Municipal and School Department

Energy and Sustainability Plan

Town of Falmouth, Maine

October 2018

MISSION STATEMENT:

Sustainability is balancing environmental stewardship, social responsibility, and economic vitality to meet the Town's present needs while ensuring the ability of future generations to meet their needs.

VISION STATEMENT:

By highlighting existing achievements, evaluating and employing sustainable practices with our residents, schools and business community, Falmouth will continue to be a regionally engaged and sustainable community.

EXECUTIVE SUMMARY:

In 2007, the Town of Falmouth signed the U.S. Mayors' Climate Protection Agreement, which recognized a voluntary commitment of reducing town greenhouse gas emissions within municipal operations (See Appendix I). During that time, the ad hoc Green Ribbon Commission (the "Commission") was established and tasked to prepare an emissions inventory and offer recommendations on ways to lower emissions within the town (For Commission Charge, see Appendix II). The twenty -seven (27) recommendations in the Climate Action Plan were accepted by the Town Council in 2010. The ideas and findings from the Commission have strongly influenced Town planning, and many were incorporated into the most recently updated 2013 Comprehensive Plan.

One of the Commission's recommendations was to create a standing committee of town volunteers to work on energy and waste reduction efforts. In 2010, the Recycling and Energy Advisory Committee (REAC) was established to advise the Falmouth Town Council on matters relating to the Town's solid waste and recycling program, energy efficiency, and other related matters. REAC consists of seven town residents who have experience, knowledge, and/or interest in energy efficiency, sustainability, and waste reduction initiatives. Duties of REAC include but are not limited to the following:

1. Endeavor to save local taxpayer dollars through increased energy-efficiency of municipal facilities and operations;
2. Prioritize the ad hoc Falmouth Green Ribbon Commission's 2010 recommendations that the Town Council wants to pursue;
3. Educate Falmouth residents and businesses about energy efficiency, waste reduction, and clean energy opportunities and choices;
4. Enhance and promote the Town's recycling program;
5. Promote the use of clean, renewable energy sources in Falmouth's public and private facilities through education and outreach;
6. Work with surrounding communities on potential regional energy efficiency and clean energy and waste management strategies;

7. Monitor new developments and options in the fields of energy and waste management as technologies evolve and change; and
8. Research and report policies to accomplish the above goals and/or related goals deemed appropriate by the Town Council.

The Town and School Department began engaging in sustainability efforts in the Climate Delegation trip to Denmark most recently in the fall of 2015. The Falmouth schools have been committed to sustainability for years, and their leadership provides tremendous value to these joint sustainability efforts. Set in 2010 by the Commission and embedded within this working document is Falmouth's commitment to reduce energy use along with by a **2% annual greenhouse gas emissions reduction goal.**

An understanding of how energy is being used for municipal operations brings value as it allows us to examine facilities and vehicles for potential cost savings, emissions reduction, and integration of renewable and/or efficient technologies. It is important to recognize we can only manage what we can measure. Sustainability Metrics, LLC, d/b/a RAPPORT has assisted the Town and School Department with greenhouse gas emission inventory and assessment. Part of the services they provide includes software and "dashboard", RAPPORT, which helps measure, track and reduce environmental impacts. Key findings from RAPPORT include but are not limited to the following:

1. Gross square footage of Town buildings has increased by approximately 25% since 2007 (see Appendix III), but efficiency measures has held carbon dioxide equivalence (CO_2E) steady—in fact, a 1% reduction;
2. Biomass accounts for 26% of the carbon footprint (the largest single source), and while biomass does have a carbon impact on our environment, we are using a renewable and local resource;
3. The Elementary, Middle and High Schools account for about 77% of the town's carbon footprint. Engaging students could help reduce this as well as provide for educational opportunities;
4. Fuel switching from 2007 to the present has made a positive impact on our emissions;
5. Adopting advanced lighting technology such as LED streetlights and LED interior lighting will further reduce our impact;
6. Gasoline and diesel fuel in the vehicle fleet are another high cost impact; vehicle fuel efficiency should be assessed;
7. A emissions target should be established based on a 2012 baseline, instead of the original 2007 baseline—this change reflects complete and accurate data collection, as well as a reflection of growth.

(For greenhouse gas data, see Appendix IIII)

HISTORY OF FALMOUTH'S
PROGRESS TOWARDS SUSTINABILITY:

2007-2010	Signing of U.S. Mayor's Agreement and the formation of the ad hoc Green Ribbon Commission. Final report presented and adopted 2010
2007	Waste Water treatment plant conducted major electrical upgrades which has reduced their electricity consumption substantially; completed in 2008 LEED Certified Elementary School opened, which features a geothermal heating and cooling system, rainwater collection and green roofs
2008	Walk through building audits were conducted on many town buildings and several improvements were implemented Propane replaced heating oil for Town Hall and Public Works All fire stations converted from oil to propane; solar hot water was also installed LEED certified new Police Department opened Town purchased two Toyota Prius automobiles. Biodiesel also integrated into vehicle fleet
2009	Solar photovoltaics installed on High School—supplying 1/3 of electricity for the building
2010-2011	Elementary, Middle and High Schools' entire domestic heat and hot water is being supplied through onsite biomass boilers
2013	Falmouth engaged in regional municipal energy working group (Municipal Streetlight Group) for third and final attempt to change state streetlight laws
2014	Falmouth hosts first annual Home Energy Fair that was attended by roughly 300 people. Model has been adopted in many Maine municipalities, such as: Portland, South Portland, Gorham, Saco and Brunswick (See appendix V for Logic Model)
2014-2015	Energy assessment and energy improvements conducted at renovated Mason-Motz Activity Center Town Hall (original building dates to 1909) renovated; energy improvements incorporated Falmouth received $3,000 in rebates through Efficiency Maine's lighting program for LED pedestrian lights on Route 1

2015	Waste Water Department converted all operations from oil to natural gas Full time Energy and Sustainability Coordinator hired. Reports to Town Manager, works with all departments, as well as acts as staff support to REAC and Conservation Commission
2015-2017	Municipal Energy Group (formally called Municipal Streetlight Group) joined stakeholder process in developing state solar policy changes Falmouth Schools partner with SIEMENS; energy teams formed at Elementary and Middle Schools
2016	Town purchased all-electric Nissan LEAF School department received grant for water bottle filling station Schools received rebates from Efficiency Maine for LED lighting upgrades Town Hall employees began composting food scraps on site. Falmouth food pantry also began composting with third party Food waste drop off program began for residents at the Transfer Station Falmouth adopted a single-use shopping bag ordinance with a five-cent fee on paper and plastic bags for stores >10,000 sq. feet
2017	Chamber of Commerce partnered with the Town and held the first Business Energy Fair at the Ocean View community Falmouth participated in a regional residential bulk purchasing effort, *Casco Bay Heat Pump Challenge*. Also partnered with WindowDressers and built 100+ custom window inserts for Falmouth residents
2016-2018	Falmouth hired RealTerm Energy to assist in conversion of streetlights to LEDs. The Town purchased streetlight assets from CMP, installed, and now owns and maintains approximately 600 streetlights
2018	Held a waste station at FalmouthFest, part of Falmouth300 celebration. Diverted all but 2 ½ bags of trash to be composted or recycled; event was attended by roughly 1,000 people.

GOALS AND ACTION ITEMS PER SECTOR:

A. Municipality

Goal—Enhance efficiencies in municipal operations by being committed to reduce fossil fuel use through energy efficiency, integrating renewable energy when feasible, and implementing waste reduction and diversion practices.

Action Items:

1. Explore funding opportunities for energy and waste reduction projects;
2. Continue researching the feasibility to site large scale solar array on the capped landfill, and smaller systems on municipal buildings' roofs;
3. Complete LED street light conversion project;
4. Upgrade interior and parking lot lights with LEDs;
5. Re-audit municipal buildings and implement recommendations when appropriate;
6. Adopt a high energy building performance standard for new municipal buildings and require energy audits when retrofitting or expanding any municipal building;
7. Procure only high preforming energy efficiency appliances;
8. Modernize vehicle fleet by integrating low or no emission or biodiesel vehicles, and establish a vehicle purchasing policy if appropriate;
9. Conduct waste audits in all departments with a goal of committing to more sustainable practices;
10. Expand organic/food waste drop-off program;
11. Have waste stations at Town events to appropriately divert waste to trash, compost and recycling. Work with vendors to ensure most waste generated can be composted;
12. Continue working with professional consultants to provide accurate and verifiable greenhouse gas emission calculations for the municipality and schools, to be used to verify emission reduction goals.

B. School Department

Goal—Enhance collaboration between the Town and schools regarding sustainability initiatives.

Action Items:

1. Work with teachers and students on projects relating to energy and waste reduction;
2. Be a resource to the school horticulture and farm-to-table efforts;
3. Assist school department in transportation initiatives.

C. Businesses

Goal—Work with local businesses to improve their bottom line through sustainable practices.

Action Items:

1. The Sustainability Coordinator should be a resource for providing information on funding opportunities for energy efficiency improvements;
2. Work with the business community to reduce the consumption of environmentally harmful products (plastics and styrofoam as examples);
3. Assist businesses in implementing waste diversion practices;
4. Be a resource to businesses to provide alternative modes of transportation for employees and customers (EV charging stations, bicycle racks etc.).
5. Explore feasibility of more advanced buildings standard for new constructions and renovations.

D. Residential

Goal—Provide services to residents needed to improve sustainable practices.

Action Items:

1. Continue education and outreach to residents through events, newsletter, workshops, seminars and programs;
2. Continue to explore modernizing curbside trash collection;
3. Explore incentive programs to help residents improve sustainability in their homes; provide a handout with information on stretch codes (building to a more stringent code than required);
4. Explore feasibility of adopting an advanced building code for new construction and renovations;
5. Be a resource to neighborhoods and residential communities such as the OceanView community for all sustainability endeavors.

E. Regional

Goal—Be at the forefront on sustainability policy development at Regional and State levels.

Action Items:

1. Continue to ensure Falmouth leads by example and is a resource to all Maine communities;
2. Remain aware and engaged in other municipal sustainability projects (GPCOG's Clean Communities, NRCM, Sierra Club and the Maine Municipal Association, as examples).

CONCLUSION:

Coordinating and implementing programs at the local government level may help define which reduction measures make the most environmental, economic and social sense for application in the commercial and residential sectors. The Town will also continue monitoring and collaborating with other entities in order to stay informed about the latest trends. This will also the Town to be a resource for all stakeholders in our community.

By developing a comprehensive approach to sustainability, this Energy and Sustainably Plan will serve as a tool and a road map for helping the Town coordinate efforts, track progress, and focus energies on the highest priorities. For administrative purposes, policy development and standard operating practice, the Falmouth Town Council is advised to make decisions based on the mission and vision statements within this plan, keeping sustainability at the forefront. This Plan creates a framework for Falmouth to continue being a regionally engaged and recognized sustainable community.

APPENDICES:

I. U.S. Mayors Climate Change Agreement
II. Charge of Green Ribbon Commission
III. Square Footage Increases in Buildings from 2007
IV. Greenhouse Gas Emissions Data
V. Home Energy Fair Logic Model

Appendix II.

AN ORDER TO ESTABLISH AN AD HOC COMMITTEE

ON ENERGY AND SUSTAINABILITY

[Excerpt from Minutes of Town Council Meeting March 24, 2008]

WHEREAS, The Town of Falmouth has signed the U.S. Mayor's Climate Protection Agreement (USMCPA) committing to reduction of carbon dioxide emissions 7% below 1990 levels by 2012; and

WHEREAS, the Town of Falmouth desires to meet—and exceed—the USMCPA's targets; reduce our use of fossil fuels; improve our local economy and quality of life; and advance the preservation of Falmouth and our natural world; its beauty; and its bounty for ourselves, our children and all that follows; and

WHEREAS, the continued production of carbon dioxide from fossil fuel combustion is causing an accelerating series of climate changes with substantial and costly impacts and, if unchecked, will soon have significant impacts on Falmouth, our children and human civilization; and

WHEREAS, sound investments in improved energy performance and renewable energy supply provide significant benefits to our environment and quality of life, our local economy, and our energy security; offer a sustainable and prosperous future for us and our descendants; and are the fastest, cleanest and most profitable way to reduce fossil fuel use and emissions of carbon dioxide; and

WHEREAS, the Town of Falmouth desires to take a leadership position in these regards; and

WHEREAS, the Town of Falmouth will realize these goals in a well researched, integrated, broadly supported plan as developed, drawing on the wide range of interests and expertise in the town and is implement by Town Council.

WHEREAS, it is believed that at this time an Ad Hoc committee structure will be more flexible than that of a standing committee, and will, the Council believes and intends, create a sense of urgency and importance of this mission, and

WHEREAS, it is the intention that the Ad Hoc Committee shall be replaced by a standing committee to assist in the implementation of the Ad Hoc Committee's recommendations.

NOW THEREOFRE, we, the Town Council of Falmouth, Maine, herby Order in the creation of an Ad Hoc Committee, to be known as the Falmouth Green Ribbon Commission on Climate Protection. The Committee shall:

1. Recommend climate protection actions to the Town Council and Town Manager, for the Falmouth community to meet or beat the Kyoto target.
2. The Commission shall draw on the work of other communities, resources within the citizenry of the town, town staff, and others to put together its recommendations.
3. The commission shall interpret this charge broadly.
4. The Commission shall self organize itself as follows:

a. Initial members shall include members of the group informally known as the citizens' working group. The initial co-chairs for the purpose of organizing shall be Susan Howe and Michael Morrison.
b. The chair or co-chairs shall schedule, set agendas for, and preside over the Commission meetings.
c. Membership is not expected to exceed twenty people.
d. The interim co-chairs shall report back to the Council Nominating Committee no later than thirty days from the date of this order with its recommendations for permanent chairs, and nominations for membership.
e. The Commission shall give consideration in nominating members to balance background (business leaders, school administrators, members of the faith community, community organizations, energy suppliers, facility managers, and energy performance/renewable energy experts), gender, and age.
f. The Town Clerk shall advertise that the Commission is seeking volunteers for service on the Commission.

5. The Commission shall report back to the Town Council and Town Manager no later than one year from the date of this order. The Committee shall present annually a report and a work plan to the Town Council.

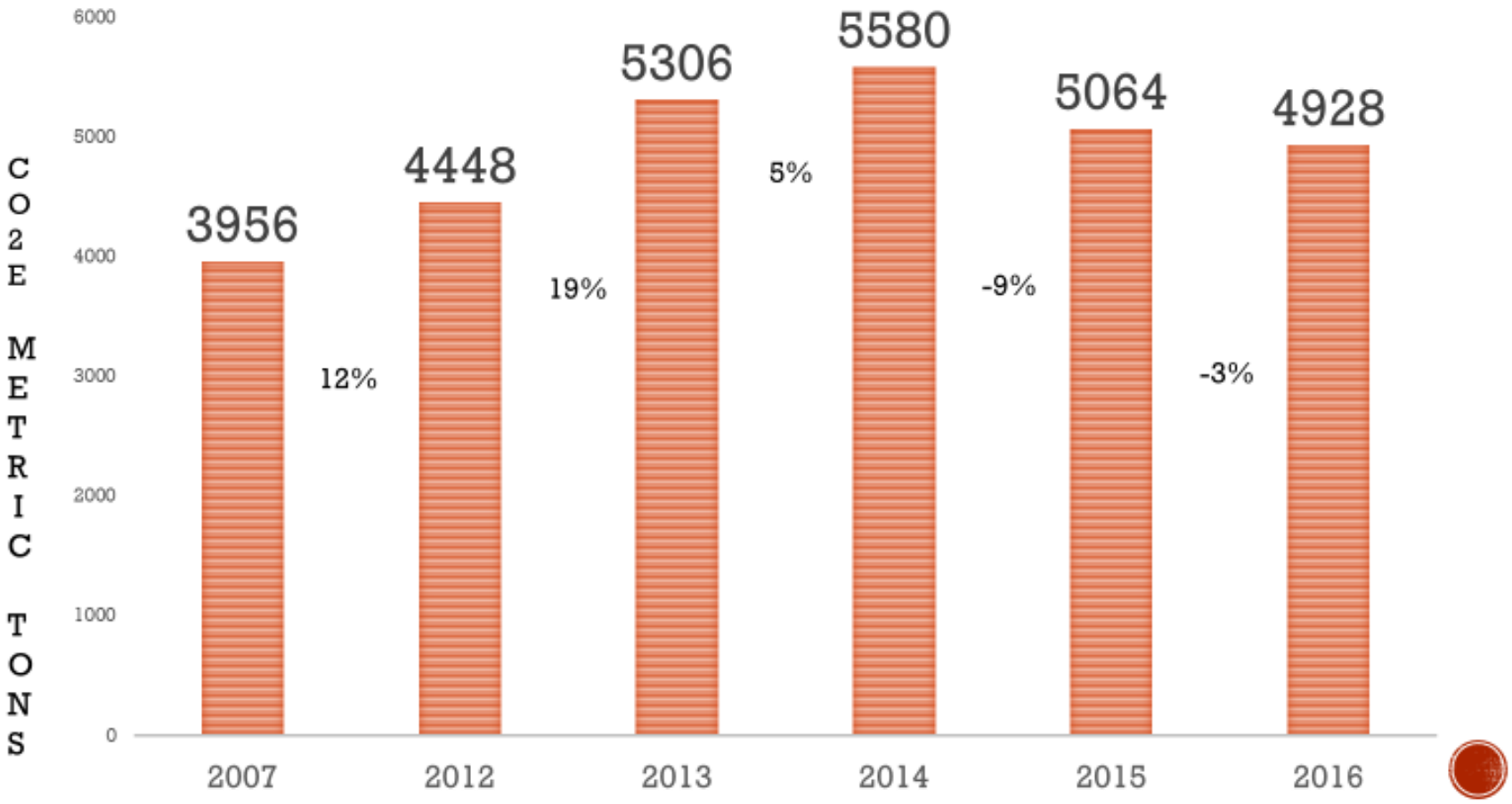
Be it Hereby Ordered, this 24th day of March, 2008, by the Town Council of the Town of Falmouth, Maine.

Appendix III. Square Footage Increase

Department	Building	Square Footage as of 2007	Square footage as of 2015	Town owned? (present)	Total by Department 2015	Increase in square footage	Decrease in square footage
Town Office	Town Hall	14,655	14,655	Yes	14,655		
Police	Police Department	n/a	8,000	Yes			
	Town Landing	400	400	Yes	8,400	8,000	
Public Works	Main Building	15,636	15,636	Yes			
	Garage	12,154	12,154	Yes			
	Transfer Station	18,000	18,000	Yes			
	Storage	672	672	Yes			
	Bargain Barn	540	540	Yes	47,002		
Fire	Winn Road	5,880	5,880	Yes			
	Foreside Road	2,070	2,070	Yes			
	Bucknam Road	6,352	8,112	Yes	16,062	1,760	
	Allen Avenue	2,250	n/a	No			2,250
Waste Water	Administrative	3,392	3,392	Yes			
	Head Works	3,128	3,128	Yes			
	Control	3,044	3,044	Yes			
	Blower	552	552	Yes			
	Electrical	480	480	Yes			
	Chemical	1,720	1,720	Yes	12,316		
School	High School	140,000		Yes			
	Middle School	140,000		Yes			
	Elementary School	n/a	140,000	Yes			
	Superintendents Office	2,258	2,258	Yes	422,258	140,000	
	Plummer	22,700	n/a	No			22,700
	Lunt	10,500	n/a	No			10,500
Community Programs	Mason-Motz	9,650	9,650	Yes			
	17 Mill Garage	4,160	4,160	Yes			
	20 Mill Garage	988	988	Yes			
	Village Park Maintenance Garage	300	300	Yes			
	Warming Hut	1,200	n/a	No	5,488		1,200
TOTAL		422,681	535,791		535,791	149,760	36,650
Total Increase							113,110
Percent Increase	535,791 -	422,681	113,110	422,681	=.267	X 100	26.8%

Appendix IV.

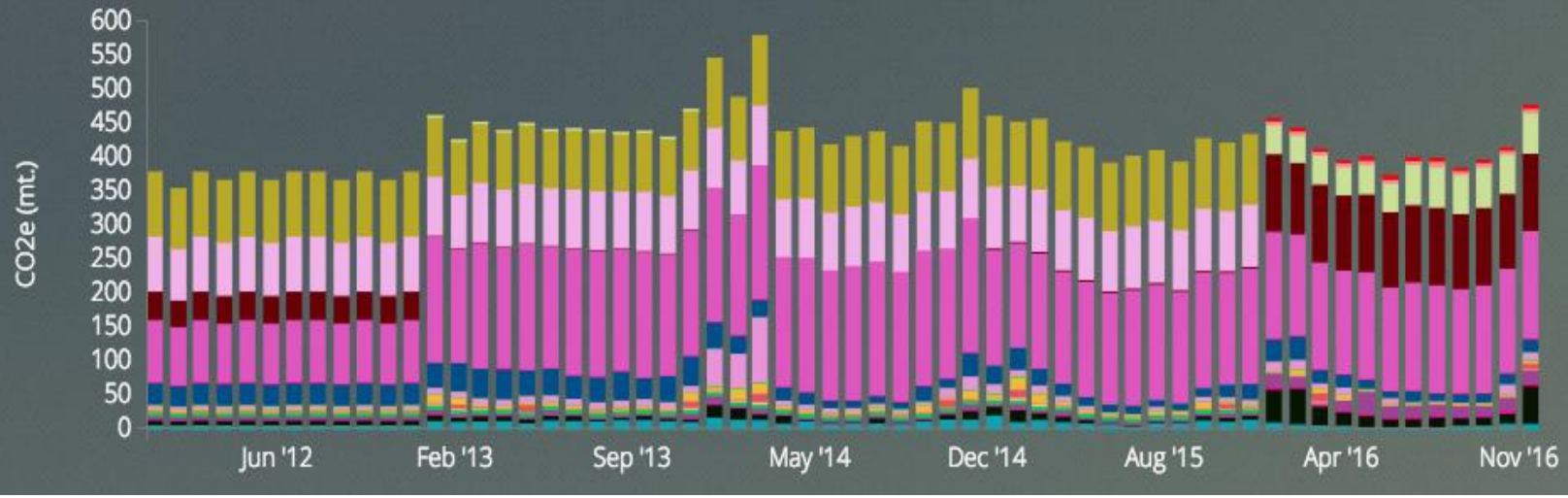
Greenhouse Gas Emissions Data



CO2e by Sites

SITES: 17 Mill Garage, Community Development: Fuel, Community Programs: Fuel, Elementary School, Fire Barn, Fire Department: Bucknam Rd, Fire Department: Foreside Road, Fire Department: Winn Rd, Fire/EMS: Fuel, Harbor Master: Fuel, High School, Mason-Motz, Middle School, Mini Mill Garage, Parks: Fuel, Police Department, Public Works, School: Fuel, Schools:Electricity, Streetlights, Superintendent's Office, Town Hall, Town Landing, Transfer Station, Vehicles, Waste Water Facilities (Admin and Plant)

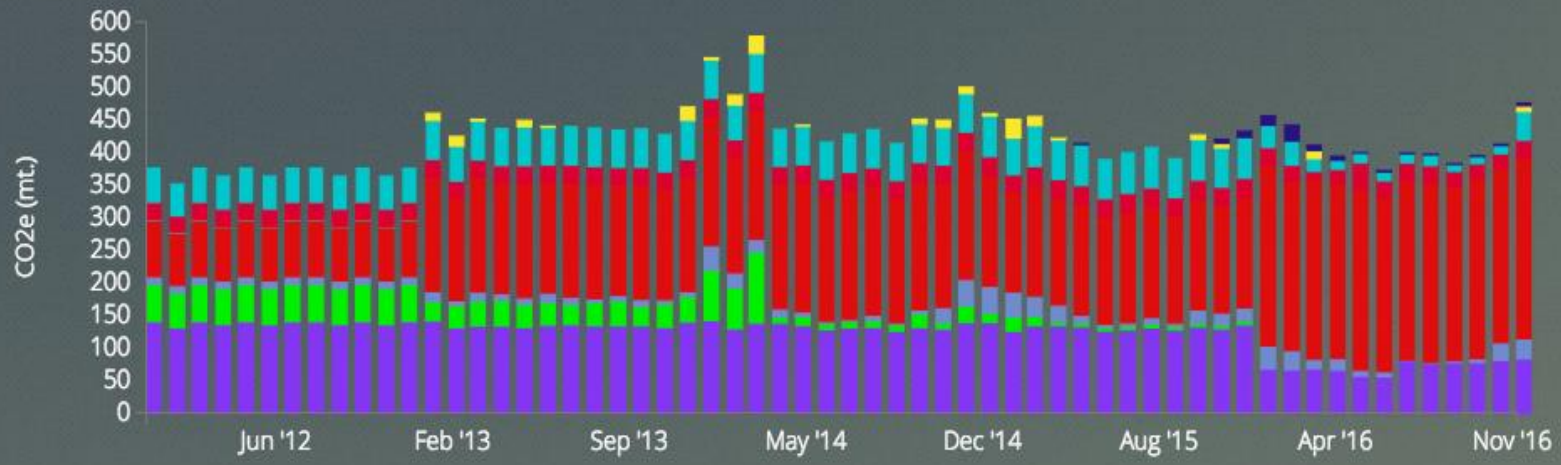
IMPACTS: #2 Fuel Oil, Diesel Fuel - Onroad, Electricity - Consumption, Gasoline, Heating Oil, Kerosene, Natural Gas, Propane, Solid Waste - Unspecified, Water, Wood



CO2e by Impacts

SITES: 17 Mill Garage, Community Development: Fuel, Community Programs: Fuel, Elementary School, Fire Barn, Fire Department: Bucknam Rd, Fire Department: Foreside Road, Fire Department: Winn Rd, Fire/EMS: Fuel, Harbor Master: Fuel, High School, Mason-Motz, Middle School, Mini Mill Garage, Parks: Fuel, Police Department, Public Works, School: Fuel, Schools:Electricity, Streetlights, Superintendent's Office, Town Hall, Town Landing, Transfer Station, Vehicles, Waste Water Facilities (Admin and Plant)

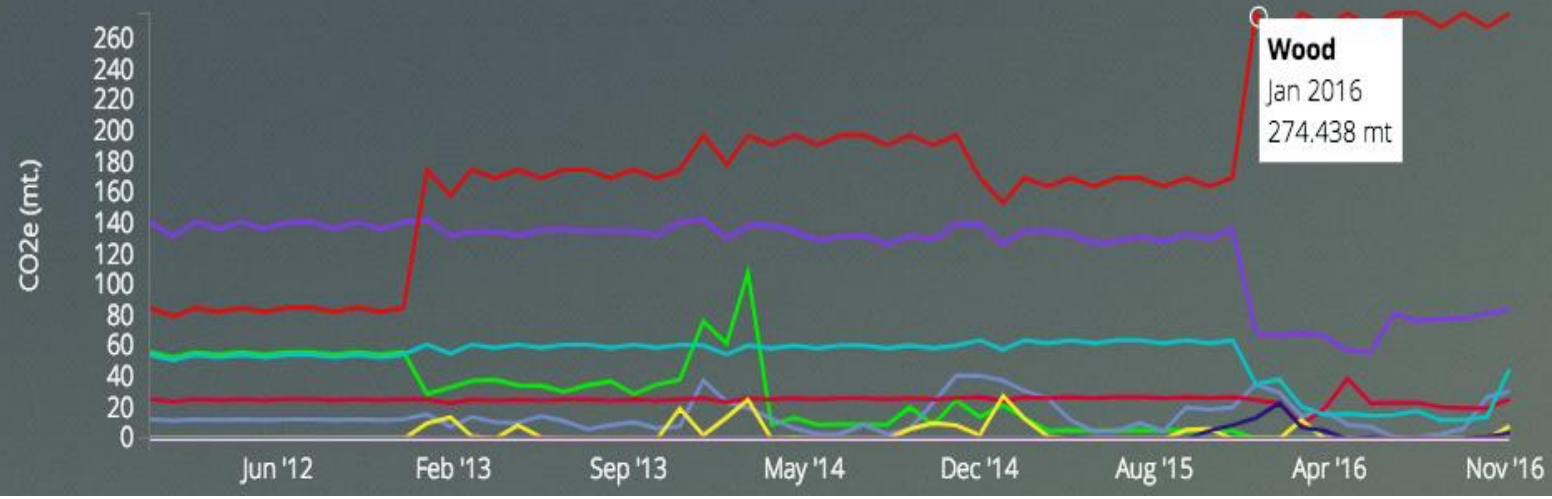
IMPACTS: **#2 Fuel Oil**, **Diesel Fuel - Onroad**, Electricity - Consumption, Gasoline, Heating Oil, **Kerosene**, Natural Gas, Propane, Solid Waste - Unspecified, **Water**, Wood



CO2e by Impacts

SITES: 17 Mill Garage, Community Development: Fuel, Community Programs: Fuel, Elementary School, Fire Barn, Fire Department: Bucknam Rd, Fire Department: Foreside Road, Fire Department: Winn Rd, Fire/EMS: Fuel, Harbor Master: Fuel, High School, Mason-Motz, Middle School, Mini Mill Garage, Parks: Fuel, Police Department, Public Works, School: Fuel, Schools:Electricity, Streetlights, Superintendent's Office, Town Hall, Town Landing, Transfer Station, Vehicles, Waste Water Facilities (Admin and Plant)

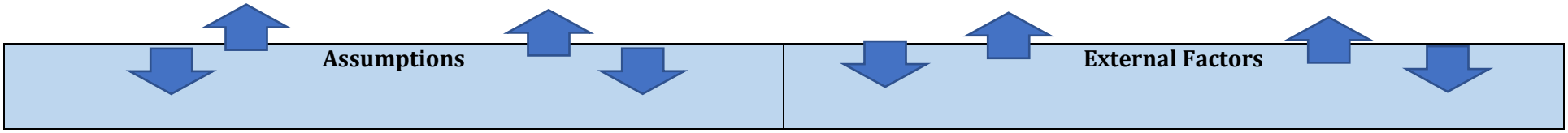
IMPACTS: #2 Fuel Oil, Diesel Fuel - Onroad, Electricity - Consumption, Gasoline, Heating Oil, Kerosene, Natural Gas, Propane, Solid Waste - Unspecified, Water, Wood



Appendix V. Home Energy Fair Logic Model

Program: Residential Education and Outreach for Sustainability—Volunteers on Recycling and Energy Advisory Committee to work with Sustainability Coordinator to implement outreach programs aimed at reducing energy and waste. ***Home Energy Fair as example.***

Inputs	**Outputs**		**Outcomes—Impact**		
	Activities	Participation	Short	Medium	Long
Staff from both Town and School Depts. Volunteer assistance before, after and during event Money to cover space to hold fair Materials provide by school to include: tables, chairs Additional materials needed: beverages, linens Partners/donations for door prizes and vendor lunches	Expand Falmouth Home Energy Fair to make more regional Deliver free services to the general public on home energy options and waste reduction methods Connect residents with professionals in the industry	Neighboring towns to include Cumberland and Yarmouth Open to the general public—advertise as such. Survey folks as they arrive to see how far the marketing reached—(where are you coming from today? How did you hear about the event?)	Expanding upon effective model used in Falmouth to increase participation/attendance while bringing more value to vendors. Raising awareness and building knowledge. Vendors are certified/reputable and are registered with Efficiency Maine-ability to pass along/apply for rebates and information directly for their clients	Changing behaviors from participants to reduce home energy use and implement proper waste diversion in their homes by hiring participating vendors; having enough information for the DIYers Decision making to add more towns than the 3 within the region (Falmouth, Cumberland and Yarmouth currently)	Model used statewide and already adopted in several towns/regions Social impact of working regionally Economic impact—better "bang for the buck" involving other communities—additional offset of costs with vendor exhibitor fees Environmental impact—reducing the use of fossil fuels and integrating renewable energy along with energy efficiency measures and upgrades



Evaluation

Collect data from residents and vendors in person and through surveys. Analyze and interpret data to make best use of marketing dollars. Expand annually