Landfill Gas to Energy
Practical Project Analysis

Methane to Markets Conference

Buenos Aires November, 2005

Agenda

1. Sponsor Analysis
2. Off-take Analysis
3. Fuel Supply Analysis
4. Fuel Transport Analysis
5. Technology Analysis
6. Environment Analysis
7. Interconnection Analysis
8. Operations Analysis
9. Construction Analysis
10. Legal Analysis
11. Interest / Foreign Exchange Risk Analysis

Sponsor Analysis

- Type of Sponsor;
  - Strategic or financial.
- Experience Level
  - Experience in Methane capture projects.
- On-going Support Requirements from Sponsor
  - Technical, financial, operational.

Off-Take Analysis

- Type of Off-take Arrangement
  - Energy sale (pre-tax), tax credit (after-tax), emission scheme (pre or after-tax).
- Tenor of Off-take Arrangement
  - Recovery of capital Investment, RoE,
  - Ability to service debt.
- Credit Standing of Off-taker
  - Credit quality,
  - Support / guarantee obligations.

Fuel Supply Analysis

- Available Gas
  - Function of in-situ waste, waste to be deposited and rate of decay.
- Gas Flow Analysis
  - Provided using proprietary models developed by sponsors and independent engineers.
- Rate of Decay
  - Function of type of waste and meteorological events.

Fuel Supply Analysis - Continued

- Date Landfill Opened
  - Initial time period required to have sufficient gas emissions.
- Gas Flow Data
  - Quality and quantity of data.
- Landfill Operations Permits
  - Length of operations of landfill and quantity limits (per day/per annum).
- Barriers to Entry
  - Difficulty to permit other sites, alternatives, i.e. incineration.

Fuel Transport Analysis

- Well Field
  - Construction or development of adequate well-field.
  - Operations and maintenance.
- Distance to Process Facility.
  - Transport to capture/conversion process facility.

Technology Analysis

- Dependent on Type of Project.
  - Conversion to electrical energy: reciprocating engines, micro turbines, other technologies
  - Process Use: Direct use, medium BTU, high BTU
- Generally Modular and Flexible.
  - Project expansion with landfill growth.

Environmental Analysis

- Projects are Environmentally Positive.
  - Landfill gas (Methane)is a potent heat trapping gas.
  - Sale of landfill gas can offset mitigation cost for landfill operator.
  - Landfill gas itself relatively benign, i.e. less Sox and Nox than natural gas, more VOC's.
- Relative Analysis
  - Other renewable project development.

Interconnection Analysis

- Project Size
  - Connect to transmission or distribution system depending on project size.
- Length of Interconnect
  - May be able to connect on-site to landfill operator's utilities.
- Delivery Point
  - Transmission scheduling issues.

Operations Analysis

- Relatively Simple technology
  - Limited number of operators required for projects.
  - Limitations on technical experience okay.
- Remote Operations
  - Some LFGTE projects can be run remotely.
- Major Maintenance
  - Long term service agreements with original equipment manufacturer.

Construction Analysis

- Relatively Simple Construction
  - No specific technical expertise required.
  - Equipment pre-manufactured by OEM's.
  - Series of small sub-contracts, no requirement for traditional EPC.

Legal Analysis

- Legal Risks Tied to Development Jurisdiction
  - Regulatory Risks.
  - Contract law (Off-take Arrangements).
  - Permits.
- Availability of PRI or Other Mitigants
  - Third Party, ECA or multi-lateral providers.

Interest / Foreign Exchange Risk

- Interest Rate Risks
  - Fixed at term conversion
  - Pro forma developed using swap rate.
- Foreign Exchange Risk
  - Dependent on jurisdiction
  - Buy coverage through private, ECA or multi-lateral party.
- Commercial Risk Coverage
  - Dependent on jurisdiction.
  - Buy coverage through private, ECA or multi-lateral party.

Questions

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