Area 3: Johnston Rhode Island Combined Cycle Electric Generating Plant Fueled By Waste Landfill Gas

Project Management Plan

A. Executive Summary

Applicant Name: Rhode Island LFG Genco LLC
Project Director/Principal Investigator: Stephen Galowitz
Project Title: Area 3: Johnston Rhode Island Combined Cycle Electric Generating Plant Fueled by Waste Landfill Gas
Project Objectives:
The primary objective of the Project is to maximize the productive use of the substantial quantities of waste landfill gas generated and collected at the Central Landfill in Johnston, Rhode Island. An extensive analysis was conducted and it was determined that utilization of the waste gas for power generation in a combustion turbine combined cycle facility was the highest and best use.

The resulting Project reflects a cost effective balance of the following specific sub-objectives:

- Meet environmental and regulatory requirements, particularly the compliance obligations imposed on the landfill to collect, process and destroy landfill gas
- Ensure that adequate space is available for the required expansion of the Central Landfill
- Utilize proven and reliable technology and equipment
- Maximize electrical efficiency
- Maximize electric generating capacity, consistent with the anticipated quantities of landfill gas generated and collected at the Central Landfill
- Maximize equipment uptime
- Minimize water consumption
- Minimize post-combustion emissions

Project Description:

- Methods – The Project will consist of several components.
  - The landfill gas collection system will be modified and upgraded to optimize the efficient collection and conveyance of landfill gas to a central processing point.
  - A state-of-the-art gas clean up and compression facility will be constructed consisting of dewatering, sulfur removal, siloxane removal and intermediate and high-pressure gas compression.
  - A 3200 foot high-pressure pipeline will be constructed to convey the cleaned landfill gas from the clean up and compression facility to the power plant
  - A combined cycle electric generating facility will be constructed consisting of five Solar Taurus 60 combustion turbine generator sets, each of which will be equipped with turbine inlet chilling, heat recovery steam generators and post combustion emissions reductions systems. The steam produced will be fed to a single steam turbine generator set.

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- The voltage of the electricity produced will be increased at a newly constructed transformer/substation and the electricity will be delivered to the local transmission system.

- Impact – The Project will produce a myriad of beneficial impacts.
  - The Project will create 453 FTE construction and manufacturing jobs and 30 FTE permanent jobs associated with the operation and maintenance of the plant and equipment.
  - By combining state-of-the-art gas clean up systems with post combustion emissions control systems, the Project will establish new national standards for best available control technology (BACT).
  - The Project will annually produce almost 350,000 MWh's of clean energy, an amount sufficient to satisfy all of Rhode Island's ambitious renewable energy standard in 2009.
  - By destroying the methane in the landfill gas, the Project will generate 1.42 million metric tons of CO2 equivalent reductions annually.
- Participants – In addition to the applicant, participates include:
  - Project Development Sponsor -Ridgewood Renewable Power
  - Owner's Engineer – Jacobs Engineering Group
  - Major Vendors – Solar Turbines, domnick hunter, Rentech, Merichem

B. Work Breakdown Structure

See Attachment.

C. Risk Management

The risk factors in the project have, to a large extent, already been eliminated or mitigated as follows:

- Site control
  i. Site control has been secured for the life of the project
- Fuel supply
  i. Exclusive rights to the fuel supply at fixed pricing has been secured for the life of the project
  ii. Multiple landfill gas curves have been developed to be certain that adequate landfill gas can be generated and collected.
  iii. Developer has secured control over the construction, maintenance and operation of the collection fields in order to ensure proper quantity and quality of fuel.
- Cost overruns
  i. Equipment has been selected and vendor indicative bids have been received for all major components.
  ii. Significant contingencies have been included in the project budgets

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- Regulatory
  i. Air permit has been received.
  ii. Wetlands permit is well in process
  iii. Electrical interconnection is well in process.
- Technical
  i. Commercially available equipment with long and successful operating histories in similar situations have been selected in order to minimize technical performance risk.
  ii. Long term service agreements with performance guarantees and liquidated damages have been specified from most of the major equipment vendors in order to ensure successful operation.
  iii. Gas pretreatment has been designed with redundant systems and excess capacity.
  iv. An internationally recognized engineering firm with specific capabilities in turbine projects and landfill gas applications was selected as owner's engineer.

D. Milestone Log

Milestone	Completion Date
ISO Approval of Completed Interconnection SIS Studies	10/1/09
Receive Wetlands Permit	11/1/09
Execute Interconnection Agreement	11/30/09
Begin Major Equipment Procurement	1/4/10
Complete Engineering	11/1/10
Complete Construction Documents	11/1/10
Major Equipment Received on site	1/1/11
Complete Construction	6/1/11
Complete Commissioning	7/15/11
Complete Performance Testing	7/27/11
Project Completion	7/27/11

E. Funding and Costing Profile

See attached

F. Project Timeline

See attached

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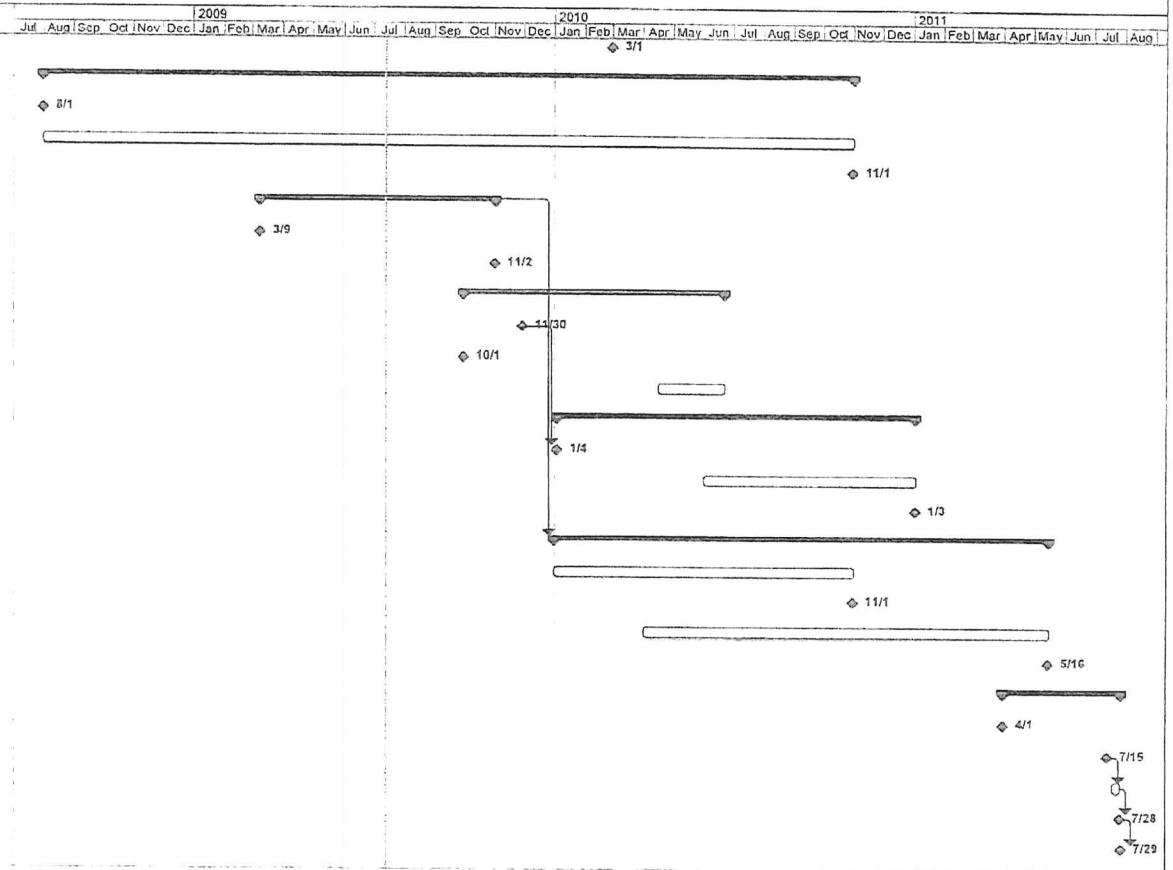
G. Success Criteria and Decision Points

The criteria for success will be the achievement of project milestones as shown on the Work Structure Breakdown and the Project timeline.

JOHNSTON COMBINED CYCLE LFG PLANT

OVERALL SCHEDULE FOR DOE

ID	Task Name	Start	Finish	Predecessors
1	150 Day Decision Point	Mon 3/1/10	Mon 3/1/10	
2	ENGINEERING	Fri 8/1/08	Mon 11/1/10	
3	Start Engineering	Fri 8/1/08	Fri 8/1/08	
4	Engineering	Fri 8/1/08	Mon 11/1/10	
5	Complete Engineering	Mon 11/1/10	Mon 11/1/10	
6	PERMITTING	Mon 3/9/09	Mon 11/2/09	
7	Air Permit	Mon 3/9/09	Mon 3/9/09	
8	Wetland Permit	Mon 11/2/09	Mon 11/2/09	
9	ELECTRICAL INTERCONNECTION	Thu 10/1/09	Tue 6/22/10	
10	Interconnection Agreemenet	Mon 11/30/09	Mon 11/30/09	
11	Completion Date For Studies	Thu 10/1/09	Thu 10/1/09	
12	Construction	Fri 4/16/10	Tue 6/22/10	
13	EQUIPMENT PROCUREMENT	Mon 1/4/10	Mon 1/3/11	
14	Major Equipment Order	Mon 1/4/10	Mon 1/4/10	10
15	Major Equipment Received On Site	Tue 6/1/10	Mon 1/3/11	
16	All Major Equipment Received	Mon 1/3/11	Mon 1/3/11	
17	CONSTRUCTION	Fri 1/1/10	Mon 5/16/11	6
18	Construction Ducuments	Fri 1/1/10	Mon 11/1/10	
19	Construction document completion	Mon 11/1/10	Mon 11/1/10	
20	Construction	Thu 4/1/10	Mon 5/16/11	
21	Construction Completion	Mon 5/16/11	Mon 5/16/11	
22	COMMISSIONING/START-UP	Fri 4/1/11	Thu 7/28/11	
23	Start Commissioning/Start-up	Fri 4/1/11	Fri 4/1/11	
24	Complete Commissioning/Start-up	Fri 7/15/11	Fri 7/15/11	
25	Performance Testing	Wed 7/20/11	Wed 7/27/11	24
26	Performance Testing Complete	Thu 7/28/11	Thu 7/28/11	25
27	PROJECT COMPLETION/COMMERCIAL OPERATION	Fri 7/29/11	Fri 7/29/11	26



Project: Johnston Sched rev1
Date: Mon 7/13/09

Task | Progress | Summary | External Tasks | Split
Split | Milestone | Project Summary | External MileTask

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Johnston Funding and Costing Profile

		Budget Period 2 Cost													
	Fed Funding	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Totals
CTG-Solar turbines	6,500,000	$975,000		$2,275,000							$2,275,000		$975,000			$6,500,000
Fuel Gas Compressor-Vilter	1,500,000		$150,000		$150,000		$264,000		$936,000							$1,500,000
HRSG-Rentech	3,500,000	$350,000					$875,000		$525,000	$700,000		$1,050,000				$3,500,000
STG-Dresser-Rand	1,500,000	$225,000		$300,000	$225,000		$300,000			$300,000					$150,000	$1,500,000
LO-CAT H2S Removal-Merichem	1,500,000	$450,000		$450,000								$450,000	$150,000			$1,500,000
Step-Up Transformer	500,000	$150,000		$150,000								$150,000	$50,000			$500,000
Totals	15,000,000	$2,150,000	$150,000	$3,175,000	$375,000	$0	$1,439,000	$0	$1,461,000	$1,000,000	$2,275,000	$1,650,000	$1,175,000	$0	$150,000	$0 $15,000,000