Renewable Thermal Opportunities in Massachusetts

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Renewable Thermal (Heating & Cooling)

- Using energy in sunlight, underground, air, biomass, biogas, biofuels for
  - Space heating/cooling
  - Domestic hot water
  - Process heating/chilling
- Market opportunities – overcoming challenges
  - Fuel **cost savings**, less energy **imports**, **business** creation, **greenhouse** gas emission reduction, improved **air quality**
  - If done right...
Creating A Greener Energy Future For the Commonwealth

Projected Renewable Thermal Market Share

Source: Commonwealth Accelerated Renewable Thermal Strategy
CARTS Report, Navigant/Meister for DOER, January 2014
Renewable Thermal in Massachusetts

• Clean Energy & Climate Plan 2020 goals
• Pilot programs to kick-start market: $32 M
  ➢ Demonstrate, Measure & Communicate
• Multi-pronged market strategy
  ➢ Based on careful analysis
  ➢ Include performance based incentives
Legislation (S1970)

• An Act relative to credit for thermal energy generated with renewable fuels

• Adds to the Alternative Portfolio Standard:
  ➢ “any facility that generates useful thermal energy using sunlight, biomass, bio-gas, liquid bio-fuel or naturally occurring temperature differences in ground, air or water”
  ➢ 3,412,000 BTU = 1 MWh = 1 Credit (AEC)
  ➢ DOER will set standards for verification, efficiency, air emissions and sustainability
Renewable Thermal Programs

Pilot Programs - $6 million
DOER / MassCEC / MassDEP partnership

Residential

- Woodstove change out - $1.2 million - closed
  - $1000 rebate for low income households
  - $750 rebate for all others
  - Total 1000 wood stoves changed out

- Outdoor Hydronic Heater change out - $150,000 for second round - closed
  - up to $15,000 per household/business
  - Total 30 hydronic heaters changed out in two rounds

- Residential wood pellet boiler - $500,000 - closed
  - $7000 - $14,000 per household
  - Total 35 new pellet boilers installed

- Residential air source and ground source heat pump pilot - $900,000 – closed
Renewable Thermal Programs

Pilot Programs

DOER/MassCEC Partnership

Commercial scale

- Schools grades K-12
- Municipal buildings
- Greenhouses
- Not-for-profit organizations

- Large wood boiler pilot - $1.2 million - open
- Community District Heating pilot - $2 million – open
- Commercial ground source heat pump pilot - $1 million-open

Feasibility studies, engineering design and construction grants available
Renewable Heating

Massachusetts Clean Energy Center

• Biomass and District Heating Solicitation -open

DOER

Renewable Thermal Programs

• DOE project SAPHIRE - $715,000 – open for public schools
  (Schools and Public Housing Integrating Renewables and Efficiency)
  energy efficiency and renewable heating – 20% energy reduction
  DOER added another $1.7 million

• Solar Water Heating and Wood Pellet Stoves for LIHEAP Households
  - $1 million
    (Low Income Home Energy Assistance Program)
    ➢ 100% funding provided
    ➢ 100 new EPA certified wood pellet stoves
    ➢ New EPA certified pellet stove (not change out), installation and one ton of
      pellets/qualifying household
    ➢ 50 solar DHW systems
DOER

Renewable Thermal Programs

• State Pilot Projects - $2 million
demonstrate new, innovative clean technologies at state facilities under DOER’s Leading By Example program
  Department of Conservation and Recreation
  Department of Fish and Game
  Trial Courts
  Armories

• Combined Heat and Power - $5 million
establish a subsidized loan program to support the financing of CHP units in MA

• Renewable Thermal Market Investment Support - $3 million
  (round 2, fall 2014)
Renewable Thermal Business Infrastructure Grant Program

- **Biomass Thermal Energy Council** - Statewide Development of efficiency test procedures for commercial-sized solid biomass boilers  $75,000.00
- **Cape Cod Biofuels** - Sandwich
  Increase Biodiesel (B20) production through facility expansion and upgrades  $280,000.00
- **Cook Forest Products, Inc.** - Upton
  Purchase CBI wood chipper to manufacture micro-chips from clean unprocessed wood waste for industrial end users  $250,000.00
- **EverStor, Inc.** - Pembroke
  Development/manufacturing of residential solar hot water storage kit for distribution in MA/NE  $90,000.00
- **Maine Energy Systems** - Salisbury
  Develop loose, bulk pellet distribution facility in MA and introduce a pellet boiler showroom  $806,598.00
Renewable Thermal Business Infrastructure Grant Program

• Meister Consultants Group - Boston
  Market development platform - procurement pools, web education, equipment dealer trainings  $230,500.00

• Northeast Biodiesel Company, LLC - Greenfield
  Complete biodiesel plant, expand recycled oil collection, and expand biodiesel distribution  $540,000.00

• Rocky Mountain Wood Company - Wilbraham
  Development of a wood pellet manufacturing facility  $1,000,000.00

• T. Jepson & Son, LLC - Spencer
  Expansion of wood chip production with procurement of Peterson 4300 chipper  $250,000.00
Renewable Thermal Programs
Massachusetts Department of Housing and Community Development (DHCD) partnership - $2 million

Montague Housing Authority- Biomass Conversion Projects
Keith Block Apartments
- 31 family apartments
- 24,282 sq. ft.
- 382 MBH
- 96 tons/yr premium pellets
- simple payback- 7.4 yrs
- 11,515 gallons heating oil displaced/yr
- $288,000 – design, construction/contingency, monitoring

Highland School Apartments
- built in 1920 as a public school, renovated in 1982 for elderly apartments
- 9 apartments
- 15,300 sq. ft.
- 191 MBH
- 59 tons/yr premium pellets
- simple payback- 7.3 yrs
- 7,172 gallons heating oil displaced/yr
- $230,000 - design, construction/contingency, monitoring
Community Clean Energy Resiliency Initiative
$40 million

• This initiative is part of the Patrick Administration’s comprehensive climate change preparedness effort.

• The grant program is focused on municipal resilience: protecting communities from interruptions in energy services due to severe storms.

• Grants are available for communities to harden critical energy services using clean energy technology for critical facilities, like police stations, firehouses, hospitals, schools, wastewater treatment plants and shelters.
University of Massachusetts Energy Extension Initiative

- DOER funded $6 million to hire new Extension staff to:
  - Offer services across clean energy technologies, but emphasis on community scale development, distributed electricity generation, CHP, thermal heating and cooling, energy storage, and district energy systems.
  - Identify and facilitate project opportunities to municipalities, businesses, real estate developers, institutions, etc.
  - Provide objective technical and analytical support to encourage project development
  - Support existing companies to expand into the clean energy sector
  - Support entrepreneurship and business creation
  - Engage with industry and government in market development strategic planning
  - Assist students to launch careers and businesses in clean energy sector
  - Offer seamless team-based expertise across technologies and disciplines
Renewable Thermal Policy Development

• Renewable heating & cooling webpage

• Renewable Heating & Cooling in Massachusetts

• Thermal in the Alternative Portfolio Standard

• Commonwealth Accelerated Renewable Thermal Strategy
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