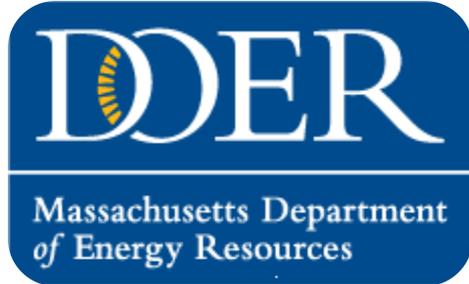


*Creating A Cleaner Energy Future For the Commonwealth*



**COMMONWEALTH OF MASSACHUSETTS**

*Deval L. Patrick, Governor*

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**Energy Managers  
Meeting**

**Boston, MA**

**September 4, 2014**

## **Renewable Thermal Opportunities in Massachusetts**

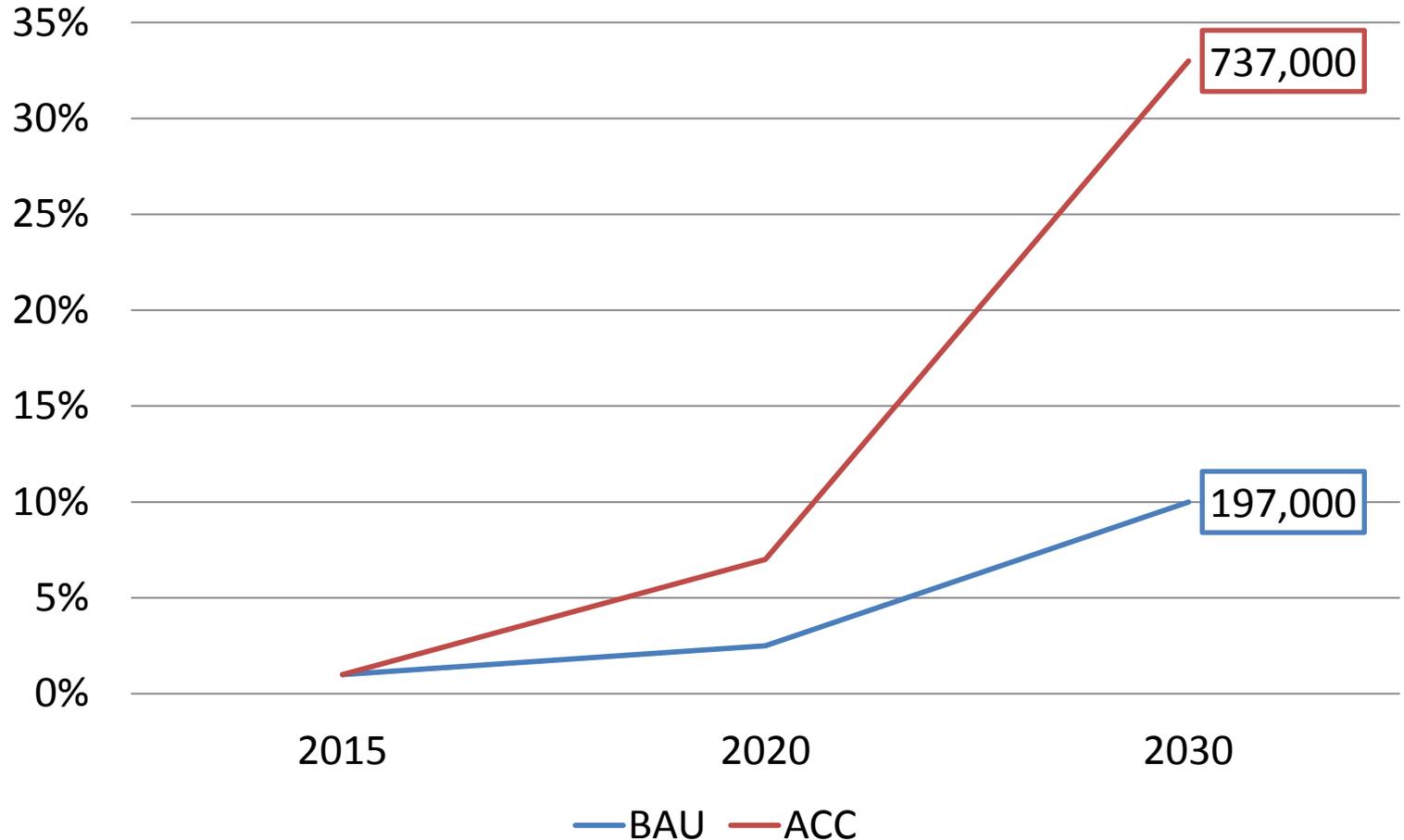
**Rob Rizzo**

**Renewable Thermal Program Manager**

# 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...

## Projected Renewable Thermal Market Share



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

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# 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
  - <http://www.masscec.com/solicitations/renewable-heating-and-cooling-and-district-energy-solicitation>

# 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.

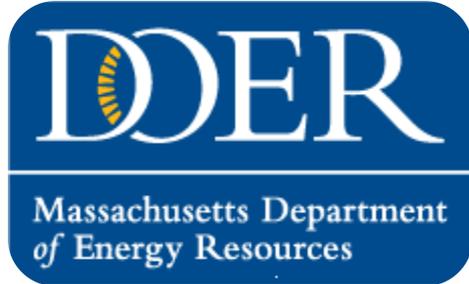
# University of Massachusetts Energy Extension Initiative

- 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
  - <http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/renewable-thermal/>
- Renewable Heating & Cooling in Massachusetts
  - <http://www.mass.gov/eea/docs/doer/renewables/renewable-thermal-study.pdf>
- Thermal in the Alternative Portfolio Standard
  - <http://www.mass.gov/eea/docs/doer/pub-info/heating-and-cooling-in-aps.pdf>
- Commonwealth Accelerated Renewable Thermal Strategy
  - <http://www.mass.gov/eea/docs/doer/renewables/thermal/carts-report.pdf>

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