

# Efficiency Maine Trust

Rules and Programs Related to Use of Biomass Energy

Before the

## Commission to Study the Economic, Environmental and Energy Benefits of the Maine Biomass Industry

Resolve 2015, chapter 85

August 2, 2016 - 9:30am to 4:30 pm

Room 216, Cross Office Building, Augusta, ME

**Michael D. Stoddard**

**Executive Director**

**August 2, 2016**



# The Efficiency Maine Trust

# Established

- In 2010, by statute, to serve as the independent administrator for energy efficiency and alternative energy resources programs in Maine

# Purpose

- Provide uniform, integrated planning, program design and administration of programs;
- Reduce energy costs and improve security of the state and local economies;
- Administer cost-effective energy and energy efficiency programs to help individuals and businesses meet their energy needs at the lowest cost and generally to improve the economic security of the State
- Ensure that all expenditures of the trust are cost-effective in terms of avoided energy costs; and
- Actively promote investment in cost-effective energy and energy efficiency measures and systems that use energy resources that reduce overall energy costs for consumers in the State.

35-A MRSA §10103(1)



# Fiduciary Duty of the Trust

- Electric conservation funds are held in trust for the benefit of the electricity utility ratepayers
- Natural Gas conservation funds are held in trust for the benefit of natural gas utility ratepayers
- RGGI funds are held in trust for the benefit of consumers
- Funds must be expended consistent with statute and 3-Year Strategic Plan (Triennial Plan)
  - as approved by Trust Board and Maine PUC

# RGGI Funds

- Allowable Uses
  - To support the goals of the carbon cap-and-trade program,
  - To fund conservation programs that give priority to measures with the highest benefit-to-cost ratio to:
    - To reduce electricity consumption, increase energy efficiency or reduce greenhouse gas emissions and lower energy costs at commercial[, institutional] or industrial facilities, or
    - To lower residential heating demand and reduce greenhouse gas emissions through measures that are fuel-neutral

35-A MRSA Sec. 10109

# Renewable Resources Fund

- Allowable Uses
  - Renewable resource R&D
  - Renewable energy demonstration projects
    - To non-profits, CAPs, COUs, municipalities,
  - Renewable Rebates
- Current Funding Sources
  - Voluntary (check off) contributions from electric utility customers
  - Alternative Compliance Payments (ACP) from load serving entities that do not comply with the Renewable Portfolio Standard (RPS)
  - Estimated Annual Revenue < \$50,000

35-A MRSA Sec. 10121

# Trust Highlights of FY2015

- Promoting energy efficiency (EE) investments
  - LED lights in homes and businesses
  - Home weatherization
  - Modern heating and cooling systems
  - Combined Heat and Power (CHP) Plants
- FY2015 Results
  - 3 million residential light sockets, 4,500 business lighting projects, more than 6,000 cold-climate heat pumps;
  - Invested \$58 million, leveraged an additional \$77 million, estimated savings delivered \$30 million/year for the life of the upgrades

# Efficiency Maine Trust Programs Related to Biomass

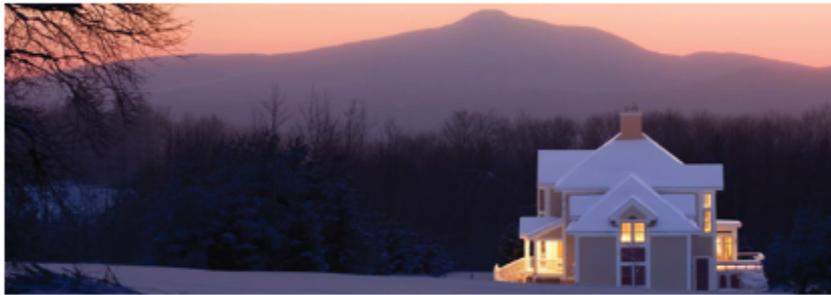
# Efficiency Maine Trust's Programs for *Residential* Customers

- Raising Public Awareness and Marketing
- Connecting Customers with Contractors & Vendors
- Providing Financial Incentives and Loans
- Recent Trends in Consumer Demand

# Information on wood heating systems

## Wood and Pellet Heating

Home » Renewable Energy » Wood and Pellet Heating



Wood and pellet fuels are a renewable and cost-effective way to heat your home or business. Pellets and wood are a popular fuel choice due to their affordability over fossil fuels and the fact that Maine has significant, locally-produced wood fuel supplies. High-efficiency wood and pellet heating systems are eligible for [Home Energy Savings Program \(HESP\) Incentives](#) and Efficiency Maine [Energy Loans](#).



**A wood or pellet stove** burns logs or pellets to heat a single room, although many homeowners locate these systems centrally and offset half or more of their primary fuel use. [Pellet and wood stoves](#) are typically fireplace inserts or free-standing models. Many different types are available. For example, pellet stoves can be fed from the top or the bottom and some models have longer fuel storage capacity and are easier to clean and remove ash. Advances in stove design have dramatically increased output efficiency and convenience, while reducing particulate emissions. [Click here](#) for more information about wood and pellet stoves including Efficiency Maine's [list of approved wood and pellet stoves](#).



**A biomass boiler** burns pellets or cordwood and is connected to a central heating and hot water system. Many Mainers are familiar with pellet stoves, but pellet boilers are a relatively new technology in our region. Pellet boilers operate like conventional fuel central heating systems but require pellet storage space (hoppers are frequently located in the basement adjacent to the boiler). Many boilers include self-cleaning systems and require less cleaning than pellet stoves. Bulk pellet delivery is offered in many regions of the state. [Click here](#) for a list of incentive criteria and known eligible models.

### Renewable Energy

#### Wood and Pellet Heating

#### Geothermal Heating and Cooling Systems

#### Solar Electric

#### Solar Hot Water

#### Find a Residential Registered Vendor

#### Financing Solutions

# Use of digital media channels to promote efficiency wood heating options.

**em Efficiency Maine**  
Published by Jessica Wallace [?] · January 6 · 🌐

Thousands of Mainers use efficient pellet boilers and stoves to keep warm using local, renewable fuel. Are you one of them? Share your experience below.

**Rebates available from \$500 to \$5,000 on wood and pellet heating solutions.**  
Some restrictions apply.

**efficiency MAINE**

Did you know?  
Using outdoor air for combustion improves overall efficiency?  
[EFFICIENCYMAINE.COM](http://EFFICIENCYMAINE.COM)

37,579 people reached

Boost Post

Like Comment Share

Jim MacDuff, Doug Allen and 47 others

Chronological

**THIS WEEK**

**17,618**  
Post Reach

**138**  
Post Engagement

**0**  
Website Clicks

**0 of 0**  
Response Rate

**1 day**  
Response Time

**FAST & EASY FINANCING**  
Not all options are available for your energy needs.

Efficiency Maine  
Whether you own a home or a business, Efficiency Maine can save you money on your energy...

Like Page · 2,474 people



# Find a Registered Vendor

- Online tool at [www.energymaine.com](http://www.energymaine.com)
- Search among more than 700 registered contractors and suppliers
- Search by type of service
- Search by distance from project site
- Get more info linking to vendor website

## Search and Sort Options

Start by entering your ZIP Code and a search radius.

ZIP Code:  Radius:

Sort by:

\* Ranked according to the quantity of projects that received a rebate from Efficiency Maine over the past four months.

## What services do you need?

Hover over service icons below for more information on services and qualifications.

- All Services
- Energy Advisor
- Air Sealing & Assessment
- Insulation
- Heat Pumps
- Gas
- Oil
- Pellet Boilers
- Pellet/Wood Stoves
- Geothermal
- Heat Pump Water Heaters
- Solar

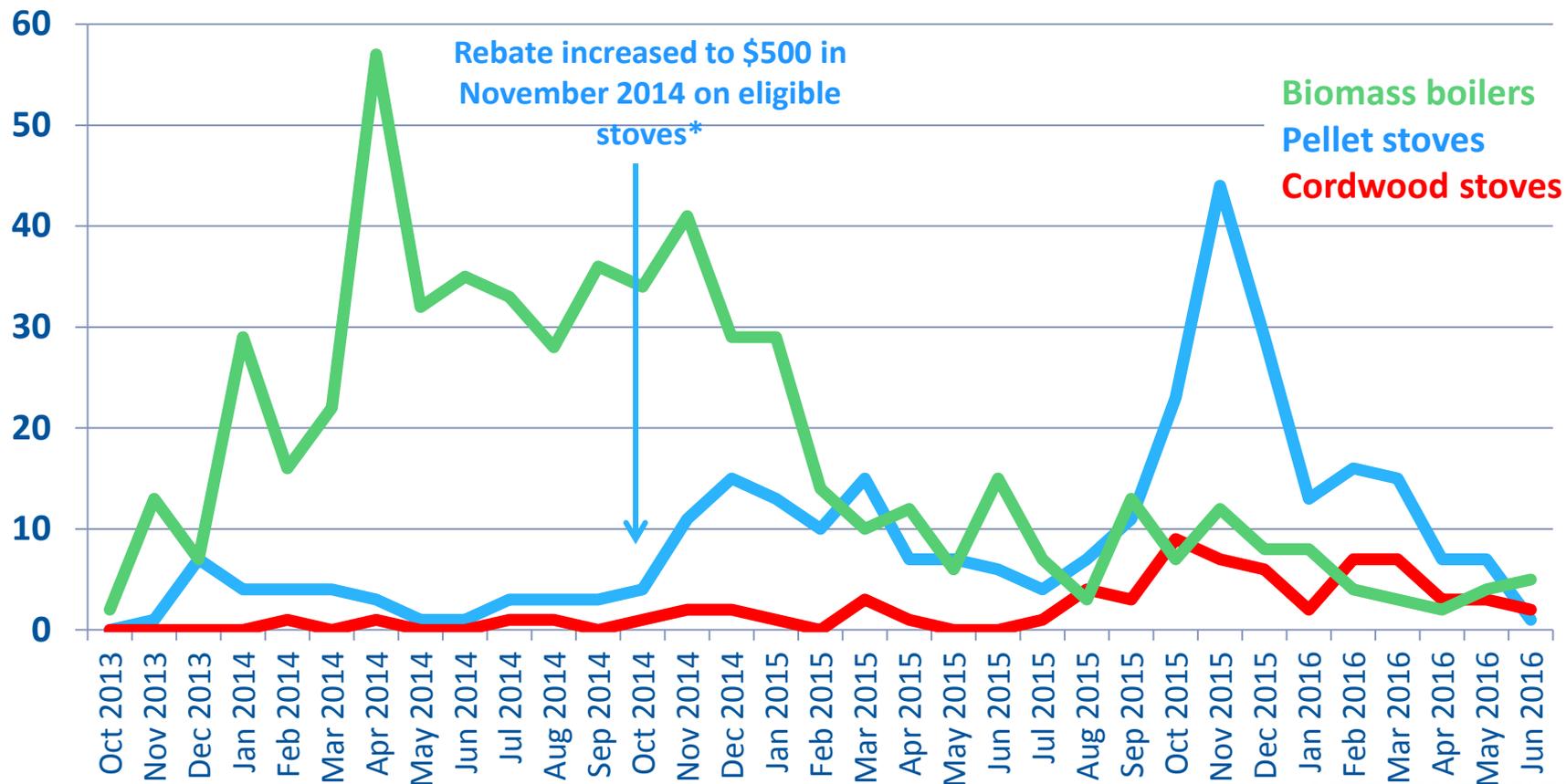
# Top 10 Results for Pellet Boilers/Stove Vendors w/in 25 miles of 04330 Zip

Vendor	Services Provided	Miles	More Info
1 Don's Stove Shop Livermore, ME - 207-897-4200 <a href="http://www.donsstoveshop.com">www.donsstoveshop.com</a>	 	25	
2 Somerset Stone & Stove Oakland, ME - 207-465-9800 <a href="http://www.somersetstoneandstove.com">www.somersetstoneandstove.com</a>	 	13	
3 Rocky's Stove Shoppe LLC Augusta, ME - 207-622-3410 <a href="http://www.rockysstoveshoppe.com">www.rockysstoveshoppe.com</a>		0	
4 Monitor of Maine Benton, ME - 2074532253	     	14	
5 McVety's Hearth and Home Augusta, ME - 207-620-2095 <a href="http://www.stovesofmaine.com">www.stovesofmaine.com</a>	 	0	
6 Gamache Plumbing & Heating Service Vassalboro, ME - 207-873-6448	    	5	
7 American Home System Manchester, ME - 207-446-3368	   	8	
8 CB Haskell Fuel Co Windsor, ME - 207-549-7669 <a href="http://www.cbhaskellfuel.com">www.cbhaskellfuel.com</a>	    	9	
9 M. A. Haskell Fuel Company LLC China, ME - 207-993-2265 <a href="http://www.mahaskellfuelcompany.com">www.mahaskellfuelcompany.com</a>	     	10	
10 Best-Way Wood Heat, Inc Readfield, ME - 207-685-3900 <a href="http://www.bestwaywoodheat.com">www.bestwaywoodheat.com</a>	  	11	

# Home Energy Savings Program

## Efficient wood heating systems

Installations per month since start of HESP in 2013



\*Low-emission EPA listed stoves with outdoor air ducted to or near stove.



Year	2015	2015	2015	2015	2015	2015	2015	2016	2016	2016	2016	2016
Month	7	8	9	10	11	12	1	2	3	4	5	6
HESP Rebate Type	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Air Sealing	113	105	114	176	175	242	150	150	136	110	68	123
Attic Insulation	66	60	56	110	97	166	89	123	99	70	58	91
Basement Insulation	37	31	40							34	32	48
Wall Insulation	17	3	16							8	5	3
MiniSplit HP	507	491	495	732	452	507	315	233	219	191	240	464
Pellet Stove	4	7	11	23	44	29	13	16	15	7	7	1
Wood Stove	1	4	3	9	7	6	2	7	7	3	3	2
Boiler	46	45	45	77	68	101	95	61	64	65	32	73
Furnace	19	5	8	13	10	31	20	18	25	12	11	28
Central Heat Pump	0	1	0	0	0	0	0	0	0	0	0	0
Geothermal HP Closed Loop	3	5	4								3	3
Geothermal HP Open Loop	2	3	0	2	3	3	2	3	1	3	2	2
Biomass Boilers	7	3	13	7	12	8	8	4	3	2	4	5
<b>Total Measures Installed</b>	<b>822</b>	<b>763</b>	<b>805</b>	<b>1,245</b>	<b>936</b>	<b>1,216</b>	<b>780</b>	<b>718</b>	<b>652</b>	<b>509</b>	<b>465</b>	<b>843</b>

**\$500 Rebate on eligible stoves**

**\$5,000 Rebate on eligible boilers**

# Efficiency Maine Trust's Programs for *Commercial, Industrial and Institutional* Customers

- Scoping Audits
- Technical Assistance Studies
- Financial Incentives

# Case Study of Technical Assistance Success: Hancock Lumber Backpressure Steam Turbine (Proposed and Approved)



# Hancock Lumber Overview

- 6<sup>th</sup> generation family owned Maine business
- Established in 1848
- Largest producers of Eastern White Pine lumber – 80,000,000 board feet annually
- 3 sawmills – Bethel, Casco, and Pittsfield
- 430 employees – many retail outlets



# Bethel Sawmill Facility – Backpressure STG Project

- Existing biomass boiler
- 250 psig steam rating, 110 psig operating pressure
- 24-hour steam load – kilns
- 24-hour electric demand – kilns fans
- Increase boiler operating pressure
- Modify kiln-7 with low pressure coils
- Replace existing pressure reducing valves (PRVs)



# Project Background

- April 2015 – Trust approved Technical Assistance Study
  - Performed by AirClean Energy (Seattle)
  - Hourly load profile, documented equipment performance, preliminary design and cost estimation to include bid specification
  - \$12,500 study cost – 50% cost share
- May 2016 – Trust received Application for Incentive
  - 470 kW installation, 2.32 MWH/year generation
  - \$1.3M cost, \$651,000 Trust incentive, \$174,000/year savings, upgrades to fuel feed system

# Project Details – Site



# Project Details – Backpressure Steam Turbine Generator

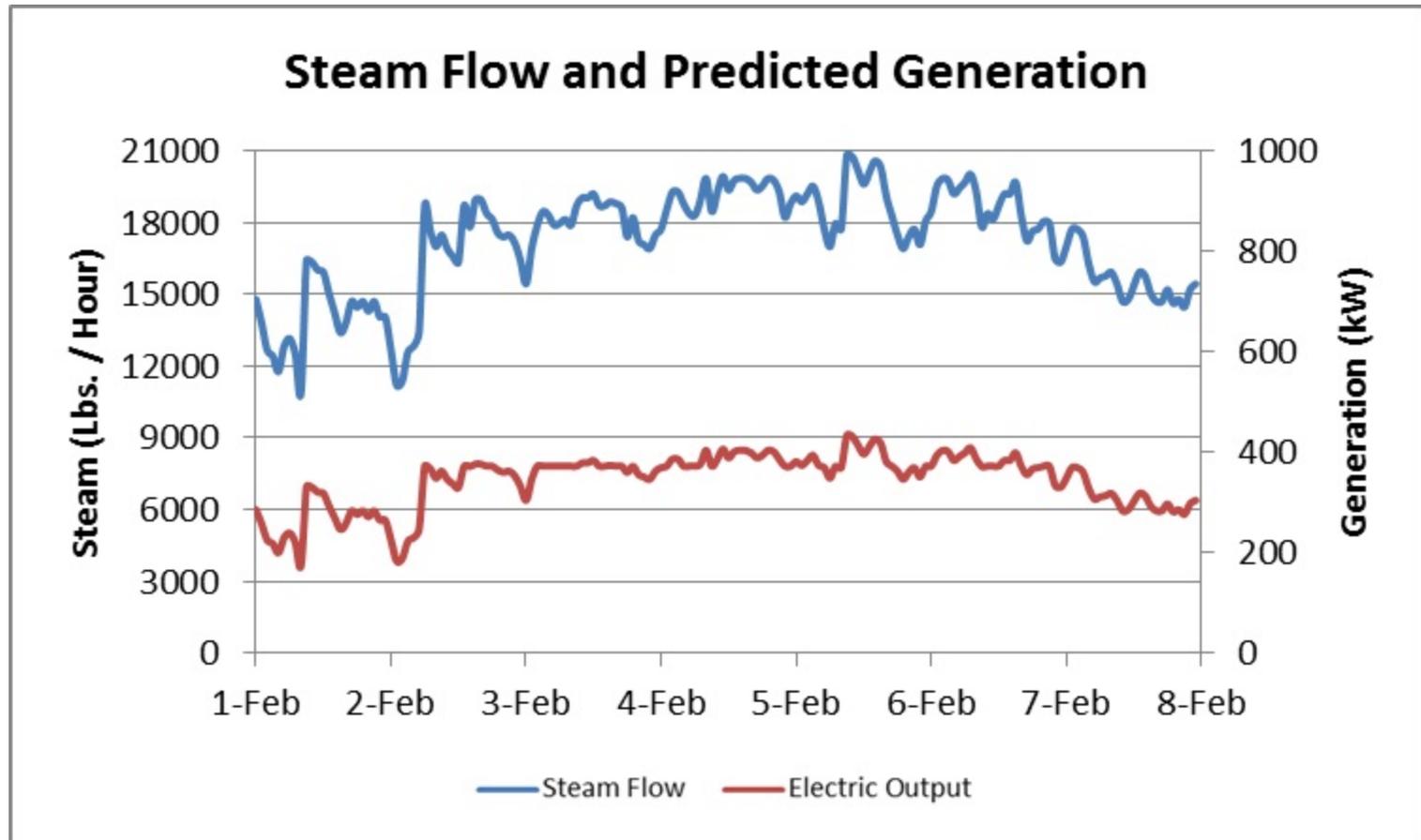
- Air Clean Model 703E skid mounted package

470 kW rated output at  
225 psig input pressure  
20 psig output pressure  
23,500 lbs. per hour max flow  
7,500 lbs. per hour min flow



- Increased boiler firing rate, 4.6% increase in fuel consumption

# Project Details – Predicted Output Typical Winter Week



# Project Details – Summary of Predicted Performance and Economics

- Electrical Output
  - 181 kW average output during summer peak period
  - 293 kW average output during winter peak periods
  - 2,236,632 kWh annual output - 26% of total 2015 consumption
  - \$203,500 per year reduction in electricity cost
- Fuel Consumption
  - 640 tons of additional biomass consumed - 4.6% increase over 2015
  - \$19,200 increase in energy cost
- Operation and Maintenance
  - \$18,000 per year (based on \$0.008/kWh from US–EPA Catalog of CHP Technologies March 2015)
- Net Anticipated Savings
  - \$166,300 per year

# Project Details – Efficiency Maine Incentive and Overall Project Economics

- Meets cost effectiveness criteria with benefit / cost ratio of 1.39
- \$0.28/kWh cap limits Efficiency Maine incentive to \$626,257
- Potential federal Rural Energy for America Program Grant of \$158,700 could reduce participant cost and Efficiency Maine incentive
- Project Cost \$1,329,300
- Total Grants and Incentives \$ 626,257 - \$ 744,000
- Net Participant Cost \$ 585,300 - \$ 703,043
- Anticipated Savings \$ 166,300/year
- Simple Payback 3.5 – 4.2 years

# Closing Thoughts

- Fiduciary duty
- Cost-effectiveness
- Reducing costs
- Fuel-neutrality
- Trends in Consumer Demand

# Thank you.

1-866-ES-MAINE

(866-37-62463)

[www.energymaine.com](http://www.energymaine.com)