



TOWN OF BROOKLINE

Massachusetts

SELECT BOARD'S CLIMATE ACTION COMMITTEE

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Co-Chairs

SELECT BOARD'S CLIMATE ACTION COMMITTEE REPORT TO TOWN MEETING SPRING 2018

The Select Board's Climate Action Committee (SBCAC) reports annually to Town Meeting on its activities of the past year and its goals and initiatives for the upcoming year. In formulating its plans for future committee activities, the SBCAC welcomes input from Brookline residents and businesses. Please direct comments and ideas to Senior Planner, Maria Morelli, Department of Planning and Community Development, at mmorelli@brooklinema.gov or 617-730-2670.

I. INTRODUCTION

The Select Board's Climate Action Committee (SBCAC) was established in 2008 by the Select Board, in conjunction with a Resolution passed by Town Meeting that May (Appendix 1). The SBCAC has fifteen members: twelve representatives of various boards and commissions and three citizens appointed by the Select Board (Appendix 2). The SBCAC has been reporting to Town Meeting annually since November 2009. This year's report builds upon the content of previous years' reports, presenting a summary of the committee's activities over the past year and identifying new goals and priorities.

The SBCAC meets monthly, and organizes itself into working subcommittees on an as-needed basis, in response to evolving goals and projects.

In February 2015, the SBCAC proposed a revised committee charge to the Select Board to better reflect the committee's efforts to be proactive and encouraging of actions that reduce greenhouse gas emissions and enable the Town to adapt to the effects of climate change. The Select Board approved the new charge, which is as follows:

"The responsibilities of the committee shall include:

- To promote a goal of achieving 80% reduction in greenhouse gas (GHG) emissions by 2050 in alignment with the Massachusetts' Global Warming Solutions Act;
- To promote and implement resiliency measures to better prepare the Brookline community to adapt to climate change;
- To develop a comprehensive strategic plan that includes, but is not limited to, reducing greenhouse gas emissions and promoting sustainable practices for home, school and businesses;
- To advance Brookline as a leader in diverse sustainable practices that contribute to environmental health and positive social impact and economic development;

- To promote greater awareness about sustainability and the need to reduce GHG emissions through citizen choices;
- To recommend and, where appropriate, implement programs that reduce the net production of GHG emissions in Brookline;
- To measure, assess and/or monitor the efforts of the Town to reduce net GHG emissions;
- To serve as liaison between the Town and the public with regard to information and programs related to reducing net production of greenhouse gases;
- To report annually to the Annual Town Meeting and to report from time to time to the Select Board, the Town of Administrator, and the public; and,
- Such other responsibilities as may be determined from time to time by the Select Board.”

II. ACCOMPLISHMENTS AND INITIATIVES

1. Prepared Climate Action Plan 2018; Prioritizing Zero Emissions by 2050

The last Climate Action Plan (CAP) was prepared in 2012 and its action items updated in 2015. The 2015 revision advocated reducing greenhouse gas emissions by 80% over the baseline year by 2050, consistent with the state’s Global Warming Solutions Act. In December 2017 the SBCAC approved a new Climate Action Plan, prepared by staff, that reflects best practices employed by municipalities as well as recommended by Carbon Neutral Cities, Mass Power Forward, and the Metropolitan Area Planning Council. The new CAP’s objective is to reduce greenhouse gas emissions by 80% by 2050 over baseline year of 2008 and but now prioritizes Zero Emissions by 2050 planning.

The CAP 2018 spans five mitigation strategies (reducing climate-changing greenhouse gas emissions): Greater Energy Efficiency, Increased Renewable Energy, Improved Transportation Options, Reduced Waste, and Enhanced Tree Canopy. The sixth strategy, adaptation (preparing for extreme weather events due to climate impacts) addresses actions that impact public health, emergency management, infrastructure, the built environment, natural resources, and economics. The provisions include actions the Town can take to lead by example, Town initiatives to benefit the community, and actions that households, small businesses, and commercial properties can take to make a measurable impact.

Section IV of this report provides an overview of key action items across the six strategies.

The Town has also updated Climate Action webpages on its site www.brooklinema.gov to better communicate the CAP’s strategies, the Town’s progress, and resources available to the public. The Planning Department has a quick link on its landing page to Climate Action activities and the CAP.

2. Awarded \$233,000 Green Communities Grant

The Town attained “Green Community” status in 2011, which affirmed the Town’s commitment to sustainability. The Town secured a grant from the Massachusetts Department of Energy Resources for \$233,000 for nine projects and an additional \$38,000 in utility incentives:

- installed LED lights in two municipal buildings (the Coolidge Corner Library and the Putterham Library);
- retrofit 60 streetlights to LED in the Brookline Village neighborhood;
- Installed a dual port Level 2 charging station (EVSE) in three municipal lots: Centre Street East, Fuller Street, and Kent-Webster;
- upgraded kitchen exhausts systems at three public schools: Baker, Heath, and Brookline High School

With the exception of the three EVSE installations, the projects will save about \$32,000 in energy costs per year and reduce electricity consumption by over 120,000 kWh annually.

Green Community designation must be maintained by continuing to satisfy the Green Community requirements (Appendix 3), including ensuring the town’s fuel efficient vehicle purchasing policy is followed and that progress is made on the adopted Municipal Energy Reduction Plan. Annual reporting on the Town’s Green Community status to the state is therefore required and was submitted in December 2017. A report on the 2017 grant projects was submitted in January 2017. A table of the Town’s progress is on the last page of this report.

3. Launched Brookline Green Electricity Program

Working with a subcommittee, the Town contracted with energy broker Good Energy to submit a community choice aggregation plan to the Massachusetts Department of Public Utilities, which was approved in June 2017. The Town launched the program in late June 2017 and reports a 90% participation rate in the program. The program has three products with different amounts of additional renewable energy (0%, 25%, and 100%). Over 92% of the participating account holders are enrolled in the default 25% product, which helps the Town displace almost 34 million pounds of carbon dioxide annually.

The Town is a leader nationwide for providing a 25% default product. This leadership is having an impact locally. The Boston City Council invited staff to testify at a public hearing at which the Council voted unanimously to create legislation approving the launch of an aggregation-plus-renewables program. Boston University and Northeastern University graduate students in sustainability consulted with staff on their capstone projects, which involve advising Boston on its net zero carbon emissions planning.

The program is seeing a steady increase in participation in the 100% renewable option. In November 2017 Eversource raised its Jan-Jun 2018 supply rates for basic service, which

means that consumers can purchase Brookline Green's 100% product for about the same price as basic Eversource rates.

4. Participated on Greater Boston Climate Preparedness Taskforce

The SBCAC and Town staff also represented the Town at meetings of the Climate Preparedness Taskforce, a newly-formed coalition of municipalities in the Greater Boston region, which, with the assistance of MAPC, have agreed to work together to address the likely regional impacts of climate change. This taskforce is encouraging municipalities to develop individual climate vulnerability assessments.

5. Completed Brookline Vulnerability Assessment and Adaptation Plan; Awarded MVP Designation from State's Executive Office of Energy and Environmental Affairs

Through a partnership made possible by the American Geophysical Union, SBCAC members and Town staff worked with Northeastern University scientists to project extreme heat temperatures and the location of urban heat islands in 2030 and 2070 so that the Town can begin work on a mitigation and adaptation action plan. With the help of a \$20,000 State Community Compact grant, the Town worked with Metropolitan Area Planning Council (MAPC) to incorporate Northeastern's research into resources that will be used to educate the public and policy makers and expand the study to flooding and precipitation.

The final report and action items was submitted to the State's Executive Office of Energy and Environmental Affairs (EEA), which awarded the Town the Municipal Vulnerability Preparedness (MVP) designation. Such designation makes the Town eligible for generous state funding to implement climate preparedness projects.

6. Presented Interim Report and Recommendations on Net Zero Schools

In collaboration with Climate Action Brookline, an SBCAC subcommittee chaired by Werner Lohe was formed to explore best practices, financial models, and challenges associated with the construction of Net Zero Energy (NZE) buildings. The subcommittee has worked with the Building Department and Planning Department to guide future policies around net zero initiatives. The report presented to the Select Board, Building Commission, Advisory Council, and School Committee, highlighting key actions to better achieve net zero:

- establishing an integrated team involving decision-makers, architects, sustainability consultant, engineers
- setting high-performance energy goals prior to the onset of the design process
- selecting appropriate benchmarks (EUI, LEED, etc.)
- obtaining early buy-in from decision-makers to make the energy goal as important as the budget

- considering not only capital costs in preparing cost-benefit analyses, but also life-cycle costs using Net Present Value analysis
- using a whole building design process, including more energy modeling
- institutionalizing NZE principles in the Town's construction process by establishing a staff function with such responsibility or by some other mechanism
- evaluating new goals or standards, particularly the ideas of Fossil Fuel Free Buildings or Zero Emissions

These principles are already being applied to the Brookline High School expansion project. The 120,000 sf Cypress Street building achieved an EUI of 29.5 kBtu/sf at schematic design, which will save an estimated 37% in annual energy costs and an estimated 42.7% reduction in greenhouse gas emissions (over the baseline).

The subcommittee in collaboration with Building and Planning staff will prepare a second interim report to describe recommended process adjustments on net zero projects.

7. Installing Solar Photovoltaic Panels

In conjunction with the Deputy Town Administrator and Town Counsel's Office, staff, with SBCAC oversight, worked hard to finalize contracts with Blue Wave Capital for solar photovoltaic panel installations on several municipal properties with the goal of installing the panels in 2017. However, the State had issues with the developer's net metering agreement for Melrose (on which the Brookline agreements would be based), and that means that the Town is not likely to complete the Blue Wave contracts.

Staff will examine other opportunities for installation of PV arrays on Town buildings, however. Until the landfill capping project at the transfer station is completed, scoping out a solar canopy project at the transfer station is on hold.

8. Promoting Installation of Electric Vehicle Charging Stations

Following a vote to refer several EV Charging Warrant Articles at the Fall 2016 Town Meeting, the SBCAC formed a study committee, chaired by Linda Olson Pehlke, on how best to encourage the installation of Level 2 charging stations for electric vehicles. The subcommittee in collaboration with Planning Department and Transportation Division staff and citizen petitioner Scott Ananian submitted a report to Town Meeting Spring 2017 that presented several paths and the mechanisms that would be required to implement the options. The most impactful and least complicated option involved updating the Town's Transportation Access Plan guidelines.

In January 2018 the Department of Public Works updated its TAP guidelines as follows:

Projects at least 25,000 sf or 25 residential units are required to have either one parking space or 2% of parking spaces (whichever is greater) installed with electric

vehicle charging stations and that an additional 15% of parking spaces have conduit to accommodate the installation of electric vehicle charging stations in the future.

The provision was applied as a condition on a permitted Chapter 40B project on Babcock Street.

9. Hosting Public Hearings on Warrant Articles Related to Sustainability

The SBCAC members hosted public hearings and made recommendations to Town Meeting on warrant articles that address issues impacting sustainability, including an amendment to the erosion and sediment control bylaw to reduce indiscriminate clear cutting of trees on private property. Enhancing the Town's tree canopy is a key mitigation strategy of the Climate Action Plan 2018.

10. Updating Open Space Plan

Werner Lohe and Deborah Rivers have been serving on the Climate Change subcommittee for the Open Space Plan update during 2016-2017. The focus of this subcommittee has been to bring greater awareness of the potential impacts of climate change on the Town and the role that parks and open space can play in the mitigation of greenhouse gas emissions and adaptation to the effects of climate change. Specific topics include heat island effect, storm water management, and the effect of methane leaks on trees. It is anticipated that the final report will be issued in mid-2018, with a presentation to the public.

III. WORK PLAN

The SBCAC has identified the following tasks for the coming year:

1. Ask the Select Board to adopt the CAP 2018 and the recommendation to prioritize Zero Emissions by 2050 planning.
2. Prepare a roadmap for achieving Zero Emissions by 2050.
3. Formulate best practices to ensure that Net Zero measures are explored on future projects and to guide decision makers on future projects.
4. Communicate Climate Action Plan strategies and resources to constituency groups, especially public health impacts and energy savings opportunities.
5. Prepare an updated greenhouse gas inventory with projections and target reductions.
6. Prioritize climate preparedness actions identified in the Brookline Vulnerability Assessment and apply for state funding to implement key actions.
7. Prepare Green Building/Sustainable Site guidelines for the private sector.

8. Provide support for the Town's efforts to implement the Green Communities Act criteria and objectives, including the execution of the municipal energy reduction plan, and encouraging the pursuit of renewable energy generation alternatives.
9. Outreach to residents, small business owners, and commercial/multifamily property owners to share ways to improve energy efficiency and available resources and incentives.
10. Continue to support community groups, Town Boards and Commissions, and residents working on activities listed in the Climate Action Plan. The actions listed in the plan provide a road map and policy framework for the committee as it moves forward.
11. Assist as needed in the Town's efforts to install solar PV facilities on municipal buildings and properties.
12. Work with community and municipal partners to identify and implement climate change adaptation strategies. Pool resources with neighboring municipalities to build support for adaptation initiatives and develop best practices.
13. Continually promote the benefits of Brookline Green Electricity.
14. Pursue the installation of additional publicly accessible Level 2 charging stations for electric vehicles.

IV. EXCERPTS FROM CLIMATE ACTION PLAN (CAP) 2018

See next page

BROOKLINE CLIMATE ACTION PLAN 2018 Overview of Selected, High-Priority Mitigation Action Items (greatest GHG reductions) and Critical Adaptation Action Items (see CAP 2018 for full list)				
GOAL Commit to Zero Emissions by 2050 and prepare road map with five-year milestones in 2018-2019 Objective of 2018 CAP To reduce greenhouse gas emissions community-wide by 80% by 2050 over baseline year level Low-Carb(on) Diet Predicated on greater Energy Efficiency, increased Renewable Energy (decarbonization), progress toward Electricity-sourced systems				
STRATEGY 1	STRATEGY 2	STRATEGY 3	STRATEGY 4	STRATEGY 5
Greater Energy Efficiency	Increased Renewable Energy	Improved Transportation Options	Reduced Waste	Enhanced/Protected Tree Canopies and Open Space
GHG Reductions X MMT CO ₂ e %	GHG Reductions X MMT CO ₂ e %	GHG Reductions X MMT CO ₂ e %	GHG Reductions X MMT CO ₂ e %	GHG Reductions X MMT CO ₂ e %
Actions 1. Adopt Green Building Guidelines for projects 25,000+ sf 2. Retrofit all street lights and facility lighting to LED 3. Create MOU with utilities to increase incentives for commercial properties to lower GHG emissions 4. Adopt BERDO/BEUDO for 25,000+ sf bldgs.; launch pilot first 5. Accelerate repair of gas/methane leaks by X% 6. Study applying Passivhaus standards to affordable housing	Actions 1. Achieve fossil-fuel-free (FFF) or net zero new school projects 2. Launch Community Solar Program 3. Launch Air Source Heat Pump Bulk Purchasing program 4. Install X megawatts of solar PV at municipal facilities 5. Study pro/con of conversion to electric heat 6. Expand solar regulations in conjunction with tree preservation policy	Actions 1. Obtain State certification for Complete Streets Prioritization Plan 2. Update Transportation Access Plan Guidelines with more sustainability provisions; for eg. EVSE installs in major impact projects 3. Install 50+ EVSE ports in optimal locations accessed by public (eg. Beacon St) 4. Work with state, private partners to implement clean energy shuttle bus services in commercial districts (Brookline Village-Coolidge; Route 9-Boylston Street)	Actions 1. Create Zero Waste plan 2. Launch composting / organics diversion program 3. Install permeable pavement on Town-owned properties to reduce runoff	Actions 1. Amend erosion control management bylaw 2. Adopt Site Plan Review with Tree Survey/Review component for private properties 3. Create tree inventory to compare with heat island, flooding maps; identify opportunities to plant X more trees in vulnerable areas for cooling effect, detaining water, and sequestering carbon 4. Participate in urban-forest carbon registry to fund planting and stormwater projects
Mechanisms / Policy Docs educate / incentivize / mandate <ul style="list-style-type: none"> Amendments to Zoning Bylaw Green Communities grant funding (ongoing) Technical assistance to create MOU 	Mechanisms / Policy Docs educate / incentivize / mandate <ul style="list-style-type: none"> Amendments to Zoning Bylaw Green Communities grant funding (ongoing) 	Mechanisms / Policy Docs educate / incentivize / mandate <ul style="list-style-type: none"> DPW updated TAP Jan 2018 VW Settlement, Eversource Investment and grant ops Grant funding, possible public-private partnerships for shuttles 	Mechanisms / Policy Docs educate / incentivize / mandate <ul style="list-style-type: none"> Amendments to Town Bylaw Amendment to Zoning Bylaw Carbon credits registry can help fund planting, stormwater projects 	Mechanisms / Policy Docs educate / incentivize / mandate <ul style="list-style-type: none"> MVP grant funding FEMA grant funding
CRITERIA FOR EACH ACTION ITEM (not in chart above)				
1. Specific and self-explanatory				
2. Quantifiable Environmental Impact (in terms of GHG reductions)				
3. Schedule or Priority				
4. Estimated Cost To Implement				
5. Funding Source				
6. Mechanism for Approval/Implementation				
7. Policy Document Governing Enforcement, Monitoring				
8. Primary Department or Body Responsible for Launch, Implementation				
9. Staffing/Town operations implications identified				
10. Co-Benefits (cost savings, improved air quality, etc)				
SELECTED POLICY DOCUMENTS THAT MUST INTEGRATE THE CAP				
<ul style="list-style-type: none"> GHG inventory / Energy Reduction Plan: A foundation for the Climate Action Plan, used to make policy decisions; needs to be created Comprehensive Plan: Include the Climate Action Plan as a separate chapter in the CP Capital Improvements Program: Include policies for building new facilities (for eg. fossil-fuel-free new school projects) Strategic Asset Plan: For eg. include facilities that can double as cooling centers with back-up generation powered by solar Hazard Mitigation Plan: Update to reflect new Vulnerability Assessment / Adaptation action item Zoning Bylaw / General Bylaw: Green Building Guidelines; enhanced erosion/sediment bylaw Transportation Asset Plan Guidelines: Include sustainability provisions; for eg. electric-vehicle charging stations/conduit for future installs Open Space Plan: (and vice versa) 				
POLICY AUDIT: Current plans in progress or completed that make progress toward CAP objective; for eg Complete Streets Policy (May 2016)				
2019 / ZERO EMISSIONS PLANNING: Not shown above, but all strategic areas must develop plans to achieve zero emissions by 2050.				

V. APPENDICES

1. **Town Meeting Resolution** (Article 29, May 27, 2008, Annual Town Meeting)

VOTED: That the Select Board establish a committee, the purpose of which is to reduce the total emission of greenhouse gases by the Brookline community, including Town government. The name of the committee shall be the Select Board's Climate Action Committee. The responsibilities of the committee shall include:

1. To recommend programs that reduce the net production of greenhouse gases in Brookline, such as energy efficiency measures, green energy sources, and additional greenspace;
2. To monitor, measure, and assess efforts of the Town to reduce net greenhouse gas emissions;
3. To monitor promising relevant programs in other municipalities;
4. To monitor relevant technological developments;
5. To serve as liaison between the Town and the public with regard to information and programs related to reducing net production of greenhouse gases;
6. To report annually to the Annual Town Meeting and to report from time to time to the Select Board, the Town Administrator, and the public; and
7. Such other responsibilities as may be determined from time to time by the Select Board.

The committee shall consist of the following members appointed by the Select Board:

1. A member of the Select Board
2. The Chair of the Advisory Committee or her/his nominee
3. The Chair of the School Committee or her/his nominee
4. The Chair of the Transportation Board or her/his nominee
5. The Chair of the Conservation Commission, or her/his nominee
6. The Chair of the Planning Board, or her/his nominee
7. The Chair of the Building Commission, or her/his nominee
8. The Chair of the Advisory Council on Public Health, or her/his nominee
9. A Co-Chair of Climate Action Brookline, or their nominee
10. The President of the Brookline GreenSpace Alliance, or her/his nominee
11. A Co-Chair of the Brookline Neighborhood Alliance, or their nominee
12. The President of the Brookline Chamber of Commerce, or her/his nominee
13. Three members at large with special consideration given to people with the following skills:
 - Relevant scientific and/or academic expertise
 - Relevant engineering expertise
 - Knowledge of and/or experience with green businesses
 - Relevant public health expertise.

All members shall serve three-year terms, which may be renewed. Initial appointments shall be for terms of one, two, and three years so that terms will expire at staggered intervals. No member shall be disqualified because she or he is not a resident of the Town. The committee shall have two co-chairpersons, one of whom shall be the selectman member and one of whom shall be elected annually by the committee. The staffing of the committee shall be determined by the Select Board and the Town Administrator. The committee shall be established by November 30, 2008, and shall be evaluated by the Select Board before December 31, 2011 to determine whether it should be made permanent or dissolved.

2. SBCAC Membership

Daniel Bennett	Building Commission; Building Commissioner
Michael Berger	At-large
Ben Chang	School Committee
Nancy Heller, Co-chair	Select Board
David Lescohier	At-large
Alan Leviton	Climate Action Brookline
Werner Lohe, Co-Chair	Conservation Commission
Swannie Jett, PhD	Public Health Advisory Council; Health Commissioner
Linda Olson Pehlke	Brookline Neighborhood Alliance
Deborah Rivers	Brookline GreenSpace Alliance
Kathleen Scanlon	At-large
Ali Tali	Transportation Board
Don Weitzman	Advisory Committee
James Carr	Planning Board
David Gladstone	Chamber of Commerce
Staff:	
Maria Morelli	Senior Planner, Department of Planning and Community Development

3. Green Communities Act

To qualify as a Green Community, a municipality must meet all five of the following criteria:

- Provide for the as-of-right siting of renewable or alternative energy generating facilities, renewable or alternative energy research and development (R&D) facilities, or renewable or alternative energy manufacturing facilities in designated locations.
- Adopt an expedited application and permitting process under which these energy facilities may be sited within the municipality and which shall not exceed 1 year from the date of initial application to the date of final approval.

- Establish an energy use baseline inventory for municipal buildings, vehicles, street and traffic lighting, and put in place a comprehensive program designed to reduce this baseline by 20 percent within 5 years of initial participation in the program.
- Purchase only fuel-efficient vehicles for municipal use whenever such vehicles are commercially available and practicable.
- Require all new residential construction over 3,000 square feet and all new commercial and industrial real estate construction to minimize, to the extent feasible, the life-cycle cost of the facility by utilizing energy efficiency, water conservation and other renewable or alternative energy technologies.

4. Municipal Energy Reduction Plan

In June 2011, the Select Board adopted a Municipal Energy Reduction Plan (available on the Climate Action website) with the goal of reducing municipal energy use by 20 percent over a 5-year period. This goal is also a criterion for maintaining the Green Communities designation, which was awarded in 2011.

Although the Town has not met the 20% target (it is about halfway there), it continues to prioritize energy conservation upgrades and measures. One possible explanation for not meeting this target over five years is that at the time the Town was awarded Green Communities designation, it had already been prioritizing energy conservation measures, especially among Town facilities, which make up the majority of the municipality's energy consumption. Nonetheless, staff is collaborating to analyze this further.

Energy efficiency and conservation is a priority of the town, and funding has been dedicated to improving the energy efficiency of the town's buildings and facilities for several years, reflecting this commitment. The town's Capital Improvements Program (CIP) has regularly included funding for energy efficiency measures on an annual basis. The CIP FY 2018-2023 budgets \$1,400,000 for energy conservation and another \$325,000 for energy management system upgrades. The Town regularly partners with and participates in utility programs that subsidize energy efficiency improvements in order to leverage these funds.

The Building Department is using cutting-edge Variable Refrigerant Flow HVAC on the Driscoll School upgrade, which uses refrigerant to both heat and cool buildings. The balancing of heating and cooling demand may have an up to 50% energy savings over traditional HVAC systems. The project team for the Brookline High School project (Cypress Street building) was charged with meeting an ambitious EUI (energy use intensity) of between 25 and 30 kBtu/sf. At schematic design, the project achieved an EUI of 29.5, which saves an estimated 37% in energy costs and reduces 42.7% greenhouse gas emissions annually over the ASHRAE baseline.

Over 90% of the Town’s streetlights have been converted to LED. The Town would like to use a self-metering wireless system, which employs a dimming feature that steeply reduces energy consumption, a technology commonly used in municipalities outside of Massachusetts. Unfortunately, Eversource will not allow the use of self-metering systems. Staff will continue to pursue ways to overcome this obstacle, though it would take considerable political pressure involving the Department of Public Utilities to prevail.

The following table shows the Town’s progress from the Green Communities annual report submitted to DOER (December 2017). Staff will increase its collaboration to analyze energy use in comparison to the previous year and ways to decrease consumption.

Timeline of Annual Municipal Energy Use*										
	Baseline MMBtu	Year 1 MMBtu	Year 2 MMBtu	Year 3 MMBtu	Year 4 MMBtu	Year 5 MMBtu	Year 6 MMBtu	Year 7 MMBtu	Year 8 MMBtu	For Most Recent Year: Change vs. Baseline (%)
Note Fiscal or Calendar Year	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	
Buildings	125,679	123,717	136,131	115,204	131,580	144,849	141,898	118,116	113,117	10.0%
Open Space	2,488	2,529	2,632	2,794	2,591	2,686	2,511	2,582	2,681	-7.8%
Street & Traffic Lights	11,181	11,226	11,199	11,439	10,981	9,927	10,526	9,611	8,957	19.9%
Vehicles	17,063	19,818	21,764	19,354	19,606	19,459	19,265	4,178	12,310	27.9%
Water/Sewer	15	9	15	10	6	5	6	5	5	66.7%
Building Stock Change Adjustment									-11.18	2017 was debut year for this category
Regional School Prorated										2017 was debut year for this category
TOTAL ENERGY CONSUMPTION (NO Weather Normalization)	156,426	157,299	171,741	148,801	164,764	176,926	174,206	134,492	137,059	12.4%
TOTAL ENERGY CONSUMPTION (Weather-Normalized)										Not available

* Does not reflect third-party audit and corrections (scheduled for mid-May) at the item of report submittal to Town Meeting (late April).