

SELECTMEN'S CLIMATE ACTION COMMITTEE REPORT TO TOWN MEETING SPRING 2017

The Selectmen's Climate Action Committee (SCAC) 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 SCAC welcomes input from Brookline residents and businesses. Please direct comments and ideas to Senior Planner, Maria Morelli, Department of Planning & Community Development, at mmorelli@brooklinema.gov or 617-730-2670.

I. INTRODUCTION

The Selectmen's Climate Action Committee (SCAC) was established in 2008 by the Board of Selectmen, in conjunction with a Resolution passed by Town Meeting that May (Appendix 1). The SCAC has fifteen members: twelve representatives of various boards and commissions and three citizens appointed by the Selectmen (Appendix 2). The SCAC 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 SCAC meets monthly, and organizes itself into working subcommittees on an as-needed basis, in response to evolving goals and projects.

In February 2015, the SCAC proposed a revised committee charge to the Board of Selectmen to better reflect the committee's efforts to be proactive and encouraging of actions that reduce greenhouse gas emissions and enable to the Town to adapt to the effects of climate change. The Board of Selectmen 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 Board of Selectmen, the Town of Administrator, and the public; and,
- Such other responsibilities as may be determined from time to time by the Board of Selectmen.”

II. ACCOMPLISHMENTS

In April, Senior Planner Maria Morelli, AICP, assumed the responsibility of working with the Selectmen’s Climate Action Committee when Lara Curtis-Hayes, AICP, left the Town of Brookline after ten years of service to work as a consultant.

1. Implemented Climate Action Plan

The SCAC continued to refine and implement the Climate Action Plan, which sets a greenhouse gas reduction goal of 25% below 1990 levels by 2020, and 80% by 2050.

2. Awarded \$145,000 Green Communities Grant

The Town attained “Green Community” status in 2011, which affirmed the Town’s commitment to sustainability. The Department secured a grant from the Massachusetts Department of Energy Resources for \$145,000 for the installation of LED lights in several municipal buildings (Driscoll School, Eliot Recreation Center, and the Senior Center) and on street poles on the new Emerald Necklace Crossing.

Town staff submitted a final grant report to the Green Communities Division in February 2017 and an application for competitive grant funding was submitted in March 2017. 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 2016.

3. Completed Brookline Green Electricity Plan

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 for approval. The Town expects to roll out the plan in spring 2017 to purchase electricity on behalf of residents and businesses, pending the State’s approval of the plan. The program, Brookline Green Electricity, will not only offer competitive pricing but more options for consumers to purchase electricity from renewable resources.

4. Participated on Greater Boston Climate Preparedness Taskforce

The SCAC 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's First Vulnerability Assessment

Through a partnership made possible by the American Geophysical Union, SCAC 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 is working with Metropolitan Area Planning Council (MAPC) to incorporate Northeastern's research into resources that will be used to educate the public and policy makers. The second phase of the project, in 2017, will focus on precipitation and flooding.

6. Spearheaded Zero Energy Building Study for Ninth School

In collaboration with Climate Action Brookline, an SCAC subcommittee was formed to explore best practices, financial models, and challenges associated with Zero Energy Buildings (ZEB). The subcommittee has worked with the Building Department and Building Commission to guide future policies around net zero initiatives. In spring 2017 the subcommittee will participate in an energy charrette for the new elementary school, coordinated by environmental engineer and project manager, Ray Masak, of the Building Department to explore energy efficiencies and possible methods of energy generation for the project.

7. Installing Solar Photovoltaic Panels

In conjunction with the Deputy Town Administrator and Town Counsel's Office, staff, with SCAC oversight, is working 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.

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 SCAC formed a study committee to work with citizen petitioner Scott Ananian to make recommendations to Annual Town Meeting 2017 on how best to encourage the installation of Level 2 charging stations for electric vehicles.

9. Hosting Public Hearings on Warrant Articles Related to Sustainability

The SCAC members hosted public hearings and make recommendations to Town Meeting on warrant articles that address issues impacting sustainability. Recently these recommendations have dealt with, electric vehicle charging stations, minimum parking requirements, plastic bags, and tree conservation on private property.

10. Updating Open Space Plan

SCAC members have been serving on the Climate Change subcommittee for the Open Space Plan update during 2016. 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.

III. WORK PLAN

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

1. Continue to provide support to groups and residents working on activities listed in the Climate Action Plan, including community shared solar (CSS), bicycle sharing and complete streets, and adaptation. As implementation of the plan proceeds, refine greenhouse gas reduction estimates. The actions listed in the plan provide a road map and policy framework for the committee as it moves forward.
2. Assist as needed in the town's efforts to install solar PV facilities on municipal buildings and properties.
3. Lead and assist in developing community shared solar (CSS) opportunities in Brookline.
4. 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.
5. Collaborate with CAB on community education and engagement activities to promote lifestyle changes that lead to greenhouse gas reduction.
6. 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.
7. Complete Brookline Green Electricity and schedule community outreach sessions, as needed, during opt-out period.
8. Work with Northeastern University and MAPC on a Vulnerability Assessment for precipitation and flooding projections in 2030 and 2070. Schedule outreach sessions

- with Town officials and citizens to report findings on areas vulnerable to the impacts of extreme temperatures, urban heat islands, and precipitation and flooding. Begin work on an action plan to mitigate these impacts.
9. Participate in an energy charrette to explore Zero Energy Building measures for the ninth elementary school. Formulate best practices to ensure that Net Zero measures are explored on future projects and to guide decision makers on future projects.
 10. Obtain funding to prepare a best practices guide to encourage the installation of Level 2 charging stations for electric vehicles.
 11. Pursue the installation of additional publicly accessible Level 2 charging stations for electric vehicles.

IV. APPENDICES

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

VOTED: That the Selectmen 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 Selectmen'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 Board of Selectmen, the Town Administrator, and the public; and
7. Such other responsibilities as may be determined from time to time by the Board of Selectmen.

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

1. A member of the Board of Selectmen
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 Selectmen and the Town Administrator. The committee shall be established by November 30, 2008, and shall be evaluated by the Board of Selectmen before December 31, 2011 to determine whether it should be made permanent or dissolved.

2. SCAC Membership

Dan Bennett	Building Commission
Michael Berger	At-large
Ben Chang	School Committee
Nancy Heller, Co-chair	Board of Selectmen
David Lescohier	At-large
Alan Leviton	Climate Action Brookline
Werner Lohe, Co-Chair	Conservation Commission
Patricia Maher	Department of Public Health
Linda Pehlke	Brookline Neighborhood Alliance
Deborah Rivers	Brookline GreenSpace Alliance
Kathleen Scanlon	At-large
Ali Tali	Transportation Board
Don Weitzman	Advisory Committee
<i>Open</i>	Planning Board
<i>Open</i>	Chamber of Commerce
Maria Morelli, Staff	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 Board of Selectmen adopted a Municipal Energy Reduction Plan with the goal of reducing municipal energy use by 20 percent over a 5-year period. Below is an excerpt from the plan's Introduction and Summary, as well as tables showing the town's energy use baseline and the energy efficiency measures that had already been implemented at the time of the plan's adoption. The Municipal Energy Reduction Plan is available on the Climate Action Committee's website.

The Town of Brookline serves a population of approximately 57,107 residents, as measured by the 2000 U.S. Census. It is primarily a well-developed suburban residential community, with commercial hubs located along major transportation routes, such as Coolidge Corner, Brookline Village and Washington Square. The town manages 42 municipal buildings, 11 of which are school buildings. The town's municipal fleet includes approximately 276 vehicles. The town's public infrastructure includes approximately 4,085 streetlights (312 of which are ornamental), 354 traffic lights, and 182 park lights. The town's buildings are supplied electricity by NSTAR and heated with natural gas, although a majority of the buildings are powered by dual-fuel boilers, allowing them to be powered by heating oil if ever needed.

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, spending more than \$750,000 on energy conservation measures alone since 2004, with another \$1 million proposed as part of the Town's FY12-FY17 CIP. The town regularly partners with and participates in utility programs that subsidize energy efficiency improvements in order to leverage these funds. Therefore, several of the town's buildings and facilities are already extremely energy efficient.

A state audit in 2010 indicated that of the 17 town buildings selected by the Building Department for independent review because of their likelihood to benefit from energy efficiency measures, only three had estimated EPA rankings of 40 or below, and two of

those buildings are small and contribute only a fraction to the town’s total energy costs. Six buildings had estimated EPA rankings of 75 or higher, qualifying them for EPA Energy Star certification should the Town wish to pursue official recognition. Such results can be credited towards the Building Department’s efficient and diligent building management as well as the town’s continued financial commitment to improving the energy efficiency of its facilities.

Table 3. Summary of Municipal Energy Use Baseline FY2009

Category	Fiscal Year 2009 MMBtu	% of Total MMBtu Baseline Energy Consumption	MMBtu Savings Already Implemented	Projected Planned MMBtu Savings	Total MMBtu Savings	Savings as % of Total MMBtu Baseline Energy Consumption
Buildings*	135,328	70.2%	10,307	19,580	29,887	15.5%
Vehicles	46,402	24.1%	782	1,377	2,159	1.1%
Street/ Traffic/ Park Lights	10,989	5.7%	0	7,936	7,936	4.1%
TOTAL	192,718	100%	11,089	28,893	39,981	20.7%

Table 5. Energy Efficiency Measures Already Implemented

	Energy Conservation Measure	Estimated Annual Savings (kWh)	Estimated Annual Savings (therms)	Estimated Annual Savings (unleaded gallons)	Estimated Annual Savings (MMBtu)	Source for Estimated Savings
Town Hall	Complete renovation, incl. replacement windows, new HVAC systems, lighting, switch from heating oil to natural gas, etc. (completed FY09)	589,109	12,510	0	3,261	Actual bill savings
	Occupancy sensors for lighting (installed FY10)	6,552			22	AECOM (vendor for project)
Brookline High School	HVAC occupancy sensors (installed FY10)	17,690	10,200		1,080	Building Commissioner Estimate
	Demand management ventilation system for gym (installed FY10)	23,551			80	AECOM (vendor for project)
	Occupancy sensors for lighting (installed FY10)	18,275			62	AECOM (vendor for project)

	Energy Conservation Measure	Estimated Annual Savings (kWh)	Estimated Annual Savings (therms)	Estimated Annual Savings (unleaded gallons)	Estimated Annual Savings (MMBtu)	Source for Estimated Savings
Baker School	Replace bulbs and ballasts (installed FY10)	34,114			116	AECOM (vendor for project)
	Lighting (installed FY10)	57,268			195	
	HVAC occupancy sensors (installed FY10-11)		5780		578	Building Commissioner Estimate
Driscoll School	Replace bulbs and ballasts (installed FY10)	61,911			211	AECOM (vendor for project)
Heath School	HVAC occupancy sensors (installed FY11)		1,200		120	Building Commissioner Estimate
Lynch Recreation Center	Occupancy sensors for lights (installed FY10)	6,271			21	AECOM (vendor for project)
New Lincoln School	lighting upgrade (installed FY10)	47,806			163	AECOM (vendor for project)
	CO2 sensors/demand ventilation equipment (installed FY10)				0	
Old Lincoln	CO2 sensors/demand ventilation equipment (installed FY10)				0	AECOM (vendor for project)
	Pipe Insulation (installed FY10)		6,335		634	
	Install new high efficiency boiler		3,674		367	Building Commissioner Estimate (10% reduction in gas usage)
Devotion School	Occupancy sensors for lights (installed FY10)	97,416			332	AECOM (vendor for project)
Lawrence School	new lighting, fixtures, controls (installed FY10)	52,696.60			180	AECOM (vendor for project)
	Occupancy sensors for HVAC (installed FY11)		7,460		746	Building Commissioner Estimate
UAB/Physical Ed Building	Occupancy sensors for lights (installed FY11)	10,532			36	AECOM (vendor for project)

	Energy Conservation Measure	Estimated Annual Savings (kWh)	Estimated Annual Savings (therms)	Estimated Annual Savings (unleaded gallons)	Estimated Annual Savings (MMBtu)	Source for Estimated Savings
Soule Gym	new lighting/fixtures (installed FY10)	9,239			32	AECOM (vendor for project)
Senior Center	Install new high efficiency boiler		1,215		122	Building Commissioner Estimate
11 Newton Street DPW	new lighting/fixtures (installed FY10)	26,719			91	AECOM (vendor for project)
Take Home Vehicle Reductions	The number of vehicles driven home by town staff has been sharply reduced. (implemented FY10)			5,448	676	Fuel savings from mileage estimates
Town PCs PowerSave Policy	All town computers have been equipped with a Powersave feature that automatically shuts off computers after a period of idleness. (implemented FY10)	543,899			1,856	7.5% savings assumed (first 3 mos of project have yielded 10% savings)
	TOTAL SAVINGS	1,603,048	48,374	5,448	10,983	

5. Town of Brookline Greenhouse Gas Inventory Overview

History and Purpose

In May 2000, the Town of Brookline elected to participate in the Cities for Climate Protection Campaign, a program of the International Council of Local Environmental Initiatives (ICLEI). The Cities for Climate Protection Campaign follows a ‘Five Milestone’ process:

- Milestone One: Conduct a Greenhouse Gas Emissions Inventory and Report
- Milestone Two: Set a Greenhouse Gas Emissions Reduction Target
- Milestone Three: Develop a Local Climate Action Plan
- Milestone Four: Implement the Local Climate Action Plan
- Milestone Five: Monitor Emissions Reductions

The Town completed the first three milestones in the ICLEI program, publishing a greenhouse gas inventory in August 2000 and a Greenhouse Gas Emissions Reduction Target and Climate Action Plan in February 2002.

The August 2000 Greenhouse Gas Inventory reported emissions for calendar years 1995 and 1998. The following summary updates those initial findings to include information for calendar years 2003 and 2008. The goal of the Greenhouse Gas Inventory is to guide Brookline's process of writing and implementing a plan to reduce the emissions contributing to climate change.

Brookline's Community Greenhouse Gas Emissions Totaled 520,000 Tons CO₂ for CY2008

Brookline's community greenhouse gas emissions (Table 1 and Figure 1) have been steady at roughly 520,000 tons of CO₂ per year for, at least, the five year period from 2003 through 2008. Community emissions comprise the residential, commercial, and government sectors.

Brookline's 2008 community greenhouse gas emissions were about eight percent below the annual emissions rate of 560,000 tons previously reported for 1995 (August 2000 Greenhouse Gas Inventory Report). Adjusting for possible inconsistencies in electricity and natural gas usage and vehicle emissions described below, Brookline's 1995 greenhouse gas emissions may have been as low as 515,000 tons per year. In either case, Brookline has done better than the United States, as a whole. Greenhouse gas emissions increased about ten percent nationally from 1995 through 2007.

Greenhouse gas emissions from Brookline's government operations (Figure 2) for 2008 are relatively unchanged from those previously reported for 1995 (August 2000 Greenhouse Gas Inventory Report). Government operations are responsible for about three percent of Brookline's total community emissions.

Emissions from MBTA trolleys and buses were not included in this analysis. Emissions from these sources are likely about one percent of the reported total community emissions, based on the August 2000 Greenhouse Gas Inventory Report.

Brookline's Climate Action Plan Base Year Should be Changed from 1995 to 2003

The ICLEI Local Government Protocol (September 2008) states: "It is good practice to compile an emissions inventory for the earliest year for which complete and accurate data can be gathered. The base year for the UNFCCC and subsequent Kyoto Protocol is calendar year 1990. However, required data from 1990 is often prohibitively difficult or impossible to collect. Given that the priority for a greenhouse gas management program should be on practical results, it is more important that the base year be documented with enough detail to provide a good basis for local action planning than it is that all local governments produce an inventory with the same, stipulated base year."

Graphs of electricity usage (Figure 3) and natural gas usage (Figure 4) from 1995 through 2008 indicate anomalies in trends for both utilities. Values for 1995 and 1998 were reported in the August 2000 Greenhouse Gas Inventory report based on information provided by Boston Edison and Boston Gas. Usage information for 2002 through 2008 was obtained from NSTAR and National Grid. The significant drop in usage of gas and electricity from 1998 to 2002 is inconsistent with both population growth in Brookline and national trends in residential energy consumption during that period.

CO₂ emissions from vehicles traveling in Brookline may also have been overstated, based on a November 2009 report from the United States Environmental Protection Agency. Vehicle emission factors generated for 1995 by the ICLEI software (SCAC2009) were based on projections that predated the recent EPA report.

Due to the above inconsistencies, it is recommended that 2003 be used as the base year for Brookline’s Greenhouse Gas Reduction Target and Climate Action Plan.

Brookline’s Residential Carbon Footprint is Much Lower than the U.S. Average

In 2008, Brookline’s average residential carbon footprint was about 31,000 pounds of CO₂ per year. The average US household had a carbon footprint of 46,000 pounds of CO₂ per year, according to data from the US Energy Information Agency’s (EIA) 2005 Residential Energy Consumption Survey and a household vehicle use survey for 2009 published by the National Highway Transportation Survey (NHTS). In both cases, CO₂ emissions from personal air travel were not included.

Brookline’s average commercial carbon footprint was 162,000 pounds of CO₂ per year in 2008, excluding air travel.

**Table 1 Greenhouse Gas Emissions
CO₂e, Tons/Year**

	1995	2003	2008
Electricity	140,920	130,384	137,125
Natural Gas	120,369	104,223	126,643
Heating Oil	126,267	112,366	103,678
Cars and Trucks	151,315	152,194	128,992
Solid Waste	21,129	21,129	21,264
Total	559,999	520,295	517,702

**Table 2 2008 GHG Emissions By Sector
CO₂e, Tons/Year**

	Residential	Commercial	Municipal	Total
Electricity	75,688	54,106	7,331	137,125
Natural Gas	89,812	34,474	2,357	126,643

Heating Oil	81,070	19,980	2,629	103,679
Cars and Trucks				128,992
Solid Waste	14,176	6,998	90	21,264
Total				517,702

Table 3 Greenhouse Gas Sources

		1995	2003	2008
Electricity	kwh	311,702,637	288,397,640	293,386,860
Natural Gas	Therms	20,445,394	17,702,807	21,511,045
Heating Oil	Gallons	11,283,499	10,041,279	9,264,891
Cars and Trucks	Miles	232,094,937	242,992,126	210,333,390
Solid Waste	Tons	21,000	21,000	21,135

Table 4 Brookline's Residential Carbon Footprint - 2008

	CO ₂ e, Tons/Year
Electricity	75,688
Natural Gas	89,812
Heating Oil	81,071
Gasoline/Diesel	139,156
Solid Waste	14,176
Total	399,901
Number of Households	25,573
Pounds CO ₂ /Household/Year	31,275

Table 5 Brookline's Commercial Carbon Footprint - 2008

	CO ₂ e, Tons/Year
Electricity	52,536
Natural Gas	34,474
Heating Oil	19,980
Gasoline/Diesel	7,576
Solid Waste	6,998
	121,564
Number of Businesses	1,500
Pounds CO ₂ /Business/Year	162,086

Table 6 Brookline's Municipal Carbon Footprint - 2008

	CO ₂ e, Tons/Year
Electricity	8,901
Natural Gas	2,357
Heating Oil	2,629
Gasoline/Diesel	2,305
Solid Waste	90
	16,282





