An Introduction to MassDEP’s Clean Energy Results Program

Superfund Advisory Committee Meeting
Thursday, May 24, 2012

Thomas M. Potter, BWSC Clean Energy Development Coordinator
AGENDA

- Background/Administration Goals
- Clean Energy Results Program (CERP)
- BWSC CERP Goals
  1. Developing 25 MW’s of Photovoltaic (PV) Renewable Energy Projects
  2. Promoting Green Remediation
Jobs & Opportunity

- October 2011 CEC Report
- 64,310 people are directly involved in work related to the state’s clean energy sector
- Represents 1.5 % of all jobs
- 4,909 clean energy companies in the state
- Companies saw 6.7% increase in jobs from 7/10 to 7/11.
- Expected to grow to 15.2% from 7/11 to 7/12

Easthampton Landfill 2.3MW - Photo Courtesy of Borrego Solar Systems, Inc.
Jobs & Opportunity (cont.)

Clean Energy Workers are Distributed Throughout the Commonwealth

Total Clean Energy Workers by Region

- Western: 9,655
- Central: 11,805
- Northeast: 27,552
- Southeast: 15,298
Mass. Has High Electricity Prices!

2010 Average Retail Electricity Price c/kWh

Mass. is 7th Highest

U.S.

Source: EIA Form 826
$18B Energy Dollars Flow Out of MA
We spend $22B per year on energy; 80% leaves MA

<table>
<thead>
<tr>
<th>MA Energy Imports 2008</th>
<th>$B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Oil (heating, diesel)</td>
<td>$5.0</td>
</tr>
<tr>
<td>Gasoline</td>
<td>$9.2</td>
</tr>
<tr>
<td>Jet Fuel</td>
<td>$1.4</td>
</tr>
<tr>
<td>Other Petroleum</td>
<td>$0.9</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>$5.2</td>
</tr>
<tr>
<td>Coal</td>
<td>$0.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$22 B</strong></td>
</tr>
</tbody>
</table>

Per Household Average ~ $4,600
Clean Energy and Climate Plan for 2020

Clean Energy and Climate Portfolio Impacts vs. Business as Usual

- Buildings (-9.8%)
- Electricity Supply (-7.7%)
- Transportation (-7.6%)
- Non-Energy (-2.0%)

25% below 1990
Mass Clean Energy Mandates

• 2007 Top Priority for Patrick Administration

• 2008 Global Warming Solutions Act
  – Comprehensive Program -> Climate Change
  – Goal 25 % Below 1990 GHG levels by 2020

• 2008 Green Communities Act (GCA)
  – Supports Development of Clean Energy Resources
  – Expands Efforts to Promote Energy Efficiency
  – Increased the Renewable Energy Portfolio Standard
Renewable Energy Portfolio Standard (RPS)

  - 2003 Statutory obligation for energy suppliers to obtain energy from renewable sources
  - 2003 obligation of 1% (increasing by 0.5% per year)
  - 2008 GCA – increased to 1% per year

- **Renewable Energy Certificate (REC)**
  - Created each time a qualified system generates 1 megawatt hour (MWh = 1,000 kwh) of electricity.
  - Suppliers must purchase a number of RECs equal to the percentage for that particular compliance year (e.g. 5% in 2010).
### Summary of MA Renewable Energy Portfolio Standard (RPS) Programs

<table>
<thead>
<tr>
<th>RPS Class</th>
<th>Sub Class</th>
<th>Technology</th>
<th>Minimum Standard</th>
<th>ACP Rate, $/MWh</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class I</strong></td>
<td></td>
<td>Wind, LFG, Biomass, Solar, Small Hydro, etc.</td>
<td>5% in 2010, increases 1%/year</td>
<td>$60.93; increases with CPI</td>
</tr>
<tr>
<td>Solar Carve-Out</td>
<td></td>
<td>Solar PV; 6 MW or less, in MA</td>
<td>set by formula to grow installed capacity to 400 MW</td>
<td>$550; can be reduced by DOER (10 y schedule)</td>
</tr>
<tr>
<td><strong>Class II</strong></td>
<td></td>
<td>same as Class I</td>
<td>3.6%, stays constant</td>
<td>$25; increases with CPI</td>
</tr>
<tr>
<td>Waste Energy</td>
<td></td>
<td>Municipal Solid Waste Combustors, in MA</td>
<td>3.5%, stays constant</td>
<td>$10; increases with CPI</td>
</tr>
<tr>
<td><strong>APS</strong></td>
<td></td>
<td>CHP, flywheels, paper-derived fuel, gasification</td>
<td>0.5% in 2010; increases to 5% in 2020</td>
<td>$20; increases with CPI</td>
</tr>
</tbody>
</table>
Administration Clean Energy Goals

- 15% of Massachusetts electricity supplied from renewable sources by 2020.
  - *Solar: 250 MWs installed by 2017, 400 MWs generated by 2020 (105+ MW as of 5/1/12)
  - Wind: 2,000 MWs by 2020 (54 MW as of 5/1/12)

*Focus of BWSC efforts*
Solar Incentives in Massachusetts

High electricity prices + Reduced Solar PV Costs + Numerous Incentives = Economical solar projects

<table>
<thead>
<tr>
<th>Incentives</th>
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<tbody>
<tr>
<td>State and Federal Tax Incentives</td>
</tr>
<tr>
<td>Rebates from MassCEC</td>
</tr>
<tr>
<td>Net Metering</td>
</tr>
<tr>
<td>SREC Sales</td>
</tr>
<tr>
<td>Low/No money down options</td>
</tr>
<tr>
<td>Power Purchase Agreements (PPA’s)</td>
</tr>
</tbody>
</table>

Solar Incentives in Massachusetts (cont.)

• Database of State Incentives for Renewable & Efficiency

• www.DSIRE.org

• BWSC Fact Sheet (under development)
• Clean Energy Results Program (CERP)
• Established in the Fall of 2011
• In conjunction with:
  – Mass Department of Energy Resources (DOER)
  – Mass Clean Energy Center (MassCEC)
• In an effort to:
  – Further MA Clean Energy Goals
  – Develop projects that meet RPS!
  – Create economic growth and employment opportunities
Three Elements of CERP

1. Project-Specific Support and Coordination
   • Permitting/Compliance Assistance
   • Regulatory and Financial Assistance

2. Regulatory Review and Streamlining
   • Remove Regulatory Barriers
   • Financial Incentives

3. Broad Public Education and Engagement
   • Coordinated Outreach (DOER, MassCEC)
   • Communicate Project Benefits/Address Misconceptions
Commissioner’s BWSC Specific Goals
(refer to CERP Brochure page 3)

1. By 2020, achieve 50 megawatts of new solar photovoltaic on underutilized contaminated land
   – BWSC Brownfields (25MW) and BWP Landfills (25 MWs)
   – creating green jobs and tax revenue benefitting Massachusetts communities.

2. Promote the use of Green Remediation at state and federally regulated contaminated sites
   – Maximize the net environmental benefit
   – Considering: remedy energy requirements, efficiency of on-site activities, reduction of impacts on surrounding areas.
Bureau of Resource Protection (BWP) - Landfills

- Closed & Capped Landfills
- 6,000 +/- acres
- 22 renewable energy projects approved to date
- “Landfill Profiles List” available online
  - Ownership
  - Operational status
  - Acreage
  - Wind speed
  - Distance to nearest electricity transmission lines, etc.
- Municipal Workshops
  - Planned July 2012
CERP Background/Goals

Questions?
Thoughts?
Concerns?
BWSC CERP GOAL No. 1: 25 MWs of Solar Photovoltaic (PV) on Contaminated Land
US Environmental Protection Agency’s “RE-Powering America’s Land” Initiative

• Launched 2008
• Mapped over 15 million acres with RE potential
  – Superfund, RCRA, LUST, Mining, etc.
• 30,000 “Superfund” acres in MA
• Liability Fact Sheet (Final 3/2011)
• Landfill/Contaminated Land Development Guidance (under Development)
• http://www.epa.gov/renewableenergyland/
BWSC Goal No. 1 Efforts: 25 MW PV

1. Project-Specific Support and Coordination
   – Compliance Assistance to any Renewable Energy Project Proponents
   – Current Activities:
     • Shaffer landfill
     • Charles George
     • Sullivan’s Ledge
     • W.R. Grace
BWSC Goal No. 1 Efforts : 25 MW PV (cont.)

2. Regulatory Review and Streamlining
   – Addressing 21E Liability Concerns
     • “Ground Leases”
   – Nothing else planned
   – Suggestions?
     • (toward helping projects get developed)
3. **Broad Public Education and Engagement**
   - Outreach to LSPA Association
     - Education Committee (April)
     - LSPA Board (April)
     - Tech Practices (May)
     - Membership (September)
     - Newsletter Article(s)
   - “PV on Contaminated Lands” Educational Workshop/Forum
     - Fall 2012?
   - BWSC Fact Sheet and Guidance Development
   - **Contaminated Sites Profile List** (e.g. Landfills)
Contaminated Sites Profile List

• ~ 880 MassDEP “Brownfield” Sites
  – of 34,000 sites

• 36 EPA “Superfund” Sites in MA
Contaminated Sites Profile List (cont.)

- Under Development!
- 35% are 4 Acres or greater
- Sites up to 700 + Acres
- 30% located within 1 mile or less of utility line
- 85% located within an investor-owned utility region
CASE STUDY: Western Massachusetts Electric Company 1.8 MW Solar Project

- Two Parcels – Pittsfield
  - 1) WMECO - 8 Acres
  - 2) PEDA – 2 Acres
- 6,500 panels, ground-mounted on 10 acres
- Power for ~300 homes
- $9.5M of investment
- Concern over liability and permitting
- State/Federal Cleanup Programs
- AULs/Grant of Env. Restriction
- Began Operation October 2010
BWSC Goal No. 1 Efforts: 25 MW PV

Questions?
Thoughts?
Concerns?
BWSC CERP GOAL No. 2: Promoting the use of “Green Remediation” at State & Federal Sites
Green Remediation

• Practice of considering environmental impacts/footprint of remediation activities to maximize the net environmental benefit through every phase of the cleanup process including:
  – Total Energy Use and Renewable Energy Use (*CERP RPS Eligible Projects*)
  – Air Pollutants and Greenhouse Gas Emissions
  – Water Use and Impacts to Water Resources
  – Materials Management and Waste Reduction
  – Land Management and Ecosystems Protection
US Environmental Protection Agency’s “Superfund Green Remediation Strategy”

- September 2010 - Initiatives:
  - Maximize use of renewable energy
    - Goal of using 100% renewable energy to power site operations, and identify methods for increasing energy efficiency;
  - Incorporate green remediation factors as part of remedy optimization evaluations
  - Pursue ways to reduce the use of natural resources and energy during remedial actions and when developing cleanup alternatives;
- http://www.epa.gov/superfund/greenremediation/
BWSC GOAL No. 2: Promoting the Use of Green Remediation

1. Project-Specific Support and Coordination

   – Federal Superfund Sites:
     • EPA doing optimization reviews at several sites
     • Baird & McGuire Superfund Site Technical & Financial Feasibility Study for Solar Photovoltaic

   – 21E Sites:
     • Evaluating Universe of sites w/active remedial systems (estimated at 900)
     • Focus on energy efficiency and renewable opportunities (*CERP RPS eligible projects*)
     • Work with PRPs/LSPs on specific projects/sites
BWSC GOAL No. 2: Promoting the Use of Green Remediation (cont.)

2. Regulatory Review and Streamlining

– Considering the application of Green Remediation as a “Performance Standard” for the conduct of Response Actions.
  • e.g. Consideration of energy use in Remedy Selection

• Associated Guidance

– Considering reference to the ASTM Guide and associated Best Management Practices (BMPs) for performance standard (others: ITRC, SuRF)
3. Broad Public Education and Engagement

- Outreach to LSPA Association
  - Education Committee (April)
  - LSPA Board (April)
  - Tech Practices (May)
  - Membership (September)
  - Newsletter Article(s)

- “Green Remediation” Educational Workshop/Forum
  - Fall 2012?

- “Sustainability Policy”/website

- Develop Green Remediation Incentives
Green Remediation
Incentives Under Consideration:

• DOER Energy Efficiency Programs
• Collaborating with the Mass Office of Technical Assistance & Technology (OTA)
• Public Recognition Awards for Projects
• Certification Program for LSPs (e.g. Eco-Brokers)
• Others?
BWSC GOAL No. 2: Promoting the Use of Green Remediation

Questions?
Thoughts?
Concerns?
Program Contacts

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Mass Department of Environmental Protection (MassDEP) Brownfields Program:

http://www.mass.gov/dep/cleanup/brownfields.htm

Mass Department of Energy Resources (DOER)

http://www.mass.gov/?pageID=eoeeaagencylanding&L=5&L0=Home&L1=Grants%26TechnicalAssistance&L2=Guidance%26TechnicalAssistance&L3=Agencies+and+Divisions&L4=Department+of+Energy+Resources+(DOER)&sid=Eoeea

Massachusetts Clean Energy Center (CEC)

http://masscec.com/index.cfm/page/About-Clean-Energy/pid/11138