Renewable Energy at Closed Landfills Workshop:

Landfill Post Closure Use Permitting Guidelines

July 26, 2012

Lynne Welsh
Massachusetts Department of Environmental Protection

The 1990 20th Anniversary edition of **Smithsonian Magazine**

'The world's largest solar plant along with seven others owned by Luz International created 90 percent of the solar power generated not just in the US but in the world.'

[274 MW]

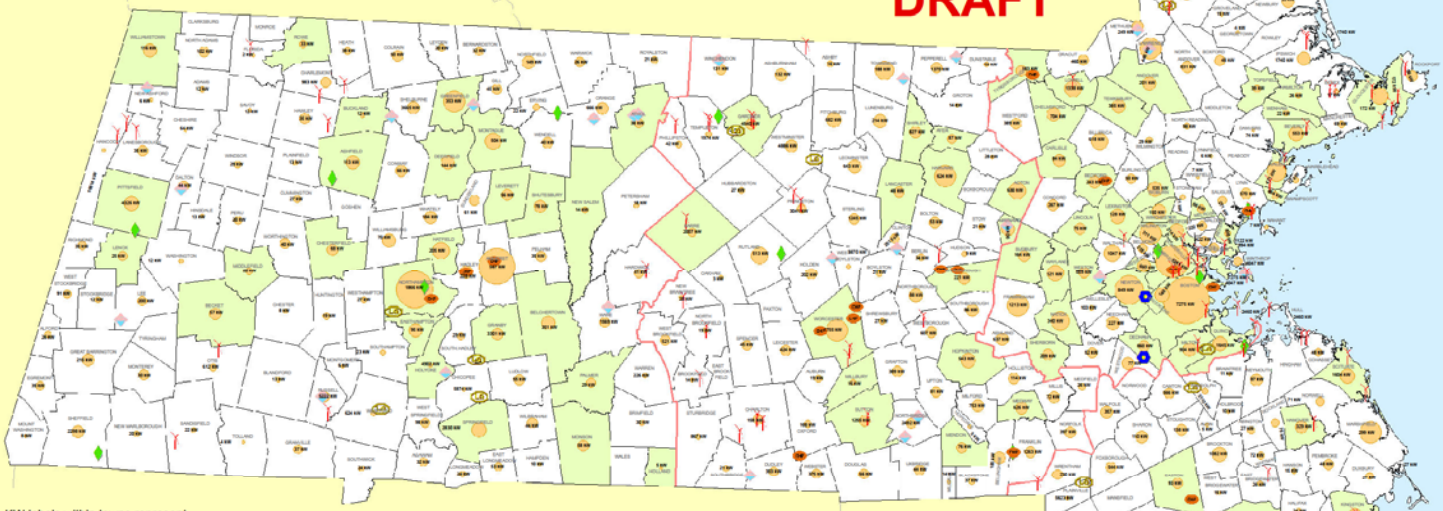
Total Renewable Energy in MA

Clean Energy Center reports as of July 1, 2012

- Solar – 118 MW
- Wind – 61 MW

Massachusetts Green Communities and Clean Energy Sites

DRAFT



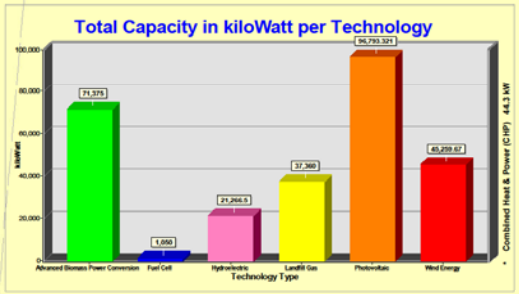
N

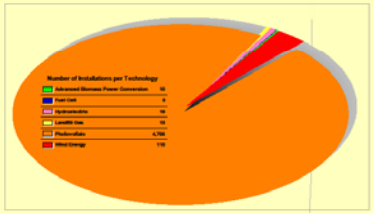
Renewable Energy Sites

- Wind Energy
- Landfill Gas
- Combined Heat & Power (CHP)
- Hydroelectric
- Fuel Cell
- Advanced Biomass/Organics
- Number of Photovoltaic Installations
- Green Community
- DEP/DOER Regional Boundary

* KW labels within towns represent the total installed DC capacity for all Photovoltaic and AC capacity for all other Renewable Energy.

0 25 50 Miles





Deval Patrick
Governor
Richard K. Sullivan Jr.
Secretary of Energy and Environmental Affairs

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection

MASSACHUSETTS CLEAN ENERGY CENTER

DOER
Massachusetts Department of Energy Resources

Data Source: MassCEC, MassDEP, MassDOER, MassEEOEA and MassGIS

Note: This map includes MassDEP permitted sites, MassDOER registered sites and Clean Energy installations registered with the Massachusetts Clean Energy Center (MCEC) from 2002 to May, 2012
Map Produced by MassDEP GIS group - PMurphy, June, 4, 2012
G:\local\user data\Clean_Energy\May2012\CERP_May.mxd version 3

Closed Landfills

- Closed Landfills have been assessed and closed (capped/final cover) in accordance with the regulations are generally:
  - closed within the last 20-25 years
  - cap may be either soil or flexible membrane liner
  - usually larger landfills where the risks and closure design aspects are known
  - majority were municipal operations
  - generally ready to move forward

Inactive Landfills

- Older landfills and/or dumping grounds that have not been assessed or closed
  - tend to be smaller sites
  - usually privately owned
  - usually no assessment or closure has been conducted
  - Will need to be assessed and closed either prior to, or concurrent with, the development of the project
  - need to ensure that funds and time will be available

Adjacent site Assigned Land

- Development adjacent to, as well as on, old disposal sites these locations may trigger requirements for the owner/operator to start the assessment and closure process

- You are changing the use of the property, be proactive and manage your risk

- The project must not compromise the function of landfill cap/final cover system;
  - must be geo-technically stable and designed to accommodate loading/settlement
  - keeps water out and controls landfill gas release points.
  - must not interfere with existing Environmental Monitoring Systems
  - maintain integrity of final cover system
  - no adverse impacts to public health, safety, welfare and the environment

1. Getting Started

- Visit the Renewable Energy Projects at Closed Landfills" website
- Review Existing Approvals and Permits
  - Site Assignment
  - Deed
  - Previous MEPA Certificates
  - Closure Plans & Assessment
  - Available Environmental Monitoring Data
  - Determine if all or a portion of the closure received funds from MA Capping Grant

2. Typical Approvals Needed

- MassDEP Post Closure Use Permit
- Massachusetts Environmental Policy Act (MEPA)
  - Thresholds (energy, impervious surface, etc.)
  - change to an existing solid waste project
  - state financial assistance
- Natural Heritage/ Endangered Species
  - Does site fall within mapped rare species habitat?
- Local Permits
  - wetlands, zoning, building, etc.

3. Set up a Pre-application Meeting with MassDEP

Solid Waste Management Section Chiefs

- Southeast Regional Office: Mark Dakers, (508-946-2847), Mark.Dakers@state.ma.us
- Northeast Regional Office: John Carrigan, (978-694-3299), John.Carrigan@state.ma.us
- Central Regional Office: James McQuade, (508-767-2759), James.McQuade@state.ma.us
- Western Regional Office: Dan Hall (413-755-2212), Daniel.Hall@state.ma.us

4. Submit a Post Closure Permit Application

- Who can complete the permit application?
  - Registered Massachusetts Professional Engineer with Owner's Approval

- Post Closure Use Permit Application
  - Minor vs. Major PCU Permit Application
  - Agency review typically takes 2-6 months
  - Can take much longer if no previous assessment or closure at proposed site

Critical Application Components

- Foundations
- Stormwater Controls
- Landfill Gas
- Construction and Access considerations
- Long-term Maintenance
- Supporting Materials
- Design for the 24-hour, 25 year storm event
- Evaluate the 24-hour, 100 year storm event

Supporting Materials

- Existing Site Conditions
  - As-built Site plans
  - Report Narrative
  - Findings of any baseline issues

- Proposed Post Closure Design Plans
  - Site plans and design details with Civil & Electrical P.E. stamped/sealed
  - Construction Plan
  - Health and Safety Plan
  - Gas Management Plan
  - Narrative Report that describes technical analysis of the proposal and effects of the solar project changes

If your application clearly demonstrates that the proposed development:

- integrates well with the function of the landfill cap/final cover;
- keeps water out and controls landfill gas release points;
- does not pose increased erosion potential;
- is geo-technically stable and designed to accommodate loading/settlement;
- doesn't interfere with existing Environmental Monitoring Systems;
- provides adequate maintenance; and
- does not create new exposure pathways for landfill gas or leachate;

then review of your application should proceed favorably.

Resources

- How MassDEP permitting works?

http://www.mass.gov/dep/service/online/gettings.htm

- Post Closure Use Instructions and Application Form

http://www.mass.gov/dep/recycle/approvals/swforms.htm#postclos

- Landfill Technical Guidance Manual

http://www.mass.gov/dep/recycle/laws/policies.htm

- Control of Odorous Gas at Massachusetts Landfills

http://www.mass.gov/dep/recycle/laws/policies.htm

- 310 CMR 19.000 Solid Waste Regulations

http://www.mass.gov/dep/recycle/laws/regulati.htm#sw

- 301 CMR 11.00 MEPA Regulations

http://www.mass.gov/envir/mepa/thirdlevelpages/meparegulations/meparegulations.htm

- Fact sheet: Developing Renewable Energy Facilities on Closed Landfills

http://www.mass.gov/dep/energy/landfill.htm

- Guide to Developing Solar Photo-voltaics at Massachusetts Landfills, April 2012

http://www.mass.gov/eea/docs/doer/green-communities/pubs-reports/pvlandfillguide.pdf