

The Greater New Bedford LFG Utilization Project Crapo Hill Landfill, Dartmouth, MA

**LANDFILL GAS ENERGY: A
SUSTAINABLE ENERGY SOURCE
FROM SMALL LANDFILLS IN NEW
ENGLAND**

December 11, 2008

CommonWealth

Resource Management Corporation

**Greater New Bedford Regional
Refuse Management District**

Greater New Bedford LFG Utilization Project: The Landfill Owner

Greater New Bedford Regional Refuse Management District

- legislatively-created solid waste management District established 1979
- two member communities
 - City of New Bedford and
 - Town of Dartmouth
- Chartered to develop and manage integrated solid waste management for member communities
- District management reports to District Board that includes representatives from each community

Greater New Bedford LFG Utilization Project: The Crapo Hill Landfill

- Last “greenfield” permitted landfill in MA
 - Modern design – lined, leachate collection, LFG management
 - 152-acres site assigned for landfill
 - Permitted 70-acre landfill
 - First phase: 20 acres - commenced operations in 1995
 - Second phase: 10 acres - operations in 2002
 - Additional 10 acres - operations in 2009
- Serves member communities only
 - Permitted disposal rate 115,000 TPY of solid waste
 - Approximately 1.6 million tons in place
 - 15 to 20 years of life remain

Greater New Bedford LFG Utilization Project: Goals

- Establish Long-term Solid Waste Plan contingent upon recycling success
- Good neighbor policy – odor control
- Build proper equipment inventory
- Ownership of surrounding property
- Training and cross-training labor
- Develop relationship with good gas consultants

Greater New Bedford Regional Refuse Management District



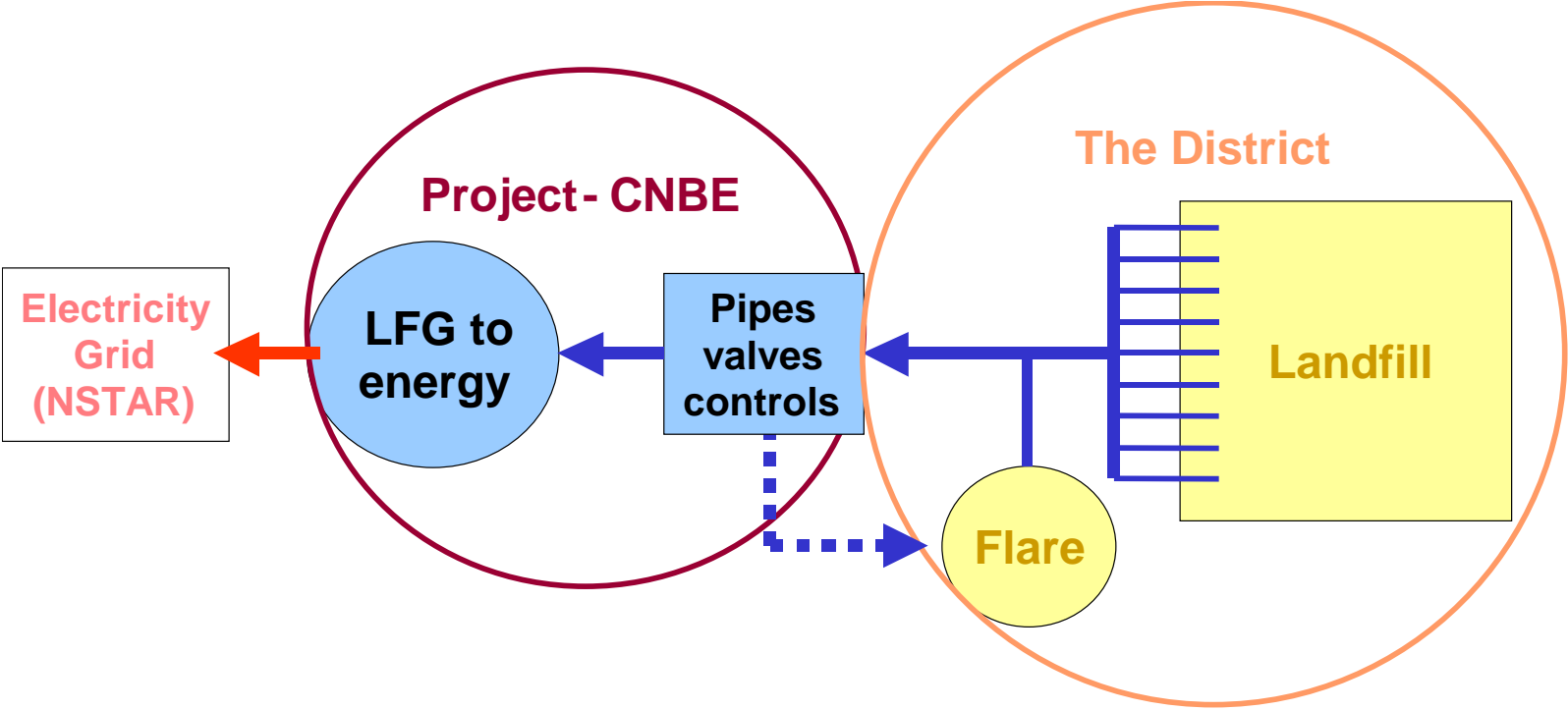
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Greater New Bedford LFG Utilization Project: LFG Management System

- LFG collection and flare – commenced operation in 2000
- LFG collection system
 - 36 vertical wells,
 - 33 horizontal connector to 10,000 feet of horizontal collectors
 - 11 connections to leachate collectors
- Flare: Open flare 2,000 scfm LFG flow – Organics SS flare
- LFG management in place to tap LFG resource
- Bring outside expertise and capital to provide District with long-term benefits.

Greater New Bedford Regional Refuse Management District

Greater New Bedford LFG Utilization Project: District and CNBE Facilities



Greater New Bedford LFG Utilization Project: Overview

The Project



Owner:	CommonWealth New Bedford Energy LLC
Operator:	North England Energy Services Corp.
Landfill owner:	Greater New Bedford Regional Refuse Management District
Fuel:	Landfill gas
Capacity:	3.30 MW gross nameplate generating capacity
Equipment:	Caterpillar 3516 internal combustion engines with Caterpillar SR4 generators (four x 825 kW)
On-line date:	November 2005

Greater New Bedford LFG Utilization Project: Construction

The site



The building



Greater New Bedford LFG Utilization Project: Construction

The landfill gas supply



Greater New Bedford LFG Utilization Project: Construction

The engines



The installation



Greater New Bedford LFG Utilization Project: The Facility



Greater New Bedford LFG Utilization Project: The Development Process

Feasibility studies: CRMC performed at risk

Procurement

- Apr 2003 District issues RFP to develop a LFG utilization facility
- Aug 2003 District selects CNBE
- Dec 2003 District and CNBE sign project agreements
 - Site Lease regarding use of the site to develop the facility
 - LFG Purchase and Sale Agreement regarding the sale of the LFG as fuel

Greater New Bedford LFG Utilization Project: The Development Process (continued)

Development

- Nov 2003 CNBE gets pre-construction loan from the MTC
- Jan 2004 CNBE starts electrical interconnection study with NStar
- Feb 2004 CNBE signs agreements to sell electricity and Renewable Energy Credits
- Apr 2004 CNBE submits permit applications
- Dec 2004 All permits issued
- Jan 2005 Electrical interconnection agreement complete
- Mar 2005 Construction financing closed; construction begins
- Nov 2005 Facility begins generating electricity

Greater New Bedford LFG Utilization Project: The Landfill Gas Resource

Quantities: 1200 to 1300 scfm of LFG corrected to 50% CH₄
projecting stable LFG supply through 2021+

Composition: 50% to 55% methane, <0.5% oxygen,
40% to 50% CO₂, balance gas (mostly nitrogen)
<200 ppm H₂S

- Most engines need >45% methane, <2% oxygen, <500 ppm H₂S

Greater New Bedford LFG Utilization Project: Development incentives

- The Landfill Owner
 - Motivated to utilize LFG as a resource
 - Understanding procurement process
 - Understanding developers needs
 - Right relationship

Greater New Bedford LFG Utilization Project: Development incentives

Federal Section 45 tax credits (1 cent per kWh)
available if owner is a private entity that pays taxes

Renewable Energy Credits (state programs)

State development incentive programs

- REC purchase support contracts (MTC)
- Pre-development financing loans (MTC)

Greenhouse gas reduction credits

- Regulatory markets: federal and state initiatives
- Wholesale markets:
 - CFIs on the Chicago Climate Exchange
 - Bi-lateral transactions
- Retail markets: Internet marketing via website
 - e-BlueHorizons.com

Greater New Bedford LFG Utilization Project: Barriers

Financing: is your project *creditworthy*?

- A financeable project needs:
 - a complete package of contracts to reduce the risk of variances from projected revenues, costs and performance
 - simple, credible answers to every question
 - not too many stories
- Money may be available to those who pass the tests
 - the CNBE project was financed on a non-recourse basis

Greater New Bedford LFG Utilization Project: Barriers

Negative neighbors: even the best and most environmentally-sound projects have determined opponents that

- Challenge awards of property rights on public lands
 - Comply with all open bidding requirements
- Expand the scope of permit reviews
 - Prepare to argue for reasonable review scopes and to respond to technical challenges
- Appeal permit decisions
 - Prepare for appeals, especially if the permit is stayable (e.g., permits related to wetlands impacts)
- Hold the project hostage to pursue unrelated agendas and opportunities
 - Retain good counsel

Greater New Bedford LFG Utilization Project: Barriers

Insurance

- Liability: general, pollution, machinery breakdown
- Property value and business interruption, with coverage for certified acts of terrorism and for calamities (e.g., earthquake and flood)

Pick an insurance agent that is familiar with the application and can introduce you to the market specialist

Interconnection

- Key issue is the strength and reliability of the local grid
- Distributed generation projects have very little leverage with local electricity distribution companies

Be prepared for the technical issues, and develop a good personal relationship with, and earn the respect of, the representatives of the electric utility

**Greater New Bedford Regional
Refuse Management District**

Greater New Bedford LFG Utilization Project:

Success!

