

ENERGY REDUCTION ACTION PLAN

I. PURPOSE AND ACKNOWLEDGEMENTS

A. Letters from Both General Government and School District Verifying Adoption of the Energy Reduction Plan: enclosed

B. List of Contributors that Participated in the Baseline and ERP Process:

Contributors included town employees James Marot, Scott Alexander , Alan Coutinho, John Roy, Merilee Kelly, Selectman David Wojnar, RISE Engineering employees Paul Radion, and Frank Davey, and especially Seth Pickering from MA DEP.

II. EXECUTIVE SUMMARY

A. Narrative Summary of the Town:

Acushnet is a small, semi-rural town in southeastern Massachusetts of 10,500 people, with its own elementary and middle schools. Nearly half the parcels in town get their water from New Bedford's water treatment plant; the rest have private wells. On a much smaller scale, about 900 homes and businesses are tied into New Bedford's wastewater treatment plant, but the majority in Acushnet have private on-site septic systems.

	Number	Ownership
Buildings		
Oil Heat: Ford Middle School, Acushnet Elementary School, Parting Ways Building, Russell Memorial Library, Long Plain Museum, Friends' Meeting House, Emergency Management Agency, Fire Station #1, Fire Station #2, DPW Barn	10	Acushnet
Natural Gas Heat: Emergency Medical Services, Town Hall, Council On Aging	3	
Propane Heat	0	
Biomass Heat	0	
Other Heat Type	0	
Vehicles		
Non-Exempt	3	Acushnet
Exempt	37	Acushnet
Street Lights	588	NStar (utility)
Traffic Lights	0	
Water and Sewer		
Drinking Water Treatment Plant	0	New Bedford (regional)
Wastewater Treatment Plant	0	New Bedford (regional)
Pumping Stations	3	Acushnet

B. Summary of Municipal Energy Uses

Table 2: Summary of Municipal Energy Use Baseline

	MMBtu Used in Baseline Year	% of Total MMBtu Baseline Energy Consumption	Projected Planned MMBtu Savings	Savings as % of Total MMBtu Baseline Energy Consumption
BASELINE YEAR FY 2012				
Buildings	19,656	75%	6905	35%
Vehicles	1578	6%	568	36%
Street Lights and Open Space	4827	18.49%		
Water/Sewer/Pumping	46	.51%		
Total	26,106	100%	7473	29%

Building Additions and New Construction: In the next few years there are plans to add new buildings to Acushnet's stock. There is an old school building, the Howard School, which had been used as a community center by an independent entity for the past twenty-five years, but this year has been re-acquired by the Town. Plans are to move the library from the tiny Russell building into the Howard School, and to use the Russell building for offices for the local cable company and school administration. Planning is also underway for a brand new police station building, expected to be finished by June of 2015. When the police move into their new building, there is likely to be some remodeling of the first floor Parting Ways building, and then some re-arranging of office space from Town Hall into the Parting Ways building.

III. ENERGY USE BASELINE INVENTORY

A. **Inventory Tool Used was Mass Energy Insight.**

B. **Baseline Year is FY 2012. The five year period of the Energy Reduction Plan is from Fiscal Year 2013 until Fiscal Year 2017.**

C. **Municipal Energy Consumption for the Baseline Year:**

See Mass Energy Insight data and Table 4 spreadsheet

IV. ENERGY REDUCTION PLAN

A. Narrative Summary

1. Overview of Goals for Years 1-3:

In Year One, FY 2012, we took a number of measures to reduce our energy consumption in Acushnet. In the Town Hall building we insulated the attic and most of the hot water piping, and replaced an old diesel generator with a new more efficient propane one. We also installed five programmable thermostats, allowing the building to cool significantly at night when not in use and to begin to warm again in early morning, just before staff comes in for the day. In the Parting Ways building we insulated the attic and the hot water piping, and replaced the old generator with a new one, also propane.

In Year Two, FY 2013, we insulated the attic and installed a new roof on the Council on Aging building. In the schools Year Two was the first year we used the new Energy Management User Interface Upgrade and Maintenance System installed by Huntington Controls. This system, consisting of new controls, lower boiler temperatures, new pumps and timers, more efficient air exchange, and the ability to monitor the whole system by computer, has allowed the Acushnet Elementary School to cut its fuel consumption by 25%, and the Ford Middle School by 44%, resulting in significant savings in both school buildings.

This fiscal year, Year Three, we are working on insulating the attic and installing new exterior doors and a high-efficiency boiler in Fire Station #1, and removing the old duct work, insulating the attic and installing new insulated windows on Fire Station #2. The Long Plain museum is also scheduled to get new insulation in the attic and side walls. We'd like to install a condensing boiler and programmable thermostats in the Parting Ways building once we finish insulating the walls and re-siding it. There's also a vending machine in that building on which we would like to install a Vendmiser.

2. Overview of Goals for Years 4 and 5:

In Years Four and Five, Acushnet would like to get a number of energy conservation measures done. We'd love to replace the individual window air conditioning units used in the Town Hall and Parting Ways buildings with mini-split high-efficiency air-conditioning units. We'd like to put new exterior windows in the DPW barn, and install the lighting upgrades to the Council on Aging Building that were suggested by RISE. The Long Plain museum building needs a new chimney liner and a new high efficiency furnace. We'd like to put a new condensing gas boiler in the Russell library building, as well as in the Town Hall building, and do lighting upgrades in Town Hall, Acushnet Elementary School, and Ford Middle School. Our long-term goal would be to change all our streetlights over to LEDs.

3. Identify Areas of Least Efficiency/Greatest Waste-

The DPW Barn is probably the single least energy efficient site in town. It is a concrete block building with high ceilings, heated by oil, with very little insulation and old fluorescent lights. It has large commercial garage doors which are opened and closed regularly for DPW vehicles, mostly large trucks and equipment, which lose a lot of heat.

B. 1. Program Management Plan for Implementation, Monitoring and Oversight

Our Green Community Program will be managed primarily by the building department; our Building Commissioner has many years' experience in the private construction industry that has proven invaluable in directing the maintenance and improvements of our town buildings. Fiscal oversight, as well as monitoring of our program, will be done by the Town Administrator and the Board of Selectmen.

2. Summary of Energy Audit or Other Sources for Projected Energy Savings

In September 2013, RISE Engineering conducted an audit of the mechanical heating equipment and lighting systems of six municipal buildings in Acushnet: Town Hall, the Parting Ways building, Acushnet Elementary School, Ford Middle School, the Council on Aging, and the Emergency Medical Services building.

C. Summary of Long-Term Energy Reduction Goals – Beyond 5 years

In the long term we expect to continue to tighten up all our buildings with insulation and energy efficient heating and cooling systems, and install the lighting upgrades and demand control ventilation suggested by RISE for the schools.

Acushnet would like to one day purchase the streetlights in town from NStar, the utility that currently owns them, and change them over to LED lighting. LED is more efficient, economical, and less toxic lighting, and would provide more light and better clarity for both drivers and pedestrians. We expect it could save us a good deal of money, and a lot of energy per streetlight.

We will also continue to look for additional ways to make our town fleet more energy efficient without sacrificing the performance needed for the various functions these vehicles carry out.

ERP Table 4

Appendix A

Four separate energy saving measures were enacted in Town Hall in 2012: we replaced five of the thermostats in the offices with new programmable ones which allowed for heat to come on just before people arrived in the morning and to shut off just after town hall closed at night; we insulated the attic; we insulated the piping that carries the hot water of the heating system; and we replaced the old diesel generator with a new one that runs on propane. Mass Energy Insight allowed us to see the data from the years 2012 and 2013, and to subtract one from the other:

	2012 data:	49,687 kWh	
Minus:	2013 data:	48,274, kWh	
	Equals	1,413 kWh	of energy savings from the

four energy savings measures taken. That number, divided between the four separate energy conservation measures (since we really cannot know which measure produced how much result after the fact) equals 353.25 kWh which I rounded out to 353, 353, 353, and 354.

Appendix B

Energy Savings Calculations

Long Plain Museum – ECM 17 High Efficiency Boiler Installation

FY 2012 Oil Usage = 971 Gallons = 135 MMBtu from FY 2012 Table 3a & 3b

$(135 \text{ MMBtu})(0.75) = 101.25 \text{ MMBtu}$ with a 25% more efficient oil fired furnace

Savings = 33.75 MMBtu

Fire Station #1 – ECM 19 High Efficiency Boiler Installation

FY 2012 Oil Usage = 1,379 Gallons = 192 MMBtu from FY 2012 Table 3a & 3b

$(192 \text{ MMBtu})(0.75) = 144 \text{ MMBtu}$ with a 25% more efficient oil fired furnace

Savings = 48 MMBtu

Russell Library – ECM 20 High Efficiency Boiler Installation

FY 2012 Oil Usage = 1,016 Gallons = 141 MMBtu from FY 2012 Table 3a & 3b

$(141 \text{ MMBtu})(0.75) = 105.75 \text{ MMBtu}$ with a 25% more efficient oil fired furnace

Savings = 35.25 MMBtu