A photograph of the exterior of Wellesley Town Hall. The building is made of reddish-brown stone and features a prominent clock tower with a stone facade and a copper roof. The clock face is circular with Roman numerals. To the left of the clock tower is a smaller, conical-roofed tower. The words 'WELLESLEY TOWN HALL' are carved into the stone at the base of the building.

Town of Wellesley

Climate Action Plan

February 2022

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Prepared for the Town of Wellesley by Kim Lundgren Associates, Inc.

ACKNOWLEDGEMENTS

CLIMATE ACTION COMMITTEE

Laura Olton - Chair
Susan Morris - Vice Chair
Fred Bunger
Martha Collins
Ellen Korpi
Cynthia Mahr
Lise Olney
Marybeth Martello, Sustainability Director
Janet Mosley, Climate Action Committee Analyst

Tricia Lyons - Babson College, Assoc. Vice President, Facilities Management and Construction
Janet Mosley* - Climate Action Committee Analyst
Don Newell* - Municipal Light Plant, Director
Laura Olton* - Climate Action Committee, Chair
Eric Pinsker-Smith - SE Advantage
David Silverstein - Copper Leaf Development
Tom Stagliano - Resident
Ashley White - Babson College, Campus and Facilities Planner

*Energy Working Group Core Team

GOVERNANCE WORKING GROUP

LEAD:

Lise Olney - Select Board, Vice Chair; Climate Action Committee

MEMBERS:

Amy Frigulietti - Assistant Executive Director
Meghan Jop - Executive Director of General Government Services
Marybeth Martello - Sustainability Director
Sheryl Strother - Finance Director

BUILDINGS WORKING GROUP

LEAD:

Fred Bunger - Climate Action Committee

MEMBERS:

Eric Arbeene - Senior Planner
Marc Charney - Historical Commission
Eric Collins - Resident
Joseph DeLisle - MassBay Community College, Director of Facilities
Mary Gard - Sustainable Wellesley
Michael Grant - Building Inspector
Erica Greene - Jones Long La Salle, Assistant Property Manager
Allen Hebert - Facilities Management Department, Operations Manager
Tricia Lyons - Babson College, Assoc. Vice President, Facilities Management and Construction
Michelle Maheu - Wellesley College, Director of Planning Design and Construction
Don McCauley - Planning Director
Joe McDonough - Facilities Management Department, Director
Catherine Mirick - School Committee, Chair
Paulette Nicoliello - Jones Long La Salle, Senior General Manager
Patrick O'Toole - John Hancock, Senior Director
Lara Pfadt - Resident
Joanne Scannell - Municipal Light Plant, Business Manager
Olivia Shehan - Wellesley College, Sustainability Coordinator

Catherine Smith - Wellesley High School Climate Action Club, Leader
Ashley White - Babson College, Campus and Facilities Planner

ENERGY WORKING GROUP

LEAD:

Ellen Korpi* - Municipal Light Board, Chair; Board of Public Works; Climate Action Committee

MEMBERS:

Moneer Azzam - Beacon Climate Innovations, Principal
Scott Bender* - Municipal Light Board; Board of Public Works
Craig Bradford - Wellesley College, Assistant Director of Engineering
Michael Daley - Resident
Francisco Frias* - Municipal Light Plant, Assistant Director
Sheryl Goodridge - Temple Beth Elohim Climate Committee, Chair
Ned Hall* - Resident; Cypress Creek Renewables, Chairman
Judson Jaffee - Resident
Vaani Kapoor* - Wellesley High School Climate Action Club, Leader

ACKNOWLEDGEMENTS

MOBILITY WORKING GROUP

LEAD:

Martha Collins - Climate Action Committee

MEMBERS:

Colette Aufranc - Select Board

Niki Brinkman-Ofenloch - Sustainable Wellesley

Allison Burson - Natural Resources Commission

Dan Fortin - Municipal Light Plant, Supervisory Electrical Engineer

Brooke Guiffre - Wesleyan University, Student

Tricia Lyons - Babson College, Associate Vice President, Facilities Management and Construction

Cynthia Mahr - Wellesley Public Schools; Climate Action Committee

Scott Showstead - Wellesley Police Department, Lieutenant

Ashley White - Babson College, Campus and Facilities Planner

Sharon Williams - MassBay Community College, Facilities Department

WASTE/NATURAL RESOURCES WORKING GROUP

LEADS:

Susan Morris - Climate Action Committee, Vice Chair

Marybeth Martello - Sustainability Director

MEMBERS:

Jeff Azano-Brown - Department of Public Works, Assistant Director

Carla Bloomfield - Resident

Dave Cohen - Department of Public Works, Director

Terry Connolly - Municipal Light Plant, Office Manager

Leda Eizenberg - School Committee, Secretary

Trish Glass - Sustainable Wellesley

Jamie Manzolini - Recycling and Disposal Facility, Superintendent

Chiara Martello - Wellesley High School, Student

Raina McManus - Natural Resources Commission, Chair

Sophia Sahni - Dana Hall School, Student

Odessa Sanchez - Wellesley Housing Authority Commission

Brandon Schmitt - Natural Resources Commission, Director

Olivia Shehan - Wellesley College, Sustainability Coordinator

Ashley White - Babson College, Campus and Facilities Planner

COMMUNICATION WORKING GROUP

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Martha Collins - Climate Action Committee

Mary Gard - Sustainable Wellesley

Trish Glass - Sustainable Wellesley

Stephanie Hawkinson - Public Information Officer

Marybeth Martello - Sustainability Director

Susan Morris - Climate Action Committee, Vice Chair

Laura Olton - Climate Action Committee, Chair

Pamela Posey - Resident

Phyllis Theermann - Sustainable Wellesley

Christina Wu - Northeastern University, Student

TECHNICAL AND ADMINISTRATIVE SUPPORT

KC Cato - Town Clerk

Brian DuPont - Information Technology, Director

Michael Grant - Building Inspector

James Joyce - Wellesley Media

Donna McCabe - Town Assessor

Michael Thompson - GIS Manager

Michael Tobin - Wellesley Conservation Land Trust, President

KLA TEAM

Kim Lundgren - Chief Executive Officer

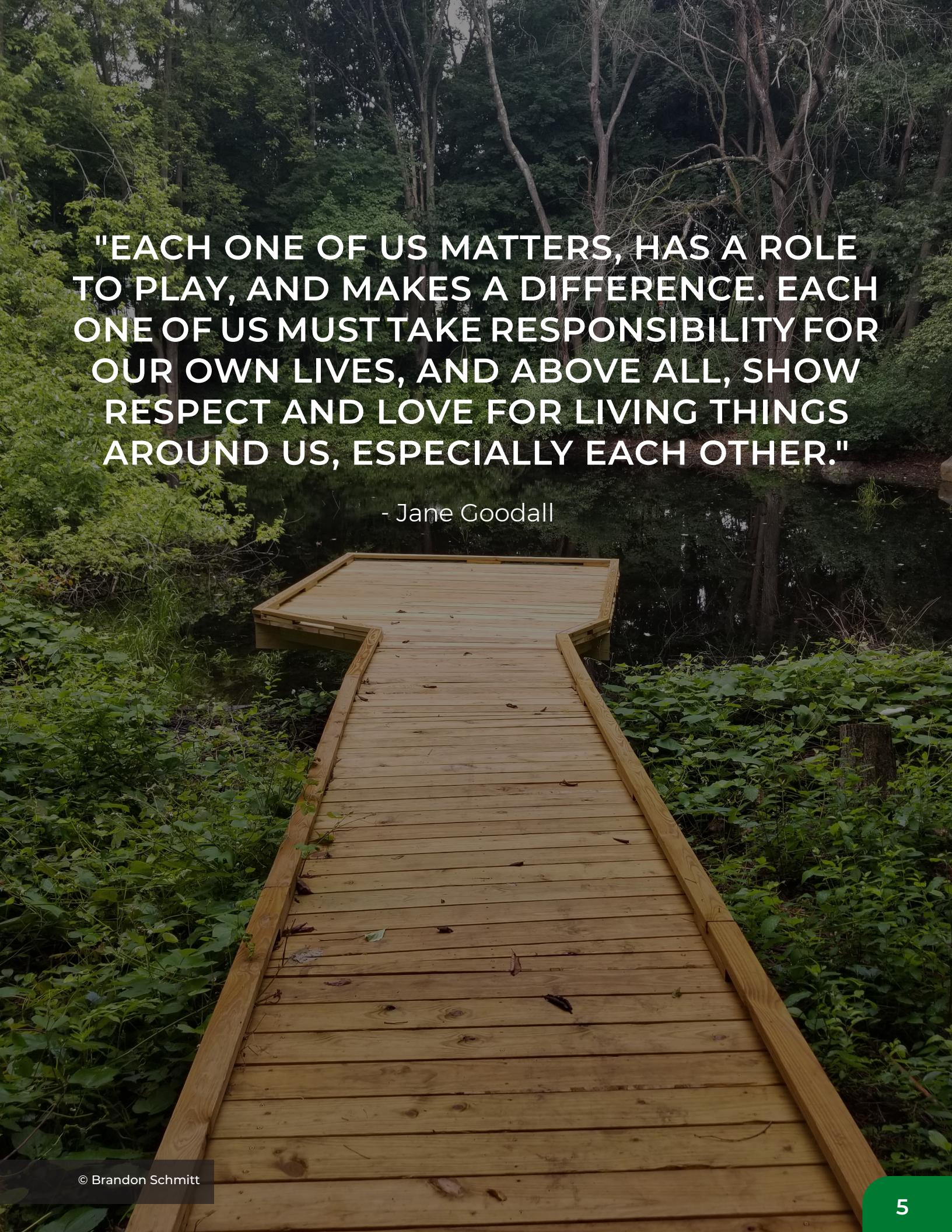
Talia Fox - Sustainability Planning Manager

Kari Hewitt - Director of Client Services (Formerly with Kim Lundgren Associates, Inc.)

Kate Galbo - Resilience Planner

Andrew Pettit - Greenhouse Gas Analysis Manager

Mike Steinhoff - Director of Tools and Technical Services



"EACH ONE OF US MATTERS, HAS A ROLE TO PLAY, AND MAKES A DIFFERENCE. EACH ONE OF US MUST TAKE RESPONSIBILITY FOR OUR OWN LIVES, AND ABOVE ALL, SHOW RESPECT AND LOVE FOR LIVING THINGS AROUND US, ESPECIALLY EACH OTHER."

- Jane Goodall

LETTER FROM THE SELECT BOARD

In 1971, a group of environmentally-minded Wellesley residents formed a group called Action for Ecology and set up metal drums to collect glass for recycling. Their initiative evolved into the Town's pioneering recycling facility that now keeps more than 40 percent of our overall waste out of the landfill each year. Fifty years later, we are proud to look back on our community's efforts to protect our environment – and we recognize that the climate crisis presents an unprecedented challenge that we must meet with even more determination and creativity.

This Climate Action Plan provides the roadmap Wellesley needs to work toward the ambitious goals for reducing greenhouse gas emissions approved by 2021 Annual Town Meeting. As we've seen during the pandemic, big changes are possible when we come together to find a way forward. Wellesley's Sustainability Director Marybeth Martello and the Climate Action Committee have led a broad and inclusive process to develop this plan with the help of Town staff, residents, businesses, colleges, and organizations. This engagement with the community was the key to building the plan, and continuing that engagement will be the key to successful implementation.

We are grateful to the Climate Action Committee and to everyone who participated in creating this plan and we are committed to supporting the important work ahead.

Select Board:

Thomas Ulfelder, Chair

Lise Olney, Vice Chair

Beth Sullivan Woods, Secretary

Colette Aufranc

Ann-Mara Lanza

LETTER FROM THE CLIMATE ACTION COMMITTEE

Wellesley has long recognized the importance of developing and adopting locally sustainable practices to reduce energy use and the impacts of climate change. For the past ten years, Wellesley's Climate Action Committee (formerly known as the Sustainable Energy Committee) has worked with our Municipal Light Plant and municipal departments, community and regional organizations, federal and state government, and of course, our residents, to create numerous successful sustainability initiatives and to achieve the Town's goals for reducing greenhouse gas emissions by 2013 and 2020.

We are now at a critical time in which climate change poses both an existential threat and an unprecedented opportunity. Our actions over the next 30 years will profoundly impact the wellbeing of our community and our planet. By addressing the risk of climate change, we can also create a healthier, more equitable, and more sustainable future. The development of this Climate Action Plan has set us on a new course to engage all segments of our town in the transformational change that is needed to achieve net zero emissions by 2050. We are dedicated to this plan's success and will apply our enthusiasm and expertise to guiding its implementation throughout the town.

We thank the members of our community, municipal staff, and Town boards who spent countless hours helping to design climate actions and their implementation. We are also grateful for the tremendous efforts of Marybeth Martello, Sustainability Director, and Janet Mosley, Climate Action Committee Analyst, as well as the team at Kim Lundgren Associates, Inc. for supporting our community's journey through this process.

Climate Action Committee:

Laura Olton, Chair

Susan Morris, Vice Chair

Fred Bunger

Martha Collins

Ellen Korpi

Cynthia Mahr

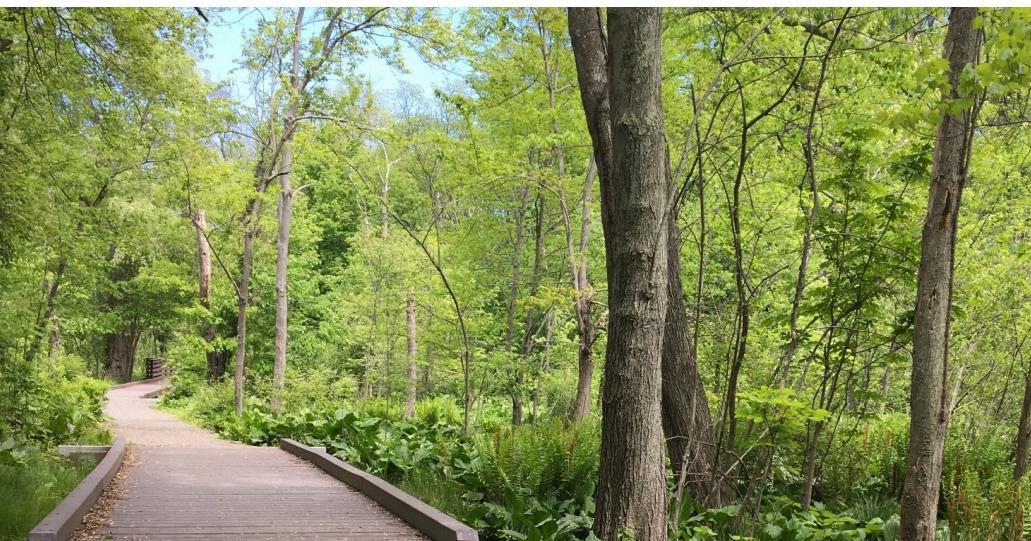
Lise Olney

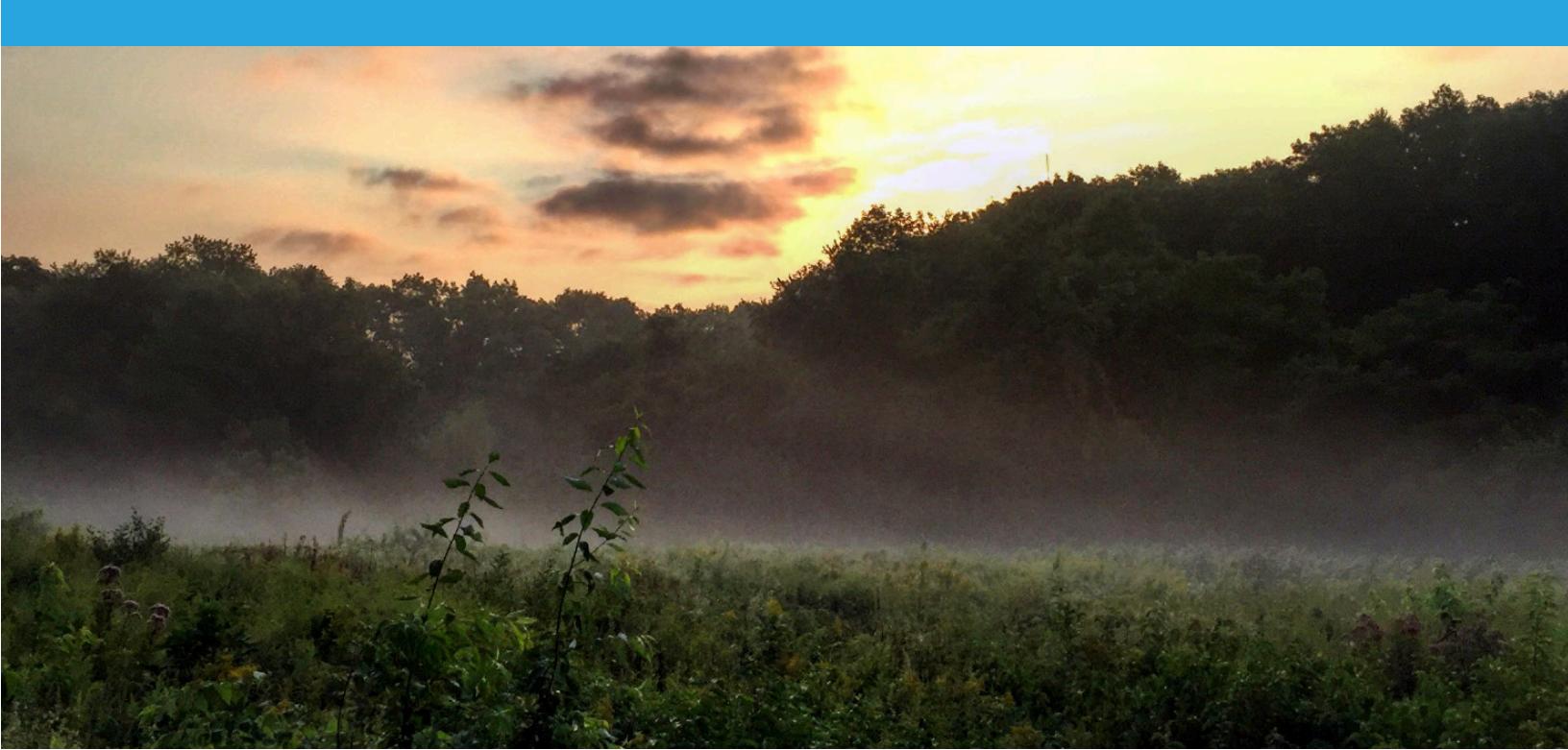


INTRODUCING WELLESLEY'S CLIMATE ACTION PLAN

Wellesley is a vibrant community that takes pride in its history, beautiful trails and open spaces, commitment to education, and active civic organizations. As we face the climate crisis, we are moved to act by our deep care for this community, as well as our sense of responsibility to people and ecosystems throughout the Commonwealth and around the globe. We know that addressing this crisis requires urgent, aggressive, and equitable action that reduces Wellesley's contribution to climate change while ensuring that all members of our community can thrive. This Climate Action Plan and its implementation will engage, inspire, and support our municipality, residents, colleges, and businesses. Together, we can do our part to avoid climate change's most dire effects.

Wellesley's Climate Action Plan is a comprehensive roadmap for lowering the town's carbon emissions while building resilience to climate change impacts.





WELLESLEY'S CLIMATE GOALS

In April 2021, Wellesley's Annual Town Meeting approved robust targets for reducing the town's greenhouse gas (GHG) emissions. These targets are aligned with the state's carbon neutrality goals and are grounded in the latest climate science as reported by the United Nation's Intergovernmental Panel on Climate Change.

NET ZERO EMISSIONS

NOUN

Climate neutral condition in which GHG emissions have been reduced as much as possible and any GHGs emitted are counterbalanced by removing equivalent GHGs from the atmosphere.

Our ability to meet these emissions reduction goals depends on action by the state and federal government, regional partners, and businesses within our community and beyond. We'll need the support of these partners to obtain technical and financial resources, coordinate regional responses, and create new solutions to reduce GHGs further and faster.

50%

Reduction in GHG emissions by 2030
(compared to 2007 levels)



75%

Reduction in GHG emissions by 2040
(compared to 2007 levels)



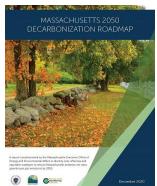
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Net GHG emissions by 2050

WELLESLEY'S CLIMATE ACTION PLAN ALIGNS WITH STATE AND FEDERAL COMMITMENTS

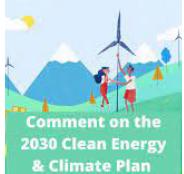
The goals set in the Climate Action Plan align with commitments set at the state and federal levels. In 2021, the Biden administration pledged a national target of 50% GHG emissions reductions from 2005 levels by 2030. Here in Massachusetts, new climate policies put the state on a path to achieving net zero emissions by 2050.

Specific relevant policies adopted at the state and federal levels include:



MA Decarbonization Roadmap (Issued December 2020)¹

This Roadmap was developed by the MA Executive Office of Energy and Environmental Affairs and includes planning scenarios for Massachusetts to achieve net zero carbon emissions by 2050. These planning scenarios serve as a model for local governments and were used to identify emissions reduction pathways for Wellesley's Climate Action Plan. They include building and vehicle electrification, efficiency, and clean energy pathways that prioritize equity and affordability.



Interim Clean Energy and Climate Plan (CECP) for 2030 (On-going)²

Building on the MA Decarbonization Roadmap, the CECP details sector-specific strategies the Commonwealth will pursue to achieve interim emissions reduction targets by 2030, making it a useful resource for local governments to align their initiatives with the Commonwealth's strategies.



An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy (Bill S.9/S.2995)³ (Enacted March 2021)⁴

Signed into law in 2021, the Next-Generation Roadmap codifies the Commonwealth's goal of net zero emissions by 2050 and sets interim emissions limits of at least 50% below 1990 levels by 2030, and at least 75% below 1990 levels by 2040. The law also expands protections for environmental justice communities, requires the development of an opt-in net zero energy code within 18 months, and authorizes an increase in the Commonwealth's procurement of off-shore wind energy. The law also establishes a municipal light plant GHG emissions standard requiring municipal light plants to sell 50% non-carbon emitting energy by 2030, 75% non-carbon emitting energy by 2040, and energy sales achieving net zero GHG emissions by 2050.⁵



Net Zero Stretch Energy Code (Under Development)

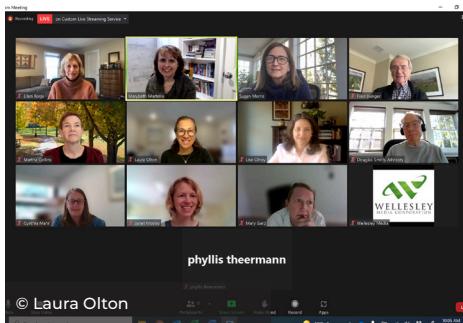
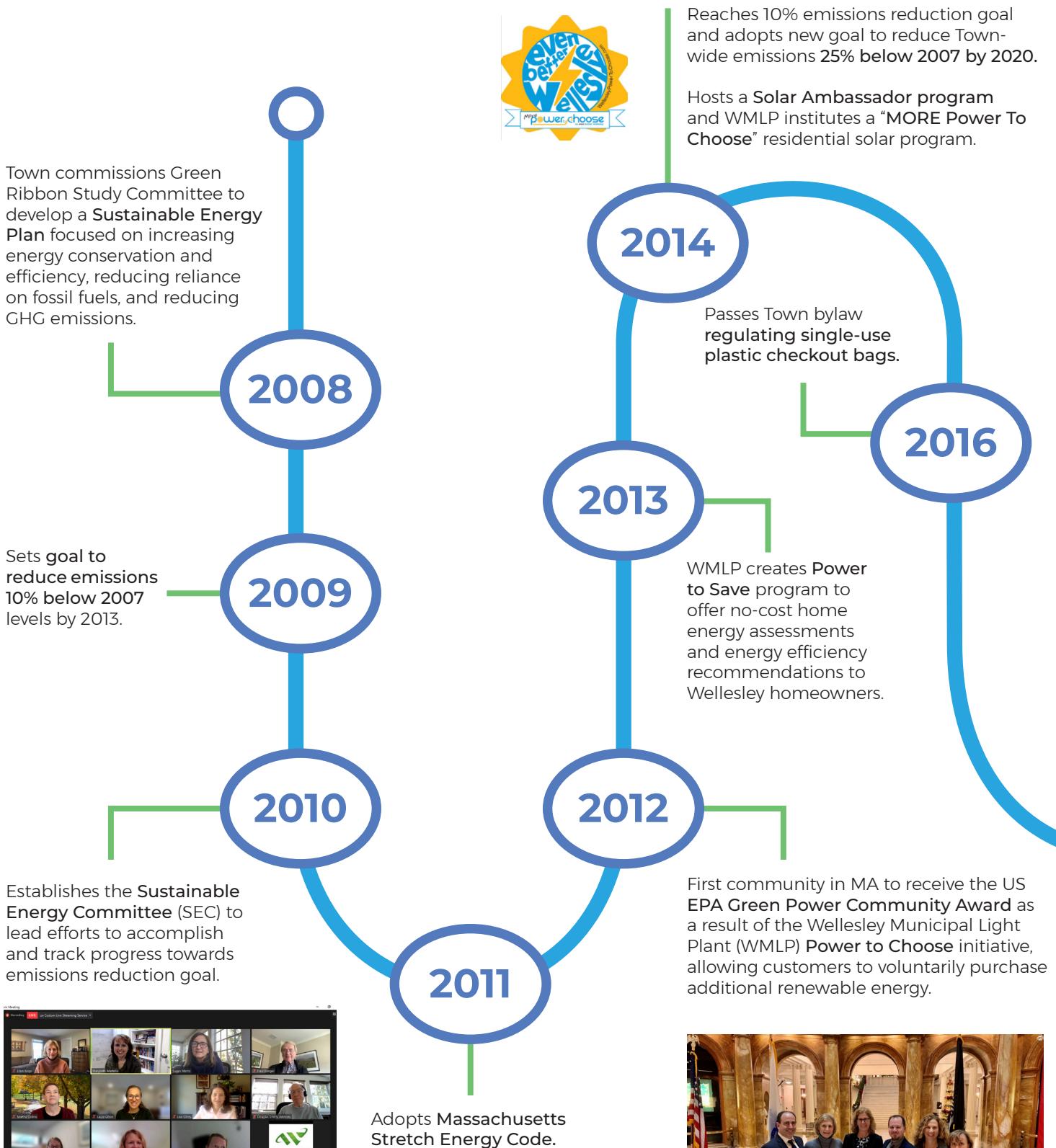
The Next Generation Roadmap law requires the Department of Energy Resources to develop a new building code with stricter energy efficiency standards for new buildings, including net zero building performance standards and a definition of a net zero building. The net zero stretch code is expected to be issued in spring 2022. Municipalities will have the option of adopting this new stretch code in order to reduce GHG emissions from the building sector. Adoption of the code by municipalities throughout Massachusetts will play an important role in the Commonwealth's ability to meet its climate goals.



American Rescue Plan Act (Enacted March 2021)

President Biden signed the American Rescue Plan Act (ARPA) into law in March 2021. ARPA funds provide direct relief to state and local governments to assist with recovery from the COVID-19 pandemic. These funds can be used for important infrastructure improvements to help build resilience and mitigate the effects of climate change.

CLIMATE ACTION IN WELLESLEY





MA Department of Energy Resources designates Wellesley as a **Massachusetts Green Community**, and awards first grant for \$137,250.

Adopts **Energy Reduction Plan** to identify municipal opportunities for energy conservation.

Establishes the **Metrowest Food Recovery Program**, which transforms leftover food into meals to distribute to food insecure individuals and families.

Bates School wins a **Secretary Award for Excellence in Energy and Environmental Education** from the MA Executive Office of Energy and Environmental Affairs for its recycling and food recovery program.

WMLP completes LED retrofit of more than 3,000 streetlights.

Receives **DOER Leading by Example Award** for initiatives including street light retrofits, installment of rooftop solar on 98 residences, reduction of GHG emissions in municipal buildings by 24% over last decade, and food donation programs.

Receives **US EPA Environmental Merit Award** for food rescue initiative.

Wellesley Public Schools awarded Grand Winner for **Green Cleaning Award for Schools & Universities**.

Obtains **SolSmart Silver** designation.

Creates **Food Waste Drop-Off Program** at the Recycling & Disposal Facility.



2017

Completes Wellesley Unified Plan, including numerous climate and sustainability elements.

Wellesley Public Schools earn US Department of Education Green Ribbon Schools Award.

Natural Resources Commission (NRC) declares a **Climate Emergency**, resolving to educate the public and explicitly consider the climate emergency in all decision-making.

2018

Obtains MA Municipal Vulnerability Preparedness (MVP) Planning Grant and establishes preparedness plan.

US EPA recognizes Bates Elementary School with **National Food Waste Recovery Award** for data-driven approach to diverting waste in their cafeteria.

Establishes the **Municipal Sustainable Building Guidelines**.

Passes the **Resolution to Address the Impact of Climate Change** urging boards, committees, and departments to consider climate change in projects and programs.

2019



2021

Reaches emissions reduction goals of 25% by 2020 from 2007 baseline and establishes new goals of 50% by 2030, 75% reduction by 2040, and net zero by 2050.

Sustainable Energy Committee renamed **Climate Action Committee**.

2020

CLIMATE CHANGE IN WELLESLEY & ITS IMPACTS

Like most Massachusetts communities, Wellesley is already experiencing the impacts of climate change, including extreme heat, drought, and an increase in the frequency and severity of intense storms. Without bold, collective action, these impacts are projected to worsen, threatening human health and livelihoods, ecosystems, natural resources, infrastructure, and our economy.



INTENSE STORMS

The number and intensity of storms are on the rise, as precipitation is concentrated in fewer, heavier events. In Wellesley, nor'easters, ice storms, blizzards, hurricanes, and heavy rain events may lead to power outages and compromised communication systems, increasing vulnerability of seniors and residents requiring medical support, as well as our infrastructure.

TRENDS

70%

more precipitation falling in heavy rain events in the Northeast between 1958 and 2010⁶

PROJECTIONS

Up to 8 to 11 days with heavy rain events by 2100 in Massachusetts (up from 1 per year)⁷

FLOODING

In Wellesley, a single intense storm can cause serious flooding, which can damage or disrupt critical facilities and infrastructure, contaminate surface water, and increase mosquito populations. Flooding is concentrated around Morses Pond, along the banks of the Charles River, and in areas with extensive impervious pavement, affecting both residential and commercial buildings.

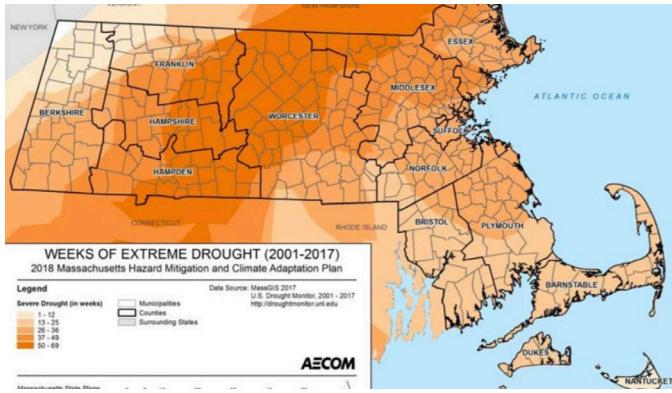
TRENDS

16

FEMA flood-related disasters in Norfolk County between 1954 and 2017 – 2nd most of any MA county⁸

PROJECTIONS

Up to 13% increase in annual precipitation by 2050, and up to 16% increase by 2100⁹



DROUGHT

Precipitation is expected to be concentrated in fewer storm events, increasing the potential for drought, which can lead to water supply shortages, crop damage, and habitat stress. During the 2016 drought in Massachusetts, Wellesley's water bodies and wetlands were highly impacted.

TRENDS

20 WEEKS of extreme drought (water shortages) in Norfolk County between 2001 and 2017¹⁰

PROJECTIONS

More frequent short-term droughts with extended periods of little to no precipitation

HEAT WAVES

Extreme heat and heat waves—3 or more days over 90°F—are increasing in Wellesley. An increase in extreme heat days will lead to heat-related illnesses, higher demand for energy in the summer, weakened tree canopy, and worsened air quality.

TRENDS

0.5°F INCREASE

in annual air temperatures per decade since 1970 and 1.3°F increase in winter temperatures per decade in the Northeast¹¹

PROJECTIONS

Approximately 29 days over 90°F by 2050, and 46 days over 90°F by 2100 in Norfolk County¹²

WELLESLEY'S GREENHOUSE GAS EMISSIONS

Community GHG emissions are created when Wellesley residents, visitors, and workers engage in daily activities such as driving, heating homes, and powering our appliances and devices. Measuring GHGs from specific sources helps us understand where and how to take action to achieve our goals.

We reached our 2020 goal:

25%

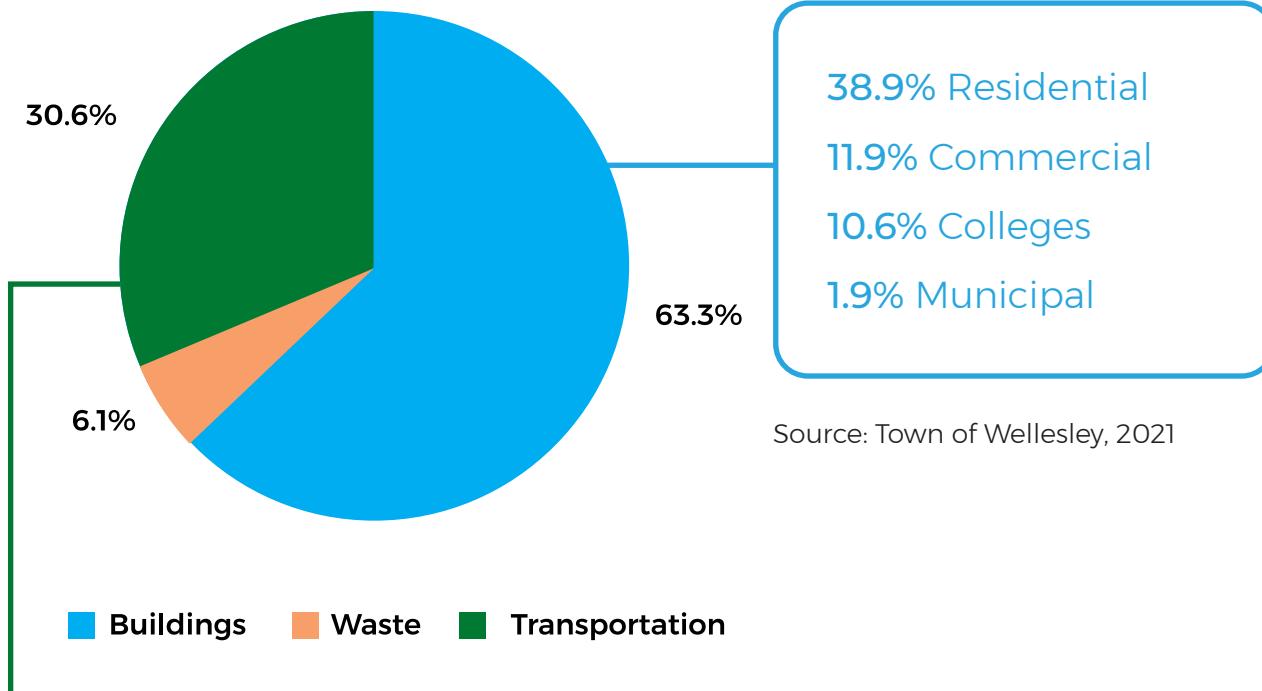
reduction in GHG emissions

(compared to 2007 levels)

We achieved our goal due to a number of factors, including decarbonization of the electricity grid, energy efficiency, transition from heating with fuel to natural gas, and pandemic-related changes in building and vehicle use.

WELLESLEY COMMUNITY GHG EMISSIONS BY SECTOR, 2020

Buildings in Wellesley produced 63.3% of the town's total emissions in 2020.¹³ The majority of these emissions came from the residential sector. Reducing total GHG emissions in Wellesley will require targeted action to reduce emissions from our homes and other buildings.



At 30.6%, transportation is the second largest contributor to Wellesley's GHG emissions, with gasoline and diesel vehicle emissions equivalent to burning more than 360 railcars of coal per year.¹⁴ Collectively, we drove more than 127 million miles in 2020, equal to more than 5,000 trips around the earth!

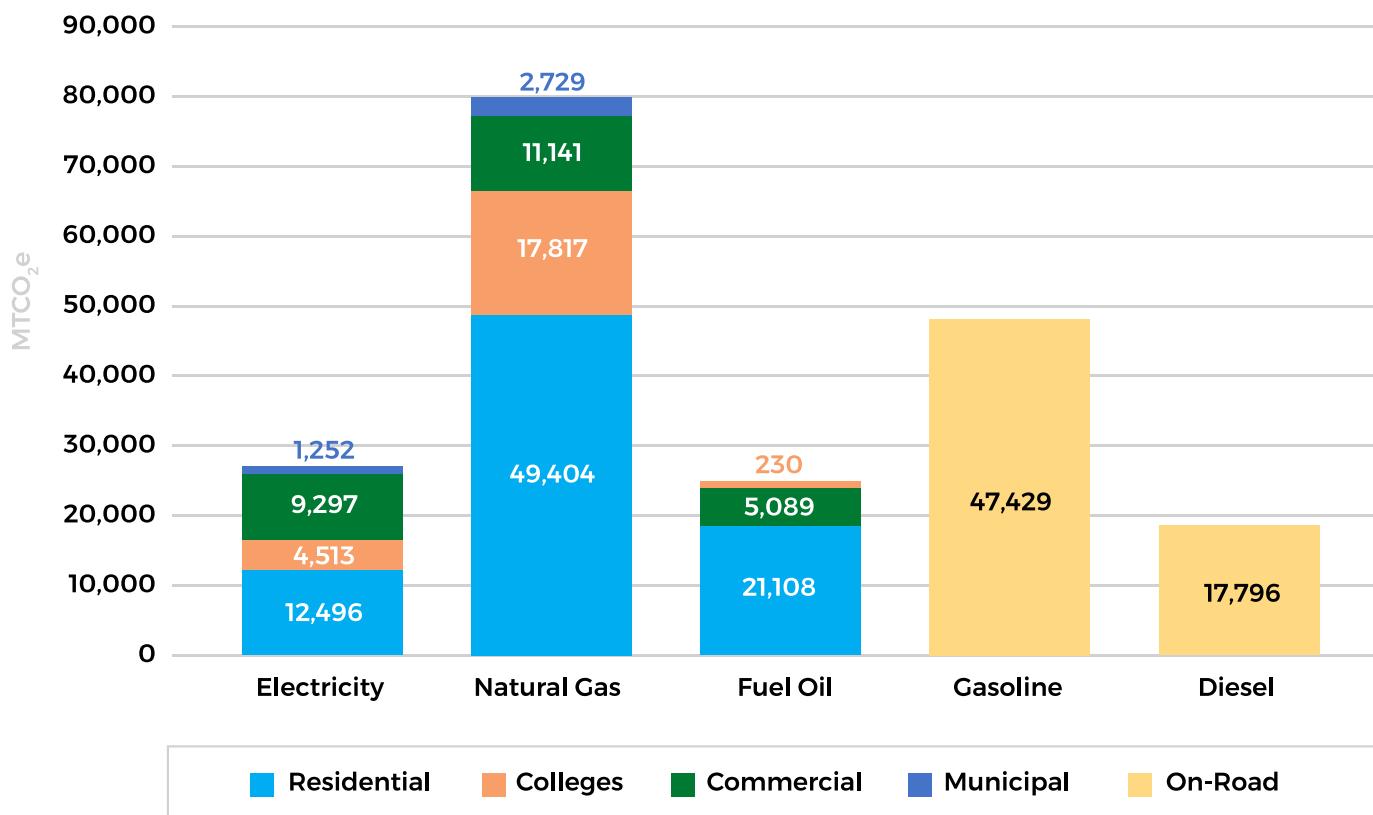
WELLESLEY COMMUNITY GHG EMISSIONS BY SOURCE

Currently, fossil fuels are used to generate most of our electricity. We also use fossil fuels to directly power our vehicles, and to heat buildings, water, and food. It is important to reduce reliance on fossil fuels across all uses simultaneously to reach our targets. If all we do is change to non-emitting electricity sources, we will reduce our emissions by only 17%. In addition to increasing our non-emitting electricity sources, we also need to switch from using oil and natural gas to power our vehicles and buildings.

CARBON DIOXIDE EQUIVALENT

NOUN

A metric used to compare the emissions from various greenhouse gases (e.g., carbon dioxide, methane, nitrous oxide) on the basis of their global warming potential relative to carbon dioxide. Using this metric allows us to compare emissions across different greenhouse gases and to express different greenhouse gases with one number. This unit of measure is metric tons of carbon dioxide equivalent (MTCO₂e).



Source: Town of Wellesley, 2021



© Martha Collins

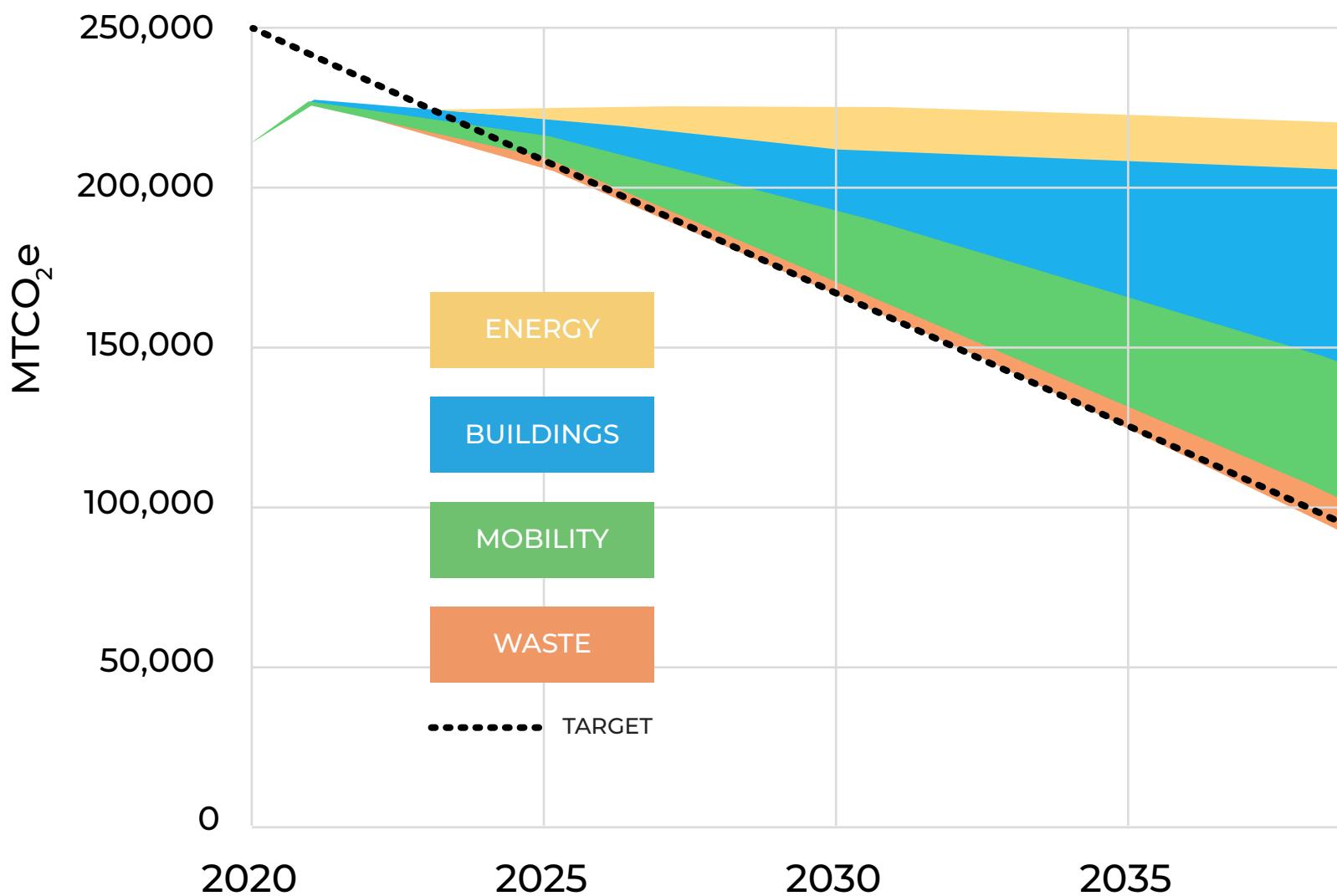
The faster we can switch to electricity to power our community, the faster we'll achieve deep emissions reductions as more renewable energy comes online. To electrify everything at our current consumption levels, we would need to buy 45% more electricity. However, if we invest in energy efficiency in our buildings and we drive less, we can limit the increased demand for electricity to 10% and save substantial amounts of money over time.

STRATEGIES TO GET TO NET ZERO

Many of the strategies in the Wellesley Climate Action Plan are designed to achieve our GHG reduction goals, while others are focused on important but non-quantifiable benefits to our community. The chart below models GHG reductions in our community through 2050, assuming that we take action as a community. The colored wedges in the graph correspond to pathway-specific strategies, listed on the right, that achieve zero emissions.

For a full list of strategies and actions, see the Climate Action Plan chapters for each Pathway starting on page 24.

GHG REDUCTION POTENTIAL OF CLIMATE ACTION PLAN STRATEGIES



ENERGY

Potential reduction up to 36,200 MTCO₂e

STRATEGY E1: Accelerate the installation of local renewable energy generation and storage in Wellesley

STRATEGY E2: Maximize amount and diversify the non-emitting energy purchased by the MLP

STRATEGY E3: Use electricity rates, technology, and incentive programs to optimize emissions reductions in the management of electricity demand

BUILDINGS

Potential reduction up to 91,000 MTCO₂e

STRATEGY B1: Drive regulatory action on net zero building standards

STRATEGY B2: Promote the benefits of net zero development

STRATEGY B3: Lead by example through municipal action

STRATEGY B4: Support conversion of Wellesley homes to all-electric systems

STRATEGY B5: Target net zero emissions from commercial and institutional buildings by 2050

MOBILITY

Potential reduction up to 72,000 MTCO₂e

See Sustainable Mobility Plan (SMP) for additional strategies

STRATEGY M1: Accelerate the shift to electric vehicles (SMP Strategy 3.1)

STRATEGY M2: Promote low-impact transportation options (SMP Strategy 3.2)

WASTE

Potential reduction up to 13,400 MTCO₂e

STRATEGY W1: The municipality leads by example on waste minimization, recycling, and food waste diversion

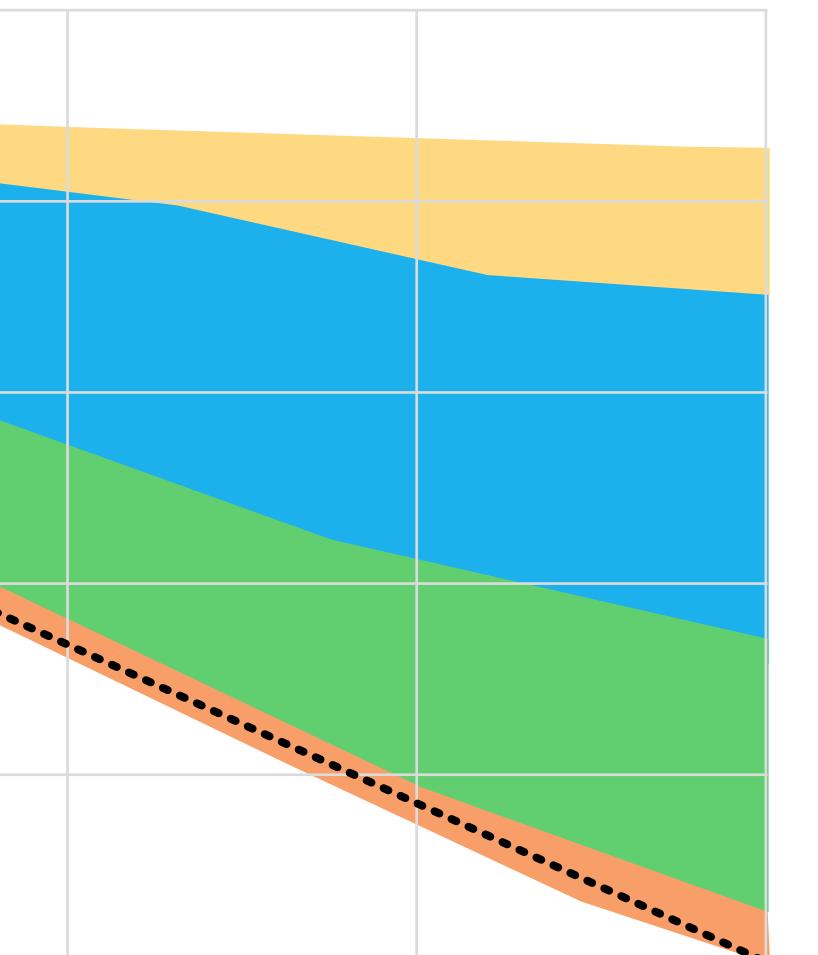
STRATEGY W2: Restart and expand food waste diversion and food rescue programs

STRATEGY W3: Develop a culture that minimizes single-use products and packaging

STRATEGY W4: Educate the community about opportunities and benefits regarding a zero-waste goal

STRATEGY W5: Promote the environmental and financial benefits of utilizing the RDF

STRATEGY W6: Expand access to and services at the RDF



2040

2045

2050

DEVELOPING THE WELLESLEY CLIMATE ACTION PLAN

PLANNING APPROACH

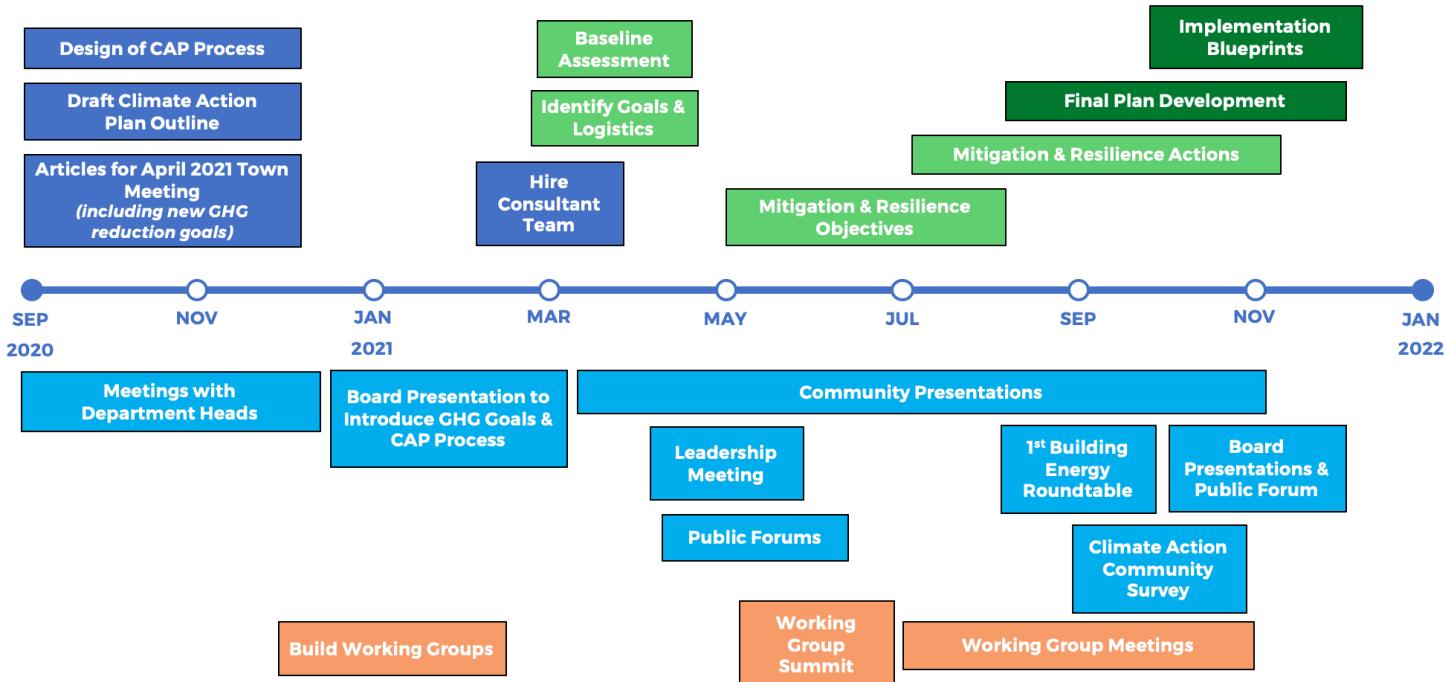
Wellesley's climate action planning process builds on the Town's history of sustainability initiatives, consensus-building approach to policymaking, and robust civic life. This process lays the groundwork for the in-depth community engagement that is essential for successful Climate Action Plan implementation, because many climate actions depend on the choices we make for ourselves and for our families, businesses, and institutions.

The **Climate Action Committee (CAC)** led Climate Action Plan development with the support of Kim Lundgren Associates, Inc. (KLA). The CAC designed the approach, recruited participants, coordinated meetings, performed outreach within the municipality and community, and oversaw data collection and analysis. A kick-off meeting in May 2021 brought together committee members, key department heads, and KLA.



The identification and prioritization of climate actions took place in four working groups for energy, buildings, mobility, and waste/natural resources and through a **consultative process** for governance. Chaired by CAC members, these pathway deliberations included municipal staff, board and committee members, as well as residents and representatives of the college and commercial sectors. More than 70 stakeholders provided input during a Working Group Summit in June 2021, and thereafter, via countless meetings and email exchanges.

CLIMATE ACTION PLANNING TIMELINE





16

Community Presentations



30

Attendees at First Building Energy Roundtable



19

Televised Board Presentations

3

Town Meeting Presentations

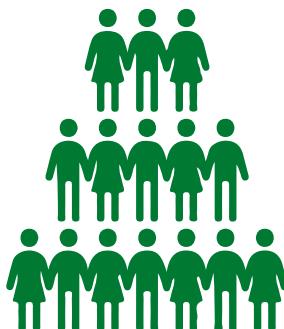


12

Departments, Boards and Committees Engaged

ENGAGING WITH THE COMMUNITY

Community engagement was critical to development of the Wellesley Climate Action Plan. Interviews, survey responses, televised presentations to boards and committees, public forums with community members and groups, and our first commercial sector Building Energy Roundtable helped to educate the community and shape the goals, actions, and implementation steps that are integral to Wellesley's climate action success.



70+

Working Group Stakeholders

1

Working Group Summit



290+

Survey Responses & Counting

COUNTLESS

Working Group Meetings & Consultations

PLAN OVERVIEW

PATHWAYS

To pursue targeted action on climate change, Wellesley is focusing on six Pathways.



GOVERNANCE



ENERGY



BUILDINGS



MOBILITY



NATURAL RESOURCES



WASTE

GUIDING PRINCIPLES

The framework used to assess and prioritize actions incorporates seven guiding principles to ensure Wellesley's climate action aligns with the Town's values.

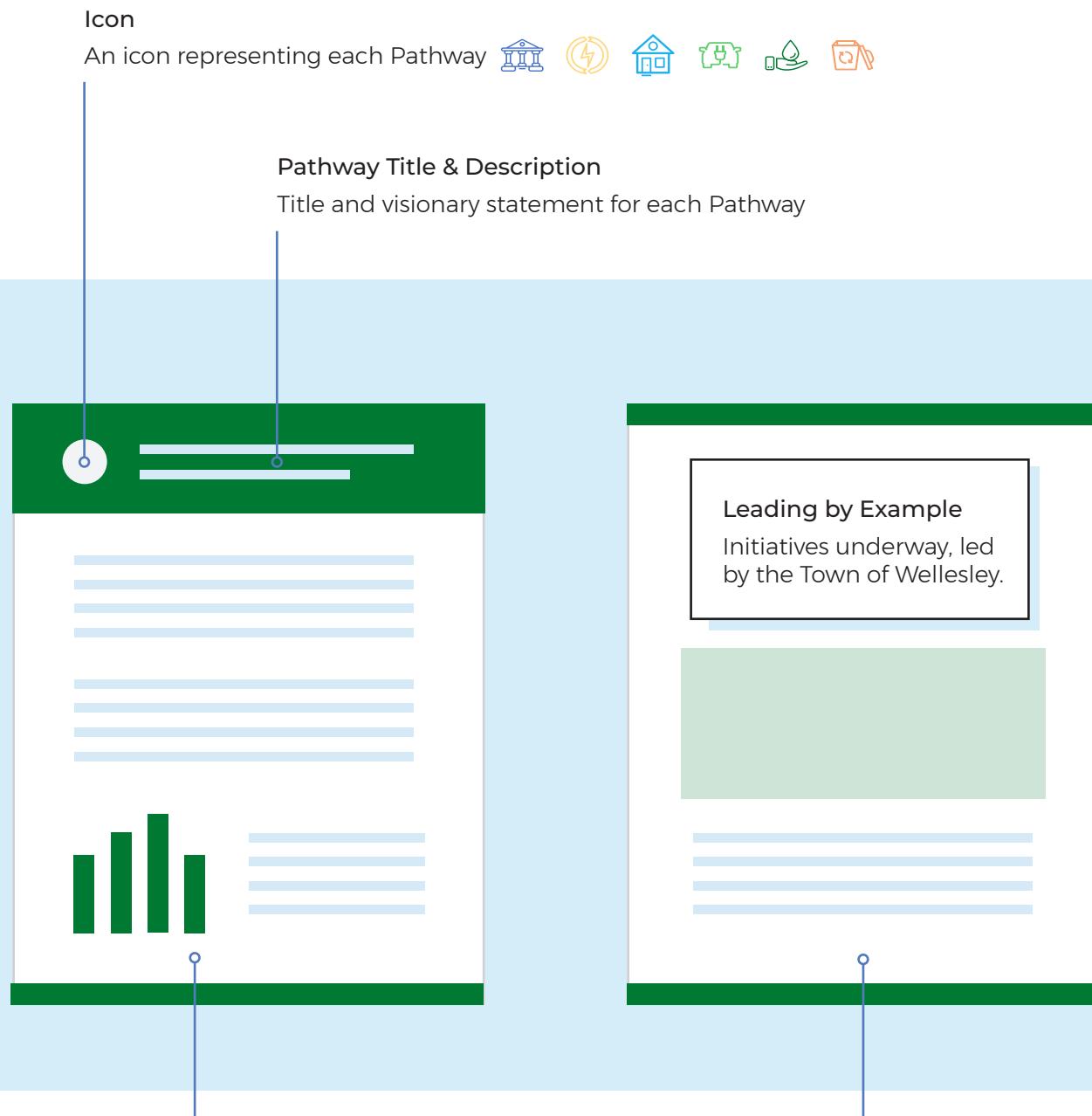
| | | | |
|---|---|---|--|
| Greenhouse Gas Reduction Reducing community greenhouse gas emissions in order to mitigate contributions to climate change | Resilience Improving everyone's ability to adapt and thrive in the face of climate change | Natural Resource Protection Restoring or preserving ecosystem services that reduce climate impacts and contribute to community well-being | Regional Collaboration Collaborating with regional partners to ensure climate action success |
| Economic Vitality Generating economic activity and workforce opportunities for all residents | Equity & Justice Ensuring equitable opportunities and access to resources for all community members | Public Health & Safety Improving health and quality of life for all residents and reducing vulnerability to climate-related threats | |

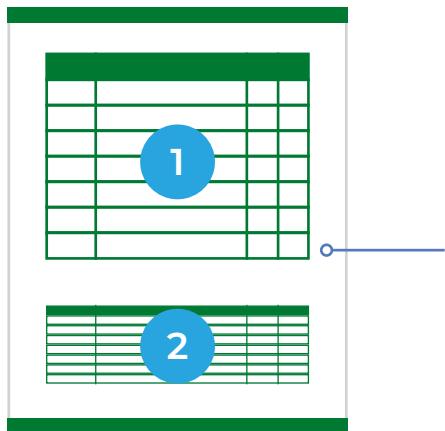


© Michael Tobin

HOW TO READ THE PLAN

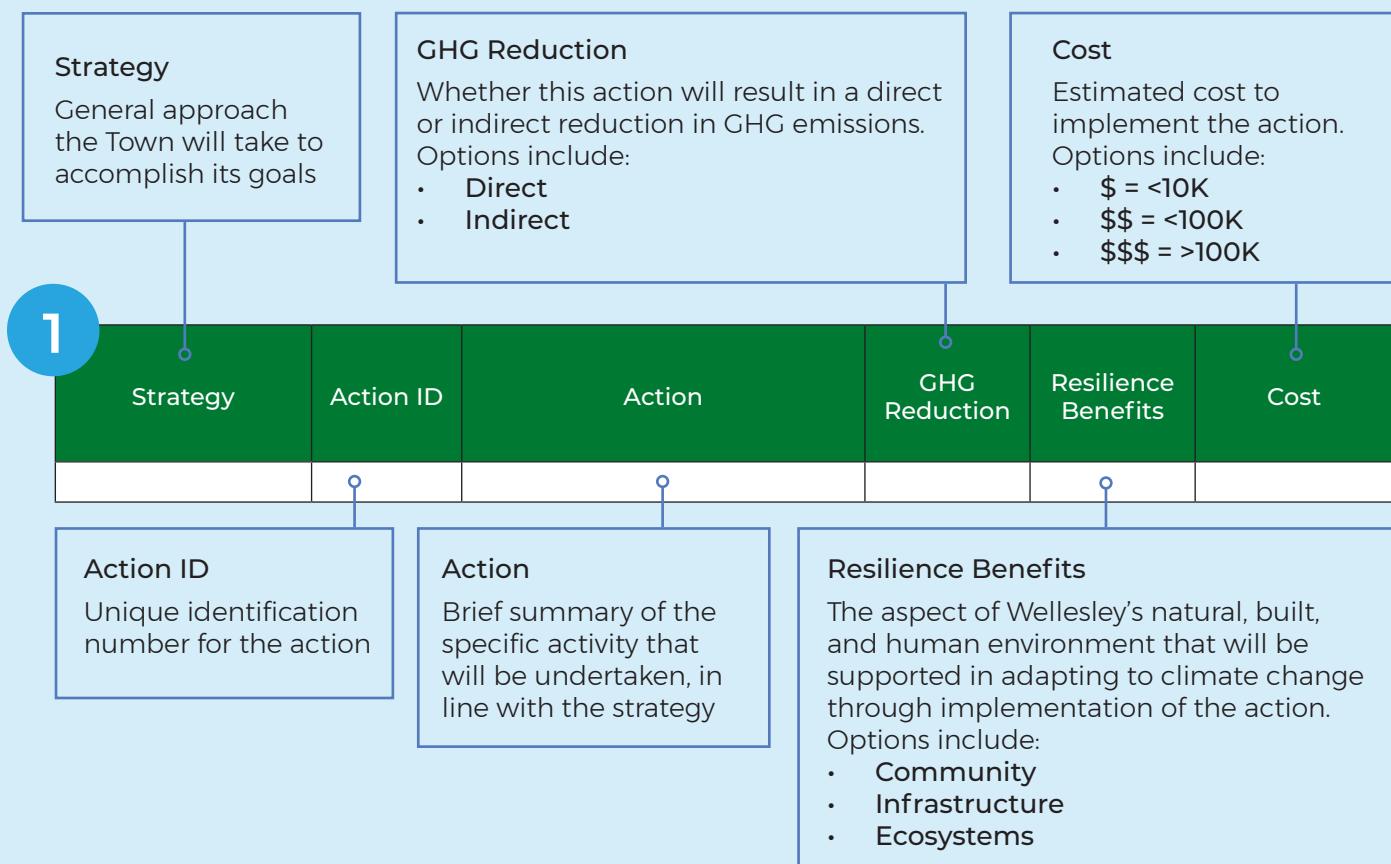
Details for each of the Pathways are outlined in the sections ahead and include the following features:





How We'll Get There

The key strategies and actions developed through public engagement and collaboration, and performance indicators to effectively measure progress.



| Metric | Baseline (Year) | 2030 Target | 2050 Target |
|--------|-----------------|-------------|-------------|
| | | | |

Performance Indicators

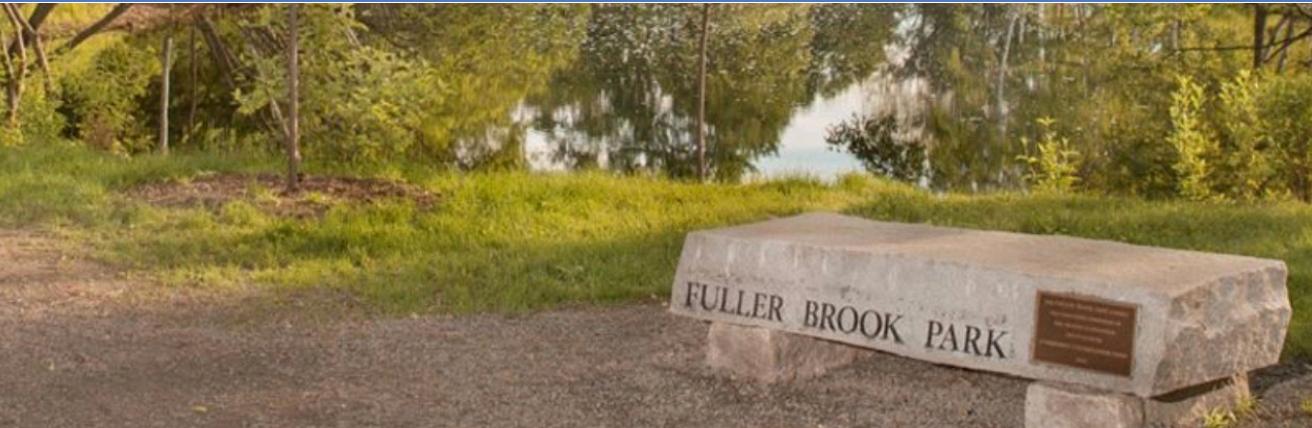
Includes key metrics and baseline data for the Town, as well as 2030 and 2050 targets. Several actions can correspond to a single metric and target.



GOVERNANCE

MAKING CLIMATE CHANGE A TOP PRIORITY OF MUNICIPAL GOVERNMENT AND SUPPORTING STATE AND FEDERAL POLICIES THAT ALIGN WITH WELLESLEY'S GOALS

© Michael Tobin



CONNECTION TO CLIMATE CHANGE

Town government can be a highly effective agent for addressing climate change by providing necessary leadership, resources, and accountability. As Wellesley implements its Climate Action Plan, our Town government can work to ensure that departments and community members have appropriate support and information to achieve our goals for reducing GHG emissions and to strengthen Wellesley's resilience.

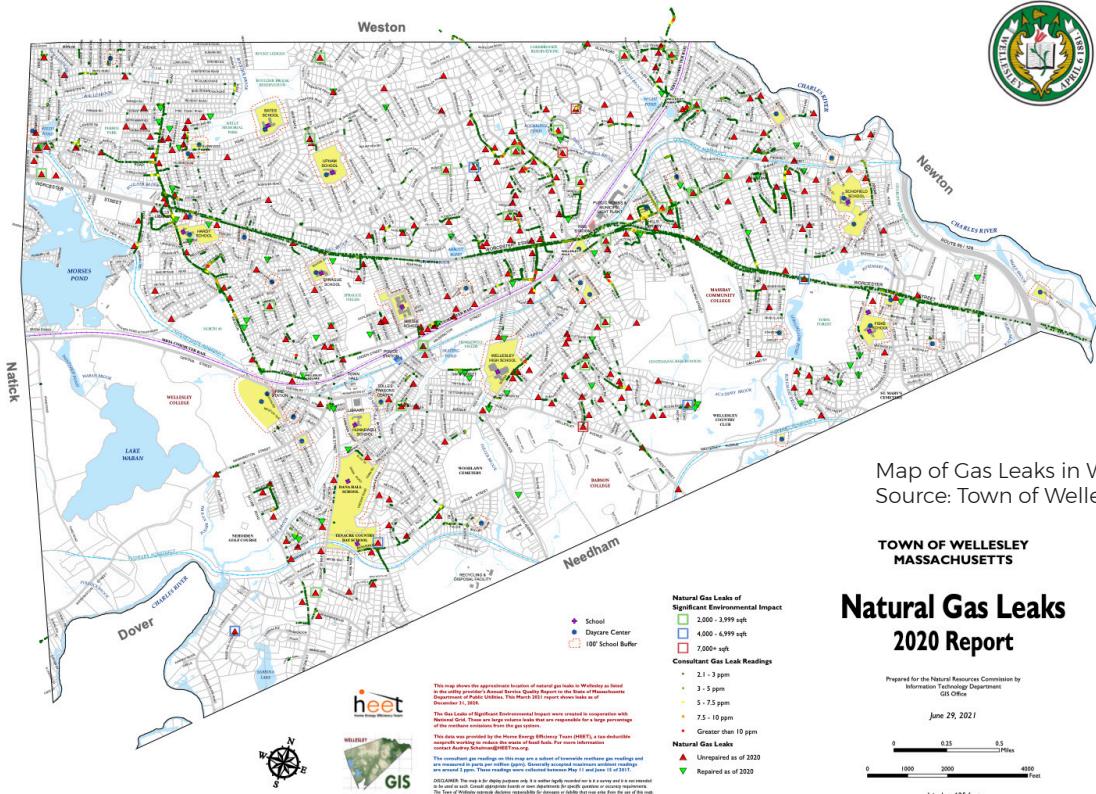
Moving forward, the Town's focus will be on several key areas:

- **Policies:** Update and revise town policies and bylaws as needed to support our climate goals
- **Accountability:** Tracking progress on the goals of the Climate Action Plan for staff and community members and incorporating climate considerations in our internal processes
- **Communications and Education:** Providing on-going information and education in the community and our schools
- **Advocacy:** Advocating for state policies that are necessary to achieve the goals in the pathways of this plan, such as an opt-in net zero building code (see Buildings), the availability of renewable energy sources for electricity (see Energy), and reducing methane emissions (see below)
- **Resilience:** Guiding efforts to build greater resilience to the changes that threaten Wellesley's infrastructure and resources

WHERE WE STAND

Wellesley's town government has demonstrated a strong commitment to climate action and has taken important steps in the past two years to accelerate our progress:

- In January 2020, the Town received designation through the state as a **Municipal Vulnerability Preparedness community** by conducting a town-wide engagement process on climate change and its effects on the community. This MVP certification makes the Town eligible for funding for action grants to build community resilience to climate change.
- In October 2020, Wellesley's Town Meeting passed the **Resolution to Address the Impact of Climate Change** proposed by the Select Board. This resolution calls for all Town boards, committees, and departments to consider actions to reduce GHG emissions, and to include a rationale for how projects or programs might influence emissions and the Town's climate resiliency.
- In April 2021, Wellesley Annual Town Meeting approved the **GHG emissions reduction goals** developed by the Climate Action Committee that are the impetus for this Climate Action Plan.



The Persistent Problem of Gas Leaks

Methane emissions from gas leaks present an on-going challenge to Wellesley's efforts to reach our GHG reduction goals. Leaks in the gas distribution system are a significant contributor to GHG emissions in the town and throughout the Commonwealth. However, municipalities have no jurisdiction over the gas system itself or the rate of leak repair.

Since 2018, the Town has participated in the Multi-Town Gas Leaks Initiative which is made up of municipalities working together and with National Grid to accelerate repair of high-volume gas leaks. At the end of 2020, National Grid reported 256 leaks in Wellesley, including approximately 30 significant environmental impact gas leaks. Making headway on this persistent problem will require continued advocacy at the regional and state levels.

GAS LEAK NOUN

Leak in the gas system that emits mostly methane, a GHG that is roughly 86 times more potent than carbon dioxide over the first 20 years in the atmosphere. Research has shown that 7% of gas leaks in Massachusetts are high volume leaks (known as significant environmental impact leaks) that are responsible for half of the state's methane emissions.

WHERE WE'RE HEADED

Successful implementation of the Climate Action Plan relies on continued leadership and commitment from every part of town government. The Town's Sustainability Director and Climate Action Committee will continue to be a resource, providing guidance as the Town works to reach its goals for reducing GHG emissions and building resilience.

OUR GOALS:

- 1** Town government leads by example and is accountable for implementation of the Climate Action Plan.
- 2** Climate action beyond town borders supports progress toward Wellesley's climate goals.
- 3** Methane emissions from natural gas infrastructure are reduced.
- 4** Municipal systems and infrastructure are resilient to impacts of climate change.



HOW WE'LL GET THERE

Actions that ensure Wellesley leads by example, both in our town and outside our town borders, are particularly valuable to achieving our climate goals. The actions in the table below can support Wellesley's efforts to address climate change.

| Action ID | Action | GHG Reduction | Resilience Benefits (Community, Infrastructure, Ecosystems) | Cost (\$ = <10K, \$\$ = <100K, \$\$\$ = >100K) |
|---|---|---------------------|---|--|
| G1: Integrate sustainability into the policies and executive operations of the town | | | | |
| G1a | Change Town Bylaws so that the Sustainability Director reports directly to Executive Director of General Government Services. | — | — | \$ |
| G1b | Work with IT to establish web-based dashboard to track Climate Action Plan progress to provide information, accountability, and transparency. | — | Community | \$ |
| G2: Integrate sustainability and resilience into systems and processes | | | | |
| G2a | Incorporate GHG reductions and other sustainability considerations into the budget process, including capital planning and prioritization. | Direct and Indirect | — | \$ |
| G2b | Develop an evaluation framework/tool to assist departments with sustainability analysis of proposed projects and initiatives. | — | — | \$ |
| G3: Engage the community in a town-wide effort to implement the Climate Action Plan | | | | |
| G3a | Launch a program to coordinate community education and engage the public in initiatives to support Climate Action Plan implementation. | — | Community | \$ |
| G3b | Continue to enhance climate change and sustainability education through Wellesley Public Schools' curriculum, activities, and operations. | — | — | — |
| G3c | Coordinate messaging concerning Climate Action Plan implementation and related sustainability measures with Public Information Officer and relevant town departments. | — | — | \$ |
| G4: Pursue local and regional partnerships and support climate-friendly state rules and policies | | | | |
| G4a | Collaborate with other communities to build local and regional decarbonization efforts. | Direct | — | \$ |
| G4b | Identify and evaluate opportunities to advocate for state laws and policies that will further Climate Action Plan goals and other sustainability priorities. | — | — | \$ |
| G5: Adopt a triage and transition approach to reducing methane emissions | | | | |
| G5a | Identify and track gas leaks in Wellesley, particularly the highest volume leaks that have the greatest environmental impact. | — | — | \$ |
| G5b | Advocate with National Grid for repair of Wellesley's highest volume leaks. | — | — | \$ |
| G5c | Advocate at state level for repair of highest volume leaks to reduce methane emissions during state transition to fossil-fuel-free alternatives. | — | — | \$ |
| G5d | Educate the public about methane emissions and about safe, fossil-fuel-free alternatives for heating, cooling, and cooking. | — | — | \$ |
| G6: Identify municipal actions to build resilience | | | | |
| G6a | Develop a Hazard Mitigation Plan. | — | Infrastructure, Community, Ecosystems | \$\$ |
| G6b | Strengthen emergency preparedness and communications to reach the public in Wellesley, as recommended in the Town's 2020 Municipal Vulnerability Preparedness Summary of Findings Report. | — | Community | \$ |



PERFORMANCE INDICATORS

| Metric | Baseline (Year) | 2030 Target | 2050 Target |
|--|-----------------|---------------------------------|-------------|
| Municipal GHGs (MTCO ₂ e) | 9,968 (2007) | 50% reduction below 2007 levels | Net zero |
| Town policy and/or bylaw changes approved to advance Climate Action Plan goals | New metric | Upward trend | |
| Number of educational and public engagement events to advance Climate Action Plan goals | New metric | Upward trend | |
| Number of outreach platforms actively maintained and coordinated with other Town departments to engage the public | New metric | Upward trend | |
| Size of audience for digital outreach (e.g., website hits, social media followers, newsletter subscribers) | New metric | Upward trend | |
| Number of contacts (meetings, letters, oral/written testimony) with legislators and government officials to support adoption of clean energy legislation and regulations | New metric | Upward trend | |
| State legislation and/or regulations approved for which the Town has advocated | New metric | Upward trend | |
| Meetings coordinated/attended with gas utility company and regional partners | New metric | Upward trend | |
| Number of Grade 3 Significant Environmental Impact gas leaks | 30 | 15 | 0 |
| Total emissions from gas leaks (MTCO ₂ e) | 7,858 (2020) | 3,929 | 0 |
| Number of grants submitted for climate mitigation and resilience projects | New metric | Upward trend | |





ENERGY

REDUCING ENERGY DEMAND AND INCREASING SUPPLY OF CARBON-FREE ELECTRICITY THAT IS RELIABLE AND AFFORDABLE

CONNECTION TO CLIMATE CHANGE

For Wellesley's Climate Action Plan, the Energy Pathway is focused exclusively on electricity generation (how we source our energy) and demand (how we use it). Electricity provided by the Wellesley Municipal Light Plant (WMLP) and used in Wellesley is responsible for 13% of all GHG emissions.¹⁵ The transition to carbon-free electricity is critical, as many actions to reduce GHG emissions, such as increasing electrification of our buildings and vehicles, will increase the total amount of electricity consumed. By having a municipal utility, Wellesley is better positioned than most towns to transition to clean electricity. While there are some limitations on which renewable sources are available to WMLP, simply having local control of the decisions to move to clean, carbon-free sources is a benefit. Wellesley will also benefit from maximizing installed solar and energy storage capacity across all sectors.

Wellesley Municipal Light Plant

WMLP is a municipal power and telecommunications provider, which aims to bring reliable and low-cost service to residents and businesses.

Similar to the Town, WMLP has also committed to reducing GHG emissions by providing affordable renewable energy options. Currently, the WMLP provides local sources of wind, hydropower, and solar to its customers.



Solar panels on the WMLP provide clean electricity for the Town.

WHERE WE STAND

Currently, 51% of electricity consumed in Wellesley is generated from carbon-free sources. In 2022, non-emitting electricity consumed in Wellesley will increase to 56%. As of 2021, there are 129 residential, 10 commercial, and three municipal installed solar projects, totaling approximately 1,138 kW. Together these installations generate approximately 1,400 MWhs per year of clean renewable energy, enough to power 78 homes' energy for one year. A solar installation on the roof of the Boston Sports Institute will add 1 MW to Wellesley's solar capacity in early 2022.

ACHIEVEMENTS TO DATE

- ✓ 51% carbon-free electricity in Wellesley
- ✓ 142 solar installations, totaling 1,138 kW
- ✓ **Shave the Peak** voluntary demand response program in place to curb peak load
- ✓ **Wellesley Electric Customers Accelerated Reduction of Emissions (WECARE)** program in place to fund local renewable energy projects

Addressing Peak Load

Reducing peak load, the period with the highest electrical demand, is also important for reducing our GHG emissions. Even when we are purchasing renewable energy, meeting peak demand periods can cause more fossil fuel based energy to be deployed to meet the need, which keeps us tied to those sources. An example of this is when the demand for electricity spikes due to high heat days in the summer, when all buildings have their air conditioning units running on high. Strategies that address peak loads, such as demand response programs, enabled by smart meter infrastructure and distributed battery storage in homes and vehicles, are also included in this pathway. Not only will these strategies help us control which sources of energy we use, they can also help us control electricity costs and enhance reliability.

LEADING BY EXAMPLE

WECARE Program



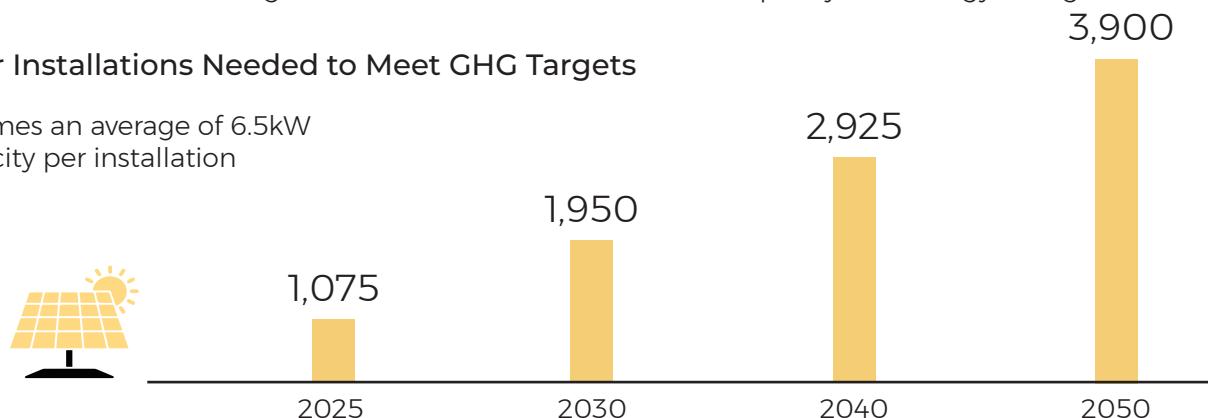
The Wellesley Electric Customers Accelerated Reduction of Emissions (“WECARE”) program is a utility initiative that aims to accelerate local emissions reduction programs.¹⁶ Residential and commercial customers are enrolled in this 4% surcharge on their WMLP bill but can opt out at any time. Funds will be used to support WECARE community solar projects, such as the 1 megawatt solar farm on the roof of the Boston Sports Institute, as well as other programs that will reduce local emissions.

WHERE WE'RE HEADED

Meeting our GHG emissions reduction targets will require a speedy transition to efficient electricity use, powered by renewable energy. The Wellesley community is poised to meet the challenge. We will use electricity more prudently through energy efficiency initiatives and we will promote migration away from fossil fuel reliance through beneficial electrification (e.g., electric vehicles). To the extent feasible, WMLP will strive to maximize the non-emitting portion of its portfolio. However, achieving emissions reduction success is exceedingly more complicated than that and will require a portfolio of innovations, many of which are not yet commercially viable. These challenges, as well as current structural barriers to accessing carbon-free electricity, make it impossible to predict the WMLP's exact portfolio in 2030. Therefore, we have modeled two scenarios as presented in Appendix 1. Scenario A reflects a WMLP non-emitting portfolio of 80% and Scenario B assumes a 65% non-emitting portfolio. Finally, to help meet local demand for clean energy and enhance community resilience to climate change, we can maximize installed solar capacity and energy storage.

Solar Installations Needed to Meet GHG Targets

Assumes an average of 6.5kW capacity per installation



OUR GOALS:

1

Carbon-free sources provide 100% of Wellesley's electricity by 2050.

2

Energy is used in ways that foster decarbonization through efficiency, beneficial electrification and demand curve management



HOW WE'LL GET THERE

Actions in the energy pathway reduce energy demand and increase supply of carbon-free electricity that is safe, reliable, and affordable in ways that utilize the latest proven technology, provide necessary infrastructure, draw upon all available outside funding sources, and ensure equitable access to energy.

Based on an analysis of Wellesley's GHG reduction potential, increasing solar development and WMLP's renewable energy sources, while reducing peak load, can reduce community-wide GHG emissions by approximately 36,200 MTCO₂e by 2050. The actions in the table below can support Wellesley's efforts to address climate change.

| Action ID | Action | GHG Reduction | Resilience Benefits (Community, Infrastructure, Ecosystems) | Cost (\$ = <10K, \$\$ = <100K, \$\$\$ = >100K) |
|--|---|---------------|---|--|
| E1: Accelerate the installation of local renewable energy generation and storage in Wellesley. | | | | |
| E1a | Identify opportunities for and install solar and, where appropriate, energy storage on municipal buildings. | Direct | — | \$\$\$ |
| E1b | Design and deliver outreach programs to encourage the installation of solar and energy storage on residential, commercial, and institutional properties. | Indirect | — | \$ |
| E1c | Work with other municipal light plants and key partners to advocate for State incentives for local renewable installations, energy storage, and other emissions reduction programs in municipal utility communities. | Indirect | — | \$ |
| E1d | Explore opportunities for ground-mounted solar in the solar district and for local installations of geothermal and wind projects. | Direct | — | \$ |
| E2: Maximize amount and diversify the non-emitting energy purchased by the MLP. | | | | |
| E2a | Advocate for access to State initiatives for procuring non-emitting energy sources. | Indirect | — | \$ |
| E2b | Identify and directly enter into Power Purchase Agreements for non-emitting energy sources. | Direct | — | \$\$\$ |
| E3: Use electricity rates, technology, and incentive programs to optimize emissions reductions in the management of electricity demand. | | | | |
| E3a | Design 'Time of Use' rates that incentivize decarbonization actions, shift and reduce system peak load, and promote more efficient use of electricity. | Direct | Infrastructure | \$\$ |
| E3b | Design MLP's energy efficiency incentive programs to optimize impact, including an energy conservation campaign to educate residents and businesses on how to best use electricity, avoid waste, and reduce GHGs (See Actions B4a and M1b). | Indirect | — | \$ |
| E3c | Design and implement voluntary and automated demand response programs. | Indirect | Infrastructure | \$ |
| E3d | Reduce peak demand and create a resilience enhancement plan utilizing energy storage, critical load management and microgrids. | Direct | Infrastructure | \$\$\$ |
| E3e | Look for opportunities to develop Virtual Power Plants that aggregate distributed energy storage and flexible demand resources in ways that optimize real time energy costs and carbon content. | Direct | Infrastructure, Community | \$\$\$ |
| E3f | Promote and support beneficial electrification programs that take into account the electrical system load profile (See Actions B4c, B5c, and M1a). | Indirect | — | \$ |
| E3g | Support building electrical service upgrades and local infrastructure development to fully enable renewable energy generation, energy storage, and beneficial electrification. | Indirect | Infrastructure | \$\$\$ |



PERFORMANCE INDICATORS

| Metric | Baseline (Year) | 2030 Target | 2050 Target |
|---|-----------------|-------------|-------------|
| Number of buildings with rooftop solar | New Metric | 1,950 | 3,900 |
| Percentage of non-emitting energy sources in the WMLP's portfolio | 51% (2021) | 65-80%* | 100% |
| Total capacity (MW) of residential, commercial, and municipal solar | 1.1 (2021) | 29.2 | 58.4 |
| Total capacity (MW) of WECARE community solar | 0.95 (2021) | 2.5 | 4.0 |
| Number of homes/businesses/multi-families with battery energy storage | New Metric | 1,463 | 3,705 |
| Total capacity (MW) of battery energy storage on Town property | New Metric | 20 | 30 |

*Progress toward these targets will depend on factors within and outside of Wellesley's control and must take into account WMLP's fiscal responsibility to ratepayers.





BUILDINGS

MINIMIZING GREENHOUSE GAS EMISSIONS FROM WELLESLEY'S BUILDING STOCK.

CONNECTION TO CLIMATE CHANGE

The electricity, natural gas, and/or oil that we use in our homes, businesses, institutions, and municipal facilities (including public schools) result in the largest source of greenhouse gas emissions in Wellesley. To reduce the impact of our current and future building stock, we must enhance energy efficiency and switch our building systems and appliances over to electricity (which, as the Energy Pathway chapter details, will be sourced from clean energy).

WHERE WE STAND

At 63.3%, Wellesley's buildings are the source of most GHG emissions in our community.¹⁷ The majority of these building emissions—about 58%—are from residential use of electricity, natural gas, and oil. That's why a key priority of this Plan is to improve home energy efficiency as well as conversion to all-electric systems.

63.3%
of total GHG emissions in Wellesley come from buildings

ACHIEVEMENTS TO DATE

- ✓ 3 Net Zero ready buildings in design (based on Municipal Sustainable Building Guidelines)
- ✓ Clean Comfort Pilot Program in place to install air source heat pumps
- ✓ Power to Save Program in place to improve home energy efficiency

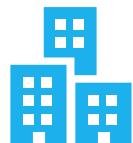


Wellesley High School's efficient Auditorium lighting, funded through the Green Communities program.

2020 Emissions from Buildings by Subsector



38.9%
Residences



11.9%
Commercial



10.6%
Colleges



1.9%
Municipal

Energy Use Intensity

Energy use intensity (EUI), which measures the amount of energy used annually per building square footage, is an important indicator for building efficiency. Energy intensive (inefficient) homes and buildings might have an EUI between 100 and 200 kBtu/sf/yr, while high performance homes and buildings might have an EUI of 30 kBtu/sf/yr or less. To achieve our goals, we'll need to get smarter about our energy consumption across these sectors.

| |  |  |  |  |
|----------------------------|---|---|---|---|
| Current Average EUI (2020) | 65 kBtu/sf/yr | 104 kBtu/sf/yr | 115 kBtu/sf/yr | 64 kBtu/sf/yr |
| To achieve 2050 goal | 30 kBtu/sf/yr or less | 40 kBtu/sf/yr or less | — | 30 kBtu/sf/yr or less (per Municipal Sustainable Building Guidelines) |

LEADING BY EXAMPLE

Municipal Sustainable Building Guidelines

As a Massachusetts Green Community, Wellesley is committed to reducing municipal energy use. The Municipal Sustainable Building Guidelines, adopted in 2020, will help Wellesley pursue our energy and emissions goals by outlining a process and criteria by which we may design, construct, and operate our municipal buildings.¹⁸ The guidelines also encourage buildings to be resilient to climate hazards and adaptable to changing climate conditions.



Rendering of the new Hunnewell School Design, which followed the Municipal Sustainable Building Guidelines.



Wellesley's Town Hall renovation project is converting this historic building from natural gas to all-electric.

WHERE WE'RE HEADED

In order to meet our GHG reduction targets, we must address fossil fuel use in our buildings. We'll introduce standards and accompanying support for new building development, and technical and financial support for widespread, deep energy retrofits in existing buildings. We will seek out tax credits, rebates, grants and other resources and will also partner with neighboring towns and municipalities to advocate for the changes we want to see at the state and regional levels.

Getting to Net Zero by 2030 for New Development

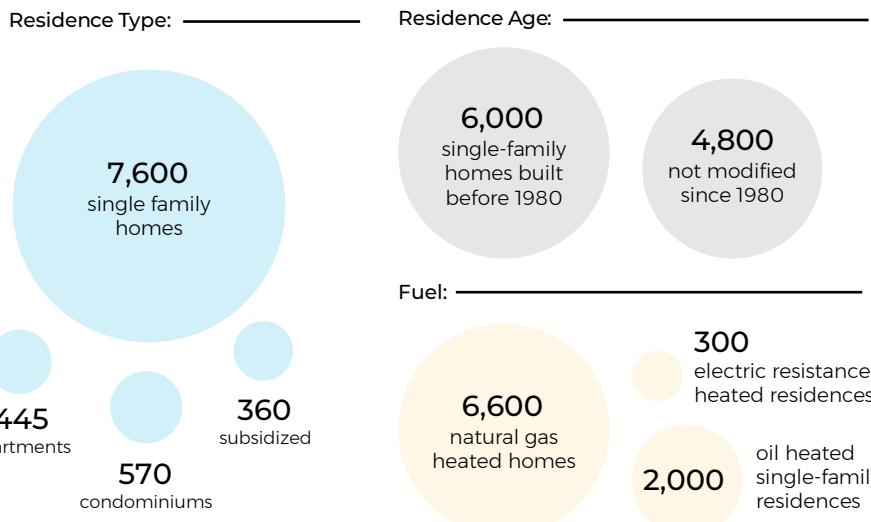
New developments implementing Net Zero standard

50% **100%**
By 2025 By 2030

| | 2025 | 2030 | 2040 | 2050 |
|---|-----------|------------|------------|-------------|
| Residential Building Electrification Targets | | | | |
| Percent of residences converted to all-electric | 5% | 20% | 75% | 100% |
| Residences to convert by target year | 447 | 1,787 | 6,701 | 8,934 |
| Average conversions needed per year | 112 | 268 | 491 | 223 |
| Commercial Building Electrification Targets | | | | |
| Percent of commercial buildings converted to all-electric | 5% | 25% | 70% | 100% |
| Buildings to convert by target year | 16 | 78 | 219 | 313 |
| Average conversions needed per year | 4 | 13 | 14 | 9 |

Outreach Opportunities for Wellesley Residences

Like many New England communities, we face the challenge of an aging building stock and many large, single-family homes. The majority of these homes are heated with natural gas, but a sizeable number of homes remain on oil heat, which emits more greenhouse gas emissions than natural gas. Because we know where the opportunities exist for reduction and electrification, we can target specific types of buildings to achieve our goals most effectively.



OUR GOALS:

1

All new construction is net zero emissions by 2025

2

Existing buildings are upgraded to net zero emissions by 2050



HOW WE'LL GET THERE

Based on an analysis of Wellesley's GHG reduction potential, promoting net zero development and retrofitting buildings to all-electric systems can reduce community-wide GHG emissions by approximately 91,000 MTCO₂e by 2050. The actions in the table below can support Wellesley's efforts to address climate change.

| Action ID | Action | GHG Reduction | Resilience Benefits (Community, Infrastructure, Ecosystems) | Cost (\$ = <10K, \$\$ = <100K, \$\$\$ = >100K) |
|---|---|---------------|---|--|
| B1: Drive regulatory action on net zero building standards | | | | |
| B1a | Advocate for the inclusion of fossil fuel free development in the upcoming Massachusetts net zero energy Stretch Code. | Indirect | — | \$ |
| B1b | Adopt Massachusetts opt-in net zero energy Stretch Code as soon as available. | Direct | — | \$ |
| B1c | Follow the progress of Home Rule petitions in other towns for the purpose of determining the potential viability of fossil fuel free building requirements in Wellesley. | Indirect | — | \$ |
| B1d | Incorporate greenhouse gas emissions goals into Wellesley planning processes and zoning bylaws for new development and Design Review. | Direct | — | \$ |
| B2: Promote the benefits of net zero development | | | | |
| B2a | Provide information, training, and incentives for local developers and contractors to build to net zero standards in Massachusetts. | Indirect | Infrastructure | \$\$\$ |
| B3: Lead by example through municipal action | | | | |
| B3a | Develop upgrade/retrofit plan for each municipal building to achieve New Buildings Institute net zero ready energy use intensity (EUI) recommendations by 2040. | Direct | Infrastructure | \$\$ |
| B3b | Develop and implement occupant behavior programs to optimize energy efficiency of municipal buildings. | Direct | — | \$ |
| B4: Support conversion of Wellesley homes to all-electric systems | | | | |
| B4a | Design and deliver energy conservation and beneficial electrification outreach programs specific to home age, fuel, and equipment types. | Indirect | Infrastructure | \$ |
| B4b | Establish a Climate Coach program that will support residential energy conservation and beneficial electrification. | Direct | Community | \$\$\$ |
| B4c | Promote incentive programs for homeowners and/or builders/contractors to encourage energy conservation and conversion of homes to all-electric systems. | Indirect | Infrastructure | \$\$\$ |
| B4d | Work with realtor interest groups to develop utility usage disclosure and home energy rating program on property transfers and real estate listings. | Indirect | — | \$\$ |
| B4e | Advocate for Residential Property Assessed Clean Energy (PACE) program and other legislative proposals to improve building energy efficiency and accelerate beneficial electrification. | Indirect | — | \$ |
| B4f | Eliminate zoning and permitting-related barriers to installation of heat pumps and insulation in set-back areas. | Indirect | — | — |
| B5: Target net zero emissions from commercial and institutional buildings by 2050 | | | | |
| B5a | Establish Building Energy Roundtable to educate and share energy and emissions reduction efforts among commercial and institutional properties. | Indirect | — | \$ |
| B5b | Opt into the state commercial Property Assessed Clean Energy (PACE) Massachusetts financing program offered by MassDevelopment. | Indirect | Community | \$ |
| B5c | Develop incentive programs to encourage energy conservation and conversion of commercial and institutional buildings to all-electric systems. | Indirect | — | \$\$\$ |
| B5d | Initiate voluntary quarterly energy/emissions reporting as a precursor to a Building Energy Reporting and Disclosure Ordinance. | Indirect | — | \$ |



PERFORMANCE INDICATORS

| Metric | Baseline (Year) | 2030 Target | 2050 Target |
|---|--|--|--|
| GHG emissions from building sector by building type (MTCO ₂ e) | Metric tons CO ₂ /yr Residential: 83,008 (2020) Commercial: 25,527 (2020) Municipal: 3,982 (2020) Colleges: 22,559 (2020) | -17% | Net zero |
| Average EUI by building sector (kBtu/square foot/year) | Residential: 65 (2020) Commercial: 104 (2020) Municipal: 64 (2020) Colleges: 115 (2020) | 55 83 58 Downward trend | 30 40 30 Downward trend |
| Percent of new all-electric buildings developed | New Metric | 100% | 100% |
| Number of existing buildings converted to all-electric | New Metric | Residential: 8,934 Commercial & Municipal: 313 | 9,247 (100%) |
| Number of existing buildings weatherized | New Metric | Residential: 2,234 (25%) Commercial & Municipal: 47 (15%) | Residential: 6,701 (75%) Commercial & Municipal: 313 (100%) |
| Number of participants in rebate and other incentive programs | Residential: 960 Commercial: 18 | | Upward trend |
| Number of commercial buildings reporting annual energy use | New Metric | 120 | 276 (100%) |





MOBILITY

FACILITATING THE TRANSITION TO LOW- AND ZERO-EMISSION TRANSPORTATION OPTIONS TO COMMUTE AND GET AROUND WELLESLEY.

CONNECTION TO CLIMATE CHANGE

Our travel choices have a big impact on climate change, especially when most of us drive alone in fossil fuel powered personal vehicles to get to and from work. A sustainable transportation system in Wellesley is one that prioritizes safe, accessible, clean options for travel, including public transportation, bicycling, and walking. Getting people out of their private vehicles and into multi-modal transportation options, as well as relying on electric vehicles (EVs), will be the most effective ways to reduce our transportation emissions.

MOBILITY

NOUN

The ability for people to get from one place to another using one or more modes of transportation to meet their daily needs

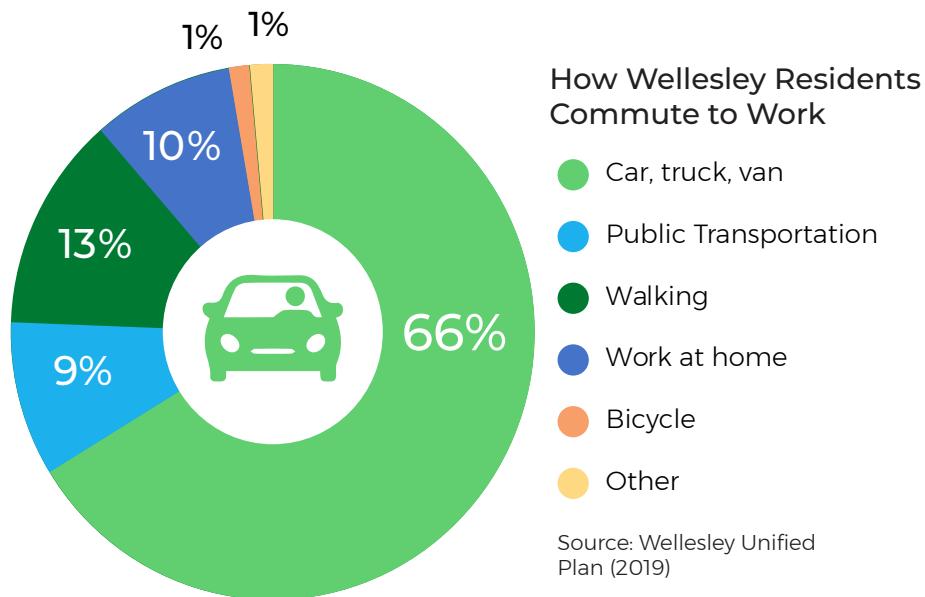


Wellesley's first Town-owned public charging station
© Marybeth Martello

WHERE WE STAND

Transportation is the second-largest contributor to GHG emissions in Wellesley, comprising approximately 31% of community-wide GHG emissions.¹⁹ Most transportation-related emissions come from private use of gas- or diesel-powered vehicles, the primary mode of transportation used in Wellesley.

Nearly two-thirds of Wellesley residents rely on private vehicles to get to work.²⁰ During the COVID-19 pandemic, more of us were working or attending school from home which significantly reduced Wellesley's transportation emissions. As the economy recovers and work-from-home policies continue in the post-COVID-19 world, we will pay attention to transportation emissions associated with commuting, making sure we get back to work and school in the most efficient way possible.



Source: Wellesley Unified Plan (2019)

ACHIEVEMENTS TO DATE

- ✓ Complete Streets policy adopted
- ✓ Sustainable Mobility Plan in progress
- ✓ 224+ EVs registered in the Bring Your Own Charger Program
- ✓ 329 MOR-EV Rebates

GETTING TO ZERO

4 million vehicle miles traveled, or 2,400 MTCO₂e

could be avoided annually if 50% of commuters in Wellesley took the commuter rail today, instead of driving gas-powered vehicles.

LEADING BY EXAMPLE

Planning for Sustainable Mobility

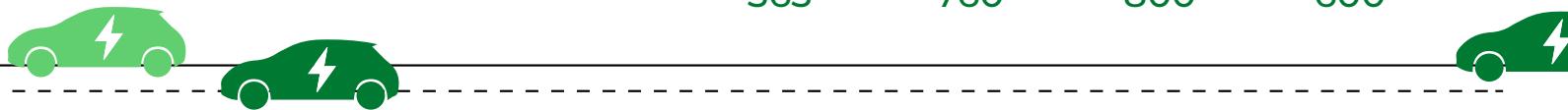
Throughout 2021, Wellesley has been developing a Sustainable Mobility Plan (SMP) to identify mobility options that expand access for all residents, while also reducing GHG emissions.²¹ The SMP includes strategies and actions focused on achieving goals related to the use of public transit and shared mobility; putting pedestrians and cyclists first; promoting smart growth; and providing safe facilities for all users regardless of travel mode and regardless of age, income, or disability. Community input is crucial for determining transportation options that work for Wellesley's residents. The Town held a virtual town forum and released community surveys to learn from residents' experiences and priorities.

WHERE WE'RE HEADED

Sustainable mobility in Wellesley means increasing accessibility for residents, workers, and visitors, while also reducing GHG emissions, traffic, and other impacts associated with transportation, such as air pollution. To meet our GHG reduction targets, we must simultaneously convert a significant number of vehicles to electric while promoting clean, multi-modal transportation options, such as public transit, biking, and walking. As of fall 2021, Wellesley has approximately 750 EVs registered in the town, and we will need to add approximately 5,250 more by 2030. In addition to transitioning to EVs, we need to strengthen the use of alternative modes of transportation to reduce driving generally.

| | 2025 | 2030 | 2040 | 2050 |
|--------------------------|-------|-------|--------|--------|
| Target Number of EVs | 2,200 | 6,000 | 14,000 | 20,000 |
| EVs as % of all vehicles | 11% | 30% | 70% | 100% |
| EV switches per year | 363 | 760 | 800 | 600 |

In order to meet our emissions reduction targets, Wellesley will need to accelerate the adoptions of EVs.



OUR GOAL:

1

Wellesley's transportation emissions decrease in line with Wellesley's GHG reduction goals



HOW WE'LL GET THERE

The Sustainable Mobility Plan, a separate Town plan which includes reducing greenhouse gas (GHG) emissions as one of several objectives, includes strategies and actions within goals of promoting the use of public transit and shared mobility; putting pedestrians and cyclists first; promoting smart growth; and providing safe facilities for all users regardless of travel mode and regardless of age, income or disability.

Based on an analysis of Wellesley's GHG reduction potential, increasing EV adoption and promoting low-impact transportation can reduce community-wide GHG emissions by approximately 72,000 MTCO₂e by 2050. The actions in the table below can support Wellesley's efforts to address climate change.

| Action ID | Action | GHG Reduction | Resilience Benefits (Community, Infrastructure, Ecosystems) | Cost (\$ = <10K, \$\$ = <100K, \$\$\$ = >100K) |
|---|---|---------------|---|--|
| M1: Accelerate the shift to electric vehicles (SMP Strategy 3.1) | | | | |
| M1a | Explore and implement incentives for EV adoption. | Indirect | — | \$\$ |
| M1b | Educate residents and municipal employees about the benefits of buying and driving EVs, including federal and state grant opportunities and operating cost savings. | Indirect | — | \$ |
| M1c | Electrify municipal vehicles, wherever possible, and consider hybrid vehicles where electric vehicles do not meet performance needs. Seek departmental input in updating the municipal Fuel Efficient Vehicle Policy to accelerate this transition. | Direct | — | \$\$\$ |
| M1d | Support electric vehicle charging in residential, corporate, and multi-family developments. Educate developers about available funding. | Indirect | — | \$ |
| M1e | Expand municipal electric vehicle charging infrastructure. | Indirect | — | \$\$ |
| M2: Promote low-impact transportation options (SMP Strategy 3.2) | | | | |
| M2a | Evaluate a potential pilot program for docked, shared electric bikes and/or electric scooters at commuter rail stations and affordable housing units. | Indirect | — | \$ |
| M2b | Install sheltered, secure parking at key locations to facilitate bike, electric bike, and/or electric scooter usage. | Indirect | — | \$ |
| M2c | Reduce community-wide vehicle idling through education and ticketing. | Direct | Community | \$ |
| M2d | Research state and federal funding for electric school transportation and vehicle-to-grid battery storage technology and share with Wellesley Public Schools and school transportation vendor to facilitate migration to electric vehicles. | Indirect | Infrastructure | \$\$\$ |
| M2e | Incorporate provisions for appropriate electric vehicle charging infrastructure in Municipal Sustainable Building Guidelines and in planning processes for new development. | Indirect | — | \$ |



PERFORMANCE INDICATORS

| Metric | Baseline (Year) | 2030 Target | 2050 Target |
|--|-----------------|-------------|-------------|
| EVs registered in Wellesley | 750+ (2020) | 7,000 | 20,000 |
| Municipal vehicle emissions (MTCO ₂ e) | 1,600 (2020) | 1,000 | Net zero |
| Full and plug-in EVs in the municipal fleet | 2 | 50 | 215 |
| Heavy-duty and emergency response hybrids in the municipal fleet | 5 | 20 | 50 |
| See Wellesley's Sustainable Mobility Plan for indicators reflecting public transit use, shared mobility, walking, biking, smart growth, and safe facilities. | | | |



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NATURAL RESOURCES

PROTECTING AND ENHANCING
WELLESLEY'S NATURAL RESOURCES
TO MAXIMIZE THEIR CLIMATE AND
RESILIENCE BENEFITS

CONNECTION TO CLIMATE CHANGE

Natural Resources encompass all aspects of a healthy and functioning ecosystem that deliver resilience benefits to the Wellesley community. These benefits include cooling (through shade and evapotranspiration), reduction and filtration of stormwater runoff, maintenance of biodiversity, and even carbon sequestration—removal of GHGs from the atmosphere.



WHERE WE STAND

Wellesley has robust natural resources, and our residents are aware of the growing need to protect and enhance them. Wellesley is known for our extensive tree canopy, in particular our public shade trees that beautify the town. Public shade trees are managed through the Public Shade Tree program and have special protections in place, as they are only removed if in substantial decline or threatening public safety. Preservation of larger trees on private property is encouraged through Wellesley's Tree Preservation Bylaw.²²

7,000

shade trees

642

acres of passive
recreation area

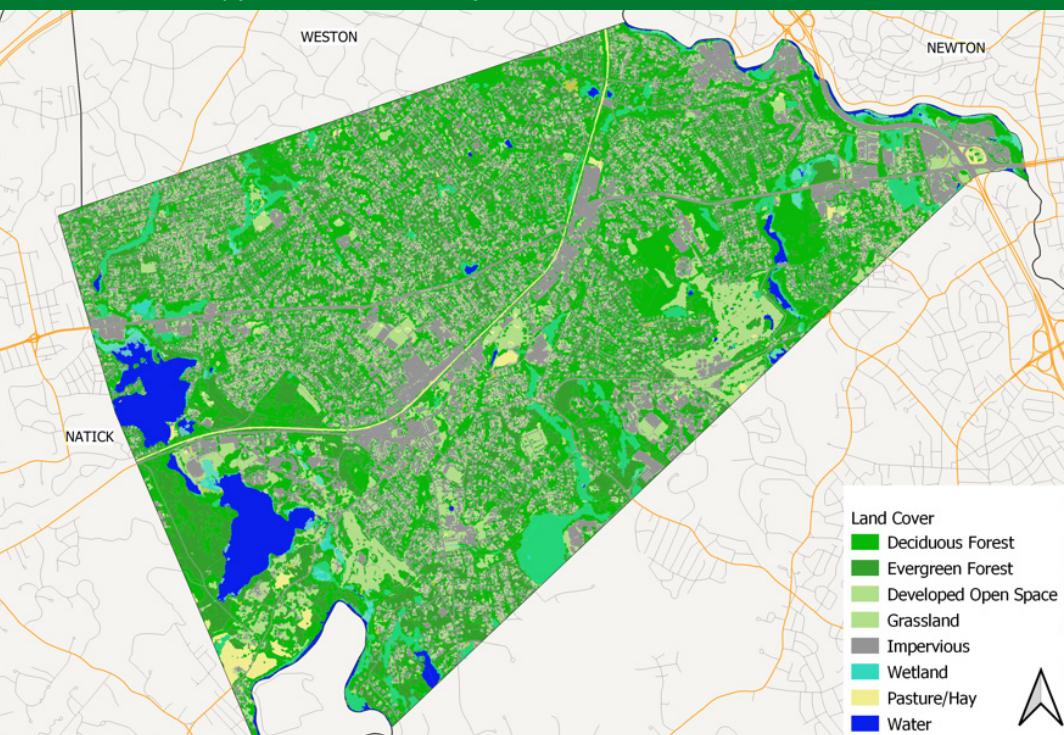
43

miles of trails

53%

canopy cover

Tree canopy cover in Wellesley. Source: MassGIS, 2016.



Trees also provide climate mitigation benefits through sequestration, or removal of GHGs from the atmosphere. Suburban tree canopy can sequester approximately

4.5

MTCO₂e per acre
every year²³



ACHIEVEMENTS TO DATE

- ✓ Organic integrated pest management (no pesticides) on Town property
- ✓ Two community gardens managed by the Natural Resources Commission
- ✓ Grow Green Wellesley program promotes sustainable landscaping methods, including **Pollinate Wellesley**, which promotes planting native plant species to support pollinators.



Sustainable Landscaping in Wellesley's pollinator corridor



© Raina McManus

LEADING BY EXAMPLE

Grow Green Wellesley Initiative²⁴

The Grow Green Wellesley Initiative promotes the use of environmentally friendly landscaping methods to protect our health and local ecosystems through town-wide events and activities. Wellesley maintains all public land, including schools and playing fields, without harmful chemicals, and makes use of native plants.

Central Park Pollinator Garden

WHERE WE'RE HEADED

Restoring, expanding, and managing our existing natural assets are critical to preserving ecological services and protecting our community from climate change impacts. Actions like reducing our water use and engaging in sustainable landscaping practices ensure our local environment is healthy in the face of climate changes. Introducing green infrastructure in our built environment can absorb and filter stormwater as we experience more frequent and intense storms. We can also prioritize protection of our wetlands, which are great at removing and storing carbon from the atmosphere, reducing flooding, and providing critical habitat for native species. Importantly, to ensure the whole community can benefit from Wellesley's abundant natural resources, we must provide equitable access to preserved natural and recreational areas.

OUR GOALS:

1

Wellesley's natural assets are protected and enhanced to deliver the highest ecosystem services.

2

Nature-based solutions are prioritized to enhance the Town's resilience.



HOW WE'LL GET THERE

Actions that can better protect and manage our natural resources, while also enhancing our resilience, are particularly valuable to Wellesley's goals. The actions in the table below can support Wellesley's efforts to address climate change.

| Action ID | Action | GHG Reduction | Resilience Benefits (Community, Infrastructure, Ecosystems) | Cost (\$ = <10K, \$\$ = <100K, \$\$\$ = >100K) |
|--|--|---------------|---|--|
| NR1: Enhance and protect the existing tree canopy | | | | |
| NR1a | Develop a program to maintain and improve the tree canopy. | Direct | Community, Ecosystems | \$\$ |
| NR1b | Augment existing free tree distribution program to prioritize locations/communities vulnerable to extreme heat impacts and tree species adapted to heat and drought. | Direct | Community, Ecosystems | \$ |
| NR1c | Explore establishment of a Town tree nursery. | Indirect | — | \$\$ |
| NR1d | Strengthen the Tree Preservation Bylaw and community education about the Bylaw. | — | Ecosystems | \$ |
| NR2: Advance the smart and efficient use of water by all community members | | | | |
| NR2a | Identify and implement the most effective programs for residential, commercial, and institutional sector water conservation. | — | Ecosystems | \$ |
| NR2b | Regulate outdoor water usage. | — | Ecosystems | \$ |
| NR3: Enhance educational and engagement programs that promote and protect the benefits of Wellesley's natural resources | | | | |
| NR3a | Lead by example with municipal adoption of sustainable landscaping best practices and use of electric landscaping equipment. | Direct | — | \$\$ |
| NR3b | Provide educational programming for residents, businesses, and institutions to promote the protection of biodiversity and electrification of landscaping equipment. | Indirect | — | \$ |
| NR3c | Develop a professional landscaper database and encourage landscapers to participate in sustainable landscaping education programs. | — | Ecosystems | \$ |
| NR3d | Mobilize volunteers to support community agriculture. | — | Community | \$ |
| NR4: Minimize stormwater run-off | | | | |
| NR4a | Explore and pursue opportunities via bylaw changes and Town approval processes to minimize impervious surfaces throughout town. | — | Ecosystems, Infrastructure | \$ |
| NR4b | Seek Town Meeting approval for a stormwater utility in line with federal requirements. | — | Infrastructure | \$ |
| NR4c | Streamline the application and permitting process for removal of impervious surfaces and introduction of low impact development. | — | Ecosystems, Infrastructure | \$ |
| NR4d | Use nature-based solutions to minimize stormwater on municipal land. | — | Infrastructure | \$\$ |
| NR5: Prioritize the role of wetlands in enhancing Wellesley's resilience to climate change | | | | |
| NR5a | Identify opportunities to protect, create, expand, and connect wetlands. | Indirect | Ecosystems | \$\$ |
| NR5b | Include climate resilience in wetlands regulations. | — | Ecosystems | \$ |



PERFORMANCE INDICATORS

| Metric | Baseline (Year) | 2030 Target | 2050 Target |
|---|-----------------|-------------|-------------|
| Percent of town-wide impervious surfaces | 27% (2021) | 25% | 20% |
| Percent of town-wide tree canopy coverage | 53% (2016) | 55% | 60% |
| Percent of public tree planting sites occupied | New Metric | 100% | 100% |
| Number of free trees distributed per year | 150 | 300 | 500 |
| Percent of trees subject to the Tree Preservation Bylaw preserved | 65% | 75% | 90% |
| Number of landscape companies registered and trained in sustainable practices | New Metric | 100% | 100% |
| Residential water consumption (gallons per resident/day) | 75 | 65 | 65 |



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WASTE

MINIMIZING GREENHOUSE GAS EMISSIONS ASSOCIATED WITH WASTE

CONNECTION TO CLIMATE CHANGE

Waste generated in Wellesley is a product of our resourcefulness as much as our consumption habits. Re-directing material towards regenerative, or circular, flows, rather than sending it to landfill, lessens the demand for ever-more resource extraction. Waste handled by the Wellesley Recycling & Disposal Facility (RDF) is sent to landfill, where GHGs—namely, methane—are generated from the breakdown of organic matter, primarily food waste. Waste managed by private haulers is likely to go to a waste-to-energy facility, where waste is incinerated. Incineration, of plastics, in particular, is a major source of GHGs from the waste sector across Massachusetts.

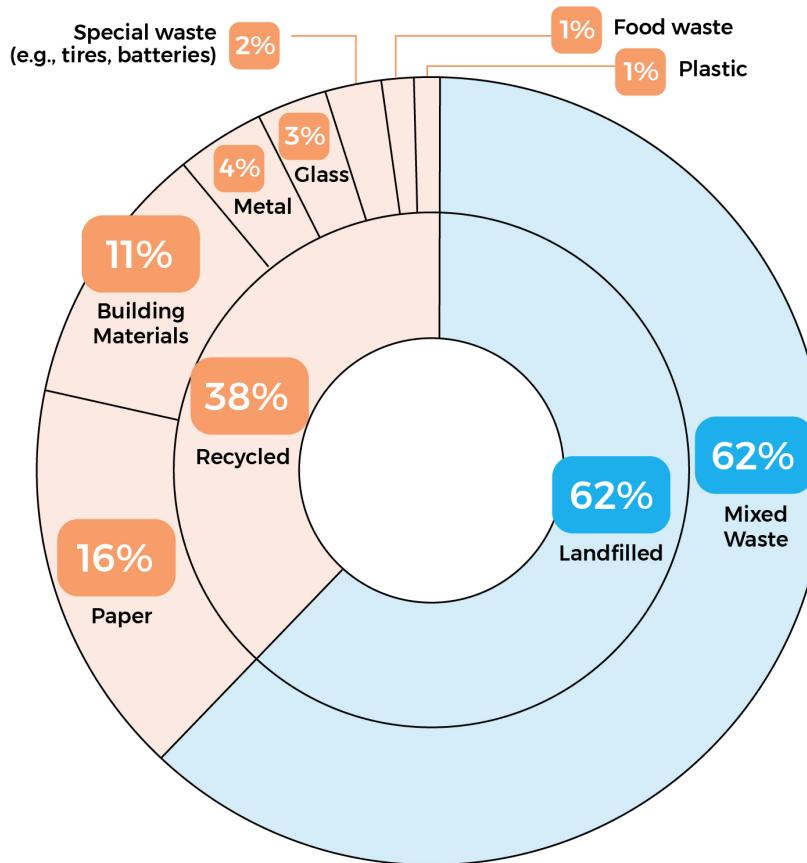
DIVERSION RATE

NOUN

The amount of material recycled in Wellesley as a proportion of total material collected at the RDF.

WHERE WE STAND

Solid waste generated in Wellesley makes up 6.1% of our total GHG emissions.²⁵ Residential, commercial, and municipal solid waste processed by the RDF contributes 13.5% of the 13,100 MTCO₂e emissions from solid waste, and the estimated 30% of households and 90% of businesses who use private haulers contribute the remaining 86.5% of these emissions. Assuming households and businesses serviced by private haulers generate the same amount of waste as their RDF-using counterparts, approximately 32,630 tons of solid waste per year goes to incineration, generating about 11,300 MTCO₂e. Increased use of the RDF would decrease emissions from solid waste and increase opportunities to influence consumption and disposal habits directly. The diversion rate for materials collected through the RDF was 38% as of FY20.



Materials Recycled or
Disposed of in Wellesley, 2020

Source: Town RDF Records



Wellesley's RDF is the primary disposal pathway for solid waste generated by about 70% of Wellesley residents and businesses.

ACHIEVEMENTS TO DATE

- ✓ 3R (Reduce, Reuse, Recycle) Working Group leads sustainable materials management efforts through WasteWise Wellesley
- ✓ Step Up! Campaign works to increase per household recycling rate
- ✓ Plastic bag ban adopted in 2016



© Allison Cross

Food rescue at Wellesley Public Schools



LEADING BY EXAMPLE

Food Waste to Energy

In 2018, Wellesley established the Food Waste Drop-Off Program at the Recycling & Disposal Facility. Users of the RDF can bring food waste to the drop-off site. Waste is then sent to an anaerobic digester, where it is converted to energy.²⁶

Food waste drop-off at the RDF.

WHERE WE'RE HEADED

A key strategy for reducing GHGs from solid waste is to minimize the amount of organic material that enters the landfill. A substantial amount of food waste, in particular, is generated within the community from schools, colleges and food service businesses. This food waste could form the base for a robust compost or energy recovery system, another strategy to reduce Wellesley's waste-driven GHGs.

OUR GOALS:

1

Wellesley implements programs that move the community to zero waste.

2

RDF utilization increases among residents, businesses, and institutions.



HOW WE'LL GET THERE

Based on an analysis of Wellesley's GHG reduction potential, minimizing waste and increasing diversion can reduce community-wide GHG emissions by approximately 13,400 MTCO₂e. The actions in the table below can support Wellesley's efforts to address climate change.

| Action ID | Action | GHG Reduction | Resilience Benefits (Community, Infrastructure, Ecosystems) | Cost (\$ = <10K, \$\$ = <100K, \$\$\$ = >100K) |
|---|--|---------------|---|--|
| W1: The municipality leads by example on waste minimization, recycling, and food waste diversion | | | | |
| W1a | Adopt and implement zero waste goals and guidelines for municipal buildings and activities. | Direct | — | \$\$ |
| W1b | Expand use of Recycle-mobile at community events. | — | — | \$\$ |
| W2: Restart and expand food waste diversion and food rescue programs | | | | |
| W2a | Restart and expand (post-COVID) the Food Rescue Network and food rescue and food waste diversion programs in Wellesley Public Schools. | Direct | — | \$\$ |
| W2b | Offer low-cost residential food waste diversion starter kits through the RDF. | Indirect | — | \$\$ |
| W2c | Explore the use of private haulers for residential compost pick-up. | Indirect | — | \$\$ |
| W2d | Establish a commercial food waste diversion program for high-volume producers. | Direct | — | \$\$ |
| W2e | Explore alternative food waste endpoints and innovative regional food waste diversion technologies. | Indirect | — | \$ |
| W3: Develop a culture that minimizes single-use products and packaging | | | | |
| W3a | Explore and implement programs and/or regulations to minimize use of disposable, single-use products throughout town. | — | — | \$ |
| W3b | Advocate for legislation or regulations that extend producer responsibility for product packaging. | — | — | \$ |
| W3c | Advocate for an expanded Bottle Bill. | — | — | \$ |
| W4: Educate the community about opportunities and benefits regarding a zero waste goal | | | | |
| W4a | Provide educational programs, resources, and incentives that encourage and enable waste minimization, food waste diversion, recycling, and upcycling throughout the community. | Indirect | — | \$\$ |
| W4b | Explore opportunities to promote commercial composting of compostable containers and utensils. | Indirect | — | \$\$ |
| W5: Promote the environmental and financial benefits of the RDF | | | | |
| W5a | Publicize how RDF utilization benefits both the environment and Town finances. Tailor messaging to specific audiences such as businesses and colleges, community members who do not hold an RDF permit, and new residents. | — | — | \$ |
| W6: Expand access to and services at the RDF | | | | |
| W6a | Simplify the RDF sticker process for renters and residents without computers or cars. | — | — | \$ |
| W6b | Expand hazardous waste disposal and electronic waste recycling at the RDF by increasing the number of collection days and becoming a permanent, regional household hazardous waste facility. | — | — | — |



PERFORMANCE INDICATORS

| Metric | Baseline (Year) | 2030 Target | 2050 Target |
|--|------------------|-------------|-------------|
| Landfill diversion rate | 38% (2020) | 50% | 100% |
| Annual tonnage of landfill-bound trash generated per RDF-using household (tons/yr) | 0.85 (2020) | 0.5 | 0 |
| Annual tonnage of food waste diverted (tons/yr) | 165 (2020) | 1,000 | 2,000 |
| Households using food waste diversion program | 300 | 5,000 | All |
| Number of schools engaged in cafeteria recycling and food waste diversion | 0 (due to COVID) | All | All |
| Number of municipal buildings engaged in recycling and food waste diversion | 0 | All | All |



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Endnotes

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