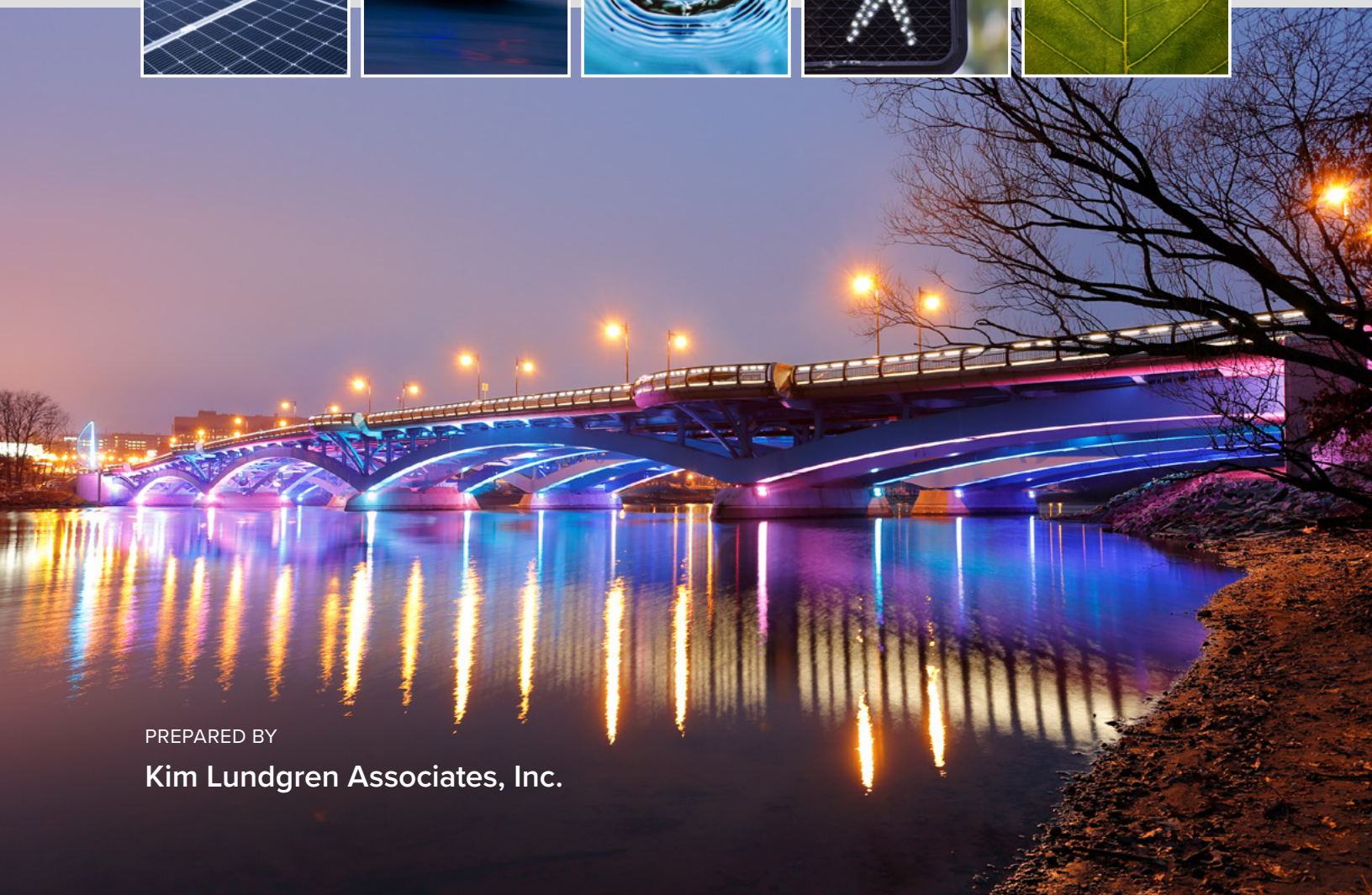
ALL IN SHREWSBURY
COLLECTIVE ACTION *for* A SUSTAINABLE FUTURE

TOWN OF SHREWSBURY MASSACHUSETTS INCORPORATED DEC. 15, 1727

All In Shrewsbury

Municipal Climate Action and Resiliency Plan



PREPARED BY

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All In Shrewsbury

Collective action for a sustainable future.

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Table of Contents

A Message From The Town Manager

To continue the Town's efforts of becoming a vibrant, inclusive, collaborative community where all can thrive, I am pleased to present the *All In Shrewsbury Municipal Climate Action and Resiliency Plan*. As part of the Town's 2030 Strategic Plan, the Town created strategic outcome areas related to being Exceptional and Sustainable. The *All In Shrewsbury Municipal Plan* sets forth a path for the Town to do our part by mitigating the impact that our operations have on climate change and fortifying our infrastructure to endure the unavoidable impacts of climate change. Addressing these two critical components will help ensure a healthy and safe future for everyone in our community.

Through the planning process, we measured the Town's impact on climate change through a municipal greenhouse gas inventory, and created a pathway to swiftly reduce our emissions and prepare our local government for climate impacts. Not only are we committed to achieving net zero emissions in municipal operations by 2050, but we are aiming for a bolder 50% reduction target by 2030 to better align with the goal of Shrewsbury Electric and Cable Operations (SELCO) to become net zero by 2032.

Reducing our emissions, while crucial to mitigating climate change, is not our only focus. We must fortify our infrastructure through resilient operations that prioritize emergency preparedness, with a focus on quick recovery from climate hazards, and integrating sustainability principles and data into municipal planning and budgeting processes to both maintain and improve existing infrastructure. With these operational improvements, we will continue to build resilient infrastructure now and into the future.

Just as critical as the steps that we will take is our commitment to doing this work collaboratively, which is a particular strength of our Town departments and staff. Through the *All In Shrewsbury Municipal Plan*, we will break down internal silos, centralize processes, and integrate climate action and sustainability principles into all aspects of municipal operations.

In addition to sharing accountability and responsibility across departments during implementation, we also want to continue to engage the broader Shrewsbury community. The planning process involved residents and representatives of local organizations who worked with Town staff to develop the plan through a Climate Action Advisory Committee. More than 500 community members and Town staff engaged in stakeholder interviews and four targeted surveys, and the feedback we received from engagement events and public comments also laid the foundation for a plan that reflects our community's priorities and concerns.

We have a lot to do, and I am eager to start working with all of you on implementation. I extend my thanks to the residents of Shrewsbury, community members, and Town staff for all of their support and engagement as we come together to rapidly reduce the Town's emissions and ensure that our operations, our infrastructure, and our people are resilient today and in the future.

Kevin J. Mizikar
Town Manager

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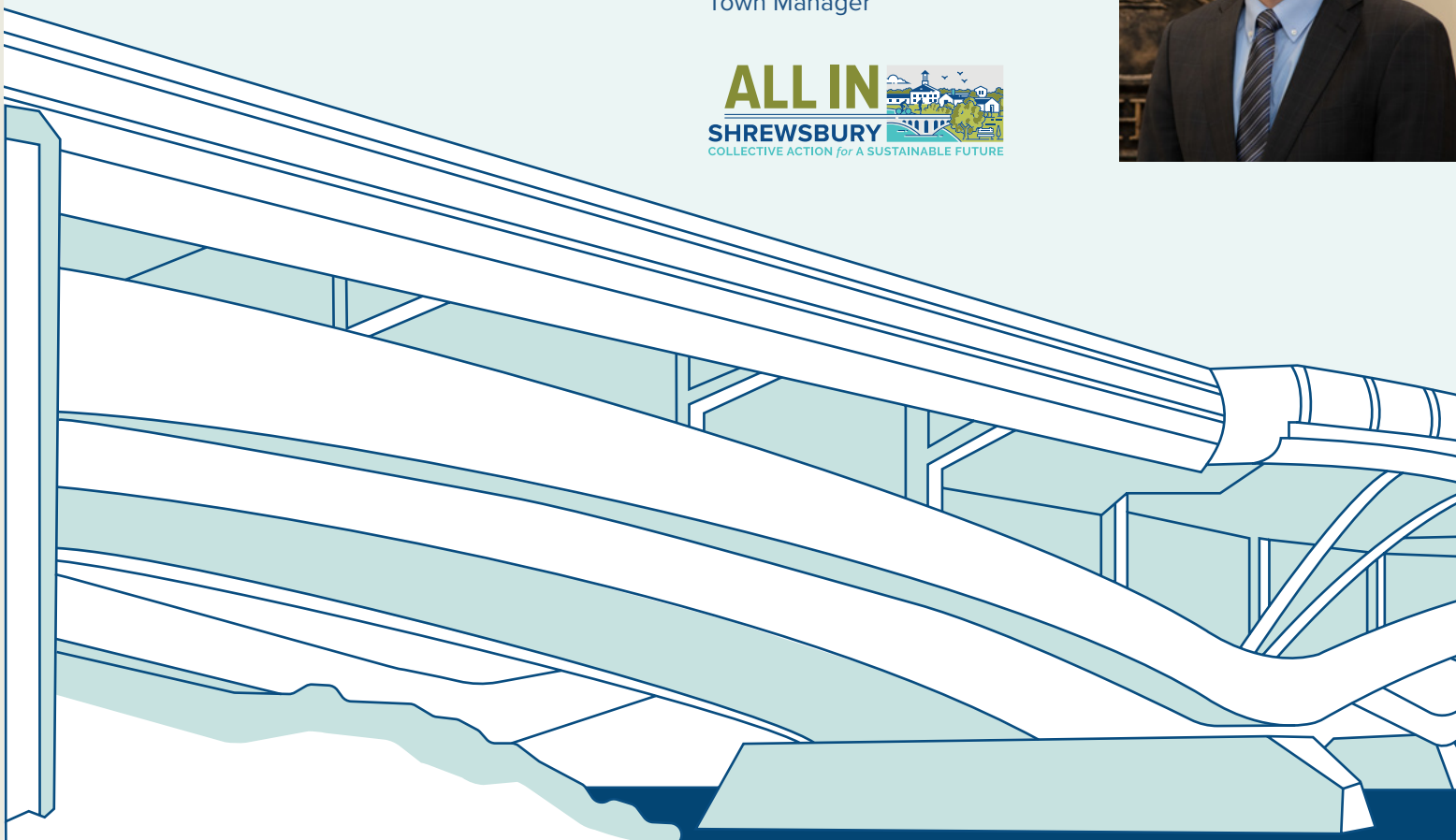

Acknowledgments

The *All In Shrewsbury Municipal Plan* would not have been possible without the time, effort, and dedication of Town leadership, staff, and community partners.

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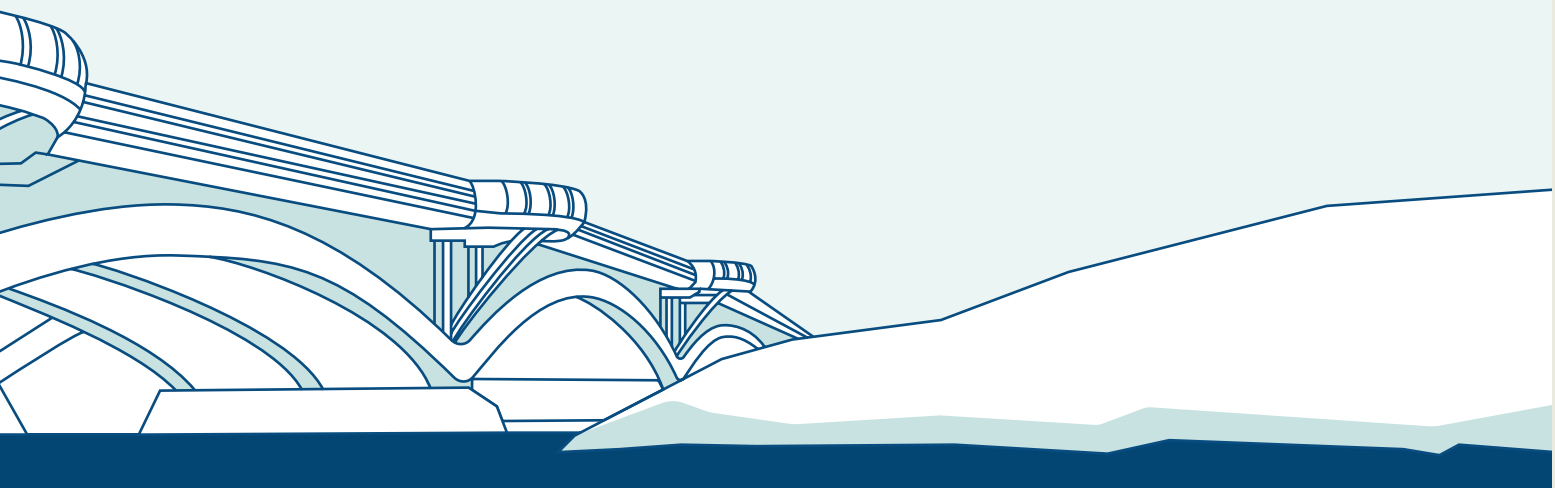
KLA KIM LUNDGREN ASSOCIATES, INC.
Customized Solutions for the Community You Want



All In for Climate Action

Shrewsbury is a welcoming New England town with vibrant and diverse neighborhoods, access to convenient urban amenities, and abundant natural resources. Residents and business owners model the community's values—integrity, inclusion, and innovation—and actively collaborate with Town departments to make Shrewsbury the best it can be. Now, the Town is going "all in" to ensure that Shrewsbury remains a healthy, safe, and resilient community in the face of climate change.

Intense storms, flooding, heat waves, and other climate hazards have already begun to impact central Massachusetts more and more frequently. For Shrewsbury, it is an opportunity to embrace forward-thinking, climate-ready solutions guided by the past and powered by a shared vision for a sustainable future. Through the *All In Shrewsbury Municipal Climate Action and Resiliency Plan*, the Town will work collaboratively across municipal departments to meet the challenges of climate change head-on.

WHAT IS A MUNICIPAL CLIMATE ACTION & RESILIENCY PLAN?

Unlike a community climate action plan, which applies to the entire geographic boundary of the community and requires implementation support from residents and local organizations and businesses, a municipal climate action plan focuses on government operations. As such, this plan identifies goals, strategies, and actions that fall under the operational control of the municipal government.

There is resident support to create a community-wide climate action plan on the heels of the *All In Shrewsbury Municipal Plan.* By developing a municipal-focused plan first, the Town will lay a foundation for local climate action and lead by example.

Achieving a Sustainable and Resilient Future

Through the *All In Shrewsbury Municipal Plan*, the Town seeks to achieve the following overarching goals:

Reduce the Town of Shrewsbury's contribution to climate change

Integrate sustainability and climate action principles across all Town departments

Ensure that municipal operations are resilient and efficient

Save money, time, and resources

Preserve the Town's history, culture, and quality of life

Prepare for the current and coming impacts of climate change

In addition, as part of its commitment to reducing Shrewsbury's contribution to climate change, the Town aims to achieve **net zero** greenhouse gas (GHG) emissions from municipal operations at the earliest technically- and economically-responsible time and no later than 2050, in alignment with the State of Massachusetts' Decarbonization Roadmap. In the interim, the Town will seek to achieve a **50% reduction in municipal GHG emissions by 2030.** The metrics and targets included in this plan demonstrate what it will take to achieve these ambitious goals.

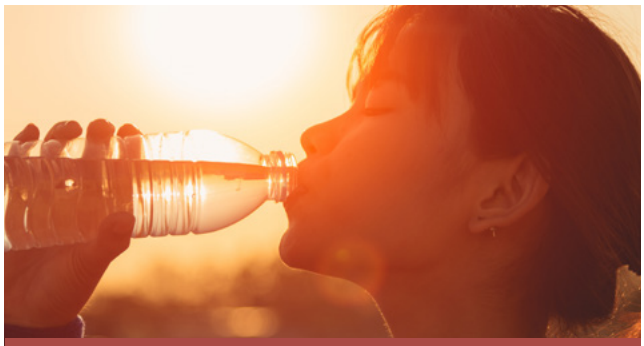
While reducing emissions is key to mitigating the impacts of climate change, it is but one part of the Town's strategy. Fostering a culture of collaboration and efficiency, involving Town staff across departments and divisions, and ensuring that the Town's systems and services are prepared for short- and long-term climate impacts will be key to realizing a stronger and more resilient government.

WHAT IS NET ZERO?

Achieving net zero emissions means reducing emissions to as close to zero as possible. For Shrewsbury's municipal operations, achieving net zero will require actions such as electrifying municipal buildings, transitioning vehicles and equipment to zero-emissions models, and diverting solid waste away from incineration. In addition, Shrewsbury's electrical grid must transition to 100% non-emitting sources of electricity in order for the Town to reach net zero.

Climate Change in Shrewsbury

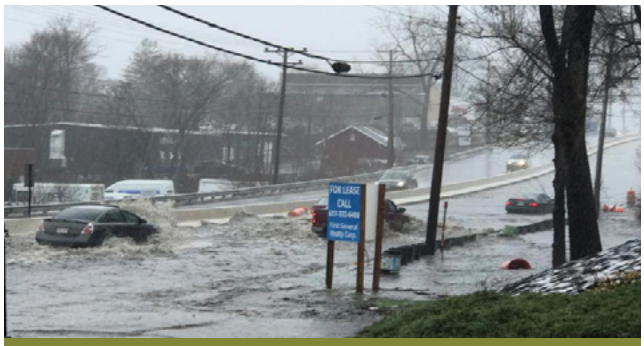
When fossil fuels are burned to power the Town's buildings and vehicles, GHG emissions are released into the atmosphere. These emissions, including carbon dioxide and methane, create a thick "blanket" in the atmosphere that traps heat and disrupts the Earth's climate. The result is more extreme temperatures, localized flooding, intense storms, and drought, which the Town of Shrewsbury is already experiencing.



EXTREME TEMPERATURES

With temperatures reaching 93 degrees in August, Worcester County experienced some of the hottest and driest conditions on record during the summer of 2022, contributing to critical drought across the state.[1]

By 2030, Shrewsbury could experience up to **19 days above 90°F** and up to **38 days by 2050**.[2]



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LOCALIZED FLOODING

There were 42 flood events and 16 flash flood events reported between January 2019 and February 2023 in Worcester County, which led to local road closures and property damage.[3]

In Shrewsbury, **20% of critical facilities** (such as dams, health facilities, etc.) are **vulnerable to hazards** like flooding.[4]

Impacts on Municipal Operations

Extreme temperatures can exacerbate demand for emergency services and cooling centers, elevate risk for vulnerable populations, threaten water supplies, and place strain on the electricity grid.

Localized flooding can damage municipal assets and facilities, lead to an increase in vector-borne illnesses and contaminated drinking water, and hinder access to essential public services.

Climate hazards can impact the Town's ability to consistently provide efficient services and pose a threat to the health and safety of community members and Town staff, especially those who work outside.

These climate hazards can pose a threat to the health and safety of community members and Town staff, especially those who work outside. Climate hazards can also impact the Town's ability to consistently provide efficient services, such as waste management services, energy and water delivery, and more. Community members who responded to the *All In Shrewsbury* Community Survey ranked Public Health and Safety, Power Outages, and Aging Public Infrastructure as their highest concerns in terms of how climate change could impact municipal services.

INTENSE STORMS

71% more rainfall in the Northeast is happening in larger storms than in the past.[5] This increase in intense storms means greater damage to property and infrastructure.

Precipitation in Shrewsbury **could increase up to 14%** by 2050, with the largest increases occurring in the winter.[6]

Intense storms can cause damage to municipal property, power outages, and disruptions to essential services including transportation, telecommunications, and energy and water supply.

DROUGHT

Rising temperatures not only result in more precipitation due to increased moisture in the air, but also more intense dry spells as more water evaporates from the land. Droughts in Central Massachusetts have increased in frequency over the past 20 years.[7]

In summer and fall of 2020, Worcester County experienced **23 consecutive weeks** of **moderate to severe drought conditions**.[8]

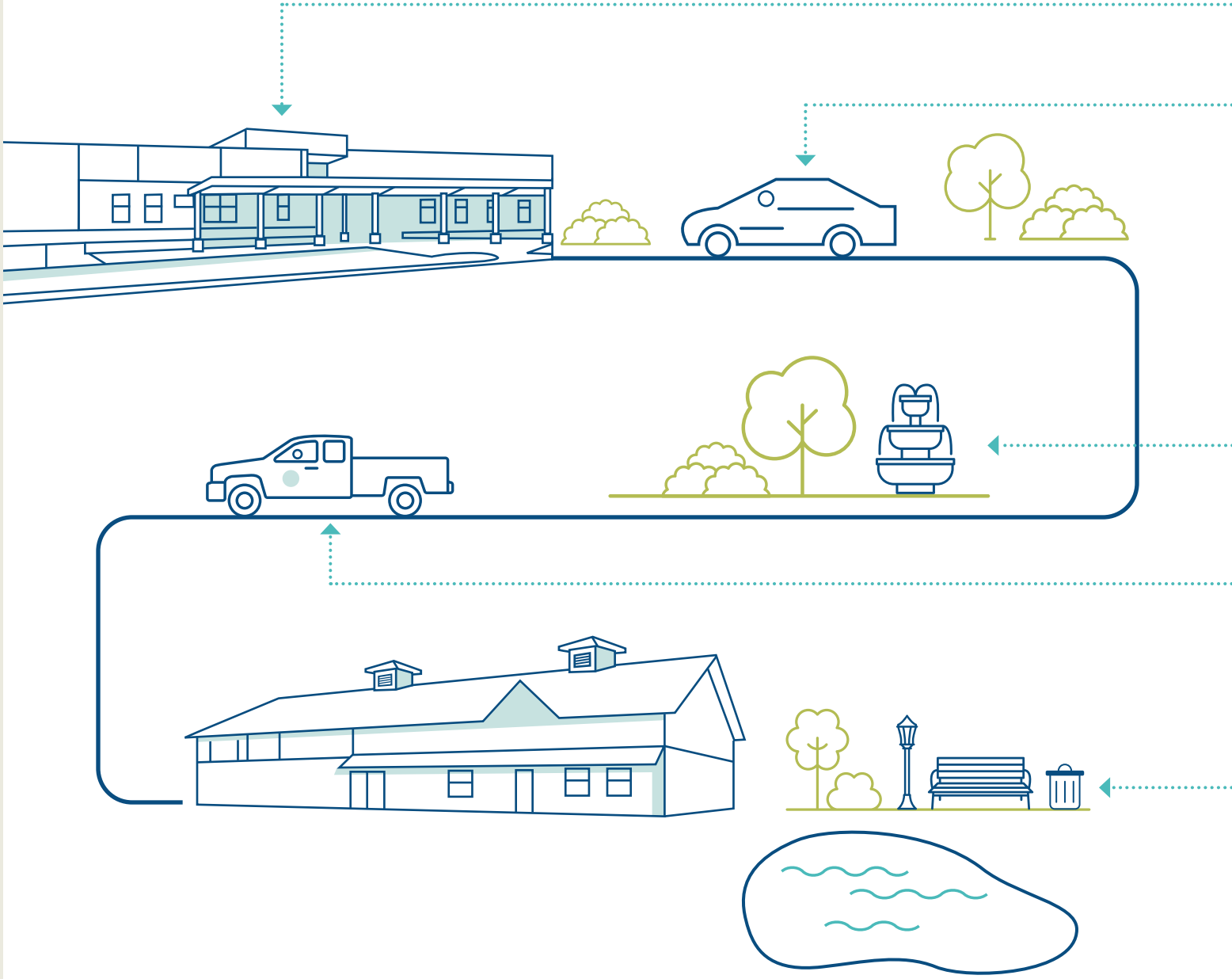
Drought conditions can not only elevate fire risk, which impacts emergency services, but also threaten the water supply, which could limit access to clean drinking water and water for irrigation.

Climate change is exacerbating all types of extreme weather conditions, including more frequent and intense precipitation and droughts.

Pathways to Zero Emissions

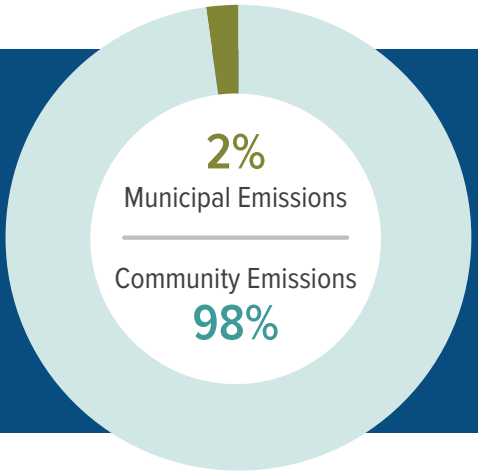
Although Shrewsbury's municipal emissions are only a small portion of the community's total emissions, the faster and more aggressively the Town—and all other municipalities across the country—can act to reduce them, the more likely it becomes to slow climate change to a manageable pace.

To create an actionable and data-driven plan, the Town first undertook a GHG emissions inventory[9] to understand the sources of municipal emissions. Using a 2021 baseline, the Town measured the amount of GHGs generated by municipal operations and identified the activities that generate them. **The sources of the Town's municipal emissions represent the biggest opportunities to reduce GHGs;** these opportunities formed the basis for the high-impact strategies in this plan.



In 2021, the Town generated **8,146 metric tons** of CO_2 equivalent ($MTCO_2e$). GHGs from Shrewsbury's municipal operations are approximately **2%** of the footprint of the entire community.[10]

Total Shrewsbury GHG Emissions



Facilities & Infrastructure

41% OF MUNICIPAL EMISSIONS

Moving to a clean electricity supply will reduce 45% of GHGs from facilities in the short term while the Town strategically invests to reduce energy use and eliminate fossil fuels.

Employee Commutes

30% OF MUNICIPAL EMISSIONS

The Town will explore how to best support employees in reducing emissions from commuting. This could include improving infrastructure for walking and biking, supporting flexible work schedules, and ensuring adequate workplace charging infrastructure to facilitate the transition to electric vehicles.

Water Supply

14% OF MUNICIPAL EMISSIONS

These emissions are primarily from the electricity that is used to pump water and wastewater throughout Town; these pumps alone account for 20% of the Town's total electricity use. Investing in efficient pumping infrastructure will lower energy use while SELCO supplies the rest with clean supply.

Vehicle Fleet

14% OF MUNICIPAL EMISSIONS

About 1/3 of the vehicles owned by the Town have an equivalent electric model available today. As these are replaced, the Town will be looking out for new developments in zero-emissions heavy equipment, such as emergency vehicles.

Solid Waste

2% OF MUNICIPAL EMISSIONS

To reduce emissions from waste incineration, the Town will improve and expand recycling and composting programs within municipal buildings and schools, as well as prioritize waste reduction and sustainable procurement.

Developing the Plan

All In Shrewsbury is a joint effort across Town departments, a diverse group of stakeholder organizations, and residents. Involving Town staff and the broader community was crucial to developing the *All In Shrewsbury Municipal Plan* to understand and incorporate their diverse priorities, concerns, and ideas for how the Town can lead on climate action.

Climate Action Advisory Committee

A committee comprised of 37 members representing Town departments and local and regional community organizations was created to shape the plan's goals, strategies, and actions.

Meeting 1: Climate Leadership and Barriers and Opportunities for Action

Committee members reviewed the results of the municipal GHG inventory, discussed what climate leadership should look like in Shrewsbury, and identified potential opportunities and barriers to taking action.

Meeting 2: Goals, Strategies, and Actions

Members provided input on the draft Action Plan, identified missing actions, and discussed equity and implementation considerations.

Meeting 3: Implementation Blueprints

Members worked in small groups to build out Implementation Blueprints for a selection of priority actions.

37
ADVISORY COMMITTEE MEMBERS

205
RESPONSES ON COMMUNITY SURVEY

213
RESPONSES ON TOWN STAFF SUSTAINABILITY SURVEY

120
RESPONSES ON PUBLIC COMMENT SURVEY

297
RESPONSES ON TOWN STAFF TRANSPORTATION SURVEY

> “I hope the Town will continue to be proactive in embracing EVs and other technologies that reduce fossil fuel use.”

> “In five years, I hope we are a community that others look to for inspiration, with thoughtful sustainable policies that guide all of our choices in community development.”

Community and Staff Surveys

The Town distributed four surveys during the planning process to gauge support for municipal climate action and identify priorities.

Town Staff Surveys

213 staff members shared their experiences with incorporating sustainability into their jobs and their willingness to participate in activities such as composting at work. 297 staff shared information about their daily commute through a transportation-focused survey to help inform the municipal GHG emissions inventory.

Community Surveys

205 survey respondents from the community indicated their support for a variety of actions and policies and shared their vision for a more sustainable Shrewsbury. 120 additional community members provided feedback through the public comment survey.

Community Engagement

In addition to conducting surveys, the Town facilitated additional opportunities for residents and business owners to learn more and provide feedback, including:

Community events like the Farmers Market and Food Truck Thursdays

Two virtual and two in-person feedback sessions

Presentations to community groups

Public comment period

Focus Areas and Guiding Principles

The *All In Shrewsbury Municipal Plan* has five focus areas. Each focus area encompasses key areas of Shrewsbury's operations where the most significant opportunities exist for reducing GHG emissions and enhancing operational resiliency and efficiency.

FOCUS AREAS

Clean Energy & Efficient Buildings

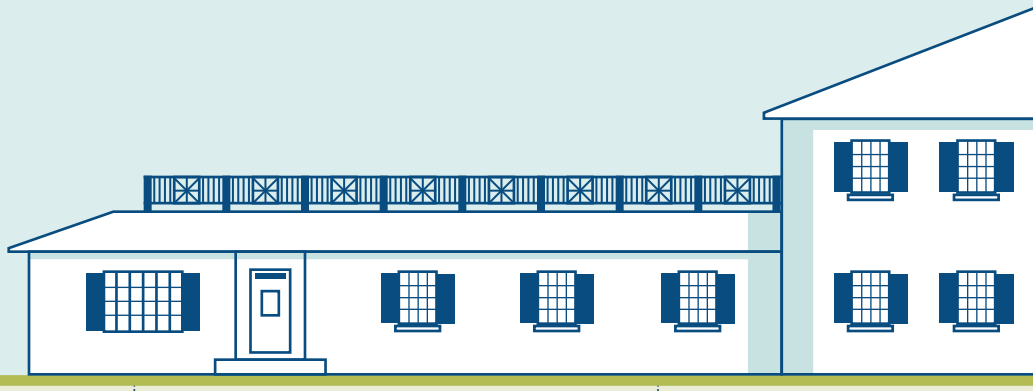
VISION

Driving the transition to renewable energy while using energy efficiently and investing in resilient and high-performing municipal buildings.

Resilient Operations

VISION

Preparing our municipal operations for climate change through enhanced processes and policies, emergency management, and communications.



GUIDING PRINCIPLES

Four Guiding Principles were selected to shape the planning process and establish priorities for implementing the *All In Shrewsbury Municipal Plan*, while also reflecting the core values of the community.

Social, Economic, and Environmental Resilience

Increasing the capacity of social, economic, and natural systems to thrive in the face of climate impacts.

Integrity and Transparency

Communicating openly with Town stakeholders about plans and progress and fostering a culture of integrity and honesty.

Smart Waste & Water Management

VISION

Providing safe, reliable waste and water services while reducing consumption and resource waste.

Sustainable Transportation

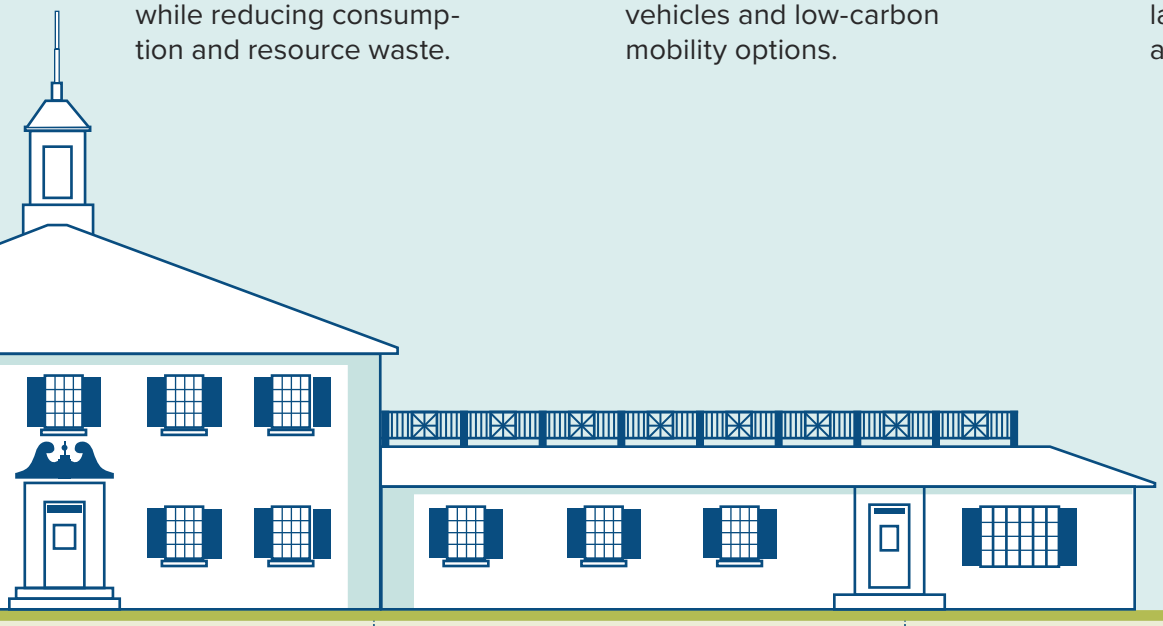
VISION

Accelerating the adoption of zero-emission vehicles and low-carbon mobility options.

Vibrant Natural Resources

VISION

Ensuring that natural resources and public lands are protected and accessible to all.



Equity and Inclusion

Ensuring that Town policies, projects, and programs are equitable, inclusive of diverse voices and experiences, and do not exacerbate inequities in our community.

Greenhouse Gas Emissions Reduction

Reducing the Town of Shrewsbury's contribution to climate change.

Action Plan

The *All In Shrewsbury* planning process identified the following goals, strategies, and actions for each focus area. This Action Plan was created in collaboration with the Climate Action Advisory Committee and further refined through stakeholder interviews and internal discussions.

Clean Energy & Efficient Buildings

GOAL 1	**Shrewsbury sources energy that is local and renewable.**
STRATEGY 1.1	**Accelerate the transition of Shrewsbury Electric & Cable Operations (SELCO)'s energy portfolio to renewable energy.**
ACTION 1.1.A	Maximize on-site renewable energy development at appropriate municipal facility sites that minimizes tree removal.
1.1.B	Establish partnerships with community institutions to develop local distributed solar installations that contribute to SELCO's clean energy supply goals.
1.1.C	Support continued expansion of SELCO's community shared solar program.
1.1.D	Coordinate advocacy through municipal utility coalitions for increased support for transition implementation by the MA Department of Public Utilities (DPU), Department of Energy Resources (DOER), and other agencies.
GOAL 2	**Shrewsbury's energy infrastructure is well prepared for weather-related disruptions and community electrification.**
STRATEGY 2.1	**Enhance energy resilience and expand capacity for renewable energy.**
ACTION 2.1.A	Create a transition plan for building new Class I renewable energy sources, expanded battery capacity, and decommissioning of existing fossil fuel generation assets.
2.1.B	Prioritize the development of advanced metering and other systems that support grid resilience services and installation of solar and battery systems in critical facilities.
2.1.C	Partner with SELCO to expand social media and other real-time messaging to customers for management of peak demand.
2.1.D	Perform regular 'landscape scan' research to monitor changes with rapidly advancing technologies for suitability to address SELCO transition priorities.
GOAL 3	**Municipal buildings are designed, constructed, and maintained to be energy efficient and minimize greenhouse gas emissions.**
STRATEGY 3.1	**Implement standards of high-efficiency and carbon neutrality for new municipal construction and major renovations.**
ACTION 3.1.A	Recommend the utilization of the Massachusetts Net-Zero "Specialized" Opt-In energy code for municipal buildings, with appropriate exceptions for critical facilities.
3.1.B	Research the development of and recommend a "no new fossil fuels" policy for new municipal construction and major renovations.
STRATEGY 3.2	**Electrify existing municipal buildings running on fossil fuels and pursue deep retrofits and resource conservation.**
ACTION 3.2.A	Investigate and support development of geo-microgrid pilot programs.
3.2.B	Publish municipal building energy use data in accessible formats with accompanying context for clear interpretation.
3.2.C	Continue pursuing upgrades to existing facilities to achieve net zero energy performance and minimize total energy use and operational expenses.

3.2.D	Prioritize the installation of energy-efficient cooling systems like heat pumps in schools and other municipal buildings to minimize energy use and protect occupant health during heat waves.
3.2.E	Educate building occupants on personal energy conservation actions and establish norms for all Town employees to follow.

Resilient Operations

GOAL 1	**Emergency services are equipped to respond to climate hazards and municipal operations are prepared to recover quickly from short-term shocks and long-term stressors.**
STRATEGY 1.1	**Expand and increase the capacity of emergency preparedness services.**
ACTION 1.1.A	Conduct a gap analysis of Shrewsbury's emergency management systems and operations to identify opportunities for improvement.
1.1.B	Design and launch an emergency preparedness campaign for municipal staff and community members.
STRATEGY 1.2	**Implement resilient operations and systems that can recover quickly from climate hazards.**
ACTION 1.2.A	Continue to improve and protect municipal assets from climate hazards by elevating mechanical utilities, floodproofing buildings, and tree trimming around utility wires to reduce power outages.
1.2.B	Update the Hazard Mitigation Plan and ensure climate impacts are incorporated.
1.2.C	Conduct yearly reviews of Shrewsbury Emergency Management Plan and Continuity of Operations Plan.
GOAL 2	**Shrewsbury's operations reflect sustainability principles and are prepared for the impacts of climate change.**
STRATEGY 2.1	**Integrate sustainability principles into procurement policies to improve efficiency and reduce waste.**
ACTION 2.1.A	Create a centralized sustainable procurement policy to prevent duplicative purchases and reduce waste.
2.1.B	Create a centralized, collaborative process and procedures for procurement.
2.1.C	Add sustainability requirements and standards for vendors and contractors, as relevant.
STRATEGY 2.2	**Integrate sustainability principles and climate data into municipal planning and budgeting processes.**
ACTION 2.2.A	Create a municipal Green Team with diverse department representation charged with implementation of the *All In Shrewsbury Municipal Plan*.
2.2.B	Develop sustainability evaluation criteria to be incorporated into municipal budgeting, capital improvement and planning, and project design processes.
2.2.C	Review all existing municipal policies to identify and remove any barriers to incorporating sustainable practices into day-to-day operations.
2.2.D	Create a Strategic Data Use Plan focused on the Town's intentions to leverage data to strengthen governance, transparency, and sustainable and efficient operations.

Smart Waste and Water Management

GOAL 1	**Shrewsbury's municipal solid waste is reduced and managed responsibly.**
STRATEGY 1.1	**Reduce consumption of single-use items and maximize reuse.**
ACTION 1.1.A	Conduct an audit of the Town's waste processes and waste stream from contracting through disposal.
1.1.B	Create a sustainable events guide for Town staff to reduce waste and single use plastics.
1.1.C	Offer a "reuse closet" for office supplies and equipment that staff can utilize to reuse materials.
1.1.D	Implement a phased paper reduction program that encourages online or digital application processes and document storage where feasible.
STRATEGY 1.2	**Increase municipal recycling and composting diversion rates.**
ACTION 1.2.A	Establish a waste management program and educational campaign to improve recycling within Town facilities.
1.2.B	Identify and designate a space to host zero waste and swap events.
1.2.C	Explore the feasibility of a pilot composting program in elementary schools.
1.2.D	Expand the schools' recycling program to include all cafeterias and provide education on how to properly recycle.
1.2.E	Incorporate requirements into waste hauler contracts for enhanced reporting and tracking of solid waste and recycling.
1.2.F	Incorporate sustainable materials and waste management requirements into RFPs.
GOAL 2	**The Town consumes water efficiently and sustainably.**
STRATEGY 2.1	**Decrease municipal water consumption and track consumption patterns over time.**
ACTION 2.1.A	Retrofit existing municipal facilities and create standards for water-efficient appliances and faucets for all Town buildings and schools.
2.1.B	Track water consumption at the municipal building level and create a dashboard to educate staff and encourage conservation.

Sustainable Transportation

GOAL 1	**The Town of Shrewsbury is a model for clean transportation options.**
STRATEGY 1.1	**Transition the municipal fleet to zero-emission vehicles and expand charging infrastructure where feasible and available.**
ACTION 1.1.A	Create a municipal Zero-Emission Vehicle (ZEV) Purchasing Policy that considers operational requirements of vehicles and availability of suitable models.
1.1.B	Work with SELCO to increase municipal and public charging infrastructure at municipal facilities.
STRATEGY 1.2	**Support flexible work schedules and low-carbon commuting options for Town staff.**
ACTION 1.2.A	Explore alternative work schedules to reduce the number of commuting days.
1.2.B	Identify priority municipal buildings to install covered bicycle parking, showers, and other appropriate facilities to support walking and biking to work.
1.2.C	Acquire and designate EVs for Town staff to share and reserve to travel to meetings, trainings, and other locations on municipal business.
1.2.D	Create incentives and awareness opportunities for Town staff to transition to EVs and other low-carbon options for personal transportation and commuting.

Vibrant Natural Resources

GOAL 1	**Town-owned trees, open spaces, and wetlands are protected and managed to enhance ecosystem services and community resilience.**
STRATEGY 1.1	**Protect and enhance Shrewsbury's tree canopy and open space.**
ACTION 1.1.A	Prioritize the allocation of resources to protect and enhance open space and conservation lands.
1.1.B	Create informational materials and signage about different types of land/open spaces in Shrewsbury and how the Town maintains them to educate municipal staff and community members.
1.1.C	Over a three-year period, create a baseline street tree inventory and management plan to track and map tree canopy and proactively maintain tree health on municipal land.
1.1.D	Collaborate with neighboring towns to work together on open space networks and ecosystems across town borders.
STRATEGY 1.2	**Prioritize the role of wetlands in enhancing Shrewsbury's resilience to climate change.**
ACTION 1.2.A	Restore and protect wetlands and buffer zones along local bodies of water to improve water quality and enhance wildlife habitat.
GOAL 2	**Landscapes in Shrewsbury support a healthy and diverse local ecosystem.**
STRATEGY 2.1	**Manage and enhance landscapes with sustainable and climate-adaptive practices.**
ACTION 2.1.A	Phase in electric maintenance equipment where feasible, starting with hand-held equipment.
2.1.B	Create municipal planting guidelines that prioritize native species well-suited for anticipated climate changes and supports pollinators and other wildlife.
2.1.C	Designate and publicly identify no-mow zones.
2.1.D	Establish pocket parks at schools and on small parcels of municipal land that incorporate low-maintenance, native, and pollinator-friendly plantings.
GOAL 3	**Stormwater in Shrewsbury is minimized and managed with nature-based solutions, green infrastructure, and municipal programs.**
STRATEGY 3.1	**Minimize stormwater generation and pollutant runoff.**
ACTION 3.1.A	Continue to improve the Town's vegetative debris (i.e., storm-related debris) management program to mitigate risks of power outages, blocked roads, flooding, and winter storm damage.
3.1.B	Incorporate green infrastructure and Low Impact Development (LID) projects into new municipal building designs and updates to parks and playgrounds.
3.1.C	Pilot water catchment and reuse systems on Town-owned properties.

Clean Energy and Efficient Buildings

By the Numbers

34%
of municipal GHG emissions come from the use of electricity in buildings and infrastructure.

84%
of building-related emissions come from natural gas and electricity use in public schools.

45%
of SELCO's overall power supply is provided by carbon-free resources.

Energy use in buildings accounts for over one-third of Shrewsbury's municipal GHG emissions. Lighting, appliances, air conditioning, and heating systems in Town-owned facilities—as well as streetlights and traffic signals—all consume energy.

To drastically reduce GHG emissions, the Town of Shrewsbury needs to electrify municipal buildings and transition the energy sources that supply the Town's electricity to renewables. As a municipal-owned utility, Shrewsbury Electric & Cable Operations (SELCO) has the advantage of determining what sources of energy provide the Town's electricity. As the Town's electricity sources shift to renewable sources, and SELCO aims for 100% non-emitting sources by 2032, it is critical that municipal buildings are built or retrofitted to be highly energy-efficient and to run on electricity in order to take advantage of these clean energy sources.

LEADING BY EXAMPLE

As some of the largest municipal buildings, the Town of Shrewsbury's public schools are also the largest energy users. The Town has already been working to implement energy efficiency projects—including weatherstripping, LED lighting upgrades, and HVAC replacements—to decrease the impact of these facilities. The LED lighting upgrades in Shrewsbury High School alone are estimated to save 115,235 kWh per year, which is equivalent to the energy used by more than 10 homes in a single year.

Tracking Progress

The following metrics and targets for Clean Energy & Efficient Buildings were identified based on the goals, strategies, and actions. The metrics will help the Town to track how much progress is being made by implementing the *All In Shrewsbury Municipal Plan*, and the targets establish the level at which the metric needs to be reached by benchmark years to meet the Town's goals.

Relevant Metric	Baseline Data	Baseline Year	2030 Target	2040 Target	2050 Target
Percentage of total SELCO power supply portfolio that is non-emitting (%)[11]	44%	2021	90%	100%*	100%
Energy capacity of community shared solar program (MW)	3 MW	2023	Increase		
SELCO's utility-scale battery capacity (MW)	New Metric	-	Increase		
Natural gas use in municipal facilities (MMBtu)[12]	30,604 MMBtu	2021	18,500 MMBtu (40% reduction from 2021 baseline)	14,400 MMBtu (54% reduction from 2021 baseline)	0 MMBtu (100% reduction from 2021 baseline)
Average EUI for municipal offices (kBtu/sq. ft.)[13]	47 kBtu/sq. ft. (includes electric & natural gas use)	2021	41 kBtu/sq. ft. (All-Electric Site EUI)	36 kBtu/sq. ft. (All-Electric Site EUI)	30 kBtu/sq. ft. (All-Electric Site EUI)
Average EUI for public schools (kBtu/sq. ft.)[14]	46 kBtu/sq. ft. (includes electric & natural gas use)	2021	40 kBtu/sq. ft. (All-Electric Site EUI)	32 kBtu/sq. ft. (All-Electric Site EUI)	25 kBtu/sq. ft. (All-Electric Site EUI)

* SELCO has committed to achieving 100% by 2032.

Resilient Operations

By the Numbers

2,094
total employees (Town, Public Schools, and SELCO staff).

203
emergency response personnel.

21,133
residents signed up for CodeRED alerts.

Shrewsbury has already experienced impacts associated with climate change, such as flooding, extreme storms, drought, and increasing high heat days. Preparing municipal operations for climate change through enhanced processes and policies, emergency management, and communications will be essential to enhancing and protecting Shrewsbury's critical assets and infrastructure in the future.

As the primary power source, the Town aims to ensure the continuity of services for Shrewsbury Electric and Cable Operations (SELCO) by assessing the need for backup fuel and alternate interconnections. SELCO is pursuing a leased utility-scale battery storage system to assist in peak saving efforts and is in the process of upgrading the distribution system to a higher capacity that can handle increased demand and grid outages. The Town of Shrewsbury also aims to embed sustainability across all departments and municipal operations. This includes improving procurement policies to increase efficiency and reduce waste and incorporating climate impacts into existing hazard mitigation and emergency management efforts.

LEADING BY EXAMPLE

Shrewsbury is proactively investing in enhancing emergency systems and resources. CodeRED is an emergency notification service that notifies residents via telephone, cell phone, text and email about emergency situations. The system is capable of sending messages to specific neighborhoods, certain groups, or the entire community. Residents are encouraged to sign up and download the CodeRED Mobile Alert app.

Tracking Progress

The following metrics and targets for Resilient Operations were identified based on the goals, strategies, and actions. The metrics will help the Town to track how much progress is being made by implementing the *All In Shrewsbury Municipal Plan*, and the targets establish the level at which the metric needs to be reached by benchmark years to meet the Town's goals.

Relevant Metric	Baseline Data	Baseline Year	2030 Target	2040 Target	2050 Target
Average electric power interruption duration (mins)[15]	57 mins	2021	Decrease		
Percentage of municipal plans that recognize climate hazards (%)	New Metric	-	100%		
Share of municipal facilities that have been assessed and upgraded for climate resilience (%)	New Metric	-	50%	100%	100%
Number of product categories with an environmental or social impact policy in place (#)	New Metric	-	Increase as applicable		
Dollar value spent on single-use goods ($)	New Metric	-	Decrease		$0
Percentage of departments regularly reporting performance metrics (%)	New Metric	-	Maintain at 100%		

Smart Waste and Water Management

By the Numbers

20%
of municipal electricity use comes from water and wastewater pumping.

86%
of municipal water use comes from the Town's public schools.

$16,200
grant awarded by the MA DEP Sustainable Materials Recovery Program in recognition of the Town's waste diversion activities.

Providing safe and reliable water and waste services is essential to the community's well-being. The Town is focused on reducing municipal water consumption and waste generation, which will in turn reduce energy use and greenhouse gas emissions.

While it is important for the Town to develop innovative ways to increase waste diversion through reuse, recycling, and composting strategies, the most effective strategy for reducing emissions is to decrease waste generation in the first place. The less material that the Town uses for its operations, the less waste will be produced and potentially sent to incineration facilities. Centralized procurement strategies that minimize the amount of paper and single-use items that are purchased, in addition to reuse programs, will help.

Water conservation has also been a long-standing priority for the Town with the development of the Shrewsbury Water Conservation Project in 2006. The Town aims to reduce water consumption among municipal users, in particular, through appliance upgrades and education. In addition to reducing water demand in municipal facilities, the Town can also work to enhance water supply and quality through low-impact design and stormwater management practices.

LEADING BY EXAMPLE

In 2018, the Town began operating the state-of-the-art Home Farm Water Treatment Plant. The plant's treatment process utilizes the newest generation of manganese removal filtration which encompasses a greener and more environmentally sustainable methodology to biologically remove the manganese, as opposed to conventional treatment methods that use chemicals to remove the manganese.

Tracking Progress

The following metrics and targets for Smart Waste & Water Management were identified based on the goals, strategies, and actions. The metrics will help the Town to track how much progress is being made by implementing the *All In Shrewsbury Municipal Plan*, and the targets establish the level at which the metric needs to be reached by benchmark years to meet the Town's goals.

Relevant Metric	Baseline Data	Baseline Year	2030 Target	2040 Target	2050 Target
Waste disposed from public schools (lbs of waste per student)[16]	71 lbs/student	2022	47 lbs/student	23 lbs/student	0 lbs/student (all waste is diverted)
Waste disposed from municipal offices (lbs of waste per employee)[17]	62 lbs/ employee	2022	41 lbs/ employee	20 lbs/ employee	0 lbs/employee (all waste is diverted)
Number of schools with composting programs (#)	0 schools	2023	2 schools	6 schools	9 schools (all public schools)
Water use in municipal facilities per occupant (gallons/person/day)[18]	8.2 gallons per person per day*	2021	Monitor and minimize		
Percentage of municipal facilities that have been retrofitted for water-use efficiency (%)	New Metric	-	30%	60%	100%
Energy intensity of water delivered (MWh/MG)[19]	2.9 MWh/MG	2021	Monitor and minimize		

* Better than average national usage for office buildings (13 gallons per person per day).

Sustainable Transportation

By the Numbers

14%
of the Town's GHG emissions are attributed to the municipal vehicle fleet.

87,581
gallons of gasoline were consumed by the municipal vehicle fleet in 2022, contributing 772 $MTCO_2e$.

30%
of the Town's GHG emissions are attributed to staff commutes.

By accelerating the transition to zero-emission vehicles, enhancing non-motorized, shared, and active transportation modes, and ensuring safe, accessible opportunities for bicycles and pedestrians, Shrewsbury can decrease municipal emissions while promoting public health and wellness. More electric vehicles (EVs) on the road, for example, means fewer fossil-fuel-burning cars, which can significantly lower transportation-related emissions and improve local air quality.

Shrewsbury is committing to purchasing fuel-efficient vehicles for municipal use, electrifying the vehicle fleet where feasible, and installing more EV charging stations. By maintaining an annual vehicle inventory and developing a replacement plan, the Town can streamline the transition to zero-emission vehicles. Since commuting by municipal employees accounts for almost one-third of the Town's GHG emissions, the Town must also improve multimodal infrastructure to promote walking, biking, carpooling, and other modes of transportation. The Town can take action by identifying locations to install covered bicycle parking, showers, and other appropriate facilities (e.g., charging stations for e-bikes). Supporting EV infrastructure and low-carbon commuting options for Town staff will also reduce fuel consumption, energy costs, and municipal GHG emissions.

LEADING BY EXAMPLE

The Town of Shrewsbury is leading the transition to electric vehicles and is working to install EV charging locations at all municipal buildings. Currently, there are EV chargers at Town Hall, Dean Park, Beal Elementary School, and the Police Station. SELCO, the municipal-owned utility, also offers convenient public charging stations around town. A successful EV transition is supported by the development of EV charging infrastructure so that it becomes commonplace—not a rarity.

Tracking Progress

The following metrics and targets for Sustainable Transportation were identified based on the goals, strategies, and actions. The metrics will help the Town to track how much progress is being made by implementing the *All In Shrewsbury Municipal Plan*, and the targets establish the level at which the metric needs to be reached by benchmark years to meet the Town's goals.

Relevant Metric	Baseline Data	Baseline Year	2030 Target	2040 Target	2050 Target
Percentage of light duty vehicles in the municipal fleet that are zero emissions (%)[20]	1% (2 of 112)	2022	25%	65%	100%
Percentage of municipal employees with access to an EV charging station at work (%)	< 1%	2023	25%	75%	100%
Share of employees carpooling, biking or walking for commutes (%)[21]	2%	2023	5%	7%	10%

Vibrant Natural Resources

By the Numbers

71%
of open space in Shrewsbury is owned by the Town.

883
acres in Shrewsbury are permanently conserved land.

877
acres in Shrewsbury are considered wetlands.

Shrewsbury is home to parks, forests, and wetlands that provide a multitude of benefits: clean air and water, shade and cooling, stormwater mitigation, carbon sequestration, and recreational opportunities. Preserving and enhancing open spaces, tree cover, habitats, and water resources through smart management practices will be crucial to the Town's ability to adapt as climate change impacts like flooding, extreme storms, and heat intensify.

Investing in and enhancing natural resources will make Shrewsbury a healthier and more vibrant place to live, work, and play. Balancing community growth and development with protecting natural and recreational resources is possible and integral to preserving Shrewsbury's community character. The Town can lead by example and incorporate best practices for sustainable landscaping, preserving tree canopy, and managing stormwater on municipal properties.

LEADING BY EXAMPLE

The Town of Shrewsbury is working to restore and protect wetlands and buffer zones along local bodies of water to improve water quality and enhance wildlife habitats. With its north-south orientation along the eastern edge of the Worcester metropolitan area, Lake Quinsigamond has special significance as a regionally important wildlife migratory corridor. As an important surface and groundwater resource, the Town is committed to protecting the lake's watersheds and surrounding land in aquifer recharge areas by regularly monitoring water quality and removing invasive species.

Tracking Progress

The following metrics and targets for Vibrant Natural Resources were identified based on the goals, strategies, and actions. The metrics will help the Town to track how much progress is being made by implementing the *All In Shrewsbury Municipal Plan*, and the targets establish the level at which the metric needs to be reached by benchmark years to meet the Town's goals.

Relevant Metric	Baseline Data	Baseline Year	2030 Target	2040 Target	2050 Target
Percent of public tree locations occupied (%)	New Metric*	-	-	100%	100%
Population share of the most common tree species (%)	New Metric*	-	Interim target to 10%	10% max[22]	
Wetland coverage in Shrewsbury (acres)	877.41 acres[23]	2020	No net loss		
Share of Town-managed conservation land with high ecological integrity (%)	39 acres / 10%[24]	2020	15%	20%	25%
Share of stormwater assets incorporating green infrastructure (%)	New Metric	-	25%	75%	

*Establish via Street Tree Inventory.

What's Next for *All In Shrewsbury*

Establish a Green Team

It's clear that tackling climate change will require creativity and collaboration. The *All In Shrewsbury* team is working to establish a municipal Green Team comprised of Town staff from different departments who will be responsible for implementing the *All In Shrewsbury Municipal Plan*. This approach seeks to foster accountability, collaboration, and shared responsibility for implementation across the Town departments who know their work best and know the best ways to get their work done on behalf of all Shrewsbury residents.

Provide Training, Tools, and Education

This plan cannot be fully implemented without the support of Town staff. Some of the actions in this plan will require staff to adopt new behaviors and policies that could change day-to-day aspects of their jobs. The Town acknowledges the challenges that will likely come with these transitions and is committed to supporting all staff with the education and resources they need to change and grow in their roles. For example, the Town could provide training opportunities that also support the plan's implementation, such as:

- Creating workforce development opportunities for **planners** and **building managers** to oversee net zero construction projects.
- Establishing technical assistance and resources to **building managers** to operate buildings at maximum efficiency.
- Providing **fleet management staff** with training related to electric vehicle maintenance.
- Increasing training opportunities for **emergency response personnel** around climate hazards.

Center Equity and Inclusion Throughout Implementation

As Guiding Principles of *All In Shrewsbury*, Equity and Inclusion will be key considerations in terms of how the Town approaches implementation. For example, when considering a new policy, project, or budget proposal, the Town will work to identify who could be impacted, how impacted stakeholders will be engaged and involved in decision-making, and what steps will be taken to avoid exacerbating existing inequities within Town operations or the broader community.

Ensure a Financially Responsible Approach

The Town of Shrewsbury is mindful of the fact that many of the actions in the *All In Shrewsbury Municipal Plan* will require some amount of funding to fully implement. To minimize potential impacts to taxpayers and ensure that the Town continues to be a responsible steward of taxpayer dollars, the Town will:

- Approach implementation strategically and thoughtfully by implementing actions when it is technologically and economically prudent to do so;
- Leverage regular maintenance that will be needed to upkeep buildings, vehicles, and other infrastructure as opportunities to implement more efficient, resilient, and electric systems;
- Integrate sustainability considerations, such as energy efficiency, into Town projects moving forward to reduce long-term operational costs;
- Explore available funding opportunities at state and federal levels to do this work.

Funding Sources and Opportunities

While Town building and operational improvements are often funded with operating or capital funds, there are opportunities to leverage external funding sources to implement the *All In Shrewsbury Municipal Plan*.

MA Green Communities Program

Helps cities and towns in Massachusetts reduce their energy use and save money by providing grants and technical assistance for energy efficiency and renewable energy projects.

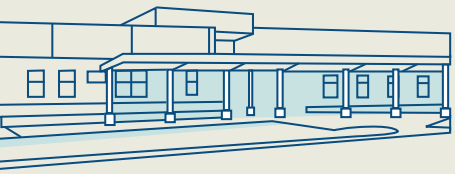
To date, the Town of Shrewsbury has leveraged Green Communities **grants to fund 58%** of its building efficiency improvements.

Bipartisan Infrastructure Law

Provides grants to help municipalities establish programs to reduce emissions from transportation and buildings and technical assistance to help communities become more resilient to climate hazards.

Inflation Reduction Act

Provides tax credits for purchasing energy efficient systems, renewable energy systems, heat pumps, electric vehicles, and more.



Strategic Upgrades: Extreme Heat and Schools

Episodes of extreme heat and humidity have become more common during the early and late parts of the school year in Shrewsbury. In recent years, Shrewsbury Public Schools have held early release days when hot and humid conditions made it unhealthy to stay inside, and canceling one or multiple school days entirely has been seriously considered. As scheduling changes are disruptive to students, staff, and parents alike—not to mention the health risks and negative impacts on student learning that are associated with extreme heat[25]—providing air conditioning in schools has become as necessary as providing heat in the winter.

As building systems need to be updated or replaced, the Town can take that opportunity to install electric heating and cooling systems and other energy efficient equipment. In the case of Floral Street School, when heating systems failed and needed to be replaced in September 2023, the Town opted to install electric heat pumps that provide both heating and cooling. While these systems currently cost more up front than traditional furnaces and air conditioning systems, the Town expects to save on energy costs in the long-term and reduce GHG emissions while ensuring the health and wellbeing of students and staff in the process.

Track and Share Progress

The Town has launched an online Community Dashboard to track, demonstrate, and share progress on the plan. This dashboard will allow the plan to "live online," providing a centralized place for community members and Town staff to learn about how the plan is being implemented and where progress on goals, strategies, and actions currently stands.

Launch a Community Planning Process

As previously mentioned, there is resident support to launch a community climate action and resiliency planning process after the completion of the *All In Shrewsbury Municipal Plan*. This effort would involve an even larger group of advisors, stakeholders, and community members to ensure that the priorities and needs of Shrewsbury residents and business owners are heard.

Tackling climate change will require creativity and collaboration.

Leverage Implementation Blueprints

To assist Town departments with implementing the plan, the Implementation Blueprints on the following pages were developed for a selection of priority actions. These blueprints outline specific steps that will be undertaken to implement the action, in addition to identifying potential partners, funding opportunities, and equity considerations.

Implementation Blueprints

Clean Energy and Efficient Buildings

ACTION

EB 3.1.B

Research the development of and recommend a "no new fossil fuels" policy for new municipal construction and major renovations.

DESCRIPTION OF ACTION	Reducing GHG emissions by minimizing fossil fuel use in existing municipal buildings and preventing new fossil fuel systems from being installed in the future. A "no new fossil fuels" policy can align Shrewsbury's municipal operations with the Next Generation Roadmap for MA Climate Policy (MA Acts of 2021).
CHAMPION	Office of the Building Inspector, Department of Public Works
OVERALL TIME FRAME	Short (1-2 years)

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
1. Research best practices and standards such as Passive House, LEED, and others for a comprehensive set of design standards that meet the goal of building decarbonization, embodied carbon minimization, and life-cycle cost considerations.	3-4 months	SELCO
2. Using municipal energy and GHG emissions data, evaluate the energy, emissions, and cost savings of electrification projects to support policy recommendation.	3-4 months	SELCO Consultant
3. Engage with municipal staff and developers to evaluate current and upcoming construction and renovation projects, determine barriers to electrification, and identify opportunities to avoid fossil fuel systems.	2-3 months	SELCO Contracted Builders & Developers
4. Develop a draft "no new fossil fuels" policy for new municipal construction and major renovations projects, aligning definitions with MA DOER.	3-4 months	SELCO
5. Socialize the draft policy to the Select Board, Town Manager's Office, and other municipal departments and work with them to create a finalized policy for consideration and approval.	1-2 months	SELCO Office of the Town Manager Select Board
6. Recommend the adoption of the final policy for municipal buildings at Town Meeting.	1-2 months	Office of the Town Manager

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
7. Utilize construction projects as opportunities to document and share the application of advanced construction techniques and equipment to build workforce readiness in the region.	Ongoing	SELCO Construction and Development Membership Associations

TOOLS & RESOURCES

FINANCIAL RESOURCES

- SELCO
- U.S. Department of Energy, Buildings Funding Opportunities
- MA Green Communities
- MA Department of Public Utilities (DPU)
- MA School Building Authority (MSBA)
- MA Municipal Wholesale Electric Company (MMWEC)
- Inflation Reduction Act (IRA)
- EPA Climate Pollution Reduction Grants (CPRG)

TECHNICAL TOOLS

- Mass Energy Insight (MEI)
- Mass Save
- MA Department of Energy Resources (DOER)
- MAPC Technical Support

EQUITY CONSIDERATIONS

- Prioritize buildings with the highest fossil fuel use and GHG emissions (i.e., public schools).
- Ensure equitable procurement processes (e.g., solicit and consider RFPs from minority and women-owned businesses).
- Apply for external funding and consider implementing in a phased approach to ensure responsible use of taxpayer funds.

OPPORTUNITIES TO OVERCOME POTENTIAL IMPLEMENTATION BARRIERS

- Evaluate back up generation, battery storage, and potential supply chain issues to ensure ample capacity for electrification projects.
- Screen all municipal projects to avoid investments in new fossil fuel infrastructure and equipment. Seek opportunities to facilitate the transition to zero carbon buildings by bundling all electric or renewable-ready upgrades into projects with a limited scope.
- Provide updates to community members about policy development and implementation through the Town's website, newsletters, public workshops, and Town Meeting.

Clean Energy and Efficient Buildings

ACTION

EB 3.2.C

Continue pursuing upgrades to existing facilities to achieve net zero energy performance and minimize total energy use and operational expenses.

DESCRIPTION OF ACTION	Continuing to reduce fossil fuel use, minimize GHG emissions, and increase the efficiency of existing municipal facilities through retrofits and upgrades.
CHAMPION	Public Buildings Division, Department of Public Works
OVERALL TIME FRAME	Long (3-5 years)

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
1. Develop a comprehensive inventory of major building systems and energy-using equipment and identify remaining useful life and fossil fuel free alternative technologies.	3-4 months	SELCO Consultant
2. Conduct research on electrification and decarbonization best practices, implementation models, and progressive building codes.	3-4 months	SELCO Consultant
3. Create an Energy Reduction Plan (ERP) to document both the baseline energy consumption and a prioritized roadmap for building and equipment upgrades that leverage opportunities in regular building renovation and upkeep cycles.	3-4 months	SELCO All Town Departments
4. Create and implement mandatory training for municipal employees to ensure occupants operate buildings to maximize savings from new equipment.	4-5 months	SELCO
5. Identify funding and financing strategies for priority near-term projects.	3-4 months	SELCO Finance & Operations
6. Implement electrification and high efficiency retrofits projects in existing municipal buildings.	2-3 years	SELCO

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
7. Revisit and reprioritize the Energy Reduction Plan annually to take advantage of new technologies, funding opportunities and operational priorities.	Ongoing	SELCO
8. Lead by example by reporting annually on municipal building energy use, emissions, and cost savings efforts.	Ongoing	SELCO

TOOLS & RESOURCES

FINANCIAL RESOURCES

- SELCO
- Massachusetts Clean Energy Center Grant Programs
- Massachusetts Green Communities Grant Program
- MA Department of Public Utilities (DPU)
- MA School Building Authority (MSBA)
- MA Municipal Wholesale Electric Company (MMWEC)
- Inflation Reduction Act (IRA)
- EPA Climate Pollution Reduction Grants (CPRG)

TECHNICAL TOOLS

- Mass Energy Insight (MEI)
- Mass Save
- MA Department of Energy Resources (DOER)
- HeatSmart Mass
- Solarize Mass

EQUITY CONSIDERATIONS

- Ensure the ERP considers both previous and expected impacts of climate hazards (e.g., heat waves and impact on energy use) to strengthen energy resilience.
- Create a transparent and equitable process for determining when and where energy upgrades and retrofits will occur across municipal properties.

OPPORTUNITIES TO OVERCOME POTENTIAL IMPLEMENTATION BARRIERS

- Communicate clear expectations that energy conservation is part of Shrewsbury's organizational culture and tie it to climate action goals. Highlight areas where the conservation culture is already "business as usual."
- Enable employees to submit workplace energy savings ideas. Dedicate a pool of funding to implement the best employee-generated recommendations.
- Pursue collaboration with partners like Green Communities, MA Department of Public Utilities, and MA School Building Authority.
- Lead by example and provide updates to the community through the Town's website, newsletters, and public workshops.
- Provide transparency to residents during the Town Meeting about the upfront costs compared to the cost savings over time.

Resilient Operations

ACTION

RO 1.1.B

Design and launch an emergency preparedness campaign for municipal staff and community members.

DESCRIPTION OF ACTION	Enhancing the local capacity of Town staff and community members to prepare for and respond to hazards and threats through ongoing outreach and education campaigns.
CHAMPION	Emergency Management Department
OVERALL TIME FRAME	Short (1 year)

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
1. Identify gaps in knowledge and training around climate-related topics, such as climate hazards (e.g., heat waves, intense storms, flooding), for both Town staff and community members. Consider conducting quick polls or short focus groups with Town staff to establish a baseline.	2 months	Office of the Town Manager School Department Department of Public Works
2. Gather and assess already-available emergency management communication and education resources from FEMA, MEMA, and other communities.	1 month	Office of the Town Manager Department of Public Works
3. Evaluate available engagement channels and their current reach (social media, community events, Code Red, Shrewsbury Media Connection, School Department).	1 month	Office of the Town Manager
4. For Town staff: Depending on the results of the gap analysis, develop a series of quarterly trainings, lunch-and-learns, or regular communications around emergency preparedness and climate hazards.	2 months	Office of the Town Manager School Department
5. For community members: Develop a communications and outreach plan that can be updated and executed on a quarterly basis.	2 months	Office of the Town Manager Community Emergency Response Team (CERT)

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
6. Implement first quarter of campaigns and programming targeting both Town staff and community members.	4 months	Community Emergency Response Team (CERT) School Department Council on Aging Community Partners Office of the Town Manager
7. Evaluate awareness and effectiveness of the programs for Town staff through a follow-up survey.	1-2 months	Office of the Town Manager
8. Implement changes for future programming based on takeaways from evaluation.	1-2 months	Office of the Town Manager
9. Continue programming for both Town staff and community members on a quarterly basis. Consider focusing on a different topic every quarter.	Ongoing	Office of the Town Manager

TOOLS & RESOURCES

FINANCIAL RESOURCES

- FEMA Grant Opportunities
- Communications/Emergency Management Budget

TECHNICAL TOOLS

- National Weather Service Seasonal Safety Campaign
- Ready.gov: Plan Ahead for Disasters
- FEMA Resources for Climate Resilience

EQUITY CONSIDERATIONS

- Ensure that all campaign materials are accessible in a variety of formats and translated into multiple languages.
- Prioritize engaging with underserved populations identified in the communications strategy such as renters, communities of color, youth, 65+ residents, etc.
- Ensure trainings are accessible to all staff by conducting them at a variety of times and offering remote options.

OPPORTUNITIES TO OVERCOME POTENTIAL IMPLEMENTATION BARRIERS

- Conduct in-person outreach at existing community events and meetings and retirement communities like Southgate.
- Provide stipends for community members who assist with outreach and marketing efforts, such as CERT Members.

Resilient Operations

ACTION

RO 2.2.B

Develop sustainability evaluation criteria to be incorporated into municipal budgeting, capital improvement and planning, and project design processes.

DESCRIPTION OF ACTION	Incorporating sustainability and climate actions goals and priorities into daily operations to reduce emissions and waste and increase efficiency and resilience of municipal processes, systems, projects, and infrastructure.
CHAMPION	Office of the Town Manager
OVERALL TIME FRAME	Short (<1 year)

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
1. Identify the existing Town processes that drive core Town operations, including Capital Improvement Projects and departmental budgeting processes.	2-3 months	Department Heads Elected Officials Boards and Committees (e.g., School Committee)
2. Define sustainability evaluation criteria by reviewing existing commitments to develop a draft framework.	1-2 months	-
3. Review the framework with department heads and elected boards to gather input and feedback.	1-2 months	Department Heads Elected Officials Boards and Committees
4. Finalize the framework and conduct “road shows” to present and socialize the framework among key stakeholders to educate and create buy-in.	2 months	Department Heads Elected Officials Boards and Committees
5. Implement the framework within municipal budgeting, capital improvement and planning, and project design processes across all municipal departments.	1-2 months	Department Heads
6. Evaluate the framework and refine as needed to ensure that it aligns with the Town’s Strategic Plan and Municipal Climate Action and Resiliency Plan.	Ongoing	-

TOOLS & RESOURCES

FINANCIAL RESOURCES

- U.S. EPA Guide to Green Bonds

TECHNICAL TOOLS

- National Weather Service Seasonal Safety Campaign
- FEMA Resources for Climate Resilience
- ENVISION Sustainable Infrastructure Rating System
- Ready.gov: Plan Ahead for Disasters
- United Nations Global Compact: Roadmap for Integrated Sustainability

EQUITY CONSIDERATIONS

- Include equity considerations in the framework, such as a set of guiding questions for every project or planning and budgeting process to identify 1) who could be impacted by the proposed project or initiative, 2) how impacted stakeholders will be engaged and involved in decision-making, and 3) what steps will be taken to avoid exacerbating existing inequities within Town operations or the broader community.
- Offer ample time for stakeholders to review the draft framework and ask questions and offer comments and feedback.
- Minimize jargon and opt for simple, consistent language when drafting the framework.

OPPORTUNITIES TO OVERCOME POTENTIAL IMPLEMENTATION BARRIERS

- Host interactive sessions with all departments to collectively identify and address potential challenges with implementing the framework.
- Design evaluation criteria to accommodate a wide range of assets and operational functions.

Smart Waste and Water Management

ACTION

WW 1.2.C

Explore the feasibility of a pilot composting program in elementary schools.

DESCRIPTION OF ACTION	Identifying the needed resources and requirements to implement a composting pilot program in elementary schools to increase organic waste diversion.
CHAMPION	Department of Public Works and School Department
OVERALL TIME FRAME	Short (1-2 years)

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
1. Research and learn from composting programs in other school districts by reaching out to other municipalities, such as Westborough.	3-4 months	Shrewsbury High School Green Club
2. Assess existing composting processes and determine what resources would be needed to implement a program in Shrewsbury schools.	2 months	-
3. Reach out to potential vendors about collection options and costs.	2 months	-
4. Create and present a draft concept for a pilot program to the School Committee for feedback and input.	1 month	School Committee
5. Confirm feasibility by identifying and secure funding for the pilot program (applying for grants, reworking budgets, etc.).	2 months	-
6. Put out an RFP to select a vendor and work with them to roll out pilot program in a pre-determined school.	4-5 months	-
7. Create outreach materials and conduct training to ensure teachers and students understand new composting processes.	Ongoing	School Committee Shrewsbury Library
8. Measure and track diverted waste to highlight program success and ensure that waste disposal collection frequency and costs incorporate reduced waste generation.	Ongoing	-

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
9. Provide opportunities for ongoing feedback through surveys, interviews, and outreach materials.	Ongoing	-

TOOLS & RESOURCES

FINANCIAL RESOURCES

- Massachusetts DEP
- MassWorks
- USDA
- Regional Partnerships (Worcester)

TECHNICAL TOOLS

- Mass.gov: Recycling & Composting for Kids, Teachers & Schools
- The Green Team: Food Waste Reduction in Massachusetts

EQUITY CONSIDERATIONS

- Consider small, minority- or woman-owned vendors during procurement process.
- Understand where the compost will be processed and potential impacts of trucking routes to ensure neighborhoods are not disproportionately impacted by traffic, noise, or air pollution.
- Ensure that outreach materials are accessible and translated as needed.

OPPORTUNITIES TO OVERCOME POTENTIAL IMPLEMENTATION BARRIERS

- Ensure language, graphics, and instructions on outreach materials are simple and targeted towards elementary students.
- Provide training and guidance to teachers so that they are well equipped to answer questions and can help to minimize contamination.
- Consider launching a “compost crew” program and appoint students in each class to stand next to the compost bins and assist other students during the lunch hour.
- Pair the compost program with a switch to using more compostable products in cafeterias to minimize contamination and make composting easier for students and staff.
- Establish a process to track the compost diversion rate and illustrate success.

Sustainable Transportation

ACTION

ST 1.1.A

Create a municipal Zero-Emission Vehicle (ZEV) Purchasing Policy that considers operational requirements of vehicles and availability of suitable models.

DESCRIPTION OF ACTION	Establishing a formal policy for purchasing and replacing vehicles in the Town's fleet that establishes a prioritization framework for continuous reduction of the use of fossil fuel vehicles.
CHAMPION	Fleet Management Division, Department of Public Works
OVERALL TIME FRAME	Short (1-2 years)

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
1. Create a Vehicle Policy Review Committee and establish regular meetings with members from different departments to ensure collaboration and consideration of cross-sector challenges.	2 months	Police Department Department of Public Works School Department SELCO Finance Committee Community Partners Office of the Town Manager
2. Review sustainable vehicle policies from other local government fleets. Identify common policy goals, progress metrics, allowable costs, enforcement mechanisms, and other policy design elements.	2 months	Vehicle Policy Review Committee
3. Assess which departments and divisions can utilize EVs and set yearly purchasing goals to incorporate into the policy.		
4. Research state and federal funding opportunities.		
5. Create a draft policy with input from the Vehicle Policy Review Committee and support from the Town Manager.	2 months	Vehicle Policy Review Committee Office of the Town Manager

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
6. Present draft policy to department heads and Select Board for review and feedback. Update the policy accordingly and finalize.	2 months	Vehicle Policy Review Committee Select Board Department Heads
7. Implement the policy alongside communication to departments.	2 months	Vehicle Policy Review Committee
8. Incorporate new criteria into fleet maintenance onboarding and training.	Ongoing	Vehicle Policy Review Committee
9. Conduct yearly policy evaluations to track progress and assess any updates that should be made based on market conditions, new technologies, etc.	Ongoing	Vehicle Policy Review Committee

TOOLS & RESOURCES

FINANCIAL RESOURCES

- Rebates from SELCO, State of Massachusetts, Inflation Reduction Act

TECHNICAL TOOLS

- U.S. Department of Energy Clean Cities Technical Assistance
- U.S. Department of Energy Alternative Fuels Data Center
- Climate Mayors Electric Vehicle Purchasing Collaborative

EQUITY CONSIDERATIONS

- Prioritize the replacement of vehicles that are used most heavily and have the highest potential for reducing local air pollution and emissions.
- For vehicles that are still in working condition when they are retired from the fleet and replaced, identify opportunities to repurpose parts or donate the vehicle.

OPPORTUNITIES TO OVERCOME POTENTIAL IMPLEMENTATION BARRIERS

- Build knowledge about EVs and their maintenance among Town staff and community members through targeted education, training, and outreach materials.
- Distribute tasks to create and implement the policy among all fleet division employees to ensure responsibilities don't fall on one individual.
- Continually assess availability of vehicles to ensure purchases are timely and cost effective.

Sustainable Transportation

ACTION

ST 1.1.B

Work with SELCO to increase municipal and public charging infrastructure at municipal facilities.

DESCRIPTION OF ACTION	Installing electric charging infrastructure at municipal facilities to ensure equitable access and help facilitate the transition to EVs for the municipal fleet, Town staff, and visitors.
CHAMPION	Department of Public Works and SELCO
OVERALL TIME FRAME	Short (1-2 years)

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
1. Conduct inventory of existing charging infrastructure and survey employees to identify locations for priority and future installations.	3-4 months	School Department
2. Identify an EV infrastructure program manager and identify a point person for each facility.	2-3 months	-
3. Conduct feasibility study, site design, and grid capacity evaluation at priority locations.	4-5 months	-
4. Identify funding sources including grants and internal budgets.	4-5 months	-
5. Develop a maintenance plan and policing policy to prevent abuse of the benefit.	4-5 months	-
6. Install stations in identified locations alongside communications to all Town staff and departments.	5-6 months	-
7. Consider hosting an EV Ride and Drive event for Town staff and community members to celebrate the installation and educate about options.	1-2 months	School Department

TOOLS & RESOURCES

FINANCIAL RESOURCES

- MassSave
- Massachusetts DEP
- Municipal and SELCO program budgets
- Green Communities Program
- Central Massachusetts Regional Planning Commission

TECHNICAL TOOLS

- U.S. Department of Energy Workplace Charging for Plug-In Electric Vehicles
- U.S. Department of Energy Workplace Charging at Federal Facilities
- U.S. Department of Energy Clean Cities Technical Assistance
- U.S. Department of Energy Alternative Fuels Data Center
- Climate Mayors Electric Vehicle Purchasing Collaborative

EQUITY CONSIDERATIONS

- Ensure that charging infrastructure is accessible and meets ADA requirements.
- Ensure a reasonable balance of regular parking spaces and EV charging stations and distribute charging infrastructure across municipal locations.
- Consider offering low-cost or free charging access to Town staff and visitors.

OPPORTUNITIES TO OVERCOME POTENTIAL IMPLEMENTATION BARRIERS

- Understand current and projected charging demand from municipal fleet, Town staff, and visitors and to install enough chargers to facilitate and support the transition to EVs.
- Listen to stakeholders about their needs and concerns (e.g., police, fire, auto mechanics, need for specialty vehicles for street or utility operations) during research and development steps.
- Consider offering EV driver training programs or EV Ride and Drive events alongside the implementation of charging infrastructure.

Vibrant Natural Resources

ACTION

NR 1.1.C

Over a three-year period, create a baseline street tree inventory and management plan to track and map tree canopy and proactively maintain tree health on municipal land.

DESCRIPTION OF ACTION	Tracking and maintaining Shrewsbury's tree canopy, including street trees, on municipal property, including public parks and open spaces.
CHAMPION	Tree Warden, Department of Public Works
OVERALL TIME FRAME	Medium (2-3 years)

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
1. Conduct a review of tree inventories and management plans in other jurisdictions that could serve as best practice models for maintaining resilient canopy coverage in a changing climate. Identify necessary software and technical tools for conducting tree inventories and mapping canopies.	1 month	GIS Coordinator Parks and Cemetery Maintenance Division Forestry Commission
2. Research grant funding and/or service-learning opportunities with universities to conduct inventory, mapping, and create the management plan.	3-4 months	Parks and Cemetery Maintenance Division Forestry Commission
3. Determine budget and hire consulting arborist(s) to conduct tree inventory.	2-3 months	Finance & Operations Parks and Cemetery Maintenance Division
4. Utilize inventory results to develop a public tree management plan that incorporates species and age diversity into planting targets to maximize canopy coverage.	5-6 months	Consulting Arborist GIS Coordinator Parks and Cemetery Maintenance Division Forestry Commission
5. Develop communication and educational materials to increase public knowledge and buy-in about how the Town plans to maintain the public tree canopy.	2-3 months	Parks and Cemetery Maintenance Division Forestry Commission Communications Staff

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
6. Conduct initial round of tree planting and maintenance based on the management plan.	5-6 months	Forestry Commission GIS Coordinator Parks and Cemetery Maintenance Division
7. Develop a process to ensure routine tree work (removals/ planting) are continuously updated in the tree inventory. Plan to update the street tree inventory on a five-year cycle.	Ongoing	Forestry Commission GIS Coordinator Parks and Cemetery Maintenance Division

TOOLS & RESOURCES

FINANCIAL RESOURCES

- Municipal Vulnerability Preparedness (MVP) Action Grants
- Metropolitan Area Planning Council: Accelerating Climate Resiliency Grant Program
- Massachusetts Department of Conservation & Recreation (DCR): Urban and Community Forestry Challenge Grants
- MA Department of Environmental Protection (DEP)
- US Environmental Protection Agency (EPA)

TECHNICAL TOOLS

- Consulting Arborist
- GIS Coordinator
- Tree City USA Program
- City of Cambridge: Urban Forest Master Plan

EQUITY CONSIDERATIONS

- Prioritize planting and maintenance in areas with more impervious surface, urban heat islands, lower income residents, and historically underserved neighborhoods.
- Assess local climate hazards and incorporate resiliency planning into tree planting and maintenance efforts.

OPPORTUNITIES TO OVERCOME POTENTIAL IMPLEMENTATION BARRIERS

- Engage the community and connect with existing volunteer groups for support with planting, maintenance, and surveying.
- Collaborate with local and regional organizations to enhance mutual resources, knowledge, and advocacy efforts.
- Identify opportunities to use tree maintenance for climate resiliency objectives (e.g., trees for shading) to gain additional buy-in and access to more funding opportunities.

Vibrant Natural Resources

ACTION

NR 2.1.A

Phase in electric maintenance equipment where feasible, starting with hand-held equipment.

DESCRIPTION OF ACTION	Establishing a phased replacement plan for electric-powered maintenance equipment to reduce fossil fuel use, localized air pollution, and GHG emissions.
CHAMPION	Parks & Cemetery Maintenance Division, Department of Public Works
OVERALL TIME FRAME	Long (3-5 years)

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
1. Create an inventory of all existing maintenance equipment including brand, age, fuel type, department, typical annual hours of use, and operational requirements of departments.	3-4 months	Recreation Department Parks & Cemetery Commission School Department
2. Conduct a market review of available electric equipment options, associated costs, and infrastructure requirements (e.g., batteries and charging equipment).	3-4 months	-
3. Conduct a review of sustainable landscaping best practices and identify potential practices to adopt alongside the transition to electric maintenance equipment (e.g., identifying no-mow zones).	3-4 months (concurrent with Step 2)	-
4. Engage municipal staff and contracted employees to understand current practices, barriers to overcome, and opportunities for improvement.	3-4 months	School Department
5. Identify viable electric replacements for existing gas- and diesel-powered equipment, as well as necessary infrastructure upgrades.	3-4 months	Recreation Department Parks & Cemetery Commission School Department
6. Formalize a feasible timeline for phasing in electric equipment (starting with hand-held and then larger equipment).	4-5 months	Recreation Department Parks & Cemetery Commission School Department

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
7. Research grant programs and apply for funding opportunities.	3-4 months	Finance & Operations Department
8. Update maintenance guidelines and training materials with new landscaping processes.	3-4 months	Recreation Department Parks & Cemetery Commission School Department
9. Launch, monitor, and assess impact of pilot equipment replacements. Re-evaluate maintenance guidelines and implementation plan accordingly.	5-6 months	Recreation Department Parks & Cemetery Commission School Department
10. Manage equipment replacements (as technology allows), continually assess impact, and provide opportunities for ongoing feedback.	Ongoing	Recreation Department Parks & Cemetery Commission School Department

TOOLS & RESOURCES

FINANCIAL RESOURCES

- SELCO Commercial Landscaping Equipment Rebate Program
- Inflation Reduction Act (IRA)
- Diesel Emissions Reduction Act (DERA)

TECHNICAL TOOLS

- Calstart Market Projections for Non-Road Equipment
- The Sustainable Sites Initiative

EQUITY CONSIDERATIONS

- Collaborate with small and minority-owned businesses for contracted services and equipment.
- Ensure communication and educational materials are distributed across municipal departments in multiple formats, and potentially multiple languages.
- Monitor local air quality and noise levels to assess the impact of equipment replacements.
- Promote available rebates for Town staff and community members to purchase personal electric lawn and maintenance equipment to reduce household emissions and localized air pollution.

OPPORTUNITIES TO OVERCOME POTENTIAL IMPLEMENTATION BARRIERS

- If maintaining a charge for larger jobs is a concern, consider pairing electric models with smaller tasks to decrease reliance on combustion models where possible while maintaining capacity for substantial tasks.
- Highlight benefits of decreased exposure to fuels and exhaust to improve occupational health and safety.

Vibrant Natural Resources

ACTION

NR 2.2.B

Incorporate green infrastructure and Low Impact Development (LID) projects into new municipal building designs and updates to parks and playgrounds.

DESCRIPTION OF ACTION	Implementing green infrastructure projects on municipal land to reduce stormwater runoff, remove associated pollutants and improve water quality, reduce loads at wastewater facilities, and increase climate resiliency.
CHAMPION	Engineering & Conservation Division, Department of Public Works
OVERALL TIME FRAME	Long (3-5 years)

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
1. Conduct research on best practices for green infrastructure and LID projects, implementation models, and funding opportunities.	3-4 months	UMASS Extension
2. Assess the Town's current infrastructure to identify areas for targeted improvement including locations of impervious surfaces and frequent surface flooding, stormwater basins, and areas where infrastructure is due for replacement.	3-4 months	Public Buildings Division School Department Parks and Cemetery Maintenance Division
3. Engage with municipal staff, community members, and other relevant stakeholders to understand barriers, local needs, and opportunities for improvement.	3-4 months	Conservation Commission Community Stakeholders
4. Develop infrastructure design and development standards aligning with best practice research and public engagement. Draft subsequent updates to current rules, regulations, and bylaws.	5-6 months	Parks and Cemetery Maintenance Division
5. Develop educational materials, trainings, and workshops for municipal staff and community stakeholders on updated guidelines and best practices.	3-4 months	Parks and Cemetery Maintenance Division School Department
6. Evaluate current proposals and projects in development to ensure designs meet best practice standards and identify potential gaps or conflicts.	2-3 months	-

IMPLEMENTATION STEPS	TIME FRAME TO IMPLEMENT STEP	COLLABORATORS
7. Design implementation schedule of new green infrastructure development and LID projects aligning with identified areas for targeted improvement.	2-3 months	Parks and Cemetery Maintenance Division Public Buildings Division School Department
8. Identify and apply for funding opportunities.	3-4 months	Finance & Operations
9. Design, implement, monitor, and assess impacts of pilot projects. Re-evaluate design standards and implementation schedule accordingly. Provide opportunities for ongoing community feedback, and continually track impact metrics.	Ongoing	Consultant Contractors

TOOLS & RESOURCES

FINANCIAL RESOURCES

- Environmental Protection Agency (EPA): Green Infrastructure Funding Opportunities
- Federal Emergency Management Agency (FEMA)
- Massachusetts Department of Environmental Protection (DEP)
- Massachusetts Green Community Program
- Massachusetts School Building Authority (MSBA)
- MassWorks Program
- Metropolitan Area Planning Council: Accelerating Climate Resiliency Grant Program
- Municipal Vulnerability Preparedness (MVP) Action Grants

TECHNICAL TOOLS

- Devens Enterprise Commission: Green Infrastructure Guidelines for Devens Projects
- The Nature Conservancy: Eco-Urban Assessment
- Metropolitan Area Planning Council: Designing Parks and Playgrounds as Green Infrastructure for Stormwater and Climate Resilience

EQUITY CONSIDERATIONS

- Prioritize areas that have more impervious surfaces, are prone to flooding, or have historically been underserved.
- Evaluate the impact of proposed infrastructure projects on accessibility and ensure that projects meet the ADA Standards for Accessible Design.
- Provide educational materials in a variety of formats (e.g., audio, visual) and languages.

OPPORTUNITIES TO OVERCOME POTENTIAL IMPLEMENTATION BARRIERS

- Provide project updates and educational materials to community members through the Town's website, newsletters, and public workshops to increase public buy-in.
- Align project proposals and designs with election cycles, budget cycles, Town Meetings, and the school year.
- Pursue funding and leverage technical assistance from external sources to support implementation and oversight of green infrastructure and LID projects.
- Take advantage of existing, creative opportunities to introduce green infrastructure (e.g., as part of projects to convert underutilized areas to parks or public green spaces).

Glossary

ACTION	The specific activity that will be undertaken to execute a strategy.	↺
CLIMATE CHANGE	Long-term shifts in temperatures and weather patterns that go beyond natural climate variability observed over comparable time periods. Greenhouse gas (GHG) emissions generated by human activity are the leading cause of the earth's rapidly changing climate today.	↺
DIVERSION RATE	Measures the portion of waste not sent to landfill or incineration. Tracking diversion rates helps measure the effectiveness of reuse, recycling, and composting programs.	↺
ENERGY USE INTENSITY (EUI)	Measures energy use per square foot in a structure. Like miles per gallon for cars, EUI indicates a building's energy performance.	↺
EQUITY	The inclusivity and empowerment of diverse populations. Equity incorporates inclusive, accessible, and authentic engagement and representation, fair distribution of benefits and burdens, structural accountability, and consideration of generational impacts.	↺
GOAL	The desired outcome presented as a broad vision statement.	↺
GREEN INFRASTRUCTURE	Systems or measures that leverage plants, soil systems, and landscaping to absorb, store, and treat stormwater, reducing flows to sewer systems and bodies of water.	↺
GREENHOUSE GAS EMISSIONS (GHGS)	Gases that trap heat in the atmosphere, including carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N2O). Carbon dioxide is the primary greenhouse gas emitted through human activities, such as the combustion of fossil fuels for energy and transportation.	↺
HAZARD	A natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage to property, infrastructure, livelihoods, services, ecosystems, and environmental resources.	↺
KW (KILOWATT)	Unit of measurement used for electricity. One kilowatt is equal to one thousand watts, which would power a 50-watt LED TV for 20 hours.	↺
MICROGRIDS	Localized energy grids that can disconnect from the traditional grid to operate autonomously. These grids can operate even when main grids shut down.	↺
MMBTU (MILLION BRITISH THERMAL UNIT)	A common measure for different energy sources (electricity, natural gas, oil, etc.) that helps compare total energy use.	↺
MTCO$_2$E (METRIC TONS OF CARBON DIOXIDE EQUIVALENT)	A unit that is used to bundle and compare different types of greenhouse gas emissions (e.g., methane and nitrous oxide) by converting them to an equivalent amount of carbon dioxide, the most common GHG.	↺
MW (MEGAWATT)	A unit used to measure energy capacity, or the total amount of energy a system can produce at perfect conditions. One megawatt is equivalent to one million watts, or the energy produced by about 10 automobile engines.	↺
ORGANIC WASTE	Biodegradable materials that come from animals or plants.	↺
RENEWABLE ENERGY	Energy produced from renewable sources, such as the sun, wind, waves, and geothermal heat.	↺
RESILIENCY	A community's ability to recover from future shocks and stresses to its social, economic, environmental, technical, and infrastructure systems.	↺
STORMWATER	Water runoff from rain events that flows over land or impervious surfaces and does not reabsorb back into the ground.	↺
STRATEGY	The general approach used to accomplish a goal.	↺
SUSTAINABILITY	The balance of resource efficiency, social well-being, and environmental stewardship while equitably meeting the needs of a growing community and thriving economy.	↺

Endnotes

1 Climate Change Projections Dashboard, Resilient MA (2023).

2 Climate Change Projections Dashboard, Resilient MA (2023).

3 Storm Events Database, National Oceanic and Atmospheric Administration (2023).

4 Shrewsbury Municipal Vulnerability Preparedness Workshop Summary of Findings, Town of Shrewsbury (2018).

5 Shrewsbury Municipal Vulnerability Preparedness Workshop Summary of Findings, Town of Shrewsbury (2018).

6 Shrewsbury Municipal Vulnerability Preparedness Workshop Summary of Findings, Town of Shrewsbury (2018).

7 U.S. Drought Monitor, Worcester County (2023).

8 U.S. Drought Monitor, Worcester County (2023).

9 Town of Shrewsbury Municipal GHG Inventory, KLA (2021).

10 Town of Shrewsbury Municipal GHG Inventory, KLA (2021).

11 Power Supply Policy and Greenhouse Gas Emission Standard (GGES), SELCO (2022).

12 Town of Shrewsbury Municipal GHG Inventory, KLA (2021).

13 Town of Shrewsbury Municipal GHG Inventory, KLA (2021).

14 Town of Shrewsbury Municipal GHG Inventory, KLA (2021).

15 Annual Electric Power Industry Report, Form EIA-861, U.S. Energy Information Administration (2021).

16 MSW Monthly Reports, Town of Shrewsbury (2022).

17 MSW Monthly Reports, Town of Shrewsbury (2022).

18 Town of Shrewsbury Municipal GHG Inventory, KLA (2021).

19 Town of Shrewsbury Municipal GHG Inventory, KLA (2021). Annual Water Quality Report, Town of Shrewsbury (2021).

20 Fuel Master Report, Town of Shrewsbury (FY 2022).

21 Employee Commute Survey, Town of Shrewsbury (2023).

22 Aligned with the 10/20/30 Rule, as illustrated by the City of Richmond, California.

23 Open Space and Recreation Plan, Town of Shrewsbury (2020).

24 Assessed by overlap between Town-owned conservation land and High Ecological Integrity map from MassDEP.

25 “The School Year Is Getting Hotter. How Does Heat Affect Student Learning and Well-Being?”, Education Week (2022).

ALL IN SHREWSBURY

COLLECTIVE ACTION *for* A SUSTAINABLE FUTURE





All In Shrewsbury

Municipal Climate Action and Resiliency Plan