lands and Natural Resources (p. 45-52) – Enhancing land conservation, preventing deforestation, and promoting sustainable farming practices.
5. Social Resilience and Education (p. 53-56) – Strengthening support for vulnerable populations, improving emergency preparedness, and expanding climate education
6. Water and Solid Waste Management (p. 57-61) – Scaling up composting, improving stormwater management, and minimizing landfill waste.

Lincoln's climate strategies build upon nearly two decades of sustainability efforts, ensuring that new initiatives enhance existing work rather than starting from scratch. The town's commitment to climate resilience planning dates back to its participation in the MVP Program in 2018, which identified key climate risks such as flooding, extreme storms, and droughts (p. 5). The 2019 Community Resilience Building Workshop reinforced these findings, highlighting the heightened vulnerability of seniors, low-income residents, and individuals living alone to extreme heat and other climate hazards (p. 5). Additionally, since its establishment in 2006, the Green Energy Committee (GEC) has led efforts to expand clean energy adoption, with Lincoln actively engaging in statewide programs like Solarize Mass to promote solar power (p. 8). These foundational initiatives provided the groundwork for the L-CAP, embedding climate action within municipal planning and long-term development goals.

The L-CAP's strategies are shaped by Lincoln's specific climate challenges, ensuring they are locally relevant and action-oriented. Buildings and transportation account for the majority of the town's GHG emissions (60% and 37.8%, respectively), making building electrification, energy efficiency, and expanded renewable energy adoption top priorities, alongside EV adoption, public transit improvements, and active mobility infrastructure (p. 9-10, 17, 24). Rising risks of flooding and drought drive strategies focused on forest conservation, wetland restoration, and sustainable land use. Waste and water management efforts emphasize stormwater infrastructure improvements, composting, and water conservation (p. 45, 57). Recognizing that climate impacts disproportionately affect vulnerable residents, the plan incorporates social resilience measures to ensure equitable access to adaptation resources (p. 53).

Community engagement was central to the L-CAP's development, ensuring that strategies align with local priorities and concerns. Over a nine-month planning process, Lincoln gathered input from residents through online surveys, listening tours, workshops, and focus groups, allowing for direct feedback on proposed strategies (p. 5). The Climate Action Lincoln (CAL) subcommittee of the GEC played a key role in advocating for the L-CAP, securing broad involvement from municipal boards and committees (p. 5). The MAPC facilitated the engagement process, using a structured methodology to analyze public input, categorize themes, and integrate findings into the L-CAP (p. 7). This participatory approach helped ensure that strategies were financially accessible, technically feasible, and equitable, particularly for historically underserved populations (p. 12).

To prioritize and refine the proposed strategies, the L-CAP underwent a rigorous evaluation process in collaboration with MAPC and the Lincoln Climate Action Plan Working Group. More than 200 strategy ideas emerged from community engagement activities, which were then consolidated and ranked based on six criteria: GHG reduction potential, equity impact, co-benefit potential, resilience-building capacity, level of effort required, and cost to implement (p. 15). Each strategy was assigned a numerical ranking, supplemented by qualitative insights from workshops and focus groups, to determine the highest-priority actions for each focus area (p. 16). This data-driven evaluation ensures that Lincoln's climate strategies remain adaptable as new technologies, funding opportunities, and community needs emerge (p. 16).

With strong governance mechanisms in place, the L-CAP is designed for long-term success. The Lincoln Climate Action Working Group is responsible for tracking progress, ensuring accountability, and maintaining public engagement throughout implementation (p. 3).

The plan's participatory governance model, alongside its emphasis on affordability, equity, and conservation-based solutions, positions Lincoln as a leader in community-driven climate action. By maintaining a practical and inclusive approach, the town is well-equipped to advance sustainability efforts for years to come.

Implementation Approach

The implementation approach of the L-CAP is built around sector-based roadmaps, providing clear action steps, accountability measures, and mechanisms for periodic review. Developed through collaboration with the Lincoln Climate Action Plan Working Group, town staff, and extensive community engagement, this strategy ensures that climate actions are practical, equitable, and aligned with local priorities (p. 16). To guide implementation, strategies are categorized into four primary action types:

1. Capacity building – Strengthening municipal and community expertise in climate action.
2. Technical assistance – Offering targeted assessments and resources
3. Policy – Enacting regulatory changes to support climate initiatives
4. Advocacy – Engaging Lincoln in broader regional and state-level climate efforts.

Each implementation roadmap defines key responsibilities, ensuring that every strategy has a designated lead, clear next steps, equity considerations, potential co-benefits, implementation partners, funding sources, and success measures (p. 16).

A mix of municipal departments, community organizations, and advisory committees will lead implementation efforts. CAL, the GEC, and other local partners will play a crucial role in tracking progress and making adjustments over time (p. 16). The L-CAP also establishes a structured review framework, with Lincoln committing to updating the plan every three to five years to reflect the latest climate data, technological advancements, and policy changes (p. 16). Each sector-specific roadmap tailors strategies to Lincoln's unique challenges and opportunities:

1. Energy – Implementation focuses on expanding renewable energy, increasing efficiency in buildings, and enhancing local energy resilience. Key actions include scaling up solar installations, promoting Lincoln Green Energy Choice, and helping residents access clean energy incentives (p. 19).
2. Mobility – The L-CAP prioritizes reducing transportation emissions through expanded pedestrian and cycling infrastructure, improved public transit, and accelerated EV adoption. Actions include developing local shuttle services, improving trail connectivity, and securing state and regional funding for EV infrastructure (p. 29).
3. Built Environment – Efforts aim to decarbonize Lincoln's buildings by supporting electrification, efficiency upgrades, and resilient infrastructure development. This includes assessing municipal facilities for clean energy upgrades, supporting homeowners with weatherization programs, and integrating low-carbon building standards into local policies (p. 36).
4. Working Lands and Natural Resources – Strategies focus on protecting forests, wetlands, and agricultural land to enhance carbon sequestration and climate resilience. Key actions include updating conservation regulations, promoting sustainable land management, and fostering regional collaboration

on food security and biodiversity protection (p. 47).

5. Water and Solid Waste Management – The L-CAP emphasizes waste reduction, improved stormwater infrastructure, and expanded composting and recycling programs. Implementation includes developing sustainable waste management guidelines, expanding municipal composting, and integrating nature-based solutions for flood mitigation (p. 51).
6. Social Resilience – Embedded across all strategies, social resilience efforts ensure that climate benefits are equitably distributed. The plan prioritizes targeted outreach to vulnerable populations, inclusive community engagement, and financial assistance programs to help low-income households adapt to climate impacts (p. 6).

Lincoln is committed to ensuring the long-term financial sustainability of its climate initiatives. The town will leverage state and federal funding sources, including the Massachusetts Clean Energy Center (MassCEC), the U.S. Department of Energy (DOE), and the EEA (p. 17). These funding efforts are strengthened through active regional and state-level collaboration, which serves as a cornerstone of Lincoln's approach. By working closely with partners such as the MAPC and MassCEC, Lincoln ensures that local climate actions are aligned with broader state goals while maximizing technical support and resource mobilization. Progress will be monitored and measured through an online dashboard and periodic progress reports, tracking key indicators such as emissions reductions, energy transition milestones, and community participation metrics (p. 53).

The L-CAP stands out for its community engagement. Unlike many climate action plans that rely primarily on surveys, Lincoln's planning process incorporated a diverse range of engagement strategies, including community workshops, focus groups, listening tours, and stakeholder mapping (p. 13) These efforts ensured that voices from renters, seniors, local farmers, and non-English speakers were actively included in the plan's development. As a result, over 200 strategy ideas emerged from public participation, shaping the L-CAP's priorities.

Lincoln also prioritizes nature-based solutions more so than the other CAPS, leveraging its rural landscape and abundant open space, with 40% of the town's land permanently protected. Nature-based solutions are led in strategy and implementation by the Lincoln Conservation Commission, with emphasis on regenerative land management, sustainable agriculture, and forest conservation for reducing emissions and enhancing climate resilience.

Greater Worcester Climate Action Plan

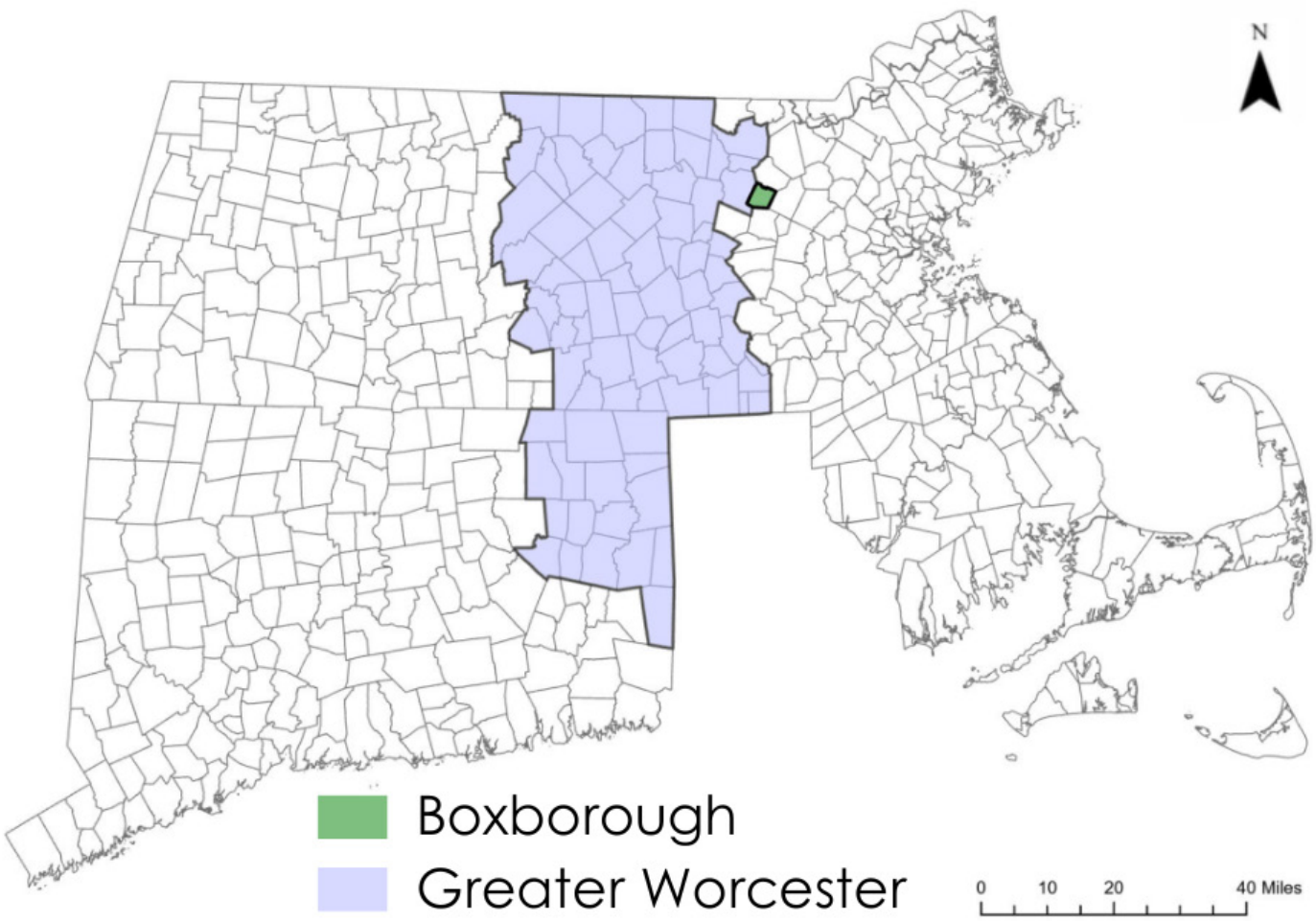


Fig 11. Map of Greater Worcester (Using data from MassGIS)

Demographic Context and Community Profile

The focus of this case study is on the Greater Worcester Massachusetts-Connecticut (MA-CT) Climate Pollution Reduction Grant (CPRG) Planning Region. It covers a broader and more diverse area than individual towns like Stow or Lincoln, and thus faces more complex climate challenges and administrative coordination. While it is not directly comparable to Boxborough in size or scope, its geographic proximity and participation in regional climate planning make it a useful case study for understanding collaborative approaches. It is important to note that the CPRG Planning Region is not the same as the Worcester MA-CT Metro Area. The towns of Ashby, Townsend, Shirley, Groton, Ayer (in Massachusetts), and Union and Voluntown (in Connecticut) are part of the CPRG Planning Region but not the Metro Area. Meanwhile, Southborough and Milford (in Massachusetts) are part of the Metro Area but not included in the CPRG Planning Region.

According to the 2020 US Decennial Census, approximately 1/4th of residents in the Greater Worcester Region identify as a race other than white or with two or more races, while 13% of residents of any race identify as Hispanic or Latino. There are large communities of African Americans, Asian Americans, and

Hispanic and Latino Americans who have lived in the region for a long time, as well as recent immigrants from Africa, Asia, Latin America, and other regions around the world (p. 15). The largest communities of non-white residents in the Greater Worcester region live in urban areas, especially within the seven municipalities with federally designated Justice40 LIDAC Census Tracts within them: Fitchburg, Gardner, Leominster, Southbridge, Webster, and Worcester in Massachusetts as well as Windham in Connecticut (p. 16).

One of the starkest contrasts between the Greater Worcester region and Boxborough or the other towns studied in this report is in income and economic diversity. While there are many thousands of households with comparable income profiles to Boxborough, close to 30% of households in Greater Worcester have yearly incomes that are lower than $50,000, according to the 2018-2022 5-year American Community Survey estimates (U.S. Census Bureau, n.d.). As the CAP posits, "There are clear geographic disparities in median household income within the Greater Worcester region." Residents of the municipalities to the east, northeast, near northwest, and southeast of Worcester are, on average, more financially well-off than residents of communities in northern, far northwestern, western, and southwestern Worcester County (p. 24).

Finally, it is again worth noting here that The Greater Worcester Region has both a growing aging population, similar to the towns we have analyzed so far, as well as a substantial youth population. The median age in the county has been increasing, with a notable 42% rise among individuals aged 60-84 between 2008-2012 and 2018-2022, reflecting an aging demographic trend (Greater Worcester Community Foundation, n.d.).

Goals and Targets

The Greater Worcester Priority Climate Action Plan (GWP-CAP) outlines a short-term, action-oriented strategy to advance GHG emissions reductions and climate justice across the Greater Worcester MA-CT CPRG Planning Region, which includes 80 municipalities in Central Massachusetts and Northeastern Connecticut (p. 10)

Developed in collaboration with the Central Massachusetts Regional Planning Commission (CMRPC) and the Northeast Connecticut Council of Governments (NECCOG), the plan is designed as an initial step in a broader climate planning process, focusing exclusively on projects that can be implemented by 2035 (p. 4, 10).

The GWP-CAP does not establish quantitative, regional emissions reduction targets. Instead, it provides a strategic framework for immediate mitigation and adaptation actions, intending to lay the groundwork for long-term climate objectives. A Comprehensive CAP, scheduled for release in 2025, will set detailed policies, strategies, and quantified emissions reduction targets to achieve net-zero or net-negative emissions by 2050 (p. 10).

The plan identifies five priority sectors, each with four specific goals, resulting in a total of 20 goals (p. 20, 65–67):

1. TrTransportation: Reduce vehicle travel demand and improve multimodal mobility; enhance freight and fleet efficiency; improve fuel efficiency; and accelerate transportation electrification (p. 67).
2. Electricity: Scale up renewable energy generation and fuel-switching; increase efficiency of or decommission fossil fuel power plants; reduce electricity consumption and peak demand; and improve grid infrastructure (p. 67).
3. Buildings: Electrify residential, commercial, and municipal buildings; improve building energy efficiency; enhance energy efficiency in water and waste facilities; and promote passive heating and cooling through building design (p. 67).
4. Waste Management: Reduce waste generation; improve the quality of recycling streams; phase out hard-to-recycle materials; and sustainably manage disposal facilities (p. 67).
5. Agricultural, Natural, and Working Lands: Protect and preserve natural resources; enhance carbon sequestration; scale up sustainable land use practices; and improve livestock and manure management (p. 66).

A key emphasis of the GWP-CAP is its commitment to climate justice and equity. The plan acknowledges that the Greater Worcester region is home to racially, ethnically, and culturally diverse populations and that seven out of the 80 municipalities in the planning region contain Justice40 LIDAC Census Tracts, communities identified as being disproportionately burdened by environmental, social, and economic inequities (p. 16).

Environmental justice considerations informed the prioritization of all goals, and the plan was developed through an extensive public engagement process to ensure that community voices shaped the selection and ranking of actions (p. 14, 63).

While the plan does not include measurable emissions reduction targets, it is explicitly framed as a preliminary step toward regional decarbonization, focusing on actionable strategies that can be implemented by 2035. The forthcoming Comprehensive CAP will build upon this foundation by establishing long-term policies, metrics, and reduction pathways to achieve the region's net-zero ambitions.

Key Strategies

The GWP-CAP is driven by data. A 2017 GHG Emissions Inventory found that 9.1 million carbon dioxide equivalents were emitted by the Worcester, MA–CT Metropolitan Statistical Area (MSA) in that year alone (p. 60). Decreasing GHG emissions is central to the work identified in the GWP-CAP. The priority plan looks to work toward this goal incrementally. GWP-CAP stresses the importance of small, collective actions that can spur greater actions in the region over time (p. 60). This GHG emissions figure includes a further breakdown by sector, as seen in table 1.

Table 1. GHG Emissions Inventory Sectors, Key Data, and Resulting Emissions (Central Massachusetts Regional Planning Commission 2024)

Sector	Key Data	Emissions (MMT CO2e)
Stationary Energy	Residential and commercial/institutional usage (natural gas, fuel oil), off-road equipment	3.4
Electricity	Residential & commercial/institutional usage, transmission and distribution losses (investor-owned utilities, municipal utilities, and community aggregation)	1.5
Transportation	Passenger vehicles, commercial vehicles, MBTA (Massachusetts Bay Transit Authority) commuter rail	5.6
Waste	Landfilled and incinerated waste, composted and anaerobically digested waste, wastewater	0.5
Agriculture	Commercial fertilizer usage	0.03
Natural & Working Lands	Tree carbon sequestration based on canopy	-2.0
	Total Net Emissions (MMT CO2e)	**9.1**

In 2017, 51% of emissions in Worcester, MA–CT MSA came from the transportation sector, with an additional 45% coming from stationary energy and electricity. GWP-CAP offers problems and practical solutions that can be used to decrease emissions in these sectors (p. 72). In the transportation sector, GWP-CAP acknowledges the aging population and the need for greater accessibility by public transportation (p. 84). Increased public transportation options and public education are identified as the greatest ways to lower this figure by 2035.

Stationary energy refers to the energy generated in locations that do not move. In Greater Worcester, this is primarily commercial and residential buildings, construction sites, and manufacturing industries (p. 107). Although this section is quite large and

widespread, the GWP-CAP emphasizes the need for public education and outreach efforts to decrease emissions across the broad sector. This GHG inventory is a key driver of the GWP-CAP, as it provides support for both implementation practices and public engagement.

Additionally, the GWP-CAP was created through a social and environmental justice lens. Low-Income Disadvantaged Communities (LIDACs) are communities that fit specifically identified criteria that are identified as "disadvantaged by the Climate and Economic Justice Screening Tool (CEJST); Any census block group that is at or above the 90th percentile for any of EJScreen's Supplemental Indexes when compared to the nation or state, and/or any geographic area within Tribal lands as included in EJScreen" (p. 6).

This priority focuses on the historical injustices that have impacted marginalized communities. Seven municipalities in the Greater Worcester MSA have Justice40 LIDAC Census Tract areas within them. These towns include Worcester, Windham, Webster, Southbridge, Leominster, Gardner, and Fitchburg (p. 16). Municipalities with LIDAC Census Tract areas within their borders are essential to the GWP-CAP, as they feature neighborhoods that are most directly harmed by climate change and environmental issues.

Implementation Approach

The GWP-CAP is the first step on the way to the more expansive Greater Worcester Comprehensive Climate Action Plan to be released in 2025 (p. 59). It focuses heavily on actions that communities and individuals can take while providing meaningful and actionable solutions to work on. This priority plan places less emphasis on longer and resource-intensive strategies than it does on things that can be done in the Greater Worcester area by 2035. Chosen topics included: transportation, energy, building, waste management, agriculture, and natural and working lands (p. 60). These sectors and the designated goals are intentionally broad so that they can be built upon in the comprehensive plan. Although the plan does not offer concrete changes to be made by section, it offers strong actions that can be taken overall. Across all sectors, encouraging public transportation use, decreasing municipal and commercial energy usage, and supporting marginalized communities were crucial to plan implementation at large.

The public plays a large role in the sectors, priorities, and aspects chosen. Furthermore, public participation is identified as crucial to the implementation of the GWP-CAP and to the long-term plan. The NECCOG and CMRPC collaborated with members of the public by inviting them to take part in ten workshops, which took place from November 2023 to January 2024 at locations across the Greater Worcester MSA (p. 62). Participants were shown a brief slideshow on the Climate Pollution Reduction Grant program and other climate and environmental justice topics (p. 64). Then, they were given the opportunity to vote on what mattered to them.

For the first activity of each workshop, members of the public used a ranked-choice voting system to show which goals they view as the most urgent (p. 83). They were also allowed to propose their own goals relating to each of the sectors. Each workshop's second

activity was a mock investment exercise (p. 83). Participants "invested" in two of the sectors that they felt were most important. The table below shows ranked results from one such set of eight workshops:

Table 2. Cumulative Goal Urgency Ranking from GWP-CAP Workshop One

Goal / Option	Rank
Reduce overall vehicle travel demand and improve mobility for all modes of transportation (i.e., active transportation and transit).	1
Improve the operational efficiency of freight and fleet.	2
Improve fuel efficiency.	3
Electrify personal transportation networks and scale up fuel switching efforts.	4

These investments were used as community feedback in deciding which sectors were most important to the GWP-CAP. GWP-CAP provides learning opportunities to be used to craft a collaborative and community-centered plan. Offering ten separate workshops in areas across the area allowed the CMRPC and the NECCOG to craft a priority plan that reflected the beliefs and ideas of the people who will be impacted by the plan's implementation (p. 62). Demographic details were important to plan creation. CMRPC and NECCOG found accurate and reflective demographic statistics that were used to inform the plan (p. 14). Furthermore, the GWP-CAP identified LIDACs and provided specific considerations for marginalized communities (p. 16).

The GWP-CAP is the precursor to the comprehensive plan that is set to be released in 2025 (p. 59). The phased approach created goals and considerations to be taken in the short-term, which is identified as before 2035 (p. 10). The comprehensive plan will look more futuristically, setting goals to be met by 2050. By working in phases, municipalities can work on manageable, achievable sections with measurable goals to be met over time.

Comparative Analysis

The Targets, Focus, and Opportunities Across Massachusetts CAPs table outlines major themes and priorities across the four CAPs. The table is delineated by location, net-zero target year, key focus areas and by important topics. Importance of each area is coded by significance and the actionable steps that the community or governing body can take. The color system indicates the importance of each topic, with the darkest purple squares being of the highest priority and lightest being of the least priority.

Table 3: Targets, Focus, and Opportunities Across Massachusetts CAPs

High Priority	Medium Priority	Low Priority

	Acton	Stow	Lincoln	Greater Worcester
Waste Management	Reducing waste, increasing recycling rates, and encouraging circular economy practices	Not clearly mentioned	Scaling up composting, minimizing landfill waste	Reducing waste, improving the quality of residential recycling streams, phasing out difficult-to-recycle materials, and sustainably managing disposal facilities
Water Conservation	Not clearly mentioned	Improving water resource management	Improving stormwater management and water conservation	Improving energy efficiency of drinking water, wastewater, and waste management buildings
Energy Goals and Opportunities	100% carbon-free electricity, electrification of buildings, and incentives for solar energy	Ensuring affordable clean energy, and supporting renewable energy storage	Expanding infrastructure, promoting clean energy, and providing incentives to the public	Increasing clean energy efforts and infrastructure, decommissioning fossil fuel-fired power plants, and reducing overall electricity use
Sustainable Transportation	Promoting EVs, improving public transportation, and expanding active transportation options	Promoting EVs, expanding infrastructure, and increasing public and active transportation options	Promoting EVs, improving public transit, and enhancing active transportation infrastructure	Reducing vehicle travel, improving active and public transportation options, increasing operational and fuel efficiency, and promoting EVs
Climate Resilience and Preparedness	Improving flood resilience, protecting and restoring natural carbon sinks, and promoting green infrastructure	Enhancing infrastructure, restoring wetland ecosystem, and land management	Expanding education, improving preparedness, and land conservation	Land management, protection, and conservation

	Acton	Stow	Lincoln	Greater Worcester
Net-Zero Target Year	2030	2050	2050	2050
Key Focus Areas	Energy efficiency, renewable energy, electric vehicle expansion, and equitable climate resilience and adaptation	Buildings, transportation, energy, natural solutions, and adaptation and resilience	Clean energy, transportation, resource protection, climate preparedness, waste management, buildings, and equity	Electricity, buildings, waste management, and land
Public Engagement	Focus on public engagement in all phases of the plan	Centered the public in shaping the CAP and implemented an advisory committee to oversee the CAP	Prioritized a participatory approach during the creation of the CAP	Focus on regional engagement and public participation
Funding	State and federal grants and private-sector partnerships and investments	State and federal grants/incentives, regional organizations, and private-sector partnerships and investments	State, regional, and federal grants and programs	Federal funding
Policy Advocacy	Community-driven approach	Places responsibility on individuals	Collaborating with regional and state partners	Focus on community participation and regional partnerships

Constraints and Limitations

Several structural and institutional constraints exist when comparing Boxborough with Acton, Lincoln, and Stow. Direct contrast is not possible between the Greater Worcester region and Boxborough here, as the scale and scope of their respective CAPs are incomparably different geographically and financially.

A primary challenge facing Boxborough is the limited municipal capacity to implement large-scale sustainability initiatives. For instance, Boxborough only has one full-time planner on staff, which limits the town's ability to independently initiate and manage comprehensive planning and sustainability efforts. In contrast, the development of the L-CAP was led by a Planning and Land Use team that included both a Director and an Assistant Director, supported by staff from multiple departments and the Metropolitan Area Planning Council (p. 2-5). Similarly, Acton established an Office of Sustainability with dedicated personnel, and the A-CAP emphasizes that continued investment in this office's capacity and staffing is a key metric of success. Further, it supports the creation of an Energy Advocate position within the sustainability office to develop energy advocacy support services for residents (p. 54).

In Stow, while there is no formal Office of Sustainability, the GAC plays a prominent role in planning and implementation, as does grant-funded consulting support from MAPC (p. 2). This highlights a distinction: although Stow is smaller and more rural than Acton, it has leveraged external support to enhance its climate capacity—an option that Boxborough may consider.

Another significant limitation in Boxborough is the town's reliance on neighboring municipalities for critical infrastructure. Boxborough does not operate its own sewer or water systems and instead depends on shared or regional services. This limits the town's capacity to implement certain sustainability measures, such as wastewater or water supply resilience projects, without significant coordination with external entities. In contrast, both Lincoln and Acton manage their own water systems. Lincoln's surface and groundwater well systems are overseen by a local water commission, while Acton collaborates with the Acton Water District to ensure equitable and resilient water infrastructure (Town of Lincoln, n.d. and A-CAP p. 111).

Financial constraints further complicate Boxborough's planning efforts. While towns like Acton and Lincoln have leveraged substantial state funding, including the aforementioned MVP Action Grants and Green Communities programs, Boxborough has relatively limited fiscal flexibility and lacks a dedicated budget line for climate initiatives. The A-CAP proposes the creation of a specific climate emergency budget as part of its implementation roadmap (p. 118). Stow, although more comparable to Boxborough in terms of size, benefits from access to local energy funding through Hudson Light & Power, which provides up to $30,000 annually for qualified energy efficiency measures (p. 53-56).

These limitations suggest that a major barrier to advancing climate action in Boxborough is the lack of institutional and fiscal capacity. Community members have expressed support for sustainability and are willing to invest in climate-friendly behaviors and technologies, such as home retrofits and EV infrastructure. However, without sufficient staff, funding, or control over essential utilities, the local government faces significant challenges in transforming community enthusiasm into actionable climate policy.

Key Takeaways for Boxborough

- **Ambitious Targets vs. Realistic Timelines**

Acton's 2030 goal is aggressive but relies heavily on widespread community advocacy, while Stow, Lincoln, and Greater Worcester have structured long-term pathways to 2050. Boxborough's timeline must be actionable, achievable, and feasible with available resources while pushing for early action.

- **Community Engagement is Essential**

Acton has worked towards an achievable outcome by utilizing workshops, surveys, and various public meetings. These community interactions

help to support the overall success and vitality of any CAP. Furthermore, Lincoln's success with broad community involvement highlights the importance of diverse outreach methods. Boxborough should continue to incorporate workshops, surveys, and participatory planning methods through the process of creating, fine-tuning, and adapting the CAP.

- **Regional Collaboration Can Enhance Impact**

While the structure and design of the GWP-CAP is not directly comparable to Boxborough in scale, the multi-town approach demonstrates that Boxborough could benefit from partnering with nearby municipalities for shared resources and funding opportunities. Presently, Boxborough has limited resources available for implementation efforts. Accessing resources available to the region and neighboring communities may be a feasible way for Boxborough to implement the CAP on an achievable timeline. Acton's CAP discusses keeping open lines of communication with the community, which can also apply to regional and collaborative efforts.

- **Policy and Funding Strategies Vary**

Acton relies on state advocacy, Stow prioritizes individual action, Lincoln integrates financial incentives, and Greater Worcester secures large-scale federal funding. Boxborough should adopt a mixed funding approach, leveraging state, regional, and federal grants. Considering the Trump Administration's discontinuation of many climate-related federal funding opportunities, Boxborough should also explore alternative funding opportunities, such as those exemplified by Stow's prioritization of individual actions and Acton's state advocacy work. actions and Acton's state advocacy work.

Synthesis

The case study analysis of Acton, Stow, Lincoln, and Greater Worcester provides valuable insights for the development of Boxborough's Climate Action Plan. While each municipality has taken a distinct approach, common themes such as community engagement, ambitious yet practical targets, diverse funding mechanisms, and policy integration emerge as best practices.

Moving forward, Boxborough should combine elements from these case studies to craft a CAP that is ambitious, data-driven, and community-centered. The next steps will involve synthesizing public input, finalizing emissions reduction targets, and identifying priority actions for implementation. By leveraging lessons from these case studies, Boxborough can develop a comprehensive and actionable roadmap toward a more sustainable future.

(West 2007a)

Chapter 5
Data Analysis

Demographic Insights

The B-CAP survey, consisting of 29 questions and optional demographic queries, was completed by 151 respondents, of whom 140 were residents of Boxborough. This survey provides valuable insights into the community's attitudes and preferences regarding climate action, sustainability, and development. The demographic section captured data such as age distribution, gender breakdown, residential status, and housing types. The majority of respondents are 65 years or older, with significant representation from the 35-44, 45-54, and 55-64 age groups. Most identify as women (62.9%), and the majority are homeowners (82.9%) residing in single-family homes (80%). The demographic data provides essential context for understanding the community's composition and tailoring climate strategies effectively. Through the analysis of both quantitative data from the survey and qualitative data from the background research and case studies, key themes have been identified that reflect the concerns and priorities of Boxborough residents. These themes align with the primary focal areas established in collaboration with the BSC. The selected focal areas are: General Climate Concerns, Water Resource Management, Community Education, Building and Energy Efficiency, and Transportation and Mobility. The following sections present a detailed report of the survey's quantitative findings and their implications for the B-CAP development.

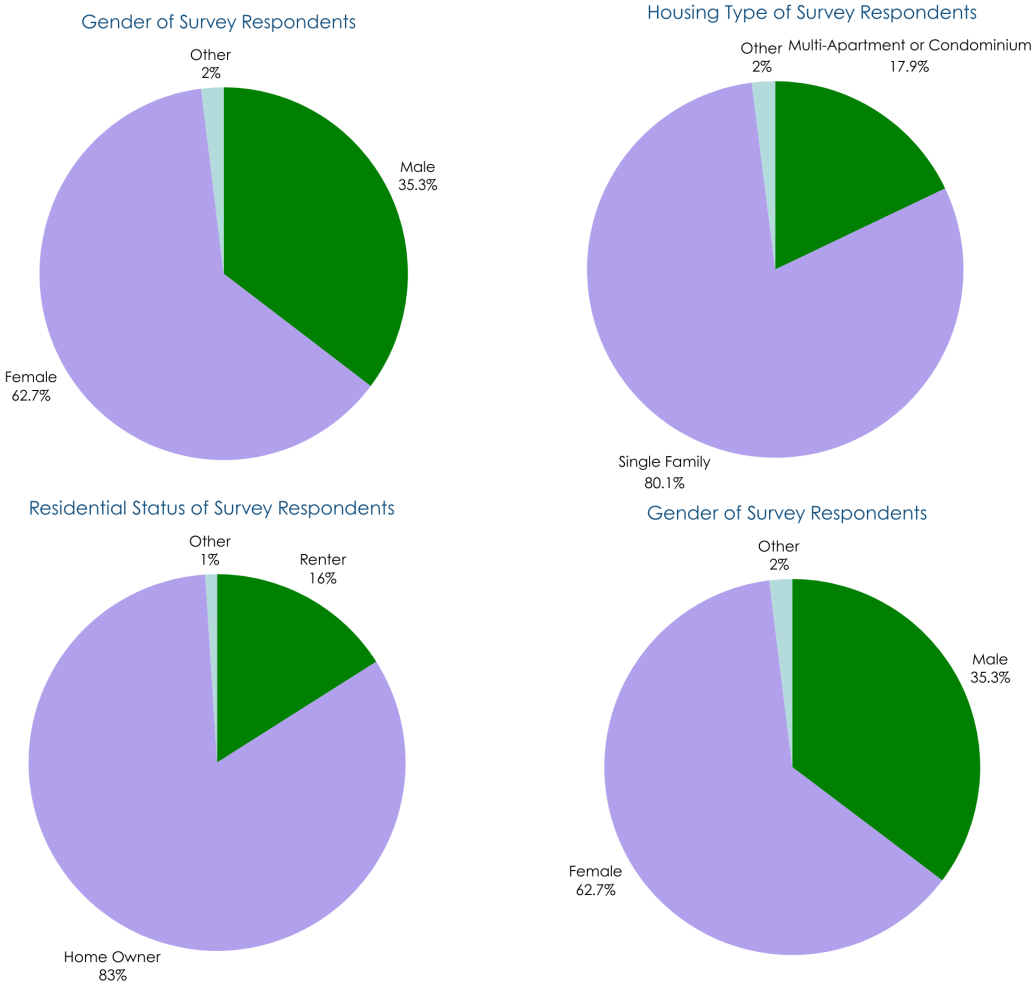


Fig 12. Demographics of Survey Respondents

Focal Areas Insights

General Climate Concerns and Awareness

- Extreme weather events (e.g., storms, flooding, heat waves) and water scarcity and water quality are a top concern for 76% of respondents.
- 43% of participants indicate that climate concerns significantly influence their daily actions, and 35.1% believe Boxborough should prioritize climate action at the highest level.
- A majority of respondents (56%) are highly concerned about climate change impacts globally, and 41.3% express similar concern about its local impacts.

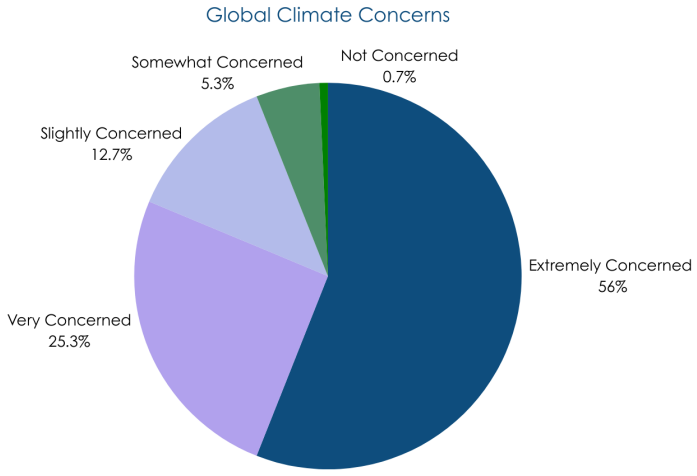


Fig 13. Global Climate Concerns of Survey Respondents

Water Resource Management

- Water supply security (56.1%), stormwater management (50%), and drought preparedness (49.3%) are identified as critical areas for improvement.
- 45.7% of respondents rate water conservation as highly important for Boxborough's future, and 41.3% strongly support new policies promoting sustainable water use.

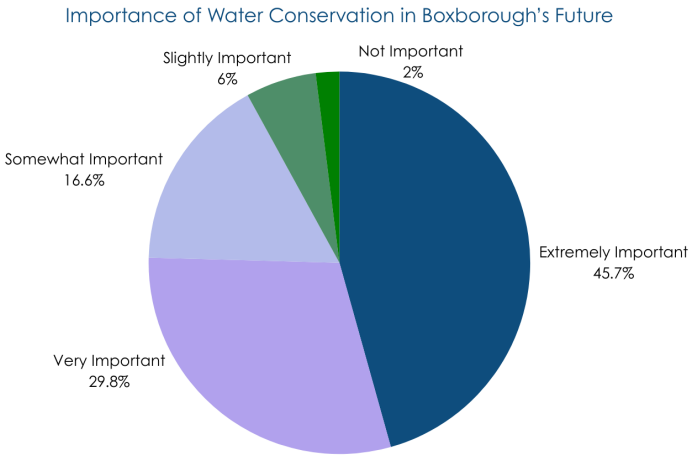


Fig 14. Survey Respondents' Water Importance Perception

Community Education and Engagement

- Digital resources (75.3%), hands-on initiatives (37%), and community workshops (39.7%) are the most preferred methods for learning about sustainability.
- Online media (78%) and traditional media (56.7%) are the primary sources of sustainability information.

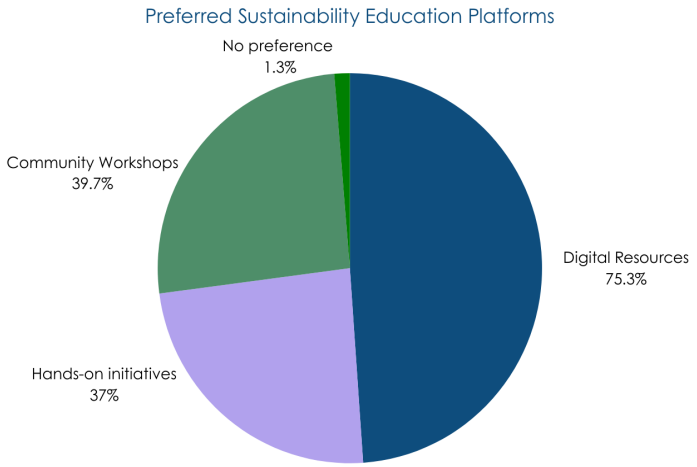


Fig 15. Survey Respondents' Preferred Sustainability Education Platforms

Buildings and Energy Efficiency

- Financial incentives like rebates (91.3%) and tax credits (78.5%) are key motivators for energy-efficient upgrades, while high upfront costs (69.4%) and lack of information (39.5%) are major barriers.
- 40.7% strongly support regulations for net-zero energy standards in new buildings.

Transportation and Mobility

- Improved pedestrian pathways (59.3%), bike lanes (47.1%), and public transit options (36.4%) are suggested to encourage alternative transportation.
- Expanding EV infrastructure is rated as highly important by 22.8% of respondents.

Implications for the B-CAP

The survey results reflect strong community concern about climate change and a clear interest in proactive local action. However, it is important to recognize that the sample does not fully reflect the demographic composition of Boxborough. Respondents skew older, with over 37% aged 65 or above, and are predominantly homeowners (82.9%) living in single-family homes (80%). As a result, the views of younger residents, renters, and those living in multi-family housing are underrepresented. While the findings provide a meaningful foundation for shaping the B-CAP, they should be interpreted with some caution and supplemented by continued outreach to ensure the plan reflects the broader needs and priorities of the full community.

General Climate Concerns and Awareness

The survey responses suggest that climate change is a priority for many residents. More than half of the respondents express high concern about global climate impacts, while over 40% are similarly concerned about local effects. This level of awareness

indicates a community that is already engaged with the issue. As a result, climate-related strategies proposed in the B-CAP are likely to receive general support, particularly if they are framed in ways that emphasize local relevance and benefits. Residents' concern around extreme weather, water-related issues, and long-term environmental stability creates a solid foundation for policy interventions that address climate mitigation and adaptation at the local level.

Water Resource Management

Survey data highlight water-related issues, including supply security, drought preparedness, and stormwater management, as top priorities. These results indicate that residents are not only aware of local water vulnerabilities but are also receptive to new policies and programs that promote sustainable water use. Nearly half of the respondents rate water conservation as highly important, and a similar proportion strongly supports new local policies in this area. Given this support, the CAP can include targeted communication campaigns, conservation incentives, and infrastructure upgrades with the expectation of strong public backing. Efforts should focus on both household-level actions and town-wide planning.

Community Education and Engagement

The data show a strong preference for digital communication (75.3%), followed by workshops and hands-on learning opportunities. Online media is the most common source of sustainability information, especially among middle-aged and older residents. This suggests that outreach efforts should include a digital-first approach while maintaining in-person opportunities to build trust and deeper engagement. A hybrid communication strategy that combines newsletters, social media, and community events can help ensure broad accessibility. Tailoring content to different segments of the population, particularly those underrepresented in the survey, will also be important moving forward.

Buildings and Energy Efficiency

Respondents show strong support for financial incentives as a means of promoting energy-efficient upgrades. Rebates and tax credits are identified as key motivators, while high upfront costs and lack of accessible information are reported as the main barriers. Additionally, there is meaningful support for implementing net-zero energy standards for new construction. These insights support the inclusion of both financial mechanisms and information resources in the B-CAP. Programs should aim to streamline access to funding, clarify benefits for homeowners, and offer resources for navigating efficiency upgrades. The town could also explore demonstration projects or peer-learning initiatives to increase visibility and uptake.

Transportation and Mobility

Residents want safer, more sustainable ways to get around – improved sidewalks, bike lanes, and expanded public transit all received notable support. But relatively few respondents (22.8%) prioritized EV infrastructure, suggesting that the town should phase in EV incentives more gradually. Instead, the near-term priority could be walkability improvements, especially in areas where pedestrians already feel unsafe or disconnected. These lower-cost, visible changes can build momentum and demonstrate responsiveness. Over time, as adoption grows, EV planning and alternative transit options can follow.

(West 2011)

Chapter 6

Recommendations

Using information gathered from survey deployment, feedback from the BSC, as well as data and case study analysis, Boxborough should look to implement the following ten recommendations across the five focus areas – Energy Goals and Opportunities, Water Conservation, Sustainable Transportation, Waste Management, Climate Resilience and Preparedness – that are necessary for a well-received and comprehensive B-CAP.

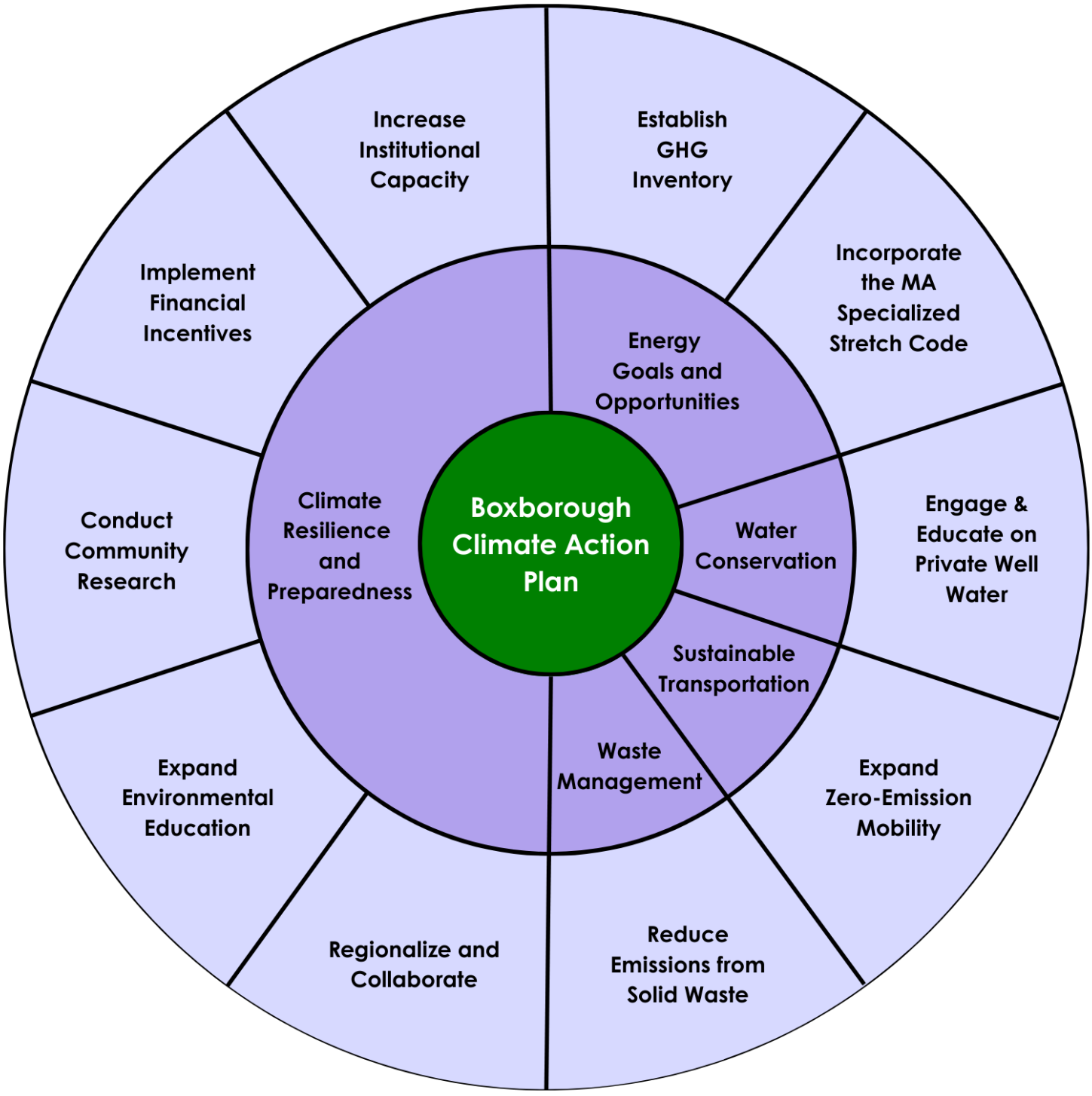


Fig 16. Recommendations for the Five Focus Areas of the B-CAP

Recommendations for Boxborough

Energy Goals and Opportunities

Establish a Greenhouse Gas Inventory

Implementation Timeline: Medium Term

The establishment of a proper GHG Inventory is essential for Boxborough. A GHG inventory quantifies the amount of heat-trapping gases released within a defined boundary over the course of a year ("Greenhouse Gas Inventories," n.d.). A detailed accounting of emissions from sources like buildings, vehicles, and waste helps communities understand where their emissions come from and provides a baseline to set reduction targets and track progress over time. Creating such an inventory will support the implementation of target guidelines and the timeline of B-CAP. Furthermore, it will help to justify the necessity of the plan and the need for support. Other towns, including Acton and Stow, have successfully utilized their own GHG Inventories in the creation and execution of their CAPs. A comprehensive GHG Inventory for Boxborough would provide the town with tangible, easily accessible goals and targets to be reached over the course of the plan's intended timeline.

Stow's S-CAP benefits from the inclusion of town-specific data taken from their 2017 GHG Inventory, which bridges gaps in emissions data that were previously unavailable to the town and are currently unavailable to Boxborough. Neighboring Acton identified buildings, transportation, and energy usage as the three most crucial sectors causing GHG emissions. Their 2017 GHG inventory found that the transportation sector in Acton contributed approximately half of all GHG emissions in the community over that year. Having community-specific data available from a proper GHG inventory will allow Boxborough to craft tangible guidelines and properly implement the B-CAP.

Incorporate the Massachusetts Specialized Stretch Code

Implementation Timeline: Long Term

Incorporating a specialized stretch code will promote B-CAP implementation. Stretch codes promote the reduction of carbon emissions, subsequently supporting both Boxborough and Massachusetts energy transition goals. Furthermore, stretch codes encourage energy efficiency, renewable energy technology, and net-zero carbon emissions standards. Boxborough's current building standards lack direction and fail to support energy efficiency, which should be a crucial aspect of the B-CAP.

Implementing a specialized stretch code comes with practical challenges that must be thoughtfully addressed. For the code to elicit the intended impacts, there must be infrastructure to support it. Energy efficient infrastructure includes a wide range of items, including solar panel installation and proper electrical systems, which take time and money to properly

enact. Additionally, Boxborough must encourage community support for the stretch code, which would require energy-efficiency outreach, education and communication efforts.
and targets to be reached over the course of the plan's intended timeline. Stow's S-CAP benefits from the inclusion of town-specific data taken from their 2017 GHG Inventory, which bridges gaps in emissions data that were previously unavailable to the town and are currently unavailable to Boxborough. Neighboring Acton identified buildings, transportation, and energy usage as the three most crucial sectors causing GHG emissions. Their 2017 GHG inventory found that the transportation sector in Acton contributed approximately half of all GHG emissions in the community over that year. Having community-specific data available from a proper GHG inventory will allow Boxborough to craft tangible guidelines and properly implement the B-CAP.

Water Conservation

Incorporate the Massachusetts Specialized Stretch Code

Implementation Timeline: Long Term

Boxborough residents primarily rely on private wells for their potable water. These wells are regulated by the Board of Health, not MassDEP, which creates challenges for homeowners and landlords. Instead of state-implemented testing and maintenance, homeowners are obligated to do these things themselves. Financial and time constraints are a concern, as well as safety and equity. Without collaboration and oversight from MassDEP, there are gaps in accessibility and safety for those in Boxborough. Respondents to the B-CAP survey indicated extreme concern for drought preparedness, contamination, stormwater drainage, and water security. Residents lack a strong governing agency that oversees their water concerns, obligating them to find other ways to access safe, potable water in the event of an emergency or water crisis.

The Boxborough Water Resources Committee created an ArcGIS StoryMap illustrating the key concerns of residents and provided ways to bridge some of the gaps in the community. The StoryMap, created using a grant from the MAPC, acknowledges Boxborough's designation as a "Country Suburb" and its lack of a centralized water supply. Boxborough's lack of a centralized water system requires residents to obtain their water through a non-centralized groundwater supply. Furthermore, there are few public water systems in Boxborough, indicating a need to expand public knowledge, support, and resources for community members with private wells.

Boxborough should incentivize community participation and welcome community opinion on the water supply in the town. This could include offering water testing kits, rebates for well maintenance, or recognition programs for households that participate in water safety initiatives. Community participation can be garnered through public meetings, surveys, opinion polls, and other outreach efforts. Additionally, Boxborough should provide seasonal drought updates, voluntary testing programs, educational services on water testing and maintenance, and a

centralized water safety tracking system. Without education on the potential challenges associated with private wells, Boxborough community members are more likely to experience adverse health implications and lower private well water security.

Sustainable Transportation

Expand Zero-Emission Mobility Options

Implementation Timeline: Long Term

Survey results show that 59.3% of respondents favor improved pedestrian pathways, and 47.1% support the expansion of bike lanes. While support for public transit and EV infrastructure was more limited, interest in walkability and active mobility indicates a strong desire for low-cost, local improvements that make non-vehicular transportation more viable. These priorities suggest that many residents are open to small-scale mobility enhancements that improve daily life and safety, particularly for those who walk or bike to civic, educational, or recreational destinations.

Given Boxborough's rural character, dispersed development pattern, and limited transportation infrastructure, large-scale transit systems or full street redesigns are not realistic in the near term. However, there are clear opportunities to pilot targeted improvements in areas with identified safety or access issues. Zones near the school, library, town center, and recreation fields are all potential candidates for interventions such as sidewalk repair or extension, signage and crosswalk upgrades, basic bike lane striping, and lighting improvements.

Case studies from Acton, Lincoln, Stow, and Greater Worcester provide relevant models for this approach. The A-CAP includes a Complete Streets policy and a dedicated bicycle and pedestrian plan to guide ongoing investments in non-vehicular mobility (p. 29, p.80). The L-CAP prioritizes walkability and accessibility through improved connections across roadside paths and trail networks, with a focus on equity and safety for all users (p. 29 - p. 32). Stow's Complete Streets Committee guides infrastructure upgrades through a public engagement process, while its "GoStow" program uses grant funding to expand local transit access (p. 57). The GWP-CAP calls for expanding protected bike lanes and shared-use paths in EJ communities, reinforcing the importance of inclusive, community-informed mobility planning (p. 92). These examples demonstrate that small towns can make measurable progress on mobility by starting with focused, practical investments tailored to community needs.

Waste Management

Reduce Solid Waste Emissions Through Reuse, Recovery, and Reform

Implementation Timeline: Short Term

The BSC has already taken some initial steps in advancing waste reduction strategies by sending out a town-wide survey to better understand resident

behaviors and preferences. Results revealed strong support for more sustainable waste practices, with most residents utilizing the Transfer Station and actively participating in recycling through drop-off and curbside services. Survey responses also indicate clear support for measures that reduce overall waste volume and promote reuse, including exploration of a town-assigned hauler system, Pay-As-You-Throw models that make disposal costs proportional to waste generated, and financial incentives to encourage recycling of bulky or specialty items. Additionally, the Swap Shed received overwhelming support, underscoring the value residents place on local reuse infrastructure and community resource sharing.

The neighboring A-CAP offers a strong and locally relevant model for Boxborough to build on. Acton's Strategy SW1 (pp. 103–105) outlines a comprehensive approach to waste reduction that includes food donation programs connecting farms and restaurants with shelters and pantries, promotion of a culture of reuse through the community Swap Shop and support for businesses that collect second hand goods, and a municipal waste audit to assess opportunities for expanding curbside collection, composting, and overall service efficiency. The strategy also ensures that recycling is available to residents in multi-unit housing, with provisions to eliminate cost barriers for low-income households. These efforts demonstrate how Boxborough can scale up its own initiatives by drawing from proven practices while tailoring them to local needs, accelerating its progress toward a more circular and climate-aligned waste system.

Climate Resilience and Preparedness

Utilize Regionalization and Collaboration with Nearby Communities

Implementation Timeline: Very Long Term

Collaboration is a crucial aspect of the Greater Worcester, Acton, Lincoln, and Stow CAPs. By utilizing a collective and regional strategy, Boxborough will be able to access combined funding opportunities and garner greater support and community involvement. Regionalization efforts support climate resiliency efforts by breaking large areas down into more manageable ones. Additionally, regionalization efforts encourage the sharing of resources and funding opportunities. While Boxborough has the opportunity to tap into extra funding opportunities as a result of its Environmental Justice and Green Community designations, it would benefit from an approach that connects it to other towns and communities.

Greater Worcester emphasizes the importance of regionalization and community participation throughout the GWP-CAP. Although the GWP-CAP encompasses a larger area than the B-CAP does, it provides a potential framework for Boxborough to follow. Regionalization efforts open up greater federal and state-level funding opportunities, support implementation inside and outside of town limits, and benefit long-term and short-term timelines by creating a regional push.

Lincoln, Stow and Acton also heavily

emphasize community participation in their plans, which allowed for stronger connections with the community throughout creation and implementation timelines. Stow and Lincoln's participatory engagement practices are vital to their outcomes. Additionally, Stow's existing Advisory Committee benefits their plan by bringing in community members to express the sentiments of those in their community.

Regionalization and Collaboration is important for Boxborough as it expands the horizons of what is possible in the implementation and creation phases. Furthermore, this approach strengthens community ties and diversifies funding opportunities, allowing for a more likely and realistic B-CAP. Collaborating with other communities and entities, as well as current Boxborough community members, is necessary for a successful plan and positive long-term outcomes.

Expand Educational Efforts on Climate Change and the Environment

Implementation Timeline: Short Term

Survey results indicate a strong interest in climate and sustainability education among Boxborough residents. 75.3% of respondents prefer digital resources, while 39.7% are interested in community workshops and 37% in hands-on initiatives. Online media is the most commonly used source for sustainability information (78%), suggesting that residents are already engaging with environmental topics but are looking for centralized, accessible, and actionable content. These findings highlight the importance of expanding educational efforts in ways that meet residents where they are – both digitally and in person – while also reaching underrepresented groups.

Boxborough already has an educational tool in place with Energize Boxborough, which provides a useful hub for climate action information. Its impact could be strengthened by building broader awareness and pairing the digital content with other forms of outreach, like seasonal workshops, signage in community spaces, and school-based activities. These types of initiatives would help connect the website to residents' daily lives, especially for those who are less likely to engage online or who didn't participate in the B-CAP survey, such as renters and younger households.

The identified comparable communities have approached education as a continuous, layered effort embedded in their respective CAPs. Acton leverages its Energize Acton platform to maintain the community engaged by continuously sharing educational materials, and commits to ensuring information reaches those who are not typically involved in climate-related activities (p. 115 - 119). L-CAP describes education strategies involving multi-stakeholder education campaigns, creative signage around the town, and a school-based curriculum. It also connects climate learning to broader ideas of equity, wellness, and community cohesion (pp. 53 - 56). The GWP-CAP focused on targeted educational campaigns in low-income and EJ communities, especially around waste, composting, and contamination (p. 145), while the S-CAP reports

community engagement efforts that used consistent public feedback loops, events like Springfest, and open committee meetings to build climate literacy over time (p.71). These examples reinforce the idea that education isn't just about resources – it's about visibility, creativity, and sustained engagement, all of which Boxborough can continue building on through its existing platforms and resources.

Conduct More Widespread Research on Community Priorities that Accurately Represent Community Demographics

Implementation Timeline: Short Term

Boxborough lacks crucial data and information needed for the sustained application of the B-CAP. Despite efforts from the BSC Recycling Survey and the Boxborough Climate Action Plan Community Survey, data is still skewed and not representative of the diverse community in Boxborough. Many respondents to the CAP Outreach Survey were above the age of 50, and just one respondent was between the ages of 18 and 25. Furthermore, respondents tended to have higher incomes and identify as white. While useful for overarching goals, this survey is limited in its capacity to represent the needs of the Boxborough community at large.

More representative data is necessary to craft a plan that supports all of Boxborough, not just some of it. As such, partnering with community partners, local universities, consulting groups, and residents to conduct larger-scale studies of community priorities is essential. Some potential ways to bridge the knowledge gap include holding focus groups, expanding data collection, and conducting community audits. These research options will help Boxborough to expand current accurate representative data points and form more collective and implementable goals in the B-CAP. As a community with frequently changing demographics, the plan must be dynamic and reflect such transformations.

Implement Financial Incentives and Rebates for Households and Businesses to Achieve Town Climate Priorities, Energy Efficiency Standards, and Goals

Implementation Timeline: Medium Term

Financial incentivization and rebate programs are important for the continued implementation efforts of the B-CAP. These programs provided vital benefits and support for residents and business owners in town, making community members more likely to be engaged and involved in the CAP process. Ideally, these incentives would be overseen by a dedicated board or committee. These programs have been enacted in both Lincoln and Stow, with oversight conducted by L-CAP, a subcommittee of the GAC in Lincoln, and the GAC in Stow. Boxborough could provide additional oversight by mirroring Stow's GAC, which provides annual reports to the Town Administrator and Select Board.

To fund such programs, Boxborough could explore several avenues, including the Massachusetts Green Communities Grant Program, where a Green Community designation would qualify eligibility for energy efficiency and renewable energy programs, and the Mass Save Municipal Partnership Program, where municipalities aiming to improve energy standards are offered financial incentives and technical assistance (EEA Office of Grants and Technical Assistance 2025 and "Mass Save - Municipalities," n.d.). Financial incentives would allow Boxborough to bolster further community support and engagement in the B-CAP and climate-related efforts.

Numerous state and federal programs support financial incentives that Boxborough can take part in. Currently, Energize Boxborough offers information on federal tax credits for heat pumps and on the Mass Save program. There are other programs available for water and solar installation in Massachusetts, which should be advertised and recommended in the B-CAP. Expanded knowledge and direct support for these programs will benefit the implementation of a specialized stretch code, net-zero carbon emissions, and energy efficiency goals. Although not a direct cost to Boxborough, supporting federal and state-level financial incentive programs may allow Boxborough residents to benefit from a decreased financial burden while supporting net-zero carbon emissions.

Invest in Institutional Capacity to Support Climate Action

Implementation Timeline: Short Term

To achieve sustained climate progress, Boxborough must invest in expanding its institutional capacity. While the town benefits from a committed volunteer BSC and an engaged community, it currently has only one full-time planner and lacks a dedicated sustainability staff member. This limited staffing constrains the town's ability to seek and manage grants, coordinate interdepartmental climate strategies, and implement programs effectively. Establishing a Sustainability Coordinator position, or exploring a regional sustainability staffing model, would represent a critical first step. Boxborough can draw inspiration from peer communities that have successfully integrated sustainability into their municipal infrastructure. Acton, for instance, has a formal Office of Sustainability. The A-CAP explicitly calls for growing the office's capacity and creating an annual climate action implementation budget (p. 111). The L-CAP was led by a Planning and Land Use team with two full-time planning professionals and substantial multi-departmental coordination (p. 2). These towns also maintain direct control over key infrastructure systems like water, which enables them to integrate climate resilience into utility planning. In contrast, Boxborough's dependence on external infrastructure services underscores the need for enhanced coordination capacity and staff bandwidth.

Stow presents a more comparable model for Boxborough. Though it does not have a sustainability office, Stow's GAC has worked alongside municipal staff and leveraged external consultants and regional partnerships to lead climate planning efforts. Notably, Stow's municipal relationship with Hudson Light & Power allows it to offer residents and businesses significant financial incentives for energy efficiency upgrades (p. 56). In addition, Stow's utilities providers also support electrification, public engagement, and educational outreach (pp. 29 - 32). Stow's example suggests that towns can make major strides by cultivating strategic partnerships and formalizing sustainability coordination roles even in the absence of deep internal capacity. By investing in staff, resources, and inter-municipal collaboration, Boxborough can build the foundation it needs to translate its ambitious climate vision into durable action.

Connections and Synergies

In order to accomplish the large-scale, comprehensive goals set out in the B-CAP, Boxborough must understand the connections between these recommendations and adopt a systemic, holistic approach. This chapter serves as both a guide for implementation and a reminder that the recommendations herein are not stand-alone actions, but part of a broader, integrated framework. Many of the goals and themes in this section connect to one another, making it important that their links are acknowledged. Further, the order in which these recommendations are implemented is equally important, as certain goals are more realistic and easily implementable on a short or medium-term timeline than others. Acknowledging these linkages is essential to strategic planning and effective sequencing. Table 4 illustrates the most efficient and realistic ways for Boxborough to successfully implement the B-CAP. The green cells represent which of the five focal areas each recommendation is housed under. The purple cells represent recommendations that can be foundational for the implementation of goals in multiple focal areas.

Table 4. Connections between Recommendations of the Five Focus Areas of the B-CAP

	Energy Goals and Opportunities	Water Conservation	Sustainable Transportation	Waste Management	Climate Resilience and Preparedness
GHG Inventory					
Specialized Stretch Code					
Private Well Water					
Zero-Emission Mobility Options					
Reduce Solid Waste Emissions					
Regionalization and Collaboration					
Education Efforts					
Community Research					
Financial Incentives					
Increase Institutional Capacity					

Starting with the recommendations under the "Climate Resilience and Preparedness" section will help to guide the implementation efforts of the goals in the remaining sections. Investing in institutional capacity to support climate action, for example, impacts all other sections. Hiring a dedicated Sustainability Coordinator will provide the town with the means and capability to work on improving zero-emission transportation. Additionally, expanding community engagement and education will provide Boxborough residents with the drive to implement other goals in the future.

Education, in particular, plays a pivotal role as both a goal in itself and a mechanism for achieving others. It represents a foundational pillar for the B-CAP goal execution in the long and short terms. Moreover, expanding the town's database of accurate demographic information is crucially important to all goals, but especially the creation of an official GHG emissions inventory. With proper demographic information, which can be obtained directly or by partnering with local institutions and community groups, Boxborough will have the ability to accurately address GHG emissions townwide.

Enactment of strong climate action and execution of work in these areas is reliant on the town's capacity. Improving the infrastructure and foundations of the work by beginning with the climate preparedness goals helps Boxborough to understand and combat the climate crisis.

Ultimately, these recommendations should be viewed as mutually reinforcing components of a cohesive climate strategy. It is thus important to look at these goals as complementary to one another. A systems-thinking lens highlights the importance of building institutional foundations early, enabling other efforts to take root more effectively. Climate action is not a linear process, but a dynamic one, where investments in capacity, education, and engagement feed into and strengthen Boxborough's ability to reach a resilient, sustainable, and equitable future.

(West 2008b)

Chapter 7
Conclusion

This report marks a significant step forward in the development of Boxborough's Climate Action Plan. In particular, this study has traced Boxborough's unique blend of rural charm and forward-thinking civic engagement through months of rigorous research, diligent analysis, and active community participation. As it concludes, it should be noted that this vision for Boxborough is one of immense possibility - a community capable of meeting the challenges of the global climate crisis with localized, pragmatic, inclusive strategies.

Key Findings

Through this study's multifaceted approach, which included a community survey, case studies, data analysis, and stakeholder engagement, five strategic pillars around which the B-CAP can be structured were identified: Energy, Water, Transportation, Waste, and Climate Preparedness. In each of these domains, Boxborough both reflects and diverges from common small-town trends, offering opportunities for innovation and leadership.

In energy, the lack of a GHG inventory emerged as a critical shortcoming, limiting the town's ability to set specific and measurable reduction targets. However, Boxborough's recent designation as a Green Community opens the door to state resources that can support energy-efficient construction and planning. With a specialized stretch code and greater visibility into municipal and residential emissions, the town can drive toward locally tailored net-zero goals.

When it comes to water conservation, Boxborough's heavy reliance on private wells and community concerns around drought and contamination pose some significant obstacles to long-term climate action planning. However, through greater transparency, education, and community-driven water testing programs, the town can nonetheless address these vulnerabilities while fostering a more informed and engaged public.

Transportation in Boxborough, largely dominated by private vehicle use, is beginning to see a shift. Survey data revealed support for walkability and bikeability improvements, reflecting a demand for low-cost, human-scaled mobility enhancements. Rather than large infrastructure overhauls, Boxborough can start with tactical upgrades near schools, the town center, and recreation fields to increase access and safety.

Waste management was another area where local enthusiasm stood out. Residents supported the creation of a Swap Shed, Pay-As-You-Throw models, and expanded recycling and composting efforts. These initiatives not only reduce landfill use and emissions but also foster a circular economy ethos rooted in community participation. Finally, climate resilience and preparedness emerged as both a strength and an area for growth. Boxborough's engaged civic culture, led by the BSC and its resident volunteers, provides a solid foundation for public awareness and mobilization. Yet institutional capacity remains thin, with limited full-time staff and significant reliance on external infrastructure systems. This gap must be addressed through investment in sustainability staffing, regional partnerships, and the pursuit of additional state and federal resources.

Equity and Inclusion

A core insight that emerged throughout the project was the importance of equity and representativeness. While Boxborough benefits from high median incomes, educational attainment, and civic engagement, its EJ designation highlights lingering disparities. Two of the town's census block groups meets the state criteria for EJ populations, reflecting higher minority populations and lower household incomes. Yet, survey responses and civic participation in sustainability initiatives remain skewed toward older, wealthier residents. To implement a truly inclusive and effective CAP, Boxborough must go beyond universal outreach and develop targeted strategies to elevate the voices of underrepresented groups. This includes youth, renters, lower-income families, and communities of color. Without their perspectives, sustainability efforts risk reinforcing existing inequities.

Education, Interdependence with Regional Systems, and Internal Capacity

Another cross-cutting theme was the need to embed sustainability more deeply into community culture. Residents indicated high levels of interest in environmental education, particularly digital resources and workshops. Programs like Energize Boxborough already provide a strong foundation, but their reach and resonance can be amplified through school-based programming, public art and signage, and peer-to-peer learning opportunities.

Cultural transformation takes time, but Boxborough has the civic fabric to support it. The town's volunteer committees, strong public schools, and close-knit neighborhoods make it an ideal setting for grassroots sustainability leadership. Education, in this sense, is not merely about information dissemination, but also about shaping norms, building trust, and creating a shared sense of purpose.

While this study focuses on Boxborough, its findings also assert that regional and intermunicipal collaboration must be a cornerstone of B-CAP implementation. Neighboring towns like Acton, Lincoln, and Stow offer models of effective collaboration, and Boxborough stands to benefit from joint grant applications, shared infrastructure investments, and coordinated educational campaigns.

Moreover, Boxborough's dependence on utilities and service providers from other towns further underscores the need for strategic partnerships. Further, climate action cannot be the domain of temporary working groups or rotating volunteers alone. Funding the institutional capacity of the town will require political will and budget reallocation, but the long-term savings, efficiencies, and opportunities from successful climate action far outweigh the costs.

The Path Forward

The opening pages of this report ask a core question: how can a small town like Boxborough respond to the global crisis of climate change in a way that is proportionate, pragmatic, and just?

The findings of this study offer an answer rooted in both vision and humility. Boxborough cannot solve the climate crisis alone, but it can lead. It can serve as a model of how small communities,

often overlooked in climate discourse, can chart a course toward resilience and justice. This plan lays the groundwork for that leadership.

The success of the B-CAP will depend on collective action: local government embracing new responsibilities, institutions embracing new priorities, and residents embracing new behaviors.

The necessary ingredients for a transformative, resilient future are already in Boxborough. It is rich in strong civic spirit, deep respect for local history, and shared, sustainable, forward-thinking values. With a comprehensive Climate Action Plan, it will also have a strategy.

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Appendix A - Survey

Boxborough Climate Action Plan Survey

Climate change is impacting communities across the country and Boxborough is no exception. From rising energy costs to extreme weather events, the choices we make today will directly impact the Town's future resilience and sustainability.

Boxborough's Office of Land Use and Permitting, along with the Sustainability Committee, are seeking your input to develop a Climate Action Plan that will establish practical, community-driven solutions to protect our environment, economy, and quality of life.

This anonymous survey will take approximately 10 minutes to complete and help us identify specific priorities, concerns, and opportunities for action at the local level. By sharing your thoughts, you're helping to build a stronger, more sustainable Boxborough for future generations.To ensure that the Climate Action Plan reflects the diverse needs and perspectives of our community, we invite you to share some basic demographic information. Please note that providing this information is voluntary, and all responses will remain anonymous.

Thank you for taking the time to participate and sharing your voice! If you wish to enter a raffle for a $50 gift card, please provide your contact information at the end of the survey so we can reach you if you win.

1. Are you a current resident of Boxborough?

- ◯ Yes
- ◯ No

General Climate Concerns & Awareness

Rating Scale:

1 - Not Concerned / Not Important

2 - Slightly Concerned / Slightly Important

3 - Neutral

4 - Concerned / Important

5 - Strongly Concerned / Very Important

2. On a scale from 1 to 5, how concerned are you about the impacts of climate change in general?

	1	2	3	4	5	
Not concerned	◯	◯	◯	◯	◯	Strongly concerned

3. On a scale from 1 to 5, how concerned are you about the impacts of climate change on Boxborough specifically?

	1	2	3	4	5	
Not concerned	◯	◯	◯	◯	◯	Strongly concerned

4. On a scale from 1 to 5, how much do environmental and climate change-related concerns influence your day-to-day actions and decisions?

	1	2	3	4	5	
Not important	◯	◯	◯	◯	◯	Very important

5. On a scale from 1 to 5, how much should the Town of Boxborough prioritize climate action?

	1	2	3	4	5	
Not important	◯	◯	◯	◯	◯	Very important

6. On a scale of 1 to 5, how concerned are you about the potential impacts of extreme weather events (e.g., storms, flooding, heat waves on Boxborough's infrastructure and safety)?

	1	2	3	4	5	
Not concerned	◯	◯	◯	◯	◯	Very concerned

7. On a scale of 1 to 5, how adequately do you think Boxborough is prepared to respond to climate-related emergencies, such as extreme storms or flooding?

	1	2	3	4	5	
Not important	◯	◯	◯	◯	◯	Very important

8. What actions would you prioritize to improve Boxborough's resilience to climate risks? (Select all that apply)

- [ ] Enhancing stormwater management and flood prevention
- [ ] Expanding emergency preparedness programs and resources
- [ ] Managing invasive species and supporting forest health
- [ ] Improving public infrastructure (e.g., roads, drainage) to withstand extreme weather
- [ ] None
- [ ] Other: _____

9. Which of the following climate-related issues concern you most? (Select all that apply)

- [ ] Extreme weather events (e.g., storms, flooding, heat waves)
- [ ] Water scarcity and water quality
- [ ] Energy costs and reliability
- [ ] Transportation emissions
- [ ] Waste management and recycling
- [ ] Other: _____

Water Resource Management

Rating Scale:

1 - Not Concerned / Not Important / Not Likely

2 - Slightly Concerned / Slightly Important / Slightly Likely

3 - Neutral

4 - Concerned / Important / Likely

5 - Strongly Concerned / Very Important Very Likely

10. On a scale from 1 to 5, to what extent do you consider water resources in your daily decisions?

	1	2	3	4	5	
Not important	◯	◯	◯	◯	◯	Very important

11. On a scale from 1 to 5, how important do you think water conservation is to Boxborough's future?

	1	2	3	4	5	
Not important	◯	◯	◯	◯	◯	Very important

12. On a scale from 1 to 5, how likely would you be to support new town policies promoting sustainable water use?

	1	2	3	4	5	
Not likely	◯	◯	◯	◯	◯	Very likely

13. What aspects of Boxborough's water management do you think need the most improvement? (Select all that apply)

- [ ] Water supply security
- [ ] Stormwater management
- [ ] Drought preparedness
- [ ] Household water conservation programs
- [ ] None
- [ ] Other: _____

Community Education & Engagement

Rating Scale:

1 - Not Concerned / Not Important / Not Likely

2 - Slightly Concerned / Slightly Important / Slightly Likely

3 - Neutral

4 - Concerned / Important / Likely

5 - Strongly Concerned / Very Important / Very Likely

14. On a scale from 1 to 5, to what extent does your knowledge of climate change influence your day-to-day decisions?

	1	2	3	4	5	
Not important	○	○	○	○	○	Very important

15. How do you prefer to learn about sustainable programs and practices? (Select all that apply)

- [ ] Fifers Day events
- [ ] Community workshops
- [ ] Digital resources (e.g., webinars, newsletters)
- [ ] Hands-on initiatives (e.g., tours/demonstrations, clean-up events)
- [ ] Classes or discussion groups
- [ ] Sustainability coaches or mentors
- [ ] Carbon CREW club
- [ ] Other: _____

16. Where do you currently get your sustainability information? (Select all that apply)

- [ ] Traditional media (newspapers, TV, radio)
- [ ] Online media (websites, podcasts)
- [ ] Social media
- [ ] Local organizations
- [ ] Friends and neighbors
- [ ] Work, school, and community engagements
- [ ] Energize Boxborough
- [ ] Other: _____

Buildings & Energy Efficiency

Rating Scale:

1 - Not Concerned / Not Important / Not Likely / Not Supportive

2 - Slightly Concerned / Slightly Important / Slightly Likely / Slightly Supportive

3 - Neutral

4 - Concerned / Important / Likely / Supportive

5 - Strongly Concerned / Very Important / Very Likely / Very Supportive

17. On a scale from 1 to 5, how likely would you be to invest in home energy efficiency improvements if incentives were provided?

	1	2	3	4	5	
Not likely	○	○	○	○	○	Very likely

18. What types of incentives like local energy efficiency coaching/mentoring would encourage you to make energy efficiency improvements? (Select all that apply)

- [ ] Financial rebates
- [ ] Tax credits
- [ ] Low-interest loans
- [ ] Other: _____

19. What barriers prevent you from making energy-efficient upgrades? (Select all that apply)

- [ ] High upfront costs
- [ ] Lack of information on available programs
- [ ] Not a homeowner
- [ ] No interest in upgrades
- [ ] Other: _____

20. On a scale from 1 to 5, how supportive would you be of regulations requiring new buildings to meet low or net-zero energy standards?

	1	2	3	4	5	
Not supportive	◯	◯	◯	◯	◯	Very supportive

21. Do you currently use a heat pump (air source or geothermal) for heating or cooling in your home?

- ◯ Yes
- ◯ No
- ◯ Other: _____

22. On a scale of 1 to 5, if you use a heat pump, how satisfied are you with its performance? (Skip if you don't use a heat pump)

	1	2	3	4	5	
Not satisfied	◯	◯	◯	◯	◯	Very satisfied

23. If you don't currently use a heat pump, would you consider installing one if there were incentives or financial assistance available?

- ◯ Yes
- ◯ No
- ◯ Other: _____

24. What type of outreach would encourage you to adopt a heat pump for your home? (Select all that apply)

- ☐ Information on financial incentives
- ☐ Information on energy savings and CO2 reductions
- ☐ Demonstrations or case studies from other residents
- ☐ Other: _____

Transportation & Mobility

Rating Scale:

1 - Never

2 - Rarely

3 - Neutral

4 - Often

5 - Very Often

25. How often do you use public transportation in or around Boxborough (MART Bus and Commuter Rail)?

- ◯ Never
- ◯ Rarely (a few times per year)
- ◯ Occasionally (a few times per month)
- ◯ Regularly (weekly or more)

26. On a scale from 1 to 5, to what extent do you consider energy and environmental concerns in your transportation purchases and decisions?

	1	2	3	4	5	
Not important	◯	◯	◯	◯	◯	Very important

27. On a scale from 1 to 5, how important is it to expand electric vehicle (EV) infrastructure in town?

	1	2	3	4	5	
Not important	◯	◯	◯	◯	◯	Very important

28. What would encourage you to use alternative transportation methods such as walking, biking, or public transit, more often? (Select all that apply)

- ☐ More bike lanes
- ☐ More frequent public transit options
- ☐ Financial incentives for EVs
- ☐ Carpooling programs
- ☐ More pedestrian pathways
- ☐ Other: _____

Open-Ended Questions

29. What additional suggestions do you have for climate action in Boxborough?

Your answer

30. What additional concerns do you have about climate action in Boxborough?

Your answer

Demographic Information

Providing demographic information helps us better understand survey results and plan strategies that reflect our community's diversity. All responses are anonymous and confidential.

How old are you?

- ◯ 18 - 24
- ◯ 25 - 34
- ◯ 35 - 44
- ◯ 45 - 54
- ◯ 54 - 64
- ◯ 65 and over

Gender

- ◯ Man
- ◯ Woman
- ◯ Non-Binary
- ◯ Other: _____

What is your residential status?

- ◯ Renter
- ◯ Homeowner
- ◯ Other

What type of housing do you currently reside in?

- ◯ Single-family house
- ◯ Townhouse or duplex
- ◯ Multi-Apartment or condominium
- ◯ Option 4

How old is your current home in years? If you don't know, please leave it blank.

Your answer

How many people live in your household?

- ◯ 1
- ◯ 2
- ◯ 3
- ◯ 4
- ◯ 5+

What is your total annual household income?

- ◯ $ 0 - 50,000
- ◯ $ 50,000 - 100,000
- ◯ $ 100,000 - 150,000
- ◯ $ 150,000 - 200,000
- ◯ $ 200,000 - 300, 000
- ◯ $ 300, 000+

If you wish to be entered into a raffle to win a $50 gift card, please enter a phone number or email address where we can reach you. We will only contact you if you win!

Your answer

If you would like to stay in touch, get involved, or receive updates on the development of the Climate Action Plan, please leave your name and contact information below.

Your answer

Please take a moment to share this survey with others who are interested in shaping the future of our town's climate strategy. Here is a sharable link: https://tinyurl.com/bxbclimatesurvey. **The more responses we receive, the more robust and effective the Climate Action Plan will be!**

Thank You!

Appendix B - Flyer

THE TOWN OF BOXBOROUGH IS DEVELOPING A CLIMATE ACTION PLAN AND NEEDS YOUR INPUT!

TAKE OUR 10 MINUTE SURVEY

AND ENTER TO WIN A $50 GIFT RAFFLE!

Your feedback will help shape strategies to reduce carbon emissions, improve sustainability, and build a resilient future for our community!