TOWN OF BROOKLINE
Massachusetts

SELECT BOARD'S CLIMATE ACTION COMMITTEE

Nancy Heller, Select Board
Werner Lohe, Conservation Commission
Co-Chairs

Staff: Maria Morelli, Senior Planner, Planning Dept.

SELECT BOARD'S CLIMATE ACTION COMMITTEE REPORT TO TOWN MEETING SPRING 2019

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.

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; **[see "II. New Emissions Policy" below.]**
- 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."

For policy documents, reports, updates, please visit **www.brooklinema.gov/Climate-Action .**

II. NEW EMISSIONS POLICY: Zero Emissions by 2050

In 2017 the SBCAC accepted the 2018 Climate Action Plan (CAP) and its objective to prioritize planning to achieve zero emissions community-wide by 2050. In 2018 the Select Board voted unanimously to adopt the 2018 CAP and its zero-emissions by 2050 policy. The SBCAC continues to support the inclusion of the CAP in the next edition of the Town Comprehensive Plan, a key planning document.

The zero-emissions policy is predicated on three fundamental categories of action: (1) deep energy efficiency, (2) reliance on renewable energy, and (3) electrification of buildings and green transport. The 2050 milestone is consistent with the Paris Climate Agreement, which Town Meeting and the Select Board voted to sign the Town on as a Non-State Actor. In addition, in 2016 the Town joined other members of Metropolitan Mayors Coalition to commit that the region will achieve net zero/carbon-free status by 2050.

To accelerate implementing the zero-emissions policy, the SBCAC also voted unanimously to focus on electrification both Town- and community-wide, and is considering establishing subcommittees to do this work. Moreover, the SBCAC regards Town Meeting votes in 2018 to fund only all-electric (or fossil-fuel-free) designs for new construction of the Baldwin and Driscoll Schools and not to support a new natural gas connection at Fire Station 6 as watershed decisions, which will guide Town policy in the future.

CAP Strategies The CAP 2018 spans five mitigation strategies (reducing climate-changing greenhouse gas emissions):

1 - Greater Energy Efficiency

2 - Increased Renewable Energy

3 - Improved Transportation Options,

4 - Reduced Waste,

5 - 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.

CAP provisions include (a) actions the Town can take to lead by example, (b) Town initiatives to benefit the community, and (c) actions that households, small businesses, and commercial properties can take to make a measurable impact.

This Report to Town Meeting provides an overview of the significant accomplishments made in the last year to fulfill CAP priority actions.

Zero Emissions Town-wide by 2030 To phase in zero emissions milestones community-wide, the SBCAC urges the Town to set a goal of achieving zero emissions by 2030 municipality-wide, a mere 11 years away. The 2030 goal is not an arbitrary one: The most recent Intergovernmental Panel on Climate Change (IPCC) report indicates that we have 11 years to cut global climate pollution in half; failure to do so means that global warming will increase 1.5 degrees Celsius, which will have dire consequences on human life, ecosystems, and economies. The disasters taking place right now—crop failures, deteriorating infrastructure, unprecedented flooding, tragic wildfires—are not abstract scenarios but tangible impacts of climate change.

Achieving zero emissions impacts capital and operating budgets, as well as procurement decisions for municipal fleet and electric supply. Although the "zero by 2030" milestone is not an officially adopted policy, the Building Department staff has requested and received a proposal from a professional engineering firm to analyze conversion of existing building stock to all-electric by 2030. This analysis will help the Building Department assess impacts on capital, operating, maintenance, and utility budgets, and in particular, to better inform the Capital Improvement Program (CIP) budget FY2020-FY2025.

CAP Priorities for 2019 To implement the zero-emissions policy, Senior Planner Maria Morelli and SBCAC co-chairs prepared a list of 20 initiatives both currently in progress and recommended as priority actions for the 2019 calendar year (**Appendix 5**). This is an active document that the SBCAC will use to measure progress on a monthly basis.

III. ACCOMPLISHMENTS AND INITIATIVES

1. Beacon Street Green Transport Program: EV Charging and EV Car Share

CAP Reference: Strategy 3

The **Beacon Street Green Transport Program** integrates multiple green transport infrastructure projects along public transit to decrease reliance on fossil fuels. It serves as green transport model not only for its comprehensive plan but especially for the effort to coordinate infrastructure improvements for all modes in a holistic, complementary manner.

Beacon Street Green Transport Program 2019

(a) providing accessible and reliable **EV charging infrastructure** in the public way

(b) introducing **EV car share** to reduce traffic congestion and pollution

(c) conducting feasibility studies for **bike infrastructure on the median**

(d) implementing Complete Streets projects for **safer pedestrian access**

(e) piloting micro mobility solutions, such as **electric scooters**

This report provides a snapshot of the EV Charging and EV Car Share project developed by Senior Planner Maria Morelli and Transportation Administrator Todd Kirrane. This project builds on the comprehensive study the SBCAC's Electrical Vehicle Charging Study committee chaired by Linda Olson Pehlke conducted in 2017 with several dedicated community advocates for accessible EV charging (2017 Report:).

The Select Board will review project proposals over the course of a series of public meetings this spring for implementation in 2019, pending approval. The project would benefit from the Eversource Make Ready Infrastructure program, Electrify America Cycle 2 Investment, and a licensing agreement with Greenspot. The Town would not incur any costs to upgrade infrastructure, purchase and install equipment, operate and maintain the program, or pay for electricity consumed. Furthermore, a possible profit-share agreement (if approved) would provide the Town with additional revenue.

Note: *Please read the project overview is submitted as a separate report in the Spring 2019 Report to Town Meeting.*

A snapshot of the project follows. The project has was highlighted in a Electrify America's Cycle 2 Investment Plan distributed nationwide.

SNAPSHOT Beacon Street EV Charging / EV Car Share Project

10% of the 600 parking spaces on Beacon St. median to be upgraded for EV-charging in 2019

EV chargers would be installed in almost 40% of the 59 upgraded spaces in 2019 (pending approval):

- 8 sites upgraded along a two-mile stretch
- 10 spaces installed with Level 2 ports
- 10 spaces with EV car share and Level 2
- 3 spaces installed with DC fast ports

Possible profit-share revenue for the Town

Opportunity scale up program

Compatible with bridle path bike lane project

Utility infrastructure would be upgraded via Eversource $45M Make Ready Program

Capital, operating, maintenance, and electricity costs would be assumed by private partners via license

- DC fast chargers provided via Electric America Cycle 2 $500M Investment
- EV Car Share and Level 2 chargers provided by Greenspot

Chargers would use Greenlots non-proprietary network software

Electric supply would be provided through Town's Brookline Green Electricity program

2. Drafted Final Report and Recommendations on Net Zero Schools

CAP Reference: Strategies 1 and 2

In collaboration with Climate Action Brookline, the SBCAC's Net Zero Ninth School 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 subcommittee issued an Interim Report and Recommendations in September 2017, and a Final Report and Recommendations in March 2019. Key actions for achieving NZE buildings were presented to the Select Board, Building Commission, Advisory Council, and School Committee:

- 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 committee not only supports Fossil Fuel Free school buildings, but believes it is important to expand the concept to include all municipal building and substantial renovation projects (beyond school buildings). Therefore, the committee recommends the following high priority next steps:

1. Commitment to Fossil Fuel Free Buildings: The Town must commit to designing and constructing Fossil Fuel Free buildings on all new construction and major renovations of municipal facilities, to include (1) achieving high-energy-efficiency design and operation; (2) generation, consumption, and storage of renewable energy; and (3) achieving fossil-fuel-free operation by using all-electric systems. A written policy should be promulgated by the end of 2019 by either the Select Board or the Building Commission or such a policy could be pursued by bylaw change or resolution of Town Meeting.

2. Prepare a procedures manual for (1) achieving Fossil Fuel Free buildings using whole-building design principles and (2) continuing to assess the behavior of building occupants to ensure long-term low energy consumption. The document will be informed by this committee's research, the Building Department's experience, and also by lessons learned from the high school expansion project.

3. Propose changes to the Building Commission Bylaw: The current bylaw as of May 2013 should be updated to be consistent with procedures, particularly life-cycle cost analysis procedures, that ensure the exploration of and achievement of Fossil Fuel Free buildings, as well as continually improving energy-efficiency and cost-saving measures.

Note: *Please see the Net Zero Schools Subcommittee's final report in the Spring 2019 Report to Town Meeting.*

3. Municipal Rooftop Solar: Proposal To Generate 1,500,000 kWh Annually

CAP Reference: Strategy 2

Senior Planner Maria Morelli worked with Building Commissioner Daniel Bennett and Facilities Director Charles Simmons to obtain a proposed power purchase agreement from developer Solect Energy (as part of the Power Options solar procurement program) to install solar photovoltaic panels on eight municipals buildings: Coolidge Corner School, Runkle School, Heath School, Brookline High School Cypress Building and STEM addition, Kirrane Pool and Gym, and the Municipal Service Center. The Town hired Cadmus for technical analysis. The SBCAC and the Select Board are slated to review the proposals at public meetings in the spring of 2019. The project would benefit from State incentives

under the Solar Municipal Renewable Target (SMART) program, pending timely approval. If installed, the eight projects have the potential to generate approximately 1,500,000 kWh renewable energy annually.

4. Municipal Vulnerability Preparedness Designation and Grant Awarded

CAP Reference: Strategies 4, 5, 6

In 2018 the Town submitted its Climate Vulnerability Assessment to the Executive Office of Energy and Environmental Affairs (EEA) and in January 2018 received the State's Municipal Vulnerability Preparedness (MVP) designation, which makes the Town eligible for at least $400,000 in grant funds annually to implement resiliency plans.

Climate Resiliency Policy Audit and Recommendations Working DPW's Water & Sewer Director Frederick Russell, Senior Planner Maria Morelli submitted a grant proposal to engineering firm Weston & Sampson conduct an audit of all Town bylaws, regulations, and guidelines against best-in-class low-impact development practices for urban areas. The project for which EEA awarded a $75,000 grant will deliver the following in spring 2019:

- A database of Town policy documents assessed against LID principles and practices with recommendation for changes
- A sustainability component for a Site Plan Review bylaw
- Site Plan Review Checklist for schools, multifamily housing, residential sites
- "Sustainability Guidelines (Part 1) - Site Optimization": Guidelines are targeted to the general public and encourage Low Impact Development techniques for new construction and major renovation projects.

A separate project, "Sustainability Guidelines (Part 2): Whole Building Design / Zero Emissions Building" is slated for 2019.

The integrated working group includes the Building Commissioner Daniel Bennett, Environmental Engineer Jay Hersey, Conservation Administrator Thomas Brady, and Senior Planner Maria Morelli, who served as the project manager. The working group will feature a public process to involve the Conservation Commission, the Planning Board, and the SBCAC.

5. Brookline Green Electricity Program

CAP Reference: Strategy 2

Current Contract 2017-2020 The Town launched the program in late June 2017 and reports a participation rate of 90% of Brookline ratepayers. 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.

The program is seeing a steady increase in participation in the 100% renewable option. At the time this report was submitted, ratepayers could purchase the program's 100% All Green option for a little less than Eversource's Basic Service, which offer no more than the State's Required Portfolio Standard of 19%.

The SBCAC acknowledges the outreach efforts of Climate Action Brookline and Mothers Out Front, encouraging Opt Up to 100%. Nearly 800 ratepayers are enrolled in the 100% All Green (twice the number enrolled when the program launched in 2017.

Preparing for New Contract 2020 – 20xx Senior Planner Maria Morelli, Co-Chairs Werner Lohe and Nancy Heller, along with Town Meeting Member Thomas Vitolo serving as technical expert requested rigorous analysis of the renewable energy market and options to ensure that Town purchases under its next contract will add new renewable energy to the power grid. The analysis also served to assess different options for increasing the default percentage of the program default product when the contract is reissued.

6. Participated on Greater Boston Climate Preparedness Taskforce

CAP Reference: Strategy 6

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.

7. Updating the Open Space Plan

Werner Lohe and Deborah Rivers served 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 with a presentation to the public.

8. Transferring Best Practices

Recognized as a sustainability leader, the Town has several initiatives that have served as models for other communities and the private sector: high-performance building, expansion of electrical-vehicle charging infrastructure to support regional networks, community

electricity aggregation plus renewables, and climate resiliency policy for urban areas. In regard to community electricity aggregation, Senior Planner Maria Morelli testified before the Boston City Council was consulted by the City of Boston Environmental Department, Boston University's Institute for Sustainability, and the Conservation Law Foundation. In addition, the Executive Office of Energy and Environmental Affairs recognized the ground-breaking implications of the comprehensive climate resiliency policy audit and its transferability to other communities. Although the Town cannot mandate green building standards that exceed the thresholds of the State Building Code, staff has assisted major commercial property owners in preparing for zero emissions by 2050. These guidelines, to be formalized in 2019, have the potential to impact over 1,000,000 square feet of housing slated to come online in Brookline the next few years.

III. WORK PLAN: CAP PRIORITIES FOR 2019

To implement the zero-emissions policy, staff and SBCAC co-chairs prepared a list of 20 initiatives in progress and recommended as priority actions for 2019 calendar year (**Appendix 5**). This is an active document that the Co-Chairs will use to measure progress on a monthly basis. To accelerate implementing the zero-emissions policy, the SBCAC also voted unanimously to establish subcommittees focused on electrification both Town- and community-wide.

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. Obtain funding to 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 DC fast and 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 **Greater Energy Efficiency**	STRATEGY 2 **Increased Renewable Energy**	STRATEGY 3 **Improved Transportation Options**	STRATEGY 4 **Reduced Waste**	STRATEGY 5 **Enhanced/Protected Tree Canopies and Open Space**	STRATEGY 6 **Adaptation and Climate Preparedness**
GHG Reductions X MMT CO_2e | Y%	**GHG Reductions** X MMT CO_2e | Y%	**GHG Reductions** X MMT CO_2e | Y%	**GHG Reductions** X MMT CO_2e | Y%	**GHG Reductions** X MMT CO_2e | Y%	
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	**Actions** 1. Reach out to hospitals, nursing homes, and group homes to ensure they have Continuity of Operations (COOP) plans so they can perform essentials functions during emergencies. 2. Encourage use of microgrids, district energy, and battery storage to keep critical facilities functioning in the event of power loss. 3. Encourage depaving and use of permeable surfaces in areas vulnerable to flooding. 4. Expand communication infrastructure
Mechanisms / Policy Docs **educate / incentivize / mandate** ▪ Amendments to Zoning Bylaw ▪ Green Communities grant funding (ongoing) ▪ Technical assistance to create MOU	**Mechanisms / Policy Docs** **educate / incentivize / mandate** ▪ Amendments to Zoning Bylaw ▪ Green Communities grant funding (ongoing)	**Mechanisms / Policy Docs** **educate / incentivize / mandate** ▪ 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** ▪ Amendments to Town Bylaw ▪ Amendment to Zoning Bylaw ▪ Carbon credits registry can help fund planting, stormwater projects	**Mechanisms / Policy Docs** **educate / incentivize / mandate** ▪ Amendments to Town Bylaw ▪ Amendment to Zoning Bylaw ▪ Maintain tree inventory ▪ Tech assistance to measure canopy increase and lower landarea temp	**Mechanisms / Policy Docs** **educate / incentivize / mandate** ▪ MVP grant funding ▪ FEMA grant funding

CRITERIA FOR EACH ACTION ITEM (not in chart above)	**SELECTED POLICY DOCUMENTS THAT MUST INTEGRATE THE CAP**
1. Specific and self-explanatory	▪ **GHG Inventory / Energy Reduction Plan:** A foundation for the Climate Action Plan, used to make policy decisions; needs to be created
2. Quantifiable Environmental Impact (in terms of GHG reductions)	▪ **Comprehensive Plan:** Include the Climate Action Plan as a separate chapter in the CP
3. Schedule or Priority	▪ **Capital Improvements Program:** Include policies for building new facilities (for eg, fossil-fuel-free new school projects)
4. Estimated Cost To Implement	▪ **Strategic Asset Plan:** For eg, include facilities that can double as cooling centers with back-up generation powered by solar
5. Funding Source	▪ **Hazard Mitigation Plan:** Update to reflect new Vulnerability Assessment / Adaption action item
6. Mechanism for Approval/Implementation	▪ **Zoning Bylaw / General Bylaw:** Green Building Guidelines; enhanced erosion/sediment bylaw
7. Policy Document Governing Enforcement, Monitoring	▪ **Transportation Asset Plan Guidelines:** Include sustainability provisions; for eg, electric-vehicle charging stations/conduit for future installs
8. Primary Department or Body Responsible for Launch, Implementation	▪ **Open Space Plan:** (and vice versa)
9. Staffing/Town operations implications identified	**POLICY AUDIT:** Current plans in progress or completed that make progress toward CAP objective; for eg Complete Streets Policy (May 2016)
10. Co-Benefits (cost savings, improved air quality, etc)	**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
David Pearlman	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
(vacant)	Transportation Board
Don Weitzman	Advisory Committee
James Carr	Planning Board
David Gladstone	Chamber of Commerce

Staff:

Maria Morelli	Senior Planner, Climate Action / Land Use 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% reduction target (it is about halfway there), a Green Communities criterion, 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 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. The Town is also designing two all-electric schools, predicated on low EUIs that go considerably beyond requirements of the State Building Stretch Code.

All 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.

To reduce energy consumption, SBCAC and staff support the following policy and process changes:

- Centralize billing systems to better track and monitor consumption
- Use Energy Star Portfolio Manager for better tracking, monitoring, reporting (although DOER requires that staff use the proprietary Mass Energy Insight database to track energy use, PM data can be exported to MEI).
- Establish a more aggressive Energy Reduction Policy to lower EUIs of problem buildings in preparation of conversion to all-electric building systems (that is, go beyond the 20% reduction Green Communities criterion and Stretch Code)
- Promote a Town-wide Energy Conservation Policy to manage plug load and user behavior
- Collaborate with School PTO Green Teams on educational conservation projects.

5. CAP Priorities for 2019

See next page.

Maria Morelli, Senior Planner, Planning Dept. 1/28/2019

Climate Action 2019 Priorities

	CAP Objective: Prioritizing planning to achieve zero emissions x 2050						
	MUNICIPALITY PLANNING TO ACHIEVE ZERO EMISSIONS **Emissions Policy (In FY20 BUDGET BOOK)** ▪ **0 x 2030 Town-wide (v. Community-wide) – Jan. 2019** ▪ **50% energy reduction by 2030 over 2010 levels** [or percentage needed as determined by engineering consultant]						
	BIG MOVES TO IMPLEMENT	MECHANISMS TO IMPLEMENT	KEY TASKS	BUDGETING TASKS	KEY MILESTONES TM, Budgets	CAC Roles	Independent Technical
1	Setting 0 x 2030 emissions policy for municipality • All-Electric Building Systems • Municipal Load Contract • EV Fleet	(Budget Priority) Select Board FY20 Objectives for inclusion in budget book	Nancy Heller reviewed staff recommendation prior to submission to SB	See components below	Submitted Jan 10, 2019 to Mel. SB to approve Jan 29.	Nancy Heller + Staff	
2	New Construction and major renovations: ZEB/All-Electric	(Policy) Resolution to TM	Update select board and obtain approval prior to subsmission	Budget maintenance (in-house training or outside service)	February	Work with staff	Sustainability consultant part of design RFP
			Submit to TM		March		
3	Planning renovations/conversions to ZEB/All-Electric • Upgrades affect not only HVAC systems but especially elements to lower EUI (windows, etc) • Consultant to confirm annual EUI targets to best support all-electric systems	(Capital Budget) CIP FY2020-2025	Garcia Galuska Desousa to review 30 buildings and scope out costs to renovate for fossil-fuel free	Confirm Facilities budget ($25,000)	March/April	NA	Staff + DOER
			Submit renovation estimates to Melissa		May	NA	Sustainability engineers, MEP (to be RFP'd)
4	Building Commission Bylaw (+ analysis framework, procedures) WBD process must dovetail Building Comm. changes, resiliency policy audit	Staff to work with Building Commission on draft	In process		Submit to TM in September (TM F19)	Review drafts in advisory capacity (preferably with architects on subcommittee)	Informal review by architects, MEPs, DOER

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5	Brookline Green Electricity: Revisit default percentage Bid for new contract	Memo to Select Board from Chairs and Staff	In process		February 12 (latest)	Chairs, Maria Morelli, Kara Brewton, Tommy Vitolo.	Sustainable Energy Advantage (Sub to energy broker)
			RFP out		March		
			Bids accepted		April		
6	Municipal Load: Increase renewable energy component to X%.	Would avoid warrant article because markets are volatile and could adversely affect school budgets	Identify criteria for green purchases			New CAC subcommittee with energy experts	Staff is evaluating new energy broker + renewables consultant
			Explore different green power portfolio options	Impacts on school budgets, etc			
			Go out to bid		Possibly in 2020		
7	Solar Rooftop PV installs 8-9 muni buildings identified for 1,500,000 kWh renewable energy generated annually	Select Board to approve licenses, agreements	Pricing from developer under review by Cadmus; project timeline being prepared.	PPA more beneficial than ownership (plus nothing has been budgeted for ownership)	Installation in Summer 2019	One dedicated CAC meeting for review and questions (Feb 25)	Cadmus to review contracts, pricing, construx plans. Power Options procured developer
8	Fleet: Convert fleet to EV	Need a conversion plan	Review replacement schedules for buys Budget purchase, O+M forEVSE Budget for training to maintain vehicles	New purchases + rebates, EVSE purchases and O+M, vehicle maintenance training	Devise plan by November 1, 2019	Maria Morelli is working Mark Parece and Kevin Johnson to devise conversion plan + assoc. costs	NA
9	School Buses: Research for EV pilot (outside contract)	Pilot?	Research models Propose a pilot	New subcommittee to scope out	March: findings May: drafted pilot proposal	Started; new subcommittee should study	Subcommittee to identify other munis who have piloted
10	Energy Conservation Strategic + Operations Policies	Select Board Statement	Revisit or craft policy Specific temp set points List of actions	Involve financial department	May (coincide with all-electric conversion analysis)	Review but not study [ie, it's a math problem (annual redux) not a policy]	The Green Engineer via Brookline HS + other tech consultants hired in (3)
11	Lower EUI of problem buildings	Need a plan for reporting	Diagnostics (determine if Facilities has such)	May need separate RFP for diagnostics	May	Maria/Dan/Charlie will scope out as part of item (3)	Combine with item (3) if possible

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12	Climate Resiliency Policy Audit	Eventual amendments to Stormwater, Zoning Plus standalone checklists	Project is underway Expected to be completed by May 2019	$75,000 MVP Grant awarded	Estimated completion of recommendation May 2019. Pertinent Boards will be involved through winter and spring.	Cross-section of boards will be involved in review. Recommendations to TM need to be prioritized.	Engaged Weston & Sampson. Will dovetail with EEA, MAPC, Charles River Watershed Assoc.
13	Site Plan Review: Sustainability guidelines: **(Resiliency)** Site optimization; LID practices, erosion control	Amend zoning bylaw to X-ref standalone checklist. **Can apply checklist first**	Resiliency component will be drawn policy audit (12)	Covered under grant (12)	Schedule to be confirmed in Spring 2019	Review guidelines in spring	
14	Site Plan Review: Sustainability guidelines **(Mitigation/prep for 0 x 2050)**: Whole Building Design, plan for all-electric renewable energy, EVSE)	Amend zoning bylaw to X-ref standalone checklist **Can apply checklist first**	Benchmarks for EUI + annual energy/GHG reductions	Maria to id scope for tech consultant		Review guidelines in fall	
15	Draft regs for large ground-mounted solar (to prioritize rooftop, surface lots over open sp)	Amend zoning bylaw	Staff to modify DOER model; Not scheduled		Identify priority, especially risks	Review staff's draft	DOER has model bylaw
16	Beacon Street : EVSE	SB approval of proposals	Update SB SB to approve agreements		Eversource work in Spring 2019	Maria will provide updates to CAC	
	#16 Described: 10% of 600 parking spaces on two mile stretch of to be upgraded by Eversource. 23 of the 59 spaces to be installed with EVSE ports: 20 = Level 2 and 3 = DCfast 10 – EV Car Share. In partnership with Electrify America, Greenlots, Greenspot, Eversource Make-Ready						
17	Beacon Street: Bike path median	Feasibility study			See DPW feasibility RFP	MM needs update fr Todd	
18	Advocacy: Municipal official can vote on State Building Code adoption of IECC (carbon neutral x 2050)			About $250 to register. See MAPC	Register by March. Vote 11/27/2019.		