

RMLD Four-Town Local Energy Action Plan

Prepared for

The Reading Municipal Light Department
The Town of Reading
The Town of North Reading
The Town of Lynnfield
The Town of Wilmington

Prepared by

The Metropolitan Area Planning Council
as part of the Local Energy Action Program



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Executive Summary

In Massachusetts, municipally-owned utilities have been excluded from statewide renewable energy and efficiency mandates, barring their customers from participating in the program opportunities and funding streams made available to customers of the private utility companies. However, municipal utilities and the local governments they represent still place a value on reducing their energy consumption and greenhouse gas emissions, and often have the ability to design and offer more flexible programs tailored specifically to the local needs of their customers.

In January 2012, the Metropolitan Area Planning Council (MAPC) selected a joint application from the Reading Municipal Light Department (RMLD) and the four towns it serves – Reading, North Reading, and Wilmington – to participate in a two-year comprehensive energy planning and implementation exercise through the Local Energy Action Program (LEAP). The RMLD funds its energy efficiency programs by collecting an efficiency surcharge that is analogous to the system benefits charges (SBC) used to fund the state efficiency and renewable programs. The purpose of participating in LEAP was to determine how a collaborative planning effort between four towns and their municipal utility could be used to expand and strategically align RMLD program offerings with town priorities, and improve participation in these programs by customers in all towns.

The RMLD Four-Town Local Energy Action Plan summarizes the information gathered during the first year of LEAP, profiling energy use in all four communities and describing past achievements in the clean energy realm by the RMLD and the towns. It also outlines the overarching goals that are intended to guide energy program development and implementation over the next three to five years, with an eye towards building capacity during this time such that the plan can be revisited and revised based on the relative success of various efforts. In short, these goals are:

- **For the RMLD:** Increase and consolidate program offerings for **municipal, commercial** and **residential** customers; **build capacity for the RMLD** to support these program offerings; and expand the RMLD's **clean energy portfolio**;
- **For the towns:** Explore options to support **local clean energy policies** that meet or exceed the equivalent of the Commonwealth's Green Communities requirements; **build local capacity** to support sustained investment in the these efforts; and **align town efforts with RMLD program offerings**.

The plan also includes detailed information on specific strategies that can be undertaken in the near term to support progress towards achieving these goals. Some of these efforts, such as developing a consolidated residential program at the RMLD, are already underway at the time of writing of this plan. Other strategies will be implemented in collaboration with the RMLD and stakeholders in the four towns with support from MAPC as part of the second year of LEAP.

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Introduction

In January 2012, the towns of Reading, North Reading, Wilmington and Lynnfield submitted an application in collaboration with their municipally-owned utility, the Reading Municipal Light Department (RMLD), to participate in a two-year comprehensive energy planning initiative through the Metropolitan Area Planning Council (MAPC)'s Local Energy Action Program (LEAP). The four towns and RMLD were selected for LEAP through a competitive process due to the effective regional collaboration demonstrated in their application, and the unique opportunity they presented to design and implement clean energy and efficiency utility program offerings across multiple communities.

The following Energy Action Plan outlines how the RMLD and the four towns it serves – Reading, North Reading, Wilmington and Lynnfield – can achieve reductions in greenhouse gas emissions and energy cost savings through strategies to promote energy efficiency, demand response and clean energy generation community-wide. The goals and strategies outlined in the plan were developed through extensive conversations with RMLD and municipal staff as well as committee volunteers, and draw upon a base of knowledge and best practices developed by other stakeholders in the municipal clean energy and efficiency world, both in the Metropolitan Boston region and across the country.

HOW TO USE THIS PLAN

The purpose of this plan is to provide the RMLD and its four towns with a guiding document that reflects their mutual clean energy goals and describes immediately actionable strategies that support progress towards these goals. These strategies are intended to serve as a starting point for program development at the RMLD over the next three to five years, as well as outline efforts that each of the towns can undertake to optimize participation in and reinforce RMLD program offerings.

These efforts also include recommendations to increase the capacity of the towns to continue to plan for and implement clean energy initiatives into the future, leveraging their regional relationship with a shared local utility. To this end, this plan is meant to be treated as a “living document,” which the RMLD and the towns should periodically review and update so that it continues to support local priorities and reinforce new opportunities on an ongoing basis.

The plan is divided into three parts:

- **Part I – RMLD Energy Action Plan and Town Energy Profiles & Priorities.** This section provides an overview of energy use across the residential and commercial sectors within the four towns in the RMLD service area, as well as a history of past energy work and achievements at the RMLD and the towns. It also summarizes the general goals and recommendations for building upon these past efforts that were determined by the RMLD and the four towns as part of the LEAP planning process.

- **Part II – Energy Action Strategies.** This section is meant to serve as a more in-depth guide for strategies that could be implemented to advance progress towards the overarching energy goals in the near term. Some of these strategies will be further developed and implemented as part of the two-year assistance provided through LEAP, with support from the MAPC.
- **Part III – Appendices.** The appendices include background information used to develop the RMLD Four-Town Energy Action Plan.

RMLD Energy Action Plan

The Reading Municipal Light Department (RMLD) serves over 29,000 customers in the towns of Reading, North Reading, Lynnfield, and Wilmington. The RMLD has a history of leading by example in terms of its clean energy-related practices and programs it offers to its customers. With the support of municipal staff and stakeholders from the four communities, the RMLD has already implemented a wide variety of initiatives with great success.

RMLD Program Successes (as of January 2013)

Energy Efficiency & Demand Response	# Customers
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Energy Audit Requests	680
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Audits Completed – Oil Heat Customers	200
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Audits Completed – Natural Gas Customers	81
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Weatherization Projects	4
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Heat Pump Projects	2
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DR Water Heater Controls	245
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Time-of-Use Rate Subscribers	300
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Renewable Energy	# Customers
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Residential Solar Projects	15
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Commercial Solar Projects	2
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Green Choice Subscribers	230
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Note: Energy audit figures are calculated starting with the hire of a MassSave-qualified auditor in summer 2012.

ENERGY EFFICIENCY & DEMAND RESPONSE

Since 2005, the RMLD has been administering energy efficiency programs to provide residential appliance rebates to its customers. In 2008, the energy efficiency rebate program was introduced to the commercial sector. In order to consolidate its energy efficiency services, the RMLD began assessing an energy efficiency surcharge of \$0.0007 per kWh to all its customers starting in October 2008. The RMLD collects roughly \$550,000 annually through this surcharge. These funds are largely issued back to customers through RMLD rebate programs. The remainder subsidizes the RMLD's energy audit services and pays for RMLD staff time to develop and administer these programs.

Through conversations facilitated with the four communities and the RMLD as part of the Local Energy Action Program (LEAP) planning process, the discovery was made that the RMLD had been paying for energy audits in homes with natural gas

heat from National Grid. These homes are eligible to receive energy audit services through the state's MassSave program, but in the past had not been able to access these services due to administrative barriers (i.e., who to call for an energy audit). As a result of recommendations made as part of LEAP, the RMLD decided to include a requirement that prospective auditors be qualified MassSave Home Performance Contractors when soliciting energy auditor bids. The current MassSave qualified auditor, Next Step Living, connects customers served by National Grid to the services they are eligible for under MassSave, which to date has saved the RMLD \$16,200 in avoided audit costs.

In addition to encouraging customers to take actions to promote energy efficiency, the RMLD also closely tracks its peak usage and seeks to encourage customers to not only become more energy efficient, but also more effective in terms of when they use energy. Approximately 300 customers currently subscribe to the RMLD's Time-of-Use rate. In December 2011, the RMLD

worked with the Metropolitan Area Planning Council (MAPC) to apply for grant funding through the MA Department of Energy Resources (DOER)'s Municipal Utilities Energy Efficiency Programs Partner initiative to administer a residential demand response program. The program retrofits electric hot water heaters with Smart Grid controls that can be shut down to save demand during peak days. The RMLD received a \$50,000 grant from DOER to implement the program, and to date has installed 245 units with a total of around 1 MWh of demand response potential. The program results in net savings to the RMLD of around \$35,000 annually; approximately half of the revenue generated from the program is distributed back to customers as an on-bill credit as part of the RMLD's opt-in electric hot water heater rate.

RENEWABLE ENERGY

In September 2006, the RMLD introduced a voluntary "Green Choice" option to customers who can opt to purchase a certain portion of their monthly energy use from renewable sources. In 2012, the RMLD adopted a Renewable Portfolio Standard (RPS) with the target of achieving 15% renewable energy by 2015 and 25% renewable energy by 2025. They are already on track to achieve these goals, currently sourcing approximately 7% of their energy portfolio from New England hydro projects, and another 0.5% from solar.

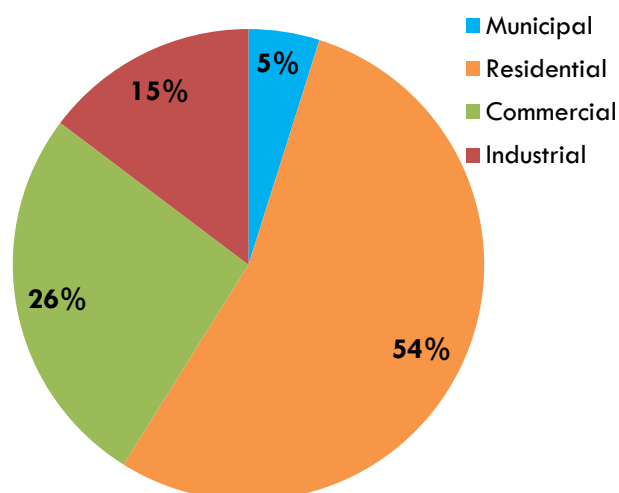
In order to advance the development of renewable energy generation projects on the local RMLD grid, the RMLD also has a net metering program in place for customers who install renewable or cogeneration projects at their homes or businesses. Currently, the program offers rebates on a per-watt basis, with an additional incentive for locally-sourced materials. As of February 2013, there were approximately 800 kW of solar installed in the RMLD service area, with an additional 2,200 kW in design. One residential cogeneration system and two residential geothermal systems have also been installed. In addition, the Town of Reading is looking into installing solar arrays on the Reading High School. Reading participated in a group procurement for solar energy management services issued by MAPC in fall 2012, and will be eligible to move forward with projects with the selected developer in early 2013.

ENERGY USE IN THE RMLD SERVICE AREA

Energy use in the four towns served by the RMLD is predominately residential (54%), followed closely by commercial and industrial (41%). Energy use in municipal government facilities constitutes approximately 5% of total energy use in the RMLD service area.

Since data on non-electric fuel consumption in the RMLD service area is difficult to obtain, this energy profile is based on an analysis of publically available data such as census data, labor statistics, and building energy survey data. It reflects only electricity, natural gas and

**Energy Consumption
by Sector – RMLD Service Area**



fuel oil consumption and does not include energy used for transportation.

This energy profile is meant to present a general overview of energy use by sector, and to highlight the predominant characteristics of users within each sector, to provide a starting point for discussions about effective program design, implementation and outreach to residents and businesses in the RMLD service area.

Since it is based on static data sources, energy use data in this profile should not be used as a basis for benchmarking the impacts of implementing specific programs. Instead, the towns and the RMLD will need to determine a strategy for analyzing and tracking data such as aggregate electricity use data from the RMLD, and possibly even aggregate natural gas use data from National Grid, to determine the energy and GHG reduction impacts of program implementation.

RMLD At-A-Glance

Community Overview

	Reading	North Reading	Lynnfield	Wilmington
Natural Gas Provider	National Grid	National Grid	National Grid	National Grid
Population	24,747	14,892	11,596	22,325
Area	9.9 square miles	13.5 square miles	10.5 square miles	17.2 square miles
Density	2,500/square miles	1,100/square miles	1,100/square miles	1,300/square miles

FY 2011 Four-Town Energy Profile

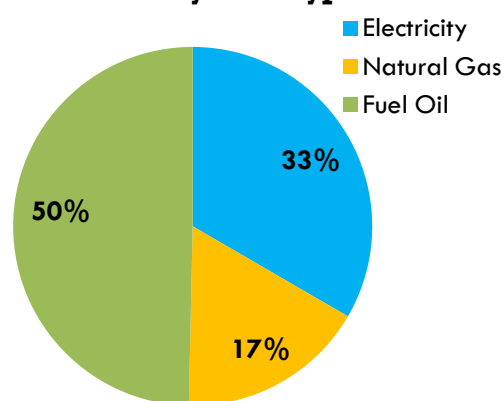
Energy Consumption	MMBTU	% of Total	MMBTU	% of Total	MMBTU	% of Total	MMBTU	% of Total
Municipal Sector	81 thousand	5%	44 thousand	5%	40 thousand	6%	110 thousand	4%
Residential Sector	1 million	67%	616 thousand	67%	512 thousand	76%	922 thousand	36%
Commercial Sector	422 thousand	28%	253 thousand	28%	118 thousand	18%	707 thousand	28%
Industrial Sector	0	0%	0	0%	0	0%	831 thousand	32%
Total Energy Consumption	1.5 million	100%	913 thousand	100%	670 thousand	100%	2.5 million	100%

Source: MassEnergyInsight; U.S. Census, 2010; Bureau of Labor Standards Economic Survey, 2010; Energy Information Administration Residential Energy Consumption Survey, 2009; Energy Information Administration Commercial Buildings Energy Consumption Survey, 2005

RESIDENTIAL SECTOR

The four towns' distribution of population by race and ethnicity is fairly similar, with a predominantly white population and slightly smaller black and Asian populations than the state average. The towns' population is similar to the state average, with a higher percentage of middle-aged adults in their 40s and 50s. The four towns' average median household income (\$101,496) is about 1.6 times the state median income (\$62,859).

Residential Greenhouse Gas Emissions by Fuel Types



84% of the housing units in the RMLD service area are owner-occupied and the remaining 16% are renter-occupied units. The four towns have a large single-family, detached, housing stock (82% of total occupied housing stock). 60% of the homes in the RMLD service area heat with fuel oil—twice as many as the statewide average—with an additional 37% of homes heating with natural gas. The remaining 3% have electric heat or use another heating fuel such as cordwood. By fuel type, fuel oil use makes up the largest part of the residential sector’s greenhouse gas emissions, followed by electricity and then natural gas.

RMLD Residential Sector At-A-Glance

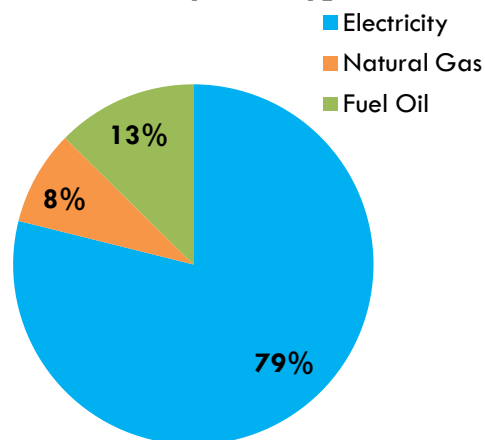
Community Overview					
	Reading	North Reading	Lynnfield	Wilmington	Four-Town
Median Household Income	\$99,131	\$104,069	\$101,921	\$100,861	\$101,496
Total # Housing Units	9,232	5,308	4,318	7,405	26,263
Owner-Occupied Units	78%	85%	89%	88%	84%
Renter-Occupied Units	22%	15%	11%	12%	16%
Units that Heat with Natural Gas	36%	47%	43%	29%	37%
Units that Heat with Heating Oil	61%	51%	53%	69%	60%
Four-Town Energy Profile					
Single-Family, Detached	75%	81%	88%	87%	82%
Single-Family, Attached	3%	4%	3%	3%	3%
Multi-Family, 2-4 Units	7%	5%	5%	3%	5%
Multi-Family, 5+ Units	15%	10%	4%	7%	10%

Source: US Census 2010

COMMERCIAL AND INDUSTRIAL (C&I) SECTORS

The commercial and industrial sectors in the four towns consist of 2,353 business establishments. The majority of these establishments are office buildings, followed by buildings classified as service industry establishments. The area also has a relatively large food sales sector. The RMLD service area has a small industrial sector with only 66 industrial establishments in Wilmington. By fuel type, electricity use makes up the largest part of the commercial sector’s greenhouse gas emissions followed by fuel oil, then natural gas.

Commercial Greenhouse Gas Emissions by Fuel Types



RMLD Commercial & Industrial Sector At-A-Glance

Community Overview

	Reading	North Reading	Lynnfield	Wilmington	Four-Town
Average Weekly Wage	\$725	\$1,022	\$826	\$1,322	\$974
Total Employment	6,486	6,742	5,676	18,419	37,323
Total Establishments	567	519	402	865	2,353

Four-Town Commercial Profile – Number of Business Establishments

Food Sales	16	10	6	13	45
Food Service	41	24	12	47	124
Outpatient	32	19	17	29	97
Lodging	9	0	0	4	13
Retail (non-mall)	19	21	4	38	82
Enclosed and Strip Malls	10	4	0	6	20
Office	156	167	140	213	676
Public Assembly	8	6	5	11	30
Religious Worship	0	0	7	5	12
Service	54	47	8	73	182
Warehouse and Storage	0	21	4	88	113
Other	0	4	0	4	8

Four-Town Industrial Profile – Number of Industrial Establishments

Printing and Related Support	0	0	0	11	11
Chemicals	0	0	0	13	13
Machinery	0	0	0	21	21
Computer and Electronic Products	0	0	0	41	41
Electrical Equipments	0	0	0	4	4

Source: Bureau of Labor Standards Economic Survey, 2010

GOALS FOR ENERGY ACTION

The goals for local energy action identified for the RMLD and the four towns as part of the Local Energy Action Program (LEAP) focus primarily on expanding program offerings through the RMLD that support clean energy efforts (including energy efficiency and demand resources) communitywide, and building capacity and adopting policies at the local level to grow participation in these programs.

The main goals recommended to the RMLD as part of LEAP are as follows:

1. Expand and consolidate program offerings for **municipal** customers;
2. Expand and consolidate program offerings for **commercial** customers;
3. Expand and consolidate program offerings for **residential** customers;
4. Increase RMLD's **clean energy portfolio**, including energy efficiency resources that help reduce the RMLD's demand for energy, particularly during peak demand periods;
5. **Identify strategies to build capacity** to support the effective implementation of program offerings across the board.

These goals, and suggested action items, are intended to be used as a starting point for future RMLD decision-making about clean energy program development. The following tables include proposed key implementers for the action items, and indicate where more detailed information on implementation can be found (if included as an Energy Action Strategy in Part II of this plan).

Recommendation	Proposed Goal/Strategy	Suggested Action Items	Suggested Key Implementers	More Info
1. Increase RMLD's clean energy portfolio	1.1 15% of RMLD energy portfolio comes from renewable energy and/or distributed generation sources by 2015 and 25% by 2025	- Adopt a Clean Energy Performance standard that requires review of and favors contracts with suppliers with low- or no-carbon generation sources. - Conduct a feasibility study for distributed generation (DG), identify and map locations that would be ideal to support solar or other renewable/alternative energy projects based on current RMLD grid and town priorities - Assess feasibility of and develop renewable generation assets (e.g. ground-mounted solar, organics-to-energy anaerobic digesters) - Develop alternative generation assets (e.g. CHP)	RMLD Board of Commissioners; Energy Services Division; Reading CAC	
	1.2 Maintain a total peak demand (kW) equal or less than projected ISO-NE growth statistics	- Grow demand response and time-of-use programs for all customers - Assess feasibility of and develop peak-shaving and peak-shifting assets (e.g., battery storage systems)	RMLD Energy Services Division	
2. Expand and consolidate program offerings for municipal customers	2.1 Deliver monthly energy reports	- Develop template for monthly energy report (based on data tracked in MassEnergyInsight) - Meet with designated school and facilities staff to review month-to-month changes and identify opportunities for improvements in capital upgrades and operations	RMLD Commercial Account Manager; Town School Departments and Facilities staff	<i>Monthly Energy Report Development Guide, p. 26</i>
	2.2 Reduce municipal building energy use 10% per year until 2005 levels are achieved	- Work with Towns to develop or update municipal Energy Reduction Plans: - Conduct ASHRAE Level II energy audits on facilities that have not previously been audited, including energy modeling and financial analysis of proposed energy conservation measures (ECMs) - Determine and budget cost and timeframe to accomplish proposed ECMS. - Implement low and no cost operational improvements that will immediately enhance building performance - Make recommendations for capital improvements/longer payback upgrades	RMLD Commercial Account Manager; Town School Departments and Facilities staff	
	2.3 Benchmark and track municipal energy use	- Work with Towns to enroll municipal electric, natural gas, heating oil and vehicle fuel accounts in the state's MassEnergyInsight tool; - Work with MassEnergyInsight's vendor, Peregrine Energy Group, to keep electric account data up-to-date and monitor and compare building energy use month-to-month	RMLD Commercial Account Manager; Town School Departments and Facilities staff	
	2.4 Reduce energy use in other municipal facilities	- Collaborate with Water Department to implement ECMs in water infrastructure; - Collaborate with Towns to explore a new program structure and establish an LED streetlight rate that would allow for efficient streetlight upgrades	RMLD Energy Services Division; Town Public Works; Town Committees	
	2.5 Source 1% of building energy use from on-site generation	- Assess municipal building stock for solar PV potential - Participate in regional qualifications-based procurements for solar developer services - Aggregate potential municipal PV projects for development through a third-party	RMLD Energy Services Division; Town Public Works and Facilities Staff; Town Committees	

		model in which RMLD purchases power Explore options to host community shared solar (CSS) projects, in which residents and businesses can invest		
	2.6 Develop municipal demand response program	Reduce costs for towns and RMLD through demand response programs	RMLD Energy Services Division	
3. Expand and consolidate program offerings for residential customers	3.1 Develop comprehensive residential outreach program	- Deliver consolidated information and technical assistance to its customers on opportunities to further energy efficiency or renewable energy projects (incentives, MassSave eligibility, etc) - Create specific marketing and outreach strategy (social media, events, etc) - Create an explicit strategy for assisting customers with oil heat - Create an explicit strategy for identifying and addressing hard-to-reach or underserved populations	MAPC LEAP staff; RMLD Energy Services Division; RMLD auditor and/or energy vendors under contract; Reading CAC; Town staff and committees	RMLD Residential Program, p. 40
	3.2 Expand residential efficiency program offerings	- Help eligible customers access MassSave incentives - Expand residential audit program to include weatherization - Achieve MassSave equivalence and better for RMLD programs - Explore options for promoting and subsidizing new technologies that help customers that heat with oil to access efficiency, i.e. (electric) air-source heat pumps, heat pump water heaters, tank-less water heaters, oil-to-gas conversions, etc. - Grow demand response program offerings (including electric water heater controls, education around the Time-of-Use rate)		Residential Demand Response Program, p. 43
	3.3 Expand residential solar program offerings	- Explore replication of the Solarize Mass model, in which RMLD or an aggregation of the Towns procures and prequalifies vendor to provide 3rd-party PPAs to residents with towns helping to conduct outreach and drive enrollment - Explore Solar Thermal incentive program - Explore options to allow customers to invest in community shared solar (CSS) projects		Community Solar & Net-Metering, p. 45
4. Expand and consolidate program offerings for commercial customers	4.1 Establish Green Business Program Requirements	- Develop “Green Business Program” requirements that delivers consolidated information and technical assistance to customers on opportunities to further energy efficiency or renewable energy projects (incentives, rebates, etc), and establishes criteria for participation in program and/or certification/awards; - Could include: Weatherization, solar, EnergyStar campaign, etc - RMLD works with Reading-North Reading Chamber of Commerce to promote this program to the Chamber’s members.	Reading CAC, Reading-North Reading Chamber of Commerce, RMLD Energy Services Division, Town staff	Local Green Business Program, p. 48
	4.2 Expand solar offerings & Create Small Business Solar Program	- Explore replication of the Solarize Mass model, in which RMLD or an aggregation of the Towns procures and prequalifies vendor to provide 3rd-party PPAs to small businesses - Explore solar thermal incentives/rebates	RMLD Energy Services Division; Commercial Account Manager	Community Solar & Net-Metering, p. 45

		Explore options to allow customers to invest in community shared solar (CSS) projects		
5. Identify Strategies to Build Capacity	5.1 Assign Energy Action Responsibilities	- Assign responsibilities for developing and implementing recommendations #2-4 to RMLD staff, or identify external implementers - Identify internal RMLD staff person to serve on a long-term inter-municipal working group for the implementation of the Local Energy Action Program	RMLD Board of Commissioners	
	5.2 Explore Opportunities for Regionalization through the RMLD	Assess need at the Towns and at the RMLD for services such as program outreach and administration, pursuit of grant opportunities and new program development and identify opportunities to hire or contract for shared services on behalf of all four Towns	RMLD Board of Commissioners, Reading CAC	

Town Energy Profiles & Priorities

Even though energy use in municipal facilities accounts for only about 5% of the total energy use in the RMLD service territory, municipal energy use is important because it is directly within the control of the towns to affect. It is also possible to obtain consumption data across fuel types, since the towns pay these bills directly. In order to accurately and regularly track and benchmark energy use in municipal facilities, the RMLD and MAPC have been working together to establish a standard monthly energy reporting system. The purpose of this is to institutionalize the process of reviewing energy use patterns in each town across municipal facilities, in order to identify areas of opportunity for improving building performance and energy efficiency.

Once the reporting system is established, the towns will be able to develop detailed and accurate municipal energy baselines across fuel types and begin to monitor energy use and effectively benchmark savings.

Benchmarking in MassEnergyInsight (MEI)

All four towns currently have accounts in the MassEnergyInsight (MEI) tool that can be used to track municipal energy use.¹ MEI monitors energy use across fuel types by account numbers, and is an effective tool for generating energy data analysis and energy reports. The following table shows a summary of data currently uploaded to the MEI tool in each town's account:

Community	Electricity Accounts	Natural Gas Accounts	Other Accounts	Missing Information
Reading	• 15 building accounts • 2 facility accounts	• 15 building accounts • 3 unassigned accounts	• 22 water accounts	• Vehicle fuel • Street and traffic lighting • Open space • Water/sewage
North Reading	• 15 building accounts • 4 facility accounts	• 16 building accounts • 1 facility account • 2 unassigned accounts • 5 competitive supply accounts		• Vehicle fuel • Street and traffic lighting • Open space
Lynnfield	• 7 building accounts • 1 facility account	• 13 building accounts • 2 facility accounts • 1 unassigned account	• 1 diesel account	• Street and traffic lighting • Open space
Wilmington	• 15 building accounts • 3 facility accounts	• 3 unassigned accounts	• 15 fuel oil accounts	• Vehicle fuel • Street and traffic lighting • Open space

¹ MassEnergyInsight (MEI) is a free, web-based tool developed by Peregrine Energy Group and made available to cities and towns in Massachusetts through the Department of Energy Resources (DOER) as part of the Massachusetts Green Communities Program. Electric and natural gas usage for the municipal accounts is pre-loaded by RMLD and National Grid into the MEI program. Other fuel use data (such as heating oil and vehicle fuel) will need to be manually entered and kept up-to-date by municipal staff.

As noted in the summary chart, at present the four towns' MEI accounts are primarily populated with electricity and natural gas account data. In order to fully utilize the MEI tool for identifying energy saving and greenhouse gas emission reduction opportunities, the towns will need to fill in the remaining data gaps for non-building facilities, such as street and traffic lighting, open space, water/sewage facilities, and vehicles, as well as ensure that information for fuel oil accounts is kept up-to-date. This information will better inform the towns on making decisions concerning facility efficiency improvement projects, as well as monitor achievements in non-building energy savings and emission reductions.

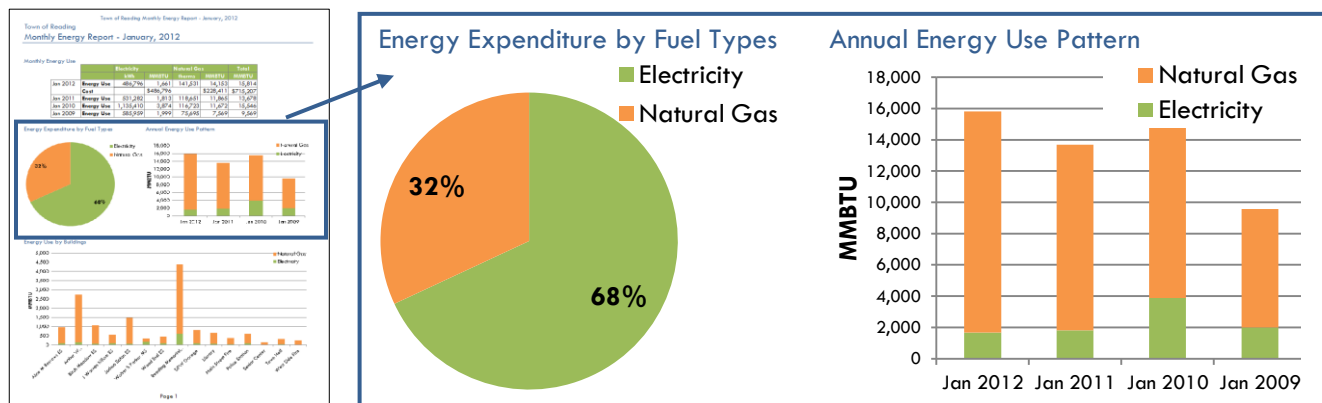
Utilizing Information from the Monthly Energy Report

The monthly energy report highlights outstanding energy use trends and patterns and points out areas where energy reduction measures are most needed. The following “Monthly Energy Report Summary” chart outlines the information available in a report.

Monthly Energy Report Summary

Report Section	Description	How to Use
Overall Municipal Energy Report		
Energy Expenditure by Fuel Types	A pie chart demonstrating the distribution of energy expenditure by fuel types.	Pursue energy efficiency improvement projects targeting specific fuel use with high monthly energy cost.
Annual Energy Use Pattern	A bar chart comparing the overall energy consumption for the given month with previous records.	Monitor overall energy reduction progress and identify abnormal energy use patterns, such as outstanding changes in energy consumption or distribution of energy consumption by fuel types.
Energy Use by Buildings	A bar chart demonstrating the energy consumption by buildings by fuel types.	Highlight high energy users with significant energy reduction potentials.
Building Energy Efficiency	An “Efficiency and Use” chart demonstrating building energy use and energy use intensity.	Identify energy efficiency improvement projects with significant energy reduction potentials by targeting buildings with high energy use and low efficiency on a kBtu/sf basis.
Facility Energy Report		
Annual Energy Use Pattern	A bar chart comparing the facility energy consumption for the given month with previous records.	Monitor facility energy reduction progress and identify abnormal energy use patterns, such as outstanding changes in energy consumption or distribution of energy consumption by fuel types.
Annual Energy Efficiency	A scatter graph comparing the building energy use intensity for the given month with previous records.	Monitor facility energy efficiency improvement progress and identify abnormal patterns, such as outstanding changes in energy consumption or energy use intensity.

The following depicts a snapshot from a sample monthly energy report:



LOCAL ENERGY ACTION PRIORITIES

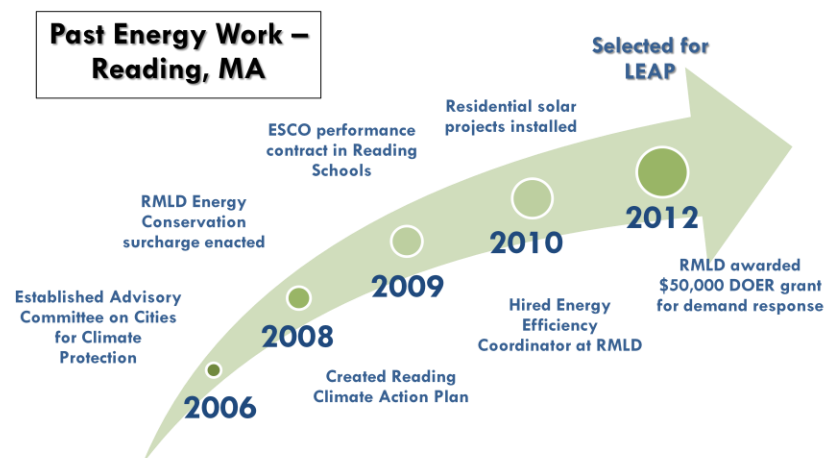
Beyond engaging in efforts that improve the performance and energy efficiency of municipal facilities, the Towns can further leverage the regional collaboration through the new RMLD program offerings to encourage sustainable energy practices communitywide. Across all the communities, the local priorities for energy action identified through the LEAP planning process are as follows:

- **Align local efforts with RMLD program offerings**, to grow participation in energy efficiency, demand response and renewable energy opportunities;
- **Build local capacity and sustained investment** in clean energy activities, and
- Explore opportunities to implement local bylaws, policies and plans that **achieve equivalence or exceed the state's Green Communities program** requirements;

The following section describes municipal energy profiles for each community, as well as summarizes past energy work. It also highlights recommendations for energy action priorities on a town-by-town basis.

TOWN OF READING

Led by the Reading Climate Action Committee (CAC) (formerly the Advisory Committee of Cities for Climate Protection Program) and the Reading School and Facilities Departments, the Town of Reading has already made great strides in advancing clean energy and sustainability efforts communitywide.



Reading Climate Action Plan: Goals

- **Reduce Green House Gas Emissions** in order to slow global climate change
- **Improve air quality** to enhance public health
- Foster responsible **stewardship of the local and global ecosystem** to ensure its longevity
- Foster the **conservation of energy sources** to preserve them for future generations
- **Reduce the energy expenses** of the town, residents and businesses to improve our standard of living and meet our goals.

In 2008, the CAC created the Reading Massachusetts Climate Action Plan as part of the Town's participation in the ICLEI (Local Governments for Sustainability) program.

The Climate Action Plan included an extensive list of

methods to be used to meet those goals, which included educational outreach to citizens and local businesses, influencing town bylaws with an eye towards promoting sustainability, and collaborating with neighboring communities to support them with similar efforts. This framework strongly influenced the goals described in this plan for both the RMLD and the four towns. To date, the CAC has successfully undertaken a number of efforts in pursuit of these goals, including:

- Recommended the creation of an energy efficiency charge at the RMLD, as well as the creation of a full-time energy efficiency staff position;
- Weatherization of group housing in Reading in collaboration with the Cambridge Home Energy Efficiency Team (HEET);
- “No-idling” signage and town-wide policy for municipal vehicles;
- Kill-a-watt meter lending at Reading Public Library;
- Launching a “Green Business Award”;

The Reading School and Facilities Departments have also worked actively to reduce energy consumption, utility bills and improve the performance of buildings in the Towns, including:

- Benchmarked all municipal buildings through the Environmental Protection Agency’s ENERGY STAR program,
- Contracted with a professional Energy Services Company (ESCO) to assess energy efficiency improvement potentials in all municipal buildings, and
- Retrofitted traffic lights on Route 28 to LED.

Approximately 5% of Reading’s total energy use comes from municipally-owned facilities. To date, the Town, led by its School and Facilities Departments, has been proactive in pursuing all low- and no-cost energy-saving measures in Town and School buildings. By developing of more regular energy reporting and tracking mechanisms with the RMLD through LEAP, it will be possible to accurately document these past achievements, and plan for future efforts that optimize building performance and energy conservation.

Reading Municipal Building Inventory

Building	Building Floor Area (Sq. Ft)	2011 Energy Use (MMBTU)	2011 EUI (kBtu / Sq.Ft)
Alice M. Barrow Elementary School	60,000	4,922	82
Arthur W. Coolidge Middle School	96,000	8,430	88
Birch Meadow Elementary School	58,500	4,343	74
J. Warren Killam Elementary School	57,000	4,135	73
Joshua Eaton Elementary School	56,000	5,739	102
Walter S. Parker Elementary School	97,800	2,689	27
Wood End Elementary School	52,000	2,834	54
Reading Memorial High School	330,000	24,264	74
Town Hall	15,648	1,916	122
Library	27,648	3,521	127

Senior Center	5,670	891	157
Police Station	29,430	4,136	141
Main Street Fire Station	10,114	1,949	193
West Side Fire Station	7,410	1,140	154
Department of Public Works Garage	42,142	4,900	116

Recommended Reading Energy Action Priorities

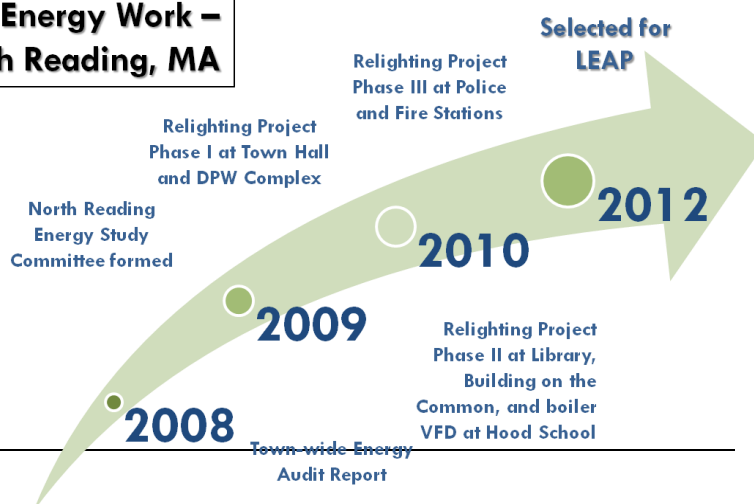
The CAC maintains a list of priorities for actions to undertake as part of their overarching Action Plan. To maximize the effectiveness of the four-town collaboration with RMLD through LEAP, and leverage the new program offerings being developed with the RMLD as part of this plan, the CAC and the Town of Reading should consider prioritizing the following activities in the near-term:

- Coordinating **outreach and educational efforts around the RMLD's comprehensive Residential Program**, to be launched as part of LEAP in 2013, which will include opportunities for residents in Reading to increase their energy efficiency, participate in demand response programs, and invest in local renewable energy;
- Assigning a **facilities staff person to review monthly energy reports** with an RMLD account manager and identify opportunities for improvements;
- Requesting an **LED street light rate** from the RMLD on behalf of all four towns in order to capture cost-savings from retrofits;
- Coordinating **group purchases of LED street lights** with neighboring communities and possibly other communities and state agencies in Massachusetts through MAPC's LED Street Light Purchasing Program;
- Evaluating opportunities to **improve town bylaws and zoning requirements to encourage the development of renewable energy**;
- Growing the Green Business Award into a **Green Business Program** in collaboration with the RMLD and Reading-North Reading Chamber of Commerce, with specific criteria for eligibility, and rewards for participation.

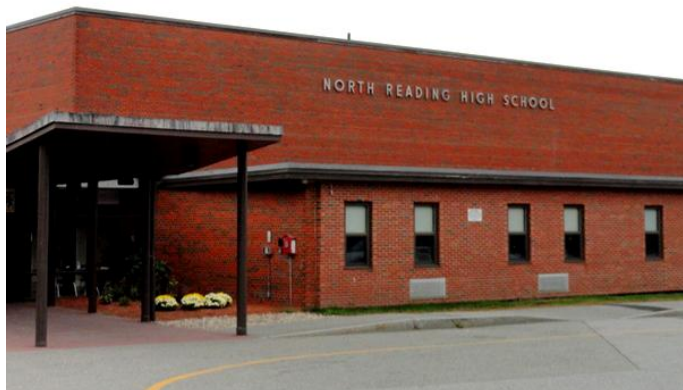
TOWN OF NORTH READING

Clean energy work at North Reading has to date focused on pursuing cost effective energy efficiency upgrades in municipal buildings. The Town has collaborated with municipal departments, including the Building Department, the Department of Public Works, and

Past Energy Work – North Reading, MA



the School Department, as well the North Reading Energy Study Committee to plan for and implement energy consumption and cost saving projects in municipal buildings.



Source: Reading Patch

North Reading's municipal energy consumption accounted for approximately 5% of the overall town-wide energy consumption in FY 2011. Thus far, the Town has been focusing on improving energy efficiency in municipal buildings using RMLD incentives. As of April 2012, the Town has completed lighting system upgrade in 98% of the municipal buildings. Additional energy efficiency measures the

Town is currently considering implementing include:

- Water pump retrofits,
- Boiler retrofits at schools, and
- Window and insulation replacement in Town Hall.

North Reading Municipal Building Inventory

Building	Building Floor Area (Sq. Ft)	2011 Energy Use (MMBTU)	2011 EUI (kBtu/ Sq.Ft)
E. Ethel Little Elementary School	47,028	4,328	92
J. Turner Hood Elementary School	43,829	4,914	112
L. D. Batchelder Elementary School	39,300	5,806	148
North Reading High School	101,896	12,711	125
North Reading Middle School	81,000	5,191	64
Town Hall	24,848	517	21
Library	18,336	1,539	84
Senior Center	5,040	280	56
Public Safety Building	38,620	2,191	57
Town Garage	8,767	238	27

Recommended North Reading Energy Action Priorities

As the Energy Study Task Force evaluates its priorities for the near term, it should consider the following action items to leverage new RMLD program offerings through LEAP, as well as take advantage of the collaborative efforts to be facilitated through the second year of the program:

- Assigning a **municipal staff person to review monthly energy reports** with an RMLD account manager and identify opportunities for improvements;
- Requesting an **LED street light rate** from the RMLD on behalf of all four towns in order to capture cost-savings from retrofits;

- Participating in **group purchases of LED street lights** with Reading, other neighboring communities, and possibly other communities and state agencies in Massachusetts through MAPC's LED Street Light Purchasing Program;
- Evaluating opportunities to **improve town bylaws and zoning requirements to encourage the development of renewable energy**;
- Supporting **outreach and educational efforts around the RMLD's comprehensive Residential Program**, to be launched as part of LEAP in 2013;
- Supporting **North Reading businesses to participate in a Green Business Program** with the RMLD, Town of Reading, and Reading-North Reading Chamber of Commerce.

TOWN OF WILMINGTON

Wilmington's municipal energy consumption accounts for approximately 4% of the overall town-wide energy consumption.

Wilmington Municipal Building Inventory

Building	Building Floor Area (Sq. Ft)	2011 Energy Use (MMBTU)	2011 EUI (kBtu/ Sq.Ft)
Boutwell Early Childhood Center	20,800	2,219	107
North Intermediate School	54,569	6,743	124
Shawsheen Elementary School	56,253	7,683	137
West Intermediate School	62,058	7,943	128
Wildwood Early Childhood Center	29,160	5,349	183
Wilmington High School	87,270	17,416	200
Wilmington Middle School	149,797	10,457	70
Woburn Street Elementary School	36,450	6,276	172
Town Hall	20,000	2,157	108
Senior Center	8,308	775	93
Library	14,910	1,303	87
Old Fire Station	6,694	591	88
Roman House	4,498	354	79
Public Safety	41,706	5,285	127
Department of Public Works	13,585	1,852	136

Recommended Wilmington Energy Action Priorities

- Assigning a **municipal staff person to review monthly energy reports** with an RMLD account manager and identify opportunities for improvements;
- Requesting an **LED street light rate** from the RMLD on behalf of all four towns in order to capture cost-savings from retrofits;
- Participating in **group purchases of LED street lights** with Reading, other neighboring communities, and possibly other communities and state agencies in Massachusetts through MAPC's LED Street Light Purchasing Program;
- Supporting **outreach and educational efforts around the RMLD's comprehensive Residential Program**, to be launched as part of LEAP in 2013;

- Exploring **establishing a citizen volunteer energy committee** to explore further clean energy opportunities in Wilmington, using the LEAP recommendations and RMLD program offerings as a starting point.

TOWN OF LYNNFIELD

In FY 2011, Lynnfield's municipal energy consumption accounted for approximately 6% of the town-wide energy consumption. In December 2011, the Town appropriated \$100,000 in funding to reinforce energy management within its schools. The funding was used for ensuring the energy systems were functioning properly and for assessing additional building energy needs.

Lynnfield is partially served by the Peabody Municipal Light Plant (PMLP). Currently, PMLP electric consumption data is not included in Lynnfield's MEI account. MAPC and Lynnfield are currently coordinating with PMLP to establish a standard system for loading data onto MEI.

Lynnfield Municipal Building Inventory²

Building	Building Floor Area (Sq. Ft)	2011 Energy Use (MMBTU)	2011 EUI (kBtu/ Sq.Ft)
Huckleberry Hill Elementary School	64,400	5,023	78
Lynnfield High School	127,800	14,803	116
Lynnfield Middle School	114,200	6,565	57
Summer Street Elementary School	67,200	5,491	82
South School*	-	1,442	-
Town Hall	-	1,220	-
Library	-	1,397	-
Branch Library*	-	32	-
Police Station	-	1,282	-
South Lynnfield Fire Department*	-	641	-
South Hall*	-	34	-
Department of Public Works Garage*	-	529	-

Recommended Lynnfield Energy Action Priorities

- Engaging Peabody Municipal Light Plant (PMLP) to explore opportunities to collaborate with RMLD program offerings and extend similar offerings to all Lynnfield residents and businesses;
- Assigning a **municipal staff person to review monthly energy reports** with an RMLD account manager and identify opportunities for improvements;
- Requesting an **LED street light rate** from the RMLD on behalf of all four towns in order to capture cost-savings from retrofits;

Exploring **establishing a citizen volunteer energy committee** to explore further clean energy opportunities in Lynnfield, using the LEAP recommendations and RMLD program offerings as a starting point.

² An asterisk sign (*) indicates buildings without electric energy consumption data in the MEI account.

Local Energy Action Priority	Goal/Strategy	Suggested Action Items	Reading	North Reading	Wilmington	Lynnfield	More Info
1. Align town efforts with RMLD program offerings.	1.1 Provide information to residents and businesses on existing programs	- Set up a streamlined process to connect residents and businesses with information and opportunities to pursue energy efficiency or renewable energy projects through RMLD program offerings - Consider launching time-sensitive campaigns to increase program participation with specific incentives and rewards	X	X			<i>Outreach Strategies for Energy Efforts, p. 55</i>
	1.2 Create Green Award/Green Business Program	Partner with RMLD, the Reading-North Reading Chamber of Commerce, and other relevant entities to launch a Green Business Award and/or Green Business Program (could also be extended to residents) to celebrate achievements and incentivize activities.	X				<i>Local Green Business Program, p. 48</i>
	1.3 Support RMLD's commercial programs with enabling local policy	Evaluate best options for facilitating energy efficiency improvements for local businesses, such as: <u>Commercial PACE</u>, a financing program for commercial buildings that provides upfront capital for efficiency or distributed renewable projects, which is then repaid through a line item on the property tax bill. <u>Energy Improvement Districts (EIDs)</u>, similar to establishing a Business Improvement District (BID) but the funds are used specifically for efficiency and renewable energy projects.	X				
	1.4 Review monthly energy reports with RMLD	- Assign municipal staff representative to meet with RMLD staff and review monthly energy reports - Identify opportunities to improve facilities and operations to optimize building performance and energy use	X	X	X	X	
	1.5 Upgrade to energy-efficient street lighting	- Request LED Street Light Rate from RMLD to capture energy cost-savings - Assess opportunities for efficient street light upgrades - Participate in group purchasing opportunities to achieve cost savings through economies of scale	X	X	X	X	
2. Build town capacity and sustained investment in clean energy activities.	2.1 Establish local energy committees in Lynnfield and Wilmington	- Reading and North Reading have existing volunteer communities with a mission to support energy, climate and/or sustainability projects. - Lynnfield and Wilmington could explore creating their own volunteer committees to support implementation of similar projects.			X	X	<i>Creating an Energy Committee, p. 22</i>
	2.2 Institutionalize a Four-Town Energy Task	Set up annual review process for regular updates and evaluation of local progress on the energy action plan	X	X	X	X	<i>Annual Review of Energy Action</i>

	Force						<i>Plan, p. 36</i>
	2.3 Shared energy staff	Explore the possibility of sharing an energy manager or coordinator position between the 4 towns.	X	X	X	X	
3. Achieve Green Communities equivalence or better.	3.1 As-of-right siting for renewable energy projects	<u>Equivalence:</u> Designate areas to be zoned for as-of-right siting of renewable generation or R&D facilities Work with RMLD/MAPC to identify best sites from a feasibility perspective (resource availability & priority grid areas) <u>Better:</u> Establish Priority Development Areas (PDAs) for renewable energy development and create a package of incentives and technical assistance (with MAPC and RMLD help) to encourage that use	X	X	X	X	
	3.2 Expedited permitting	<u>Equivalence:</u> Adopt an expedited application and permitting process under which the facilities subject to the as-of-right siting provision may be sited within 1 year (MGL ch 43 D process qualifies) <u>Better:</u> Conduct a full analysis of zoning code and permitting practices with an eye to eliminating barriers to renewable energy and efficiency projects	X	X	X	X	
	3.3 Energy Reduction Plan	<u>Equivalence:</u> Baseline municipal energy use and work with RMLD to create a plan to reduce this baseline use by 20% or more over a 5-year period. <u>Better:</u> Create a plan that aligns with proposed and more ambitious RMLD goals to reduce 10% every year until 2005 levels are reached Consider performance contracting as a way to achieve these goals	X	X	X	X	
	3.4 Fuel-efficient vehicle purchasing policy	<u>Equivalence:</u> Adopt a policy of purchasing only fuel-efficient vehicles for municipal use whenever available and practical <u>Better:</u> Develop and amend policy with a strategy for electric vehicle adoption and charging infrastructure for the 4 towns and RMLD	X	X	X	X	
	3.5 Stretch Code	<u>Equivalence:</u> Adopt Stretch code requiring new construction to be built 30% more efficient than base building code <u>Better:</u> Establish an Energy Conservation Ordinance (ECO) that adds “trigger points” for meeting standards in addition to new construction, such as sale or major renovation Consider more comprehensive requirements for new construction: LEED equivalence; other local criteria or rating system	X	X	X	X	

Energy Action Strategies

CREATING AN ENERGY COMMITTEE³

Action: Create a Community Energy Advisory Committee to plan for community clean energy efforts and manage energy efficiency and renewable energy projects.

Target Sector: Municipal Sector

Objective Met: Build town capacity and sustained investment in clean energy activities.

Key Implementers: Town Managers/Administrators; Boards of Selectmen; existing volunteer committees

A Community Energy Advisory Committee/Energy Committee engages community members in actively participating in decision making processes concerning local clean energy planning and management. It is a valuable resource for building municipal internal capacity for clean energy work, capturing local expertise and public views, generating innovative ideas for future projects, as well as building trust in municipal-community collaborations in pursuing energy goals and actions.

In general, an Energy Committee is an independent committee, task force, or advisory board appointed by and responding to the Board of Selectmen or City Council/Mayor. This strategy outlines the process for establishing a local Community Energy Advisory Committee/Energy Committee to plan for community clean energy efforts and oversee energy efficiency and renewable energy projects.

Program Overview

Implementation Steps	Objectives	Key Implementers	Projected Staff Time Requirement
Establish Committee purpose and structure.	Develop clear purposes and goals of the Committee and define the scope of key Committee tasks.	Town manager/administrator	10 hours
Establish Committee.	Obtain the relevant approvals to authorize a Community Energy Advisory group.	Town manager/administrator, Board of Selectmen	5 hours
Recruit members.	Recruit members that are compatible with the Committee's mission.	Town manager/administrator	10 hours
Maintain Committee.	Establish operating procedures and perform Committee functions.	Energy Committee	On-going

Program Implementation Steps

1. Establish Committee Purpose and Structure.

³ This energy action strategy builds upon the 1998 Environmental Protection Agency "Community Advisory Group Toolkit," the 2009 California Environmental Protection Agency Department of Toxic Substance Control California Environmental Protection Agency "Community Advisory Group (CAG) Handbook," and the 2008 U.S. Department of Education "Building an Effective Advisory Committee Fact Sheet."

- **Create a mission statement** – Develop a clear mission statement defining the purposes and primary objectives of the Energy Committee, keeping in mind of existing opportunities and challenges in advancing community clean energy efforts, current municipal energy goals and priorities, as well as community principles and values. An effective mission statement should be:
 - Convincing and easy-to-understand,
 - Free of jargon,
 - Short and to-the-point, and
 - Articulated in a way that inspires support and ongoing commitment.
- **Define Committee structure and scope** – Establish a well-defined charter that clearly outlines the structure and operating procedures of the Committee. Identify the role of the Energy Committee in performing energy planning and management work in the community and define how the Committee should help the municipality in advancing local clean energy efforts. Important questions that should be considered include:
 - What community functions does the Energy Committee perform?
 - How does the Energy Committee carry out its responsibilities?
 - What authorities and decision-making powers does the Energy Committee hold?
 - How do members of the Energy Committee communicate with each other?
 - How does the Energy Committee communicate and collaborate with municipal departments and community stakeholders?
 - Who should the Energy Committee report to, and how?
 - What is the annual budget available for the Energy Committee?
- **Name the Committee** – The name of the Committee helps define the purpose and scope of the organization both internally and to the public. While this strategy uses the terms “Community Energy Advisory Committee,” there are many alternatives that may be more suitable for the mission, the audience, and the authority of the group, such as Energy Advisory Board, Clean Energy Task Force, Energy & Sustainability Committee, and Climate Action Group. Similar to a mission statement, the name of the group should be short and easy-to-understand and should clearly address the primary objectives of the advisory group.

2. Establish Committee.

- **Obtain relevant local approvals** – A community advisory body is generally appointed by the legislative body (e.g. Mayor, City Council, Board of Selectmen, etc.). The community

should review local statutes and identify the legal procedures required for obtaining approvals to establish an advisory group.

3. Recruit Members.

- **Define membership and leadership** – Given the Committee’s mission, primary responsibilities, and municipal capacity, define the internal organization of the advisory group. Identify the roles needed to carry out regular Committee functions and decide how internal decisions will be made within the group. Additionally, identify the criteria for selecting Committee members (e.g. local residency, able to meet once a month, understanding of energy systems, grants writing experience, web-editing skills, etc.) Based on the requirements and constraints for the Energy Committee, determine the number of Committee members needed and the duration of Committee membership. If a leadership position, such as a chairperson or an executive board, is required, establish the procedures for selecting the leaders and define clearly the duties, the authorities, and the duration of the position.
- **Recruit members that fit with the Committee’s mission** – Based on the definition of membership and leadership, establish the procedures for selecting Committee members (e.g. nomination, voluntary, etc.). Engage with community stakeholders that fit the Committee’s mission and share the Committee’s passion in local clean energy work, keeping in mind a balance of cultural, racial, age, and gender representation. The community should plan its engagement methods strategically to reach local stakeholders with the skills and experience the Committee needs.

Tips: It may be helpful to start the engagement process with community stakeholders that have actively participated in local events in the past and may have already expressed an interest in being involved with local energy projects. These stakeholders may be good candidates for Committee membership and may also provide a valuable insight on other community members that the community should reach out to.

- **Provide thorough orientation** – Explain to recruited members the mission of the Committee and their expected responsibilities. Provide background materials, such as community energy baseline, municipal building energy audits, and past project reports to help members define the challenges and opportunities in pursuing energy work in the community and identify how they can help achieve the Committee’s primary objectives.

4. Maintain Committee.

- **Establishing meeting procedures** – Determine when and where the Committee will meet. Establish the frequency and time frame of the meetings. Be sure to plan flexibly to allow for alternative meeting time or additional meetings as issues arise.

Tips: Regular Committee meetings should be frequent enough to maintain interest and momentum, but not so often that they lose the purpose and relevance.

Additional meeting procedures the Committee should consider include methods for announcing regular meetings and documenting meeting notes, as well as attendees of the regular Committee meetings. For example, should the entire community be invited to every regular Committee meeting? In what format and to whom should the meeting notes be distributed?

- **Plan for and implement energy projects** – The Committee should work with municipal staff and community organizations, as well as communicate with local residents and businesses to pursue clean energy goals and projects. In order to expand resource for advancing the community’s energy cost saving and greenhouse gas reduction potentials, the Energy Committee should regularly research and identify grant funding and innovating financing opportunities for clean energy projects.
- **Maintain and celebrate Committee activities** – The following tips are provided by the U.S. Department of Education on how to effectively and productively maintain a community advisory group.
 - Pursue projects that have obtainable goals and are compatible with the Committee’s mission.
 - Encourage members in taking lead on projects, but make sure the activities are within the Committee’s scope and capacity.
 - Seek out new members and provide a thorough orientation for those who join.
 - Provide regular updates about Committee activities to local municipal officials and the community. *Potential methods for promoting the Committee’s work may include flyers, posters at public events, presentations at schools, press releases on local media broadcasts, and announcements on municipal website, local MA Patch website, and Energy Committee website.*

References

California Environmental Protection Agency Department of Toxic Substances Control. (2009) “Community Advisory Group (CAG) Handbook.” Available online at:
http://www.dtsc.ca.gov/GetInvolved/upload/PP_Guidance_CAG.pdf

Environmental Protection Agency. (1998) “Community Advisory Group Toolkit: For the Community.” Available online at:
<http://www.epa.gov/superfund/community/cag/pdfs/cagtlkrc.pdf>

U.S. Department of Education. (2008) “Building an Effective Advisory Committee Fact Sheet.” Available online at: http://educationnorthwest.org/webfm_send/232

MONTHLY ENERGY REPORT DEVELOPMENT GUIDE

Action: Develop monthly energy reports.

Target Sector: Municipal Sector

Objective Met: Increase RMLD programs for municipal customers.

Key Implementers: RMLD Energy Services Division; Commercial Account Manager; Town Public Works/Facilities staff

This strategy is intended to provide guidance to help the RMLD provide its municipal customers with monthly energy reports on the status of energy use across their portfolio of accounts and facilities. RMLD will build on the available data in MassEnergyInsight (MEI) and help the towns institutionalize the practice of reviewing their energy consumption and expenditures on a regular basis, and begin to identify opportunities for efficiency upgrades.

For reference, the following conversion factors are used to compare physical fuel units with Btu (British thermal units):

Energy Unit Conversion Factors		
Fuel Type	Units	Factor
Electricity	MMBTU/ kWh	0.003412
Natural Gas	MMBTU/ therm	0.1
Fuel Oil	MMBTU/ gallon	0.139
Propane	MMBTU/ gallon	0.091

Referenced Data Set:

The following two datasets are available in each municipality's MEI account under the "View Report" tab. Datasets in MEI can be exported as Excel files under "Export > Crosstab."

- MassEnergyInsight "Data Loaded - Detail"
- MassEnergyInsight "Annual Usage Patterns"

Step-by-Step Instructions:

Step 1. Find the monthly municipal energy consumption for each month by fuel types. Use the “Annual Usage Patterns” dataset to determine the monthly energy use data for each month by fuel types for each fiscal year.

SHEET 1 – Monthly Energy Use					
	A	B	C	D	E
1		Electric (kWh)	Electric (kWh)	Gas (therms)	Gas (therms)
2		FY 2011	FY 2012	FY 2011	FY 2012
3	July	450,125	414,325	4,701	3,801
4	August	353,372	370,813	2,844	4,223
5	September	436,226	387,430	3,535	3,686
6	October	439,407	452,951	4,354	4,854
7	November	472,799	415,025	40,269	30,360
8	December	453,242	435,515	90,697	39,787
9	January	453,242	435,515	125,689	120,657
10	February	531,282	486,796	165,760	122,244
11	March	497,115		107,889	61,926
12	April	445,783		53,580	33,017
13	May	528,472		34,934	15,247
14	June	413,861		10,344	5,856

Step 2. Adjust the building energy consumption for historical weather conditions. Refer to the Simple-Ratio Weather Normalization method in Appendix A to correct the heating fuel consumption for each municipal building for the following heating fuel types:

- Natural Gas
- Fuel Oil

SHEET 1 – Monthly Energy Use							
	A	B	C	D	E	F	G
1		Electric (kWh)	Electric (kWh)	Gas (therms)	Gas (therms) - Normalized	Gas (therms)	Gas (therms) - Normalized
2		FY 2011	FY 2012	FY 2011	FY 2011	FY 2012	FY 2012
3	July	450,125	414,325	4,701	4,438	3,801	4,459
4	August	353,372	370,813	2,844	2,685	4,223	4,954
5	September	436,226	387,430	3,535	3,337	3,686	4,324
6	October	439,407	452,951	4,354	4,110	4,854	5,694
7	November	472,799	415,025	40,269	38,014	30,360	35,612
8	December	453,242	435,515	90,697	85,618	39,787	46,670
9	January	531,282	486,796	125,689	118,651	120,657	141,531
10	February	497,115		165,760	156,478	122,244	143,393
11	March	445,783		107,889	101,848	61,926	72,639
12	April	528,472		53,580	50,580	33,017	38,729
13	May	413,861		34,934	32,978	15,247	17,885
14	June	445,624		10,344	9,765	5,856	6,869

Step 3. Find the monthly municipal energy expenditure for each month by fuel types. Use the “Annual Usage Patterns” dataset to determine the monthly energy cost data for each month by fuel types for each fiscal year. *(Please note that there may be more than one columns associated with the same fuel type under the same fiscal year in the “Annual Usage Patterns” dataset. The additions*

columns are energy cost associated with competitive supplier. Please aggregate all energy cost under for the same fuel type under the same fiscal year before creating the “Monthly Energy Cost” table.)

SHEET 2 – Monthly Energy Cost					
	A	B	C	D	E
1		Electric (kWh)	Electric (kWh)	Gas (therms)	Gas (therms)
2		FY 2011	FY 2012	FY 2011	FY 2012
3	July	\$501,283	\$467,826	\$10,714	\$7,134
4	August	\$396,191	\$417,182	\$7,452	\$8,807
5	September	\$491,992	\$434,087	\$8,723	\$7,872
6	October	\$497,578	\$506,009	\$9,165	\$9,291
7	November	\$534,645	\$464,066	\$74,051	\$51,252
8	December	\$510,177	\$488,816	\$178,286	\$66,759
9	January	\$596,439	\$545,497	\$246,746	\$228,411
10	February	\$557,400	\$467,826	\$326,479	\$230,960
11	March	\$500,676		\$209,280	\$92,589
12	April	\$590,648		\$84,808	\$50,479
13	May	\$464,254		\$50,340	\$23,132
14	June	\$501,731		\$16,898	\$9,947

Step 4. Find the monthly building energy consumption for each month by fuel types by building. Use the “Data Loaded-Detail” dataset to determine the monthly building energy use data for each month by fuel types for each fiscal year.

SHEET 3 – Monthly Building Energy Use								
	A	B	C	D	E	F	...	BI
1					FY 2008	FY 2008		FY 2012
2	Department	Complex	Facility	Fuel (units)	July	August		January
3	School Department		High School	Electric (kWh)	212,600	206,400		174,400
4	School Department		High School	Gas (therms)	463	4,112		32,254
5	School Department		Middle School	Electric (kWh)	46,400	39,200		52,000
6	School Department		Middle School	Gas (therms)	186	249		1,452
21	Country Club	Country Club	Main Building	Electric (kWh)	28,960	33,120		12,960
22	Country Club	Country Club	Garage	Gas (therms)	57	56		2,398

Step 5. Find the building energy consumption for the given month. Find the column for the given month (e.g. SHEET 3 Column BI) on “SHEET 3 – Monthly Building Energy Use” and determine the energy used for each building by fuel types for the given month on a new “SHEET 4 – Building Energy Use.” Convert the consumption in physical units to MMBTU. Please remember to normalize the consumptions values of all building heating fuel use using the Simple Ratio Weather Normalization method as noted in Appendix A.

SHEET 4 – Building Energy Use – January 2012					
	A	B	C	D	E
1		Electricity (kWh)	Electricity (MMBTU)	Natural Gas (therms)	Natural Gas (MMBTU) – Weather Normalized
2	Elementary School	25,440	87	7,342	861
3	Middle School	41,280	141	22,026	2,584
4	High School	17,680	60	8,460	992
5	Police Station	24,000	82	4,044	474

Step 6. Aggregate the total energy consumption for each building for the given month and insert the floor area for each building. Use the “SUM” function to determine the total energy consumption for each building for the given month. Insert a column to identify the floor area in sq. ft using information from MEI for each building.

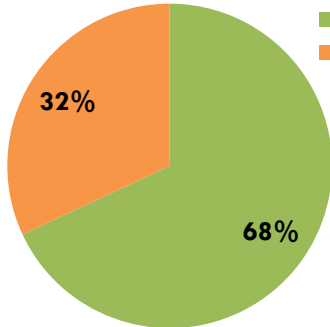
SHEET 4 – Building Energy Use – January 2012							
	A	B	C	D	E	G	H
1		Floor Area (sq.ft)	Electricity (kWh)	Electricity (MMBTU)	Natural Gas (therms)	Natural Gas (MMBTU) – Weather Normalized	Total MMBTU
2	Elementary School	60,000	25,440	87	7,342	861	948
3	Middle School	96,000	41,280	141	22,026	2,584	2,725
4	High School	330,000	17,680	60	8,460	992	4,378
5	Police Station	29,430	24,000	82	4,044	474	604

Step 7. Create a monthly energy report template. Create a new sheet, “Energy Report,” and set the “View” setting as “Page Layout” to view the document as printed pages for formatting purpose.

Step 8. Create a general monthly energy use summary table. Use “SHEET 1 – Monthly Energy Use” and “SHEET 2 – Monthly Energy Cost” to create a table that summarizes the monthly energy use and monthly energy cost for the given month and the historic energy use for the same month in previous fiscal years. *Please remember to normalize the consumptions values of all building heating fuel use using the Simple Ratio Weather Normalization method as noted in Appendix A.*

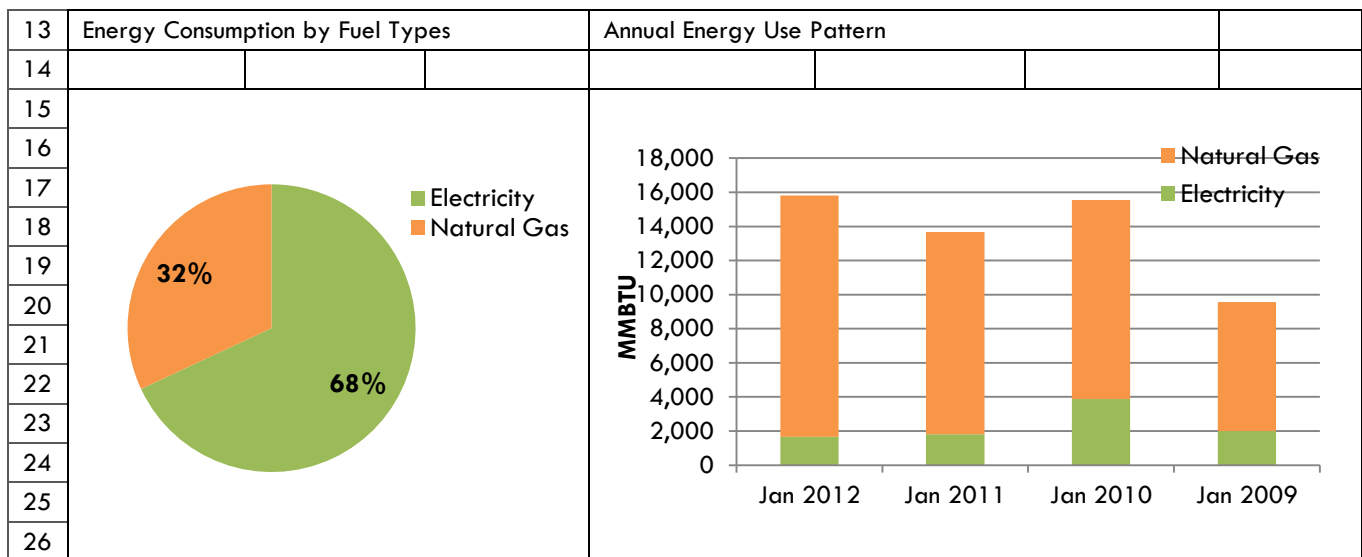
SHEET 5 – Energy Report – Page 1							
	A	B	C	D	E	F	G
1	Town of X						
2	Monthly Energy Report – January, 2012						
3							
4	Monthly Energy Use						
5			Electricity		Natural Gas		Total
6			kWh	MMBTU	Therms	MMBTU	MMBTU
7	Jan 2012	Energy Use	486,796	1,661	120,657	14,153	15,814
8		Cost	\$486,796		\$228,411		\$715,207
9	Jan 2011	Energy Use	531,282	1,813	125,689	11,865	13,678
10	Jan 2010	Energy Use	1,135,410	3,874	115,268	11,672	15,546
11	Jan 2009	Energy Use	585,959	1,999	82,369	7,569	9,569

Step 7. Determine the distribution of energy expenditure by fuel types. Create a pie chart that identifies the distribution of energy expenditure for each fuel type using the energy cost for each fuel type (blue cells) in the “Monthly Energy Use” summary table.

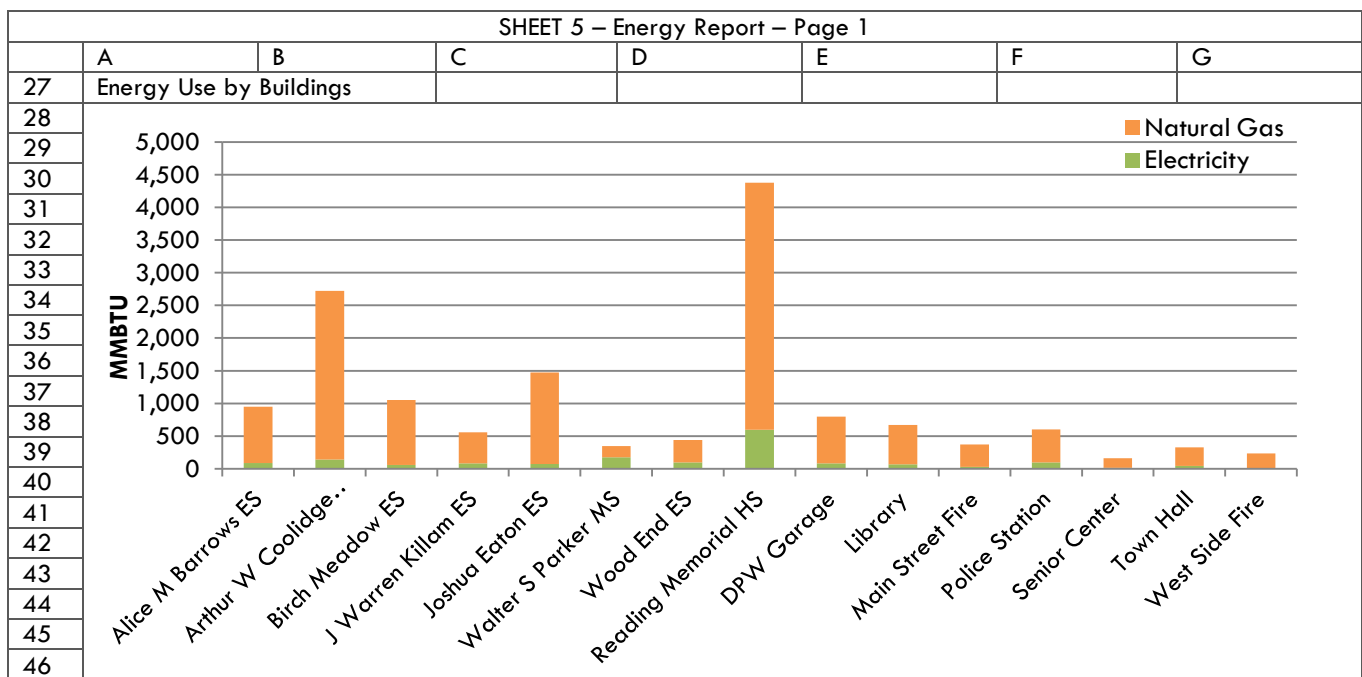
SHEET 5 – Energy Report – Page 1							
	A	B	C	D	E	F	G
1	Town of X						
2	Monthly Energy Report – January, 2012						
3							
4	Monthly Energy Use						
5			Electricity		Natural Gas		Total
6			kWh	MMBTU	Therms	MMBTU	MMBTU
7	Jan 2012	Energy Use	486,796	1,661	141,531	14,153	15,814
8		Cost	\$486,796		\$228,411		\$715,207
9	Jan 2011	Energy Use	531,282	1,813	118,651	11,865	13,678
10	Jan 2010	Energy Use	1,135,410	3,874	116,723	11,672	15,546
11	Jan 2009	Energy Use	585,959	1,999	75,695	7,569	9,569
12							
13	Energy Consumption by Fuel Types						
14							
15	 ■ Electricity ■ Natural Gas						
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							

Step 8. Compare the energy consumption for the given month with previous records. Create a bar chart that demonstrates the energy consumption for the given month this year and in previous fiscal years for each fuel type in MMBTU (blue cells) in the “Monthly Energy Use” summary table.

SHEET 5 – Energy Report – Page 1							
	A	B	C	D	E	F	G
1	Town of X						
2	Monthly Energy Report – January, 2012						
3							
4	Monthly Energy Use						
5			Electricity		Natural Gas		Total
6			kWh	MMBTU	Therms	MMBTU	MMBTU
7	Jan 2012	Energy Use	486,796	1,661	141,531	14,153	15,814
8		Cost	\$486,796		\$228,411		\$715,207
9	Jan 2011	Energy Use	531,282	1,813	118,651	11,865	13,678
10	Jan 2010	Energy Use	1,135,410	3,874	116,723	11,672	15,546
11	Jan 2009	Energy Use	585,959	1,999	75,695	7,569	9,569
12							



Step 9. Create a snapshot of energy consumption by buildings by fuel types. Create a bar chart that demonstrates the energy consumption for each building by fuel types using Electricity MMBTU (Column D) and Gas MMBTU - Weather Normalized (Column F) on “SHEET 4 - Building Energy Use.”



Step 10. Create a building energy efficiency summary table. Create a table on a new page on “SHEET 5 - Energy Report”. Insert the floor areas for each building (SHEET 4 Column B) and the total energy consumption (SHEET 4 Column G) from “SHEET 4 - Monthly Energy Use” into the energy efficiency table. Determine the energy efficiency (SHEET 5 Column E) of each building by converting the Total MMBTU (Column D) to kBTU and dividing the consumption value by the floor area of each building (SHEET 5 Column C).

Example: Calculate the energy efficiency for Elementary School (Cell E2).

$$E2 = D2 * 1000 / C2$$

SHEET 5 – Energy Report – Page 2						
	A	B	C	D	E	F
1	Building Energy Efficiency					
2			Floor Area (sq.ft)	Total (MMBTU)	Energy Efficiency (kBTU/sq.ft)	
3		Elementary School	60,000	948	=D2*1000/C2	
4		Middle School	96,000	2,725	28	
5		High School	330,000	4,378	13	
6		Police Station	29,430	604	21	

Step 11. Create a snapshot of building energy efficiency. Export the “Efficiency and Use” chart for the current fiscal year under the “Buildings to Target” section under the “View Report” tab in MEI.



Facility Energy Summary

Follow Step 12 to Step 16 to create an energy summary for each facility identified in the municipal building inventory.

Step 12. Create a facility energy consumption summary. On a new page on “SHEET 5 – Energy Report,” create a table that summarizes the electricity and heating fuel consumption for each facility for the given this year and in the past fiscal years using the information from “SHEET 3 – Monthly Building Energy Use.” Convert the physical units to MMBTU. *Please remember to normalize the consumptions values of all building heating fuel use using the Simple Ratio Weather Normalization method as noted in Appendix A.*

SHEET 5 – Energy Report – Page 3					
	A	B	C	D	E
1	Facility Energy Use Summary				
2	School Department				
3					
4	Elementary School				
5	Year Built:		Floor Area:	60,000	
6		Electricity		Natural Gas	
7		kWh	MMBTU	therms	MMBTU
8	Jan 2012	25,440	87	7,342	861
9	Jan 2011	29,160	99	8,256	779
10	Jan 2010	69,600	237	6,403	648
11	Jan 2009	28,140	96	6,454	593

Step 13. Aggregate the total energy consumption for all fuel types for each building. Use “SUM” function to determine the total energy consumption in MMBTU for each building.

SHEET 5 – Energy Report – Page 3						
	A	B	C	D	E	F
1	Facility Energy Use Summary					
2	School Department					
3						
4	Elementary School					
5	Year Built:		Floor Area:	60,000		
6		Electricity		Natural Gas		Total MMBTU
7		kWh	MMBTU	therms	MMBTU	
8	Jan 2012	25,440	87	7,342	861	948
9	Jan 2011	29,160	99	8,256	779	879
10	Jan 2010	69,600	237	6,403	648	886
11	Jan 2009	28,140	96	6,454	593	689

Step 14. Compare the building energy consumption for the given month with previous records. Create a bar chart that demonstrates the building energy consumption for the given month this year and in previous fiscal years for each fuel type in MMBTU (blue cells) in the “Facility Energy Use” summary table.

SHEET 5 – Energy Report – Page 3						
	A	B	C	D	E	F
1	Facility Energy Use Summary					
2	School Department					
3						
4	Elementary School					
5	Year Built:		Floor Area:	60,000		
6		Electricity		Natural Gas		Total
7		kWh	MMBTU	therms	MMBTU	MMBTU
8	Jan 2012	25,440	87	7,342	861	948
9	Jan 2011	29,160	99	8,256	779	879
10	Jan 2010	69,600	237	6,403	648	886
11	Jan 2009	28,140	96	6,454	593	689
12						
13	Annual Use Pattern					
14	1,000 800 600 400 200 0 MMBTU Jan 2012 Jan 2011 Jan 2010 Jan 2009 Natural Gas Electricity					
15						
16						
17						
18						
19						
20						
21						
22						
23						

Step 15. Determine the building energy efficiency for the given month in this year and previous fiscal years. Find the building energy efficiency value by converting the total energy consumption (Column F) to kBtu and dividing the value by the building floor area in sq.ft.

Example: Calculate the building energy efficiency for January 2012 (Cell G8).

$$G8=F8*1000/ \$D\$5$$

SHEET 5 – Energy Report – Page 3							
	A	B	C	D	E	F	G
1	Facility Energy Use Summary						
2	School Department						
3							
4	Elementary School						
5	Year Built:		Floor Area:	60,000			
6		Electricity		Natural Gas		Total	Energy Efficiency
7		kWh	MMBTU	therms	MMBTU	MMBTU	kBtu/ sq.ft
8	Jan 2012	25,440	87	7,342	861	948	=F8*1000/ \$D\$5
9	Jan 2011	29,160	99	8,256	779	879	
10	Jan 2010	69,600	237	6,403	648	886	
11	Jan 2009	28,140	96	6,454	593	689	
12							
13	Annual Use Pattern						

Step 16. Compare the building energy use intensity for the given month with previous records. Create a scatter graph that demonstrates the building energy consumption and energy efficiency for the given month this year and in previous fiscal years (blue cells) in the “Facility Energy Use” summary table. Set total energy consumption (Column F) as the y values and energy efficiency (Column G) the x values.

SHEET 5 – Energy Report – Page 3							
	A	B	C	D	E	F	G
1	Facility Energy Use Summary						
2	School Department						
3							
4	Elementary School						
5	Year Built:		Floor Area:	60,000			
6		Electricity		Natural Gas		Total MMBTU	Energy Efficiency kBtu/ sq.ft
7		kWh	MMBTU	therms	MMBTU		
8	Jan 2012	25,440	87	7,342	861	948	16
9	Jan 2011	29,160	99	8,256	779	879	15
10	Jan 2010	69,600	237	6,403	648	886	15
11	Jan 2009	28,140	96	6,454	593	689	11
12							
13	Annual Use Pattern			Annual Energy Efficiency			
14	1,000 800 600 400 200 0 MMBTU Jan 2012 Jan 2011 Jan 2010 Jan 2009 ■ Natural Gas ■ Electricity				1,000 900 800 700 600 MMBTU 10 12 14 16 18 ○ Jan, 2012 △ Jan, 2011 □ Jan, 2010 ○ Jan, 2009		
15							
16							
17							
18							
19							
20							
21							
22							
23							

ANNUAL REVIEW OF ENERGY ACTION PLAN

Action: Institutionalize a Four-Town Energy Task Force to establish an agreed-upon process for regular updates and evaluation of local progress on the energy action plan.

Target Sector: Municipal Sector

Objective Met: Build town capacity and sustained investment in clean energy activities.

Key Implementers: Town staff and volunteer committees; RMLD Energy Services Division

The RMLD Four-Town Energy Action Plan is intended to be a living document that can be continually supplemented and passed down to stakeholders in RMLD and the four towns on an ongoing basis. To that end, the four towns should annually review progress made towards meeting the goals and implementing the actions described in the plan, and update it as needed. This strategy describes how the towns can coordinate a Four-Town Energy Task Force and establish an annual review process to review and update the Energy Action Plan, evaluate strategy implementation processes, document achievements, and identify new opportunities and goals for the municipal, residential, and commercial sectors.

Program Overview

Implementation Steps	Objectives	Key Implementers	Projected Staff Time Requirement
Establish a Four-Town Energy Task Force.	Coordinate an Energy Task Force comprised of RMLD staff, municipal staff, and community stakeholders from the four towns to annually review and update the Energy Action Plan.	Town managers/administrators	5 hours
Conduct annual review.	Create annual report to document the actions adopted and achievements made.	Four-Town Energy Task Force	5 hours
Plan for next steps.	Hold annual meetings with local clean energy stakeholders to update goals and identify implementation projects for the project year.	Four-Town Energy Task Force	10 hours

Program Implementation Steps

The following section describes a three-step process for implementing an annual review of the Energy Action Plan.

1. Establish a Four-Town Energy Task Force.

Town managers/administrators from the four towns should establish a Four-Town Energy Task Force comprised of RMLD staff and representatives from each community that is dedicated to meet annually and plan for new implementation actions for the upcoming

project year. Members of the Task Force may include a RMLD staff member, as well as a municipal staff member and a community member from each town. The following list is an example of energy stakeholders the towns should consider inviting to participate in the Energy Task Force:

- Building Department
- Department of Public Works
- School Department
- Community energy advisory groups (e.g. Reading Climate Action Committee, North Reading, and the potential Lynnfield and Wilmington Energy Committees)
- Chamber of Commerce

The Task Force will be responsible for documenting existing energy work, evaluating implementation progress, identifying new goals, strategies, and implementable projects, as well as updating the Energy Action Plan, so that it continues to provide relevant guidance on how to pursue energy efforts in the four towns.

2. Create an Annual Energy Action Update.

Every year the Four-Town Energy Task Force should conduct an annual review of the four towns' clean energy efforts, documenting the progress made in implementing the Energy Action Plan. The review should culminate in an annual Four-Town Energy Action Update that serves as a written record of the four towns' clean energy work. The report should document the strategies and specific actions adopted over the past year, as well as the goals accomplished. The report will be uploaded annually onto the municipal clean energy websites to inform the community of the municipalities' clean energy effort and success. The following items could be included in the annual update, when possible and relevant:

- **Energy baselines and benchmarking** - An energy baseline should identify the aggregated annual energy consumptions and expenditures for the municipal, residential, and commercial sectors. The towns can compile information from the Monthly Energy Report and data from their MassEnergyInsight accounts to benchmark municipal energy reductions. If a semi-annual process for obtaining updated natural gas consumption data in the residential and commercial sectors is established, comparisons to this baseline can and should also be made. If possible, this section should also include information on other quantifiable metrics, such as customer participation rates in RMLD energy efficiency and clean energy programs and in MassSave incentive programs.
- **Progress** – The Energy Action Update should provide an overview of the community's progress in implementing projects, as well as an assessment of whether the community is on track with achieving its goals as documented in the plan. It is important to keep a detailed record of the implementation process of the Energy Action Plan, so new

employees, volunteers, and other municipalities can build upon this institutional knowledge for future project implementation. The Task Force should identify and document all strategies from the Energy Action Plan that have been implemented and/or are being implemented in the annual update. The description of each accomplished strategy should contain the following attributes:

- Overview of the strategy
 - Goals fulfilled by the strategy
 - Process of implementation
 - Key implementers
 - Key contacts
 - Financing mechanisms
 - Current stage of implementation (planning, in progress, or completed)
 - Specific actions (e.g. programs, policy, projects, outreach events)
 - Short-term results
 - Projected outcomes (e.g. energy and cost savings, payback year)
- **Performance Evaluation** - It is important that the review process acknowledge the effectiveness of previously adopted strategies. The Four-Town Energy Task Force should benchmark each strategy prior to the adoption for performance evaluation purpose and assess the outcomes of the strategies at the end of each year. The performance evaluation section highlights both strategies that demonstrate the best outcomes and ones that are experiencing the biggest challenges with implementation. For each of the listed strategies, the Task Force should discuss the factors that contribute to the success or difficulties with adopting the strategy and provide recommendations for future implementations.

3. Plan for Next Steps.

One purpose of the annual review is to identify new clean energy opportunities and to plan for next steps. At the end of each fiscal year, the Task Force should build upon project implementation progress in the previous year and decide on new implementation actions for the upcoming project year. The Task Force should consider the following:

- a. **Revise Energy Action Plan.** Edit strategies utilizing input from the annual report and annual process review.
- b. **Identify goals, strategies, and implementable projects for the upcoming year based on the following attributes:** the progress of past projects, internal capacity, and availability of funding.
- c. **Designate key implementers for each strategy.**
- d. **Prepare for project implementation.** Identify the available resources and possible performance measures for each strategy to provide guidance for adoption. Create and distribute memos informing key implementers of the selected strategies for the upcoming

year and recommendations for implementation. Update local clean energy websites to inform the community of the municipality's goals for the upcoming year.

RMLD RESIDENTIAL PROGRAM

Action: Design and implement a residential program offered through the RMLD.

Target Sector: Residential Sector

Objective Met: Increase RMLD residential program offerings.

Key Implementer: RMLD Energy Services Division; RMLD auditor and other energy vendors under contract

Related Strategies: Demand Response Program, Community Solar and Net-Metering, Outreach Strategies for Energy Efforts

The purpose of this strategy is to coordinate existing RMLD incentives for residential energy efficiency, demand response and distributed generation with new incentives and services to be developed as part of a comprehensive Residential Program offered through the Energy Services Division.

The RMLD Residential Program can offer residential customers in Reading, North Reading, Wilmington and Lynnfield opportunities to improve the performance of their homes, reduce their energy costs and invest in local renewable energy. The potential to improve energy efficiency and reduce RMLD peak load and greenhouse gas emissions through a residential program is significant: the overwhelming majority of homes in the RMLD territory are single-family (82%) and owner-occupied (84%), and 60% of RMLD's customers heat their homes with oil – twice the statewide percentage of oil heat customers. In order to optimize participation across program offerings, the RMLD should clearly and consistently market the variety of available rates, rebates and incentives, as well as develop a top-down strategy for targeting customers that would benefit the most from specific offerings (e.g., air source heat pumps for oil heat customers).

The RMLD Residential Program is a three-pronged program focused on the following categories:

1. **Home energy audits, efficiency and weatherization** – All RMLD residential customers are eligible to receive a home energy assessment through the RMLD's Residential Program. RMLD customers that heat with natural gas from National Grid are eligible for home energy assessments and weatherization incentives through the MassSave program. In order to ensure that the RMLD does not pay for audits that should be paid for by MassSave, and that natural gas customers are accessing the MassSave incentives to which they are entitled, the RMLD should require its auditor to be qualified as a MassSave home performance contractor. The RMLD will provide equivalent energy audits for customers that heat with oil, and can support these customers with additional energy efficiency incentives as they relate to reducing electricity consumption, e.g., on-bill financing for electric air source heat pumps (ASHPs). In order to present a uniform program to customers regardless of heating fuel type, RMLD should continue to explore options to help oil heat customers weatherize their homes and reduce their energy use, within reason as an electric utility. Since custom measures for oil

heat customers may be more challenging for the MassSave-qualified auditor to incorporate into their customer service approach, RMLD may find it necessary to identify additional capacity to support oil heat customers and educate them about their options outside of the MassSave program.

The RMLD Residential Program will offer a package of incentives to reduce electricity consumption to customers regardless of heating fuel type, such as EnergyStar appliance rebates and a free light bulb program.

2. **Demand response controls and time-of-use rates** – This category includes demand response controls for hot water heaters, which are installed as part of the RMLD Electric Hot Water Heater Rate, and could be extended to include additional loads, such as air conditioning units and air source heat pumps (ASHPs). In addition, the RMLD offers a Time-of-Use rate, which could be more aggressively marketed to customers as part of a behavioral/energy education package. *For more information, refer to the “Demand Response Program” strategy on page 43.*
3. **Community solar and distributed generation** – To develop more renewable and distributed generation assets across the RMLD portfolio, the RMLD can offer two opportunities for residential customers: 1) a straightforward net-metering policy and incentive structure for residential distributed generation (e.g., PV arrays), and 2) community shared solar (CSS) options that allow customers to purchase their energy from locally-sourced solar projects. *For more information, refer to the “Community Solar and Net Metering” strategy on page 45.*

RMLD auditors, customer service representatives, and Energy Services staff should be knowledgeable of all program offerings and understand how to make recommendations about rates and equipment upgrades to customers based on their basic energy use profile (e.g., heating fuel type, existing water heater and HVAC equipment, etc). In order to increase customer participation and program effectiveness, RMLD should develop and distribute marketing materials that help customers understand the requirements, energy cost savings and other benefits of each program offering. In addition, RMLD could implement both top-down, data-driven strategies and grassroots, campaign-based strategies to drive customer participation in specific activities, such as enrolling in CSS options.

PROGRAM IMPLEMENTATION OVERVIEW

RMLD already offers most of the specific rebates, incentives and rates mentioned above. Implementation of a comprehensive Residential Program therefore calls primarily for a marketing and outreach strategy that presents these offerings in a clear and consistent manner, so that customers understand how to best take advantage to the opportunities that are available to them. RMLD may choose to contract with an outside vendor for the design and implementation of some targeted marketing and outreach efforts for the Residential Program in its early stages and possibly on an ongoing basis, depending on results.

Some possible marketing and outreach strategies may include:

- **“One-stop-shop” website portal.** The RMLD Energy Conservation page can be the home base for all resources relating to the Residential Program. These links and marketing materials should be revamped and consolidated to help customers more easily understand the options available to them, and the requirements and cost savings involved in taking a specific action.
- **Targeted, data-driven outreach.** Through a combination of RMLD data, assessor data, and other available data sources, customers can be identified and targeted based on relevant attributes, such as: oil heat, existing time-of-use or electric water heater rate customers, solar potential, energy use profiles, etc. Analysis of customers based on these attributes can be used to develop targeted outreach strategies (such as mailers).
- **Advanced topics workshops.** The RMLD can host workshops for residents on a wide variety of topics, possibly targeting residents with certain attributes as described above. These workshops could be held as part of a regularly scheduled series, and advertised through the schools or other
- **Innovative incentives offered through Green Business program.** Local businesses participating in a RMLD or Town-based Green Business program could be asked to offer rewards (such as gift certificates or other giveaways) to residents for achieving certain energy-related goals, such as signing up for a CSS project, winning a time-of-use rate competition, signing up for a home energy audit in-store, and so forth.
- **Campaigns and competitions.** Limited-time offers (such as tiered pricing through a group procurement of residential solar installations, a la Solarize Mass) and competitions can be an effective strategy to increase customer participation in specific activities over a short period of time.
- **Partnerships with the towns, energy committees and other community groups.** The RMLD should leverage local energy action groups (such as the Reading Climate Action Committee and North Reading Energy Study Committee) and other community stakeholders to advertise program offerings, events, and campaigns/competitions as described above on an as-needed basis.

For more information on how to conduct effective outreach to increase customer participation in utility programs, see “Outreach Strategies for Energy Efforts” section on page 55.

Resources:

“Request a residential energy audit from the RMLD” Available online at:
http://www.rmlld.com/Pages/rmldma_conservation/ResiAuditRequest

RESIDENTIAL DEMAND RESPONSE PROGRAM

Action: Develop and conduct outreach for a residential demand response program.

Target Sector: Residential Sector

Objective Met: Expand RMLD residential efficiency program offerings.

Key Implementer: RMLD Energy Services Division and other vendors under contract

Related Strategy: Outreach Strategies for Energy Efforts

Demand response (DR) can be described as a resource that allows consumers of electricity to modify their usage of electricity by responding to price signals, which could be in the form of financial incentives, reliability signals, or environmental conditions. End users of electricity typically tend to be unresponsive to wholesale electricity prices. This can be a challenge for utility providers during times of peak demand, because less efficient or more expensive generators must be used to serve this demand. DR is an important resource for utilities because it allows them to give their customers the option to reduce their electricity consumption or shift a portion of their consumption away from peak hours. In doing so, utilities can benefit from avoiding the expenditure of resources on expensive peak demand electricity.

IMPLEMENTING A DR PROGRAM

Two of the most common DR programs that utilities across the country are using today are dynamic pricing and time-of-use rates (TOU). Dynamic pricing refers to the change of consumers' electricity prices on a continuous basis. This provides a more accurate representation of the true cost of electricity depending on peak and off-peak demand. The successful implementation of a dynamic pricing program requires a "smart" electricity grid infrastructure consisting of appliances and meters on the customer side that transmit usage data in real time to the utilities so that decisions can be made on demand-based pricing. Similarly, customers can program their smart appliances to alter their usage in response to the price signals that utilities set.

A TOU rate system is a less complex mechanism of encouraging users to shift their peak usage. Utilities set a higher electricity rate for a predetermined peak time, and encourage customers to shift some of their usage to off-peak hours when electricity rates are lower.

RMLD'S CURRENT EFFORTS

RMLD currently runs a TOU rate program that its customers can opt into. It works much like a traditional TOU program with on-peak and off-peak times, and different electricity rates associated with those respective time periods. RMLD has also recently employed the services of a Sequentric control system that allows them to remotely control customers' appliances in

response to demand.⁴ There exists great potential for energy savings if customers are informed of the program and are encouraged to sign up.

RECOMMENDATIONS

RMLD has made a great start to implementing DR programs that can mutually benefit both themselves and their customers. With further efforts on data analysis and customer outreach, there exists an even greater potential for more participants and consequent energy savings. Our recommendations for RMLD regarding DR programs are as follows:

1. Analyze consumption data to identify potential customers.
2. Reorganize program information on RMLD's website in a more user-friendly fashion.
3. Send information about the cost and energy benefits of TOU rates via email or utility bills.

For more information on how to conduct effective outreach to increase customer participation in utility programs, see "Outreach Strategies for Energy Efforts" on page 55.

⁴ For more information, see Renew Grid. "RMLD Deploying Sequentric's Demand Response Tech." Available online at: http://www.renewgridmag.com/e107_plugins/content/content.php?content.9417#.URqbl6W5Nre

COMMUNITY SOLAR & NET-METERING

Action: Design and conduct outreach for community solar and net-metering programs.

Target Sector: Residential Sector

Objective Met: Expand residential solar program offerings.

Key Implementer: RMLD Energy Services Division; Town staff and volunteer committees

Related Strategies: Outreach Strategies for Energy Efforts

While residential rooftop solar installations represent a positive step towards renewable energy generation, the process can be prohibitive to some residents for a variety of reasons. A significant capital investment is typically required up front; residents that rent their living space may not have the permission of their landlord to install solar; condo and apartment owners may find that have a very limited amount of roof space. A community shared solar (CSS) project is a unique way to address these concerns and give residents ownership of a renewable source of energy generation.

A CSS project, colloquially referred to as a “solar garden,” can be defined as a solar electric array with multiple subscribers connected to the utility grid.⁵ These subscribers can be residents, businesses, or other organizations that are entitled to purchase a portion of the electricity generated by the array. The garden is typically built and maintained either by a utility company or a third party company, and is financed by the up-front capital investments of its subscribers.

EXAMPLES OF SOLAR GARDENS

Quite a few states around the US have been enacting legislation to allow the legal operations of solar gardens. After signing legislation in 2012, Colorado in particular has seen an overwhelming amount of interest from residents who are keen to implement a solar garden in their communities.⁶ Utility companies like Xcel energy have partnered with solar community garden providers like SunShare to launch solar gardens that give residents the option to purchase a single solar panel for an upfront cost, and receive all the energy that it generates as a credit on their monthly electricity bill.⁷

Massachusetts has also established laws to allow the operation of solar gardens, resulting in the creation of various solar cooperatives. The Brewster Community Solar Garden Cooperative, for example, has successfully set up a large, 1440-panel array in the town that provides its members the electricity generated by the array as a credit on their utility bill every month.⁸ In this

⁵ For more information, see: <http://solarpanelhost.org/garden/massachusetts/solar-gardens-massachusetts>.

⁶ For more information, see: http://www.dailycamera.com/news/boulder/ci_21340100/xcel-flooded-solar-garden-applications.

⁷ For more information, see: <http://www.coloradoconnection.com/news/story.aspx?id=802660#.URqd8qW5Nrd>.

⁸ For more information, see: <http://www.brewstercommunitysolargarden.com/my-generation-energy/>.

particular program, the members purchase an upfront “SunShare”, entitling them to the ownership of 28 panels.

CURRENT EFFORTS

The Town of Reading is currently exploring options to develop solar arrays on town and school rooftops, some of which could be viable opportunities for CSS. An analysis of potential economic and program structures for a CSS project will be forthcoming as part of technical assistance provided through the Local Energy Action Program in 2013.

RECOMMENDATIONS

Some ways in which the RMLD could streamline the process of establishing a CSS project/solar garden in the Towns include:

1. Formalize a streamlined application process for customers to sign up.

- a. Clear instructions on RMLD’s website.
- b. Decide on customer priority (first-come first-served vs. lottery, or combination).
- c. Decide on solar panel limit per customer.

2. Implement a comprehensive outreach strategy.

- a. Create a landing page on RMLD’s website to clearly draw attention to the upcoming project.
- b. Include important information like what a solar garden is, why RMLD is pursuing it, costs and benefits to customers, etc.
- c. Promote the concept by attaching flyers to monthly utility bills.
- d. Discuss the creation of a replica model for the solar array in Town Hall, where each panel is labeled with its owner to create a sense of pride.
- e. Include a live, dynamic display that updates visitors on the amount of energy that the panels are generating.

For more information on how to conduct effective outreach to increase customer participation in utility programs, see “Outreach Strategies for Energy Efforts” on page 55.

3. Assess project replication potential

- a. Depending on customer reaction and demand, earmark future sites to build community solar.
- b. Fine-tune application process and marketing strategies to increase effectiveness.

LOCAL GREEN BUSINESS PROGRAM

Action: Partner with RMLD, the Reading-North Reading Chamber of Commerce, and other relevant entities to launch a Green Business Award to celebrate achievements and incentivize activities.

Target Sector: Commercial Sector

Goals Met: Align town efforts with RMLD program offerings.

Key Implementers: Reading Climate Action Committee; Reading-North Reading Chamber of Commerce; RMLD Energy Services Division; other Town staff and committees

The purpose of a Green Business Program is twofold: (1) to acknowledge the clean energy efforts and energy savings of the business community and (2) to encourage local businesses to take advantage of energy and renewable energy opportunities, such as utility incentives. As part of the program, neighboring businesses or business sectors can compete to showcase their efforts in increasing local commercial energy efficiency and adopting clean energy practices. To celebrate their success, local businesses can be rewarded with awards, such as window decals, certificates, marketing opportunities, and technical assistance.

For a community just starting out, it may be helpful to ramp up to full implementation of a Green Business Program in phases. Some sample ideas include:

Phase I: Launch of Green Awards

Allow “Blank Page” Nominations. For the first phase of the awards program, allow open nominations for a Green Award – anyone can nominate anyone for anything (including self-nomination). The application can be comprised of basic information (who are you, what do you do, contact info) and an open-ended response component asking for information on any activities that deserve recognition for innovation in sustainability. The goal should be to raise awareness of the program and encourage as many applications as possible.

Tip: Allow submissions through an online survey tool. SurveyMonkey is one option that is both free and easy to use, and results can be viewed by a number of people.

Energy/Sustainability Committee Recommends Awardees. The committee can also choose to include representatives from Municipal Staff, Chamber of Commerce or the RMLD. This Award Committee will review applications and select recipient(s) based on qualitative merit of their open-ended response.

Obtain Sponsorship for Awards. The Energy/Sustainability committee should pursue buy-in for the award from the RMLD and Chamber. This sponsorship could range from simply having their organizations listed on a certificate/window decal for the awardee(s), or a more tangible sponsorship such as paying for plaques, providing special incentives to the awardee (i.e., fast-

tracking them for an energy audit or solar energy assessment, providing special technical assistance in a certain area, increased rebates), etc.

Celebrate Awardees and All Participants. A highly publicized award ceremony will attract attention to the program as well as drive business to the awardee(s). Make sure that all press releases include information on how to submit applications for the next round.

Follow Up with All Nominees. The Energy/Sustainability committee, with input from RMLD, should provide all nominees with examples of what they can do to get an award for next year!

Some ideas: Get an energy audit from RMLD and complete a certain percentage of recommended work; partner with RMLD's residential efficiency program and offer gift cards to a certain number of residents who sign up for energy audit work.

Phase II: Green Business Program Development

Establish Pre-Requisites for Nomination. This might require a business to submit data on their non-electric fuel use and account numbers to easily look up electric fuel use data; get an energy audit from RMLD; or complete a number of simple tasks (such as lighting retrofits, posting information about the residential efficiency program in their place of work, etc).

Actively Develop and Market Portfolio of Opportunities. This should be a document that describes all opportunities to get involved in clean energy work, produced primarily by the Energy/Sustainability Committee, but distributed by the Chamber of Commerce, RMLD, Towns, other community partners, etc.

Add Categories for Awards. Consider encouraging competition between residents, municipal departments, schools, or towns overall in the RMLD service territory. This is a program that can be easily scaled and brought to other RMLD towns.

Program Implementation Overview

Implementation Steps and Responsibilities	Key Implementers
Design program and work plan	Community Energy Advisory Groups
Prepare program material	Community Energy Advisory Groups
Advertise program & recruit nominations	Community Energy Advisory Groups; Municipal Staff; RMLD; Chamber of Commerce
Review applications and select recipients	Community Energy Advisory Groups; Municipal Staff/RMLD/Chamber of Commerce (if needed)
Sponsorship of plaques, certificates, and/or window decals	Chamber of Commerce, RMLD
Sponsorship of technical assistance, energy efficiency expertise, and other incentives	RMLD

Case Studies

Methods of Implementation:

The section below summarizes examples of Green Business Programs in cities around the country that have proven to be successful in promoting green practices and energy efficiency in the commercial sector.

Municipality	I. Boston	II. San Francisco	III. Chicago
Program	Green Business Award	Green Business Program	Green Office Challenge
Key Implementers	City Office of Environmental and Energy Services	City Department of Environment	City Department of Environment
Program Model	By sector	By sector	Sector-specific; By ownership
Performance Measures	Sustainable and environmentally beneficial activities	Program standard scorecard	ENERGY STAR Portfolio Manager or Tenant scorecard
Benefits and Award	Green Business Awards	Green Business Program membership; technical assistance; marketing toolkit	Green Office Challenge Awards; technical assistance
Unique Attribute	Encourages innovative strategies	Increases awareness of standard guidelines	Promotes actions in target sectors

I. Boston Green Business Award

The City of Boston and its Office of Environmental and Energy Services created the Boston Green Program, which comprises of the Green Business Award, Green Residential Award, and Sustainable Food Leadership Award programs, in 2006 to acknowledge sustainable and environmentally beneficial practices in the community. The annual Boston Green Business Award program aims to engage the commercial sector by celebrating local success in sustainable business practices, such as waste management, energy conservation, clean energy promotion, and sustainable operations. Businesses in Boston can apply to earn the Green Business Award in one of the following four categories: (1) commercial; (2) industrial; (3) non-profit; and (4) academic, cultural, and healthcare institutions.

Candidates for the Green Business Award are selected by nomination. The nomination process requires a description of three or more environmentally beneficial activities that demonstrates the businesses' exceptional performance in promoting sustainable business practices. Examples of possible sustainable and environmentally beneficial practices include: energy efficiency upgrades, sustainable procurement policies, on-site renewable energy production, and the design and implementation of a comprehensive waste reduction/reuse/recycling plan. The Green Business Award recipients are announced at an annual award ceremony to acknowledge their sustainable efforts.

How to Adopt the Model

Local businesses can voluntarily apply to earn a Green Business Award under different business categories. Each application should include an energy audit of the business and descriptions of the businesses' clean energy actions, as well as the action results, such as

energy savings or event participation, if applicable. The Boston model allows businesses to freely describe their environmentally beneficial activities. This design encourages local businesses to think outside the box and pursue innovative strategies for promoting sustainability. Award recipients under each category are selected based on the number of clean energy actions they have practiced, the resulted savings, their community outreach effort, and the educational value and the innovativeness of their practices. The performance guidelines may vary based on the business categories. For example, community outreach may be valued more in the non-profit sector, while the educational value and innovativeness of an action may be more important for academic and healthcare institutions.

II. San Francisco Green Business Program

The San Francisco Green Business Program is a component of the Bay Area Green Business Program and the California Green Business Program. It was developed by the City's environmental department, SF Environment, to provide technical assistance to the commercial sector and to publicly recognize businesses that adopt sustainable and profitable practices. Local businesses under one of the following eight business sectors can apply to become a member of the SF Green Business Program by completing the program standard checklists.

- [Hotels](#)
- [Dentists](#)
- [Restaurants](#)
- [Garment Cleaning](#)
- [Offices](#)
- [Catering](#)
- [Retailers](#)
- [Janitorial Cleaning](#) (Program is under development)

Each performance standard checklist creates a rigid guideline for selecting SF Green Business members. Businesses must demonstrate that they are strictly in compliance with the environmental regulations on the checklist. These program standards comprise of various green business actions, including solid waste management and reduction, energy conservation, water conservation, and pollution prevention. For applicants who cannot meet all of the standard requirements, the program provides technical assistance and an [online toolkit](#) to help them implement green business measures. Businesses that meet all program requirements become a Green Business member and receive a San Francisco Green Business seal. A Green Business seal is a verification of a business's effort to be aware of the City's environmental regulations. The members also receive technical assistance and marketing opportunities to share their success through the Green Business Program website and the [Bay Area Green Business Program marketing toolkit](#).

How to Adopt the Model

The SF Green Business Program encourages local businesses to adopt specific environmental measures to achieve the municipality's sustainability goal. To adopt this model, a

municipality can create specific clean energy checklists for different business sectors. The checklists should incorporate any relevant actions listed in the Local Energy Action Plan, as well as other clean energy standards and measures that are suitable for helping businesses reduce energy consumption. All businesses should be required to complete the checklists annually to remind businesses of additional actions they can take, as well as to help the municipality both keep track of measures the commercial sector has adopted and to identify business sectors or projects that require more outreach. Businesses that demonstrate strong compliance with the guideline will be automatically considered as a candidate for the annual Green Business Award. Award recipients will be selected based on the specific measures the businesses have taken and their outcomes. For businesses that are unable to meet the requirements, the program can offer technical assistance and expertise through toolkits, workshops, and other outreach programs to guide them through the process.

III. Chicago Green Office Challenge

The Chicago Green Office Challenge is a sector-specific program created by the Chicago Department of Environment. The Challenge is a strategy of the [Chicago Climate Action Plan](#) and aims to promote sustainable and energy efficiency buildings in Chicago's downtown business district offices. Both office tenants and property managers are eligible to participate in the on-going Challenge.

- [Tenants](#) - Once registered to participate in the Challenge, the participating tenants complete an online scorecard to generate a baseline score that verifies green actions the office has taken. The Challenge guides tenants through “key milestones” needed to improve their scores by providing them with training and technical assistance to establish goals, create plans, implement plans, and evaluate performance. Once the participants complete these milestones, they can submit their final scores and receive public recognitions for their green business efforts at an award ceremony hosted by the Chicago Department of Environment.
- [Property managers](#) - Property managers follow a similar application process to what the office tenants do, but instead of scorecards, managers are required to complete an online data form to establish a baseline in four areas: energy, water, waste, and tenant engagement. The property managers are recommended to use ENERGY STAR's Portfolio Manager for tracking energy and water use. In order to accomplish the challenge, property managers need to implement measures to achieve the challenge goals listed in following table. The participants receive different levels of achievement depending on the number of goals they achieved. The program provides expertise to guide property managers throughout the whole process to complete the Challenge.

Chicago Green Office Challenge – Property Manager Challenge Goals

	Base Goal	Stretch Goal
Energy Use Reduction (Electric and Natural Gas)⁹	10%	30%
Waste Reduction	30%	50%
Water Use Reduction	10%	20%
Tenant Engagement	25%	50%

Chicago Green Office Challenge – Property Manager Levels of Achievements

	Option 1	Option 2
Leadership in Property Manager Excellence Award	3 Stretch Goals	-
Property Manager Excellence Award	2 Stretch Goals	4 Base Goals
Property Manager Achievement Award	1 Stretch+ 1 Base Goals	3 Base Goals
Property Manager Award	1 Stretch Goal	2 Base Goals

How to Adopt the Model

A sector-specific program can strategically engage businesses that are high energy users. Target sectors can be identified by employment size or energy consumption using the commercial baseline provided in this Energy Action Plan or by working with local utilities to identify high users. Based on the operation of the target sectors, a municipality can create a scorecard that includes recommended energy actions for each business type. Each action can be assigned with a score. In order to complete the challenge, businesses are required to obtain a certain score.

The program should provide training and technical assistance to guide businesses through the process, including setting goals, identifying applicable strategies from the scorecard, developing plans, implementing plans, and evaluating performances. Each program applicant is required to submit a recent energy audit and provide energy records, such as utility bills, to track energy consumption and set baseline for identifying reduction goals. On an annual basis, businesses are responsible for informing the municipality of the clean energy measures taken, aggregated energy and cost savings, and the updated Green Business score. The program can have multiple levels of achievement. As a business proceeds to score higher by implementing more green actions, it will move to a higher level of achievement. This design motivates businesses to stay with the program and continue to take clean energy actions. Participants who reach the highest level of achievement will be awarded in a ceremony.

Program Monitoring

1. Establish energy efficiency program participation goals and energy reduction goals for the Green Business Program.
2. Hold annual meetings with the RMLD, Chamber of Commerce, Energy Service Vendors, and local businesses to learn about the opportunities and challenges in promoting clean energy efforts in the commercial sector through the Green Business Program.

⁹ Properties that have earned an ENERGY STAR rating of 75+ automatically achieve the challenge goal.

3. Hold annual meetings with the RMLD to assess program participation, determine aggregated savings, and identify new program opportunities and incentives.

Resources

ICLEI's [Green Business Challenge website](http://www.icleiusa.org/climate_and_energy/green-business-challenge/) provides valuable information to guide local governments through the process of building successful Green Business Programs. Local governments can develop a tailored program using ICLEI's [Green Business Challenge web application](http://www.icleiusa.org/climate_and_energy/green-business-challenge/), as well as get planning process tips and examples of successful Green Business Programs through various guides and toolkits. For more information, see: http://www.icleiusa.org/climate_and_energy/green-business-challenge/

A Better City's [Sustainability Toolkit](http://www.abettercity.org/toolkit/index.html) is a living document designed to provide guidance for businesses, institutions, and buildings owners in the Greater Boston area to implement sustainable business practices. This toolkit is a great starting point for local governments and businesses with the interest in planning for green business development to identify and prioritize implementable and effective green business strategies. The document is categorized into eight areas ("Cleaning and Toxics," "Energy Efficiency," "People and Culture," "Purchasing," "Renewable Energy," "Transportation," "Waste Reduction," and "Water Efficiency"). Local governments and businesses can access informative guidance on sustainable business measures including new technology, policies, financing options, and rebates and incentives, as well as their benefits and local case studies. For more information, see: <http://www.abettercity.org/toolkit/index.html>

[UnCommon Sense](http://www.yellowstonebusiness.org/UncommonSense/) is a Green Business leadership program organized by the Yellowstone Business Partnership that helps local businesses in the Yellowstone-Teton region adopt sustainable and responsible practices. The program is a 2-year program and costs \$1,200 to enter. Participating business owners and business managers attend workshops and teleconferences to learn about sustainable business opportunities and gain peer support. The program website provides additional information about the program structure and materials needed to build a similar program. For information, see: <http://www.yellowstonebusiness.org/UncommonSense/>

Boston Green Business Award. "Green Business Award." Available online at: <http://www.cityofboston.gov/environmentalandenergy/greenawards/businesses.asp>

Chicago Green Office Challenge. "Chicago Green Office Challenge." Available online at: <http://www.chicagogreenofficechallenge.org/>

San Francisco Green Business Program. "SF Green Business." Available online at: <http://www.sfgreenbusiness.org/>

OUTREACH STRATEGIES FOR ENERGY EFFORTS

Action: Provide information to residents and businesses on existing programs.

Target Sectors: Residential sector

Objective Met: Align town efforts with RMLD program offerings.

Key Implementers: Reading Climate Action Committee; other Town staff and volunteer committees; RMLD

For any energy project or program to be successful, participation and engagement is critical. From spearheading a municipal energy project to developing a residential outreach program, it is important that proper messaging and marketing is used to ensure desired goals are achieved.

All stakeholders involved in community energy efforts, such as municipal staff and volunteers, can use the outreach and marketing techniques described below to create more effective programs and projects.

COMMUNITY BASED SOCIAL MARKETING

Research has found that outreach campaigns that focus entirely on education are not effective:

The failure of mass media campaigns to foster sustainable behavior is due in part to the poor design of the messages, but more importantly to an underestimation of the difficulty of changing behavior....Information campaigns alone will rarely bring about behavior change.

- Doug McKenzie Mohr, Community Marketing Expert

There are several factors that influence the success of an energy campaign. Based on research in the field and MAPC's past experiences, key elements to successful outreach efforts include:

- A clear vision of desired behaviors or actions
- A streamlined process to influence the development of targeted behaviors or actions
- Effective and knowledgeable leaders
- Focused and personalized messages

Community based social marketing (CBSM) is an outreach strategy that is gaining increasing popularity in sustainability campaigns across the country. CBSM goes beyond traditional outreach efforts by leveraging community relationships and social interactions to build upon informational campaigns. Specifically, CBSM requires those performing outreach to think carefully about their desired goals and how they can utilize local, community-based interests, values and relationships to achieve such goals.

THE 7 STEPS OF COMMUNITY BASED SOCIAL MARKETING¹⁰

1. Identify behaviors and barriers.

To effectively promote energy actions, you must first identify what energy behavior(s) you are looking to change, since each behavior might have different barriers. Are you trying to encourage people:

- To sign up for an energy audit?
- To turn off lights more frequently?
- To use a programmable thermostat?
- To collect and review energy data and project information on an ongoing basis?
- To do something else?

After you identify the energy-related behavior(s) you would like to promote, you must then identify the barriers to such behaviors. Do people not exhibit the preferred behaviors because of:

- Lack of awareness?
- Lack of interest?
- Lack of time?
- Lack of resources?
- A combination of these reasons?
- Something else?

You may be able to identify these barriers using knowledge gained from past experiences. You may also want to do additional research, such as creating a survey or holding a focus group, to make sure you know what the real barriers are to convincing people to pursue the desired energy-related behaviors.

2. Build commitment.

Research has found that people have a strong desire to be seen as consistent, and therefore building commitment is an important step in encouraging a particular behavior. Collecting written pledges is a simple and effective way to build commitment. Such pledges not only give a person more incentive to follow through with an action, but the pledges can also be displayed to advertise community members' commitment and actions.

Written Pledge Guidelines:

¹⁰ This section builds upon Doug McKenzie-Mohr's *Fostering Sustainable Behavior*.

- Keep it simple and non-authoritarian (e.g., “I pledge to sign up for a MassSave audit” or “I pledge to lower my thermostat at night and when I leave the house”).
- Offer a pledge card to remind people of their pledges.

Local leaders and influential community members should be used to assist with the pledge collection, as they will help legitimize the cause among a large number of constituents.

3. Use prompts.

Prompts are effective reminders. Examples of prompts include:

- Pledge displays, such as yard signs or pictures of people holding their written pledges posted in town hall or a public library;
- Stickers on light switches, thermostats, dishwashers, and washing machines;
- Door hangers or mailers praising those who have taken steps to pursue clean energy efforts;
- Door hangers or mailers with reminders about next steps for those who may have pledged to do something, such as have a home energy assessment, but have not yet followed up.

4. Build social norms.

Tip #1: Use descriptive norms only to promote desirable behaviors.

More Effective:

“90% of guests at Hotel Eco-Friendly choose to re-use their towels. If you do not require towel service, please hang your towels back on the rack.”

Less Effective:

“Hotel Eco-Friendly uses 100,000 gallons of water per month to wash towels. Help us conserve: hang your towels back on the rack if you do not require daily service.”

Incorporating social norms into a group’s messaging can make outreach more effective. Descriptive norms indicate which behaviors are normally engaged in by a community. When a hotel sign states that most guests reuse their towels, it is using a descriptive norm to encourage guests to reuse towels. You can use descriptive norms to promote an energy behavior by describing or displaying people’s participation in whatever action you are trying to promote. However, it should be noted that research has found that if an undesirable behavior is a frequent occurrence, showcasing the frequency of the negative behavior may actually encourage others to engage in that action. For

example, showing that people do not recycle will actually encourage more people to do this negative action instead of a positive action. Therefore, one should only use descriptive norms to promote a desirable behavior.

Injunctive norms provide information on behaviors of which a community approves or disapproves. The use of happy or sad emoticons when reporting on someone’s success in reducing energy consumption is an example of using

Tip #2: Back up an injunctive norm (“praise”) with a descriptive norm (“information”).

Not Helpful:

“😊 -- You used 10% less energy in June than in May. Thanks for helping the planet!”

More Helpful:

“😊 -- 15 of the 25 houses on this block used less energy in June than in May. Keep up the good work!”

injunctive norms. However, sometimes using just an injunctive norm fails to result in a desired outcome. For example, in a study that used door hangers to promote energy conservation, researchers found that residents who received a message that just used an injunctive norm, such as praise or smiley face for their level of energy conservation actually increased their energy consumption. However, those who received a message with a descriptive and an injunctive norm of praise were more likely to maintain their level of energy conservation. When using social norms, one should think carefully about the potential impact of the message and consider using descriptive information with praise to promote desirable actions.

5. Offer incentives.

Incentives can create motivation. RMLD and MassSave, the state's energy efficiency program, already provides financial rebates and incentives to businesses, residents, and the four towns. If the people you are trying to reach are not motivated by financial incentives, you might find it more effective to explain to residents or businesses that they have actually already paid into RMLD energy efficiency programs and the MassSave system through a System Benefits Charge on their utility bill.

Other incentives that you can offer that may be effective include:

- Offering prizes for competition or challenge winners. Prizes should be meaningful (no one really cares about getting another free reusable bag). Some energy campaigns have sought donations from utility providers or private businesses to provide incentives such as solar panels on schools and gift cards to local businesses.
- Providing public recognition in the local paper, on the municipal website, etc. Public recognition uses injunctive norms to praise people for good behavior and this type of incentive may be particularly effective for those who are not motivated by financial incentives.

6. Market your message.

A key component of CBSM is using social interactions to market a campaign's message. Although the media and informational campaigns can be effective in encouraging a small group of people to become early adopters of a particular action, research has found that personal interactions are crucial in promoting the adoption of a behavior more broadly.

Promoting residential and business energy efficiency actions through social means can be challenging because such actions are often invisible to neighbors, friends, and peers. This challenge further highlights the benefit of using prompts and commitments to make actions more noticeable in the community.

Tips for designing your message:

- Know your audience: listen to people's interests/concerns and use this to design outreach methods (e.g., if people don't care about costs, don't use "free" as a selling point; if people are busy, be able to show them how little time/effort the action requires)

- Use nonpolitical language
- Make the message easy to remember
- Make the message specific
- Always stay positive
- Use the right messengers

Competitions & Challenges

Competitions and challenges can be designed in a variety of ways, such as among local businesses, among schools, among municipal departments, among municipalities, etc. Before creating a competition or challenge it is important to build partnerships with community leaders and organizations that will participate in and/or promote local energy efforts. Such leaders or organizations may include:

- Schools (school superintendent, school board, teachers, etc.)
- Places of worship (clergy)
- Youth (school clubs, Boy Scouts, Girl Scouts, etc.)
- Neighborhood associations
- Local businesses and business organizations

Examples of competitions and challenges in Massachusetts:

- **Greenfield's 10% Challenge** – The Greening Greenfield Challenge asks residents to participate in the challenge by pledging to do a range of energy reduction actions. Those who join the challenge receive a lawn sign and monthly information/tips on how reduce energy consumption. Over 40 businesses have also joined the challenge. For more information see: <http://greeninggreenfield.org/>
- **SouthCoast Energy Challenge** – The SouthCoast Energy Challenge is a regional campaign that challenges residents to make an online pledge to participate in a range of energy reduction activities either individually or as part of a team. The challenge has users track their progress on MyEnergy, an online webtool,. For more information see: <http://southcoastenergychallenge.org/press>

Themed Workshops & Parties

Themed workshops or parties are a great way to have people who are not initially interested in energy-related issues get together to talk about an issue of interest that does in fact relate directly to energy issues. The workshops or parties can be held in various places depending on the audience (e.g., house parties, community centers, Mass Audubon sanctuaries, schools, places of worship, etc.)

Examples of workshops or parties in Massachusetts:

- **Ice Dams Workshops** – The Center for EcoTechnology (CET) holds a workshop entitled “Ice Dam Prevention: Why they happen and what to do about it.” During the workshop CET discusses why ice dams are a problem, their underlying causes, building science, options for remediation and prevention and resources available for weatherization. For more information see: <http://www.cetonline.org/>
- **Climate Change at the Local Level** – Mass Audubon hosted a workshop in Worcester that focused on the potential impact of climate change on local resources (e.g., the Blackstone River watershed) and local action steps that can be taken to address these potential impacts. Mass Audubon’s workshop focused on the MA Green Communities Act, but a group could just as easily talk about residential audits and retrofits. For more information see: <http://www.nbcares.org/node/865>
- **New Homebuyer Workshops** – The Housing Assistance Corporation on Cape Cod (HAC) holds new homebuyer workshops that include sections on the benefits of energy efficiency. A group could hold a similar workshop both for new homebuyers, as well as for those who are planning to do major renovations to their home. For more information see: <http://www.haconcapecod.org/>

Enhanced “Traditional” Outreach

- **Information Tables** – Although setting up information tables can sometimes be effective, many groups struggle to table at a) events where people are already interested in energy and know what to do, or b) locations such as grocery stores, where people are busy and do not want to stop to talk. Some methods to improve tabling success may include:
 - **Ask passersby to make a written pledge.** Encourage them to sign a written statement committing to whatever action you are promoting (e.g., “I will get a MassSave home energy assessment”), and then follow up with them via phone and email to remind them of the pledge and their commitment.
 - **Offer a reward for signing up, either directly or through a raffle/drawing.** A gift card to a business located near the tabling location can provide an immediately relevant incentive, and is also a good way to engage surrounding businesses in your efforts.
- **Advertising in Newspapers and Mailings** – While traditional advertising and mailings can be informative and educational, this outreach strategy can easily be overlooked by its intended audience. Some ways to increase the effectiveness of this strategy could include:
 - **Present injunctive and descriptive norms in an easily digestible form.** Compelling images, visualizations of relevant behavioral data, and a clear and succinct layout can all contribute to a message that is more likely to be viewed and comprehended. However, even a simple advertisement can be effective so long as the intended

outcome is clear (e.g., “Attend a free workshop next Tuesday on how to reduce home oil heating costs this winter!”)

- **Advertise in media that is more likely to be viewed.** This could include official mailings from the municipality, power and water bills, etc.
- **Email** – These days everyone is overwhelmed with email. To increase the number of viewers of a mass email, consider asking a well-known leader or organization to send out the email on behalf of an effort. One town in Massachusetts had great success having the municipal government send out an email about residential energy opportunities. Further, emails that focus just on the energy action you are promoting will likely be more effective than embedding a message about the action somewhere in a general newsletter that touches on multiple topics or has multiple articles.

7. Identify external barriers.

As you proceed with your outreach, it is important to make note of the external barriers that prevent residents from moving forward with particular behaviors or actions. These barriers should be reported to the relevant key stakeholders, e.g., municipal leadership, MAPC energy staff, RMLD, National Grid, and MassSave program administrators, to ensure stakeholders are aware of the issues or problems that need further attention.

References

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