

Landfill Gas Offset Projects in the Regional Greenhouse Gas Initiative (RGGI) – *A Regulatory Perspective*



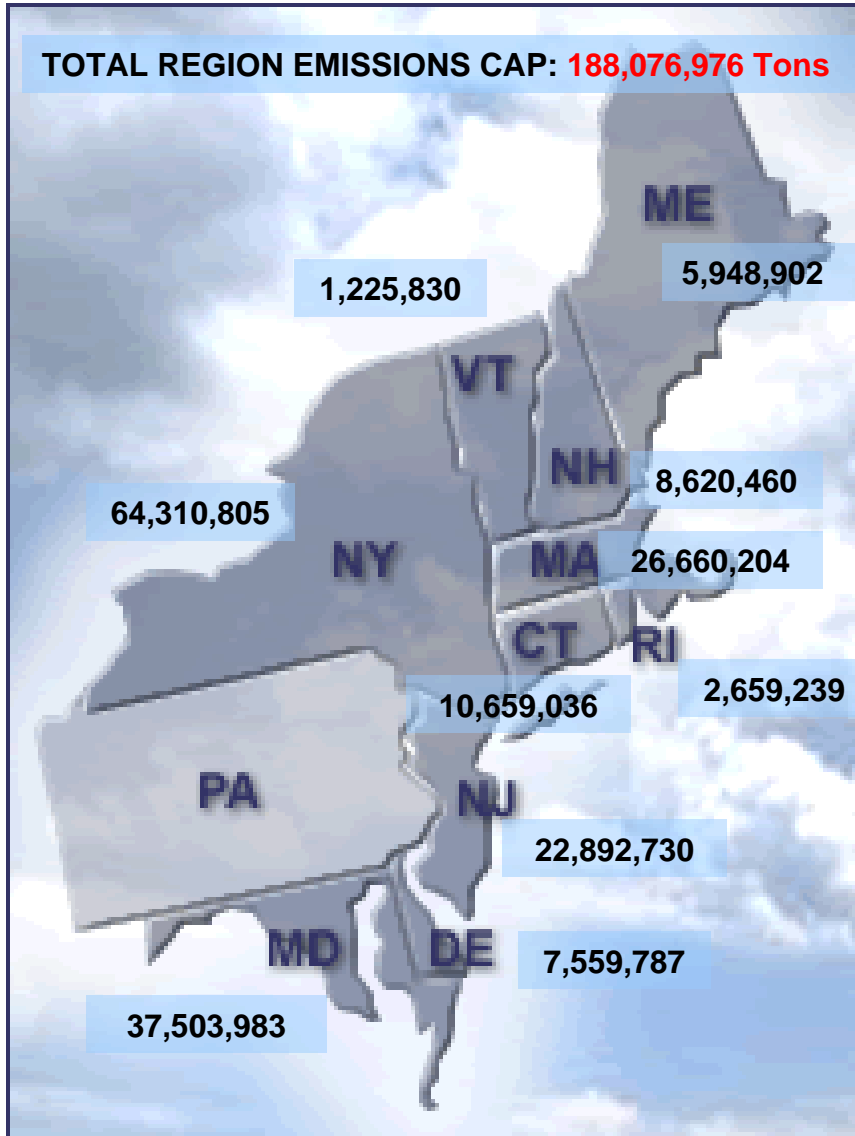
Landfill Gas Energy: A Sustainable Energy Source from Small
Landfills in New England

Location: Lee Community Hall, USM – Portland, Maine

Presented by: Eric Kennedy, Bureau of Air Quality

Date: December 11, 2008

What is RGGI?



- Effective 1/1/2009
- 10% reduction in CO₂ from baseline by 2019
- Covers Electric Generators
 - Fossil fuel-fired units
 - 25 MW or greater
 - >10% annual gross sales to grid
- Purpose
 - Reduce Greenhouse gases
 - Promote energy efficiency & low carbon resources
 - Establish a carbon price
 - Encourage innovative technologies
 - Establish a national model

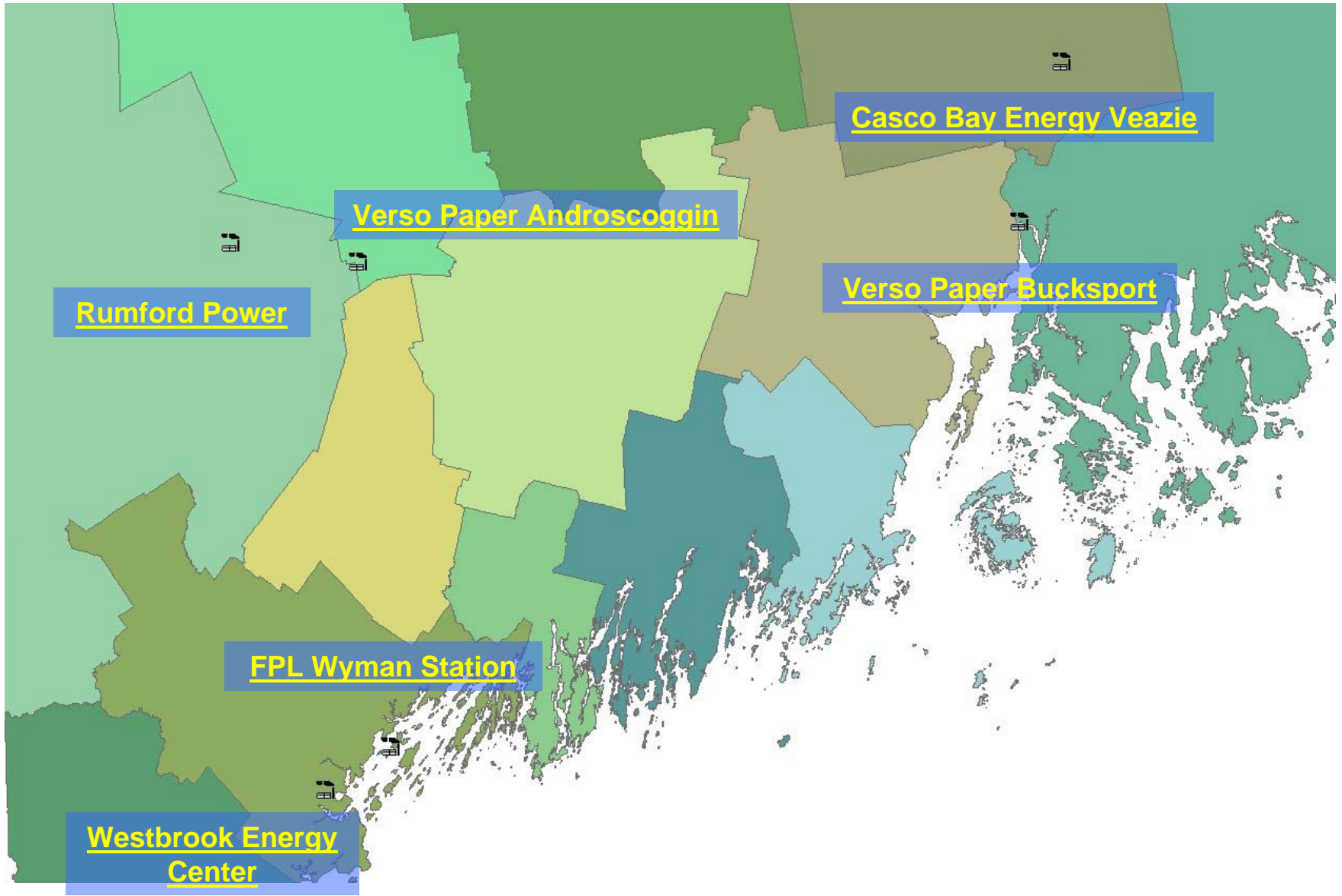
Maine's CO₂ Budget

- Six Year Stabilization Period:
2009 thru 2014 = 5,948,902 CO₂ allowances per year
- Four Year Reduction Period:
2015 = 5,800,180 CO₂ allowances
2016 = 5,651,458 CO₂ allowances
2017 = 5,502,736 CO₂ allowances
2018 = 5,354,014 CO₂ allowances
(10% reduction from stabilization period budget)

Status of Maine's Legislation/Regulations

- Legislation/Revisions enacted
- Rulemaking
 - Chapter 156 – CO₂ Budget Trading Program
 - Originally Adopted on December 6, 2007
 - Revisions Adopted on July 17, 2008
 - Chapter 157 – RGGI Waiver
 - Adopted on May 1, 2008
 - Chapter 158 – Auction Provisions
 - Adopted on July 17, 2008
 - First Auction Held on September 25, 2008

Maine RGGI Sources



CO₂ Budget Source Obligations

- Select a CO₂ Authorized Account Representative
- Obtain a CO₂ Budget Source License
- Determine/Monitor Emissions
- Submit Compliance Reports
- Obtain CO₂ Allowances
- Surrender CO₂ Allowances = Emissions at end of Compliance Period (3/4 years)

CO₂ Budget Source Obligations

- Compliance options
 - Reduce CO₂ emissions at source
 - Purchase allowances at auction
 - Purchase allowances on secondary market
 - Purchase/obtain offset allowances
 - Purchase/obtain CO₂ emissions credit retirements

Offset Allowances

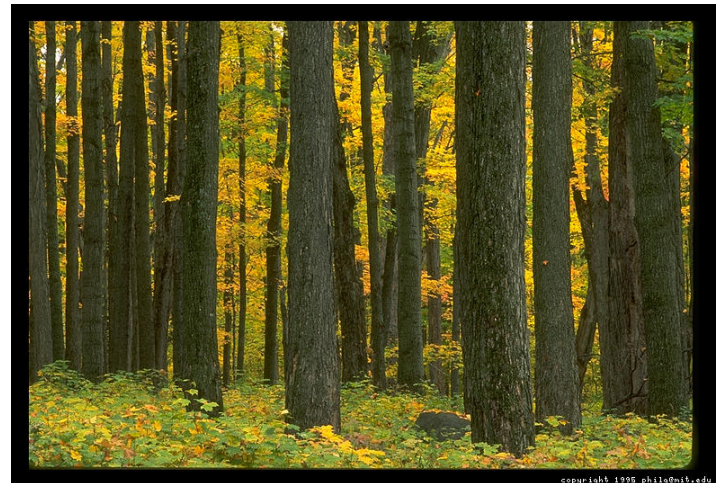
- Project Categories Currently Limited to Five
- Can be used for up to 3.3% of compliance obligation
- Increases to 5% with Stage 1 Trigger Event (\$5/ton, 2005 dollars)
- Increases to 10% with Stage 2 Trigger Event (\$7/ton, 2005 dollars)

Offset Project Categories



***Methane
Capture from
Farms***

***Convert Land
to Forest***



Offset Project Categories

***SF₆ Gas Leak
Prevention in
Electricity
Distribution***



***Landfill Gas
Capture & Destruction
at Small Landfills***



Offset Project Categories



And End-Use Energy Efficiency Projects

- Potential future offset project categories
 - Forest management
 - Prevention of forest land conversion

General Process for Offset Projects

- Owners & Operators designate a project sponsor
- Project Sponsor
 - Opens a general account
 - Completes & submits a consistency application
 - Submits annual monitoring and verification reports
- Department reviews and approves/denies consistency applications and M&V reports

Offset Project Provisions are Designed to ensure that emission reductions will be:

- Real
- Additional
- Verifiable
- Enforceable
- Permanent

Offset Project Locations

- In Any Participating State
- In Any State or Other U.S. Jurisdiction where a cooperating regulatory agency has an MOU with the Department to carry out certain offset project related obligations

Offset Project Sponsor

- Any person who meets the requirements of the CO₂ authorized account representative for the general account of an eligible offset project
 - Open a general account
 - Be authorized to represent the owners & operators

Additionality Requirements

- Offset Allowances shall not be awarded to an offset project that:
 - is required pursuant to any local, state or federal law, regulation, or administrative or judicial order;
 - includes an electric generation component, unless the legal rights to attribute credits (other than the CO₂ offset allowances) are transferred to the Department;

Additionality Requirements (cont.)

- Offset Allowances shall not be awarded to an offset project that:
 - receives funding or other incentives from any system benefit fund, or other incentives provided through the consumer benefit fund; or that
 - Is awarded credits or allowances under any other mandatory or voluntary greenhouse gas program

Maximum Allocation Periods

- Initial period of 10 years
- Second period of 10 years, upon a showing by the project sponsor that the offset project continues to meet all applicable requirements and upon submission of another consistency application and subsequent approval

Timing of Offset Projects

- Offset Allowances may be awarded only for projects that are initially commenced on or after 12/20/05
- Consistency Application Deadlines
 - 6/30/09 for offset projects that commenced prior to 1/1/09
 - Within 6 months after the offset project is commenced for projects that commenced on or after 1/1/09

Consistency Application Contents

- Project Sponsor's name, address, e-mail address, phone, fax, and general account number
- Description of offset project
- Demonstration that the project meets all applicable requirements
- Emissions baseline determination
- An explanation of how the reduction will be quantified, monitored, and verified
- Completed agreements, disclosures, statements, and certification reports
- A verification report and certification statement signed by an accredited independent verifier

Place for Filing Consistency Applications

- For an offset project located in one participating state, file with that state's appropriate regulatory agency
- For an offset project located in more than one participating state, file in the state where the larger part of the project is projected to occur
- For an offset project located wholly outside all participating states, file with the appropriate regulatory agency in any one participating state

Department Action on Consistency Applications

- The Department will make a completeness determination within 30 days following receipt of a consistency application
- The Department will issue a determination as to whether the offset project is consistent with applicable requirements within 90 days of making a completeness determination

Specifics for Landfill Offset Projects

- Eligibility: Landfills subject to NSPS for MSW landfills (40 CFR Part 60 Subparts Cc and WWW) are not eligible
- Offset Project Description:
 - Detailed narrative of project including eligibility
 - Owner and operator information for offset project and for landfill
 - Location and landfill specific information
 - Equipment specifications and project schematics

Specifics for Landfill Offset Projects

- Monitoring and Verification Requirements:
 - Employ landfill gas collection system that provides continuous metering and data computation of landfill gas volumetric flow rate and CH₄ concentration
 - Annual M&V reports with monthly volumetric flow rate and CH₄ concentration data
 - Submit M&V Plan as part of consistency application that includes a QA/QC program description for the monitoring equipment
 - Annually verify landfill gas CH₄ composition through sampling and analysis by an independent laboratory using applicable EPA approved test methods

Specifics for Landfill Offset Projects

- Emissions Baseline Determination:
Emissions (tons CO₂e) = (V x M x (1 – OX) x GWP)/2000, where
V = volume of CH₄ collected (ft³)
M = mass of CH₄ per ft³ (0.04246 lbs/ft³)
OX = oxidation factor (0.10)
GWP = CO₂e global warming potential of CH₄ (23)

Specifics for Landfill Offset Projects

- Calculating Emissions Reductions:
Emissions Reductions (tons CO₂e) = $(V \times M \times (1 - OX) \times C_{ef} \times GWP) / 2000$, where
V = volume of CH₄ collected (ft³)
M = mass of CH₄ per ft³ (0.04246 lbs/ft³)
OX = oxidation factor (0.10)
C_{ef} = combustion efficiency of methane control technology (0.98)
GWP = CO₂e global warming potential of CH₄ (23)

Status of Application Forms & Guidance Materials

- Offset Project application forms, instructions, and guidance materials are currently in development
- ICF International has been contracted by the RGGI participating states to develop materials for review and approval
- Offset Project application information will be input into COATS (CO₂ Allowance Tracking System) which is being developed by PQA
- Expect that process will be approved and available sometime during Q1 of 2009

Air Emission License Impacts

- The installation of flares and/or electric generating equipment can have impacts on a facility's need to obtain or modify its Air Emission License
- Contact the Bureau of Air Quality as early as possible in the project development phase for guidance