

Edom Hill Waste Conversion Facility

Riverside County, CA

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Emerging Technologies Forum

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Tipping Fee History

- 1994 – County tipping fee was \$38.50 per ton.
- 1996 – County lowers tipping fee to \$30.00 per ton
- Cities use \$8.50 differential to fund future MRF's, Alternative Energy Facilities or other diversion programs
- 2004 – Edom Hill landfill closes

Edom Hill Transfer Station History

- 2001 – County issues RFP for landfill replacement facility.
- 2002 – County awards the Edom Hill Transfer Station contract to WMoD.
- RFI for Conversion Technology is part of contract.
- Gate rate is set at \$34.51 per ton.

Project Overview

- RFI was changed to RFQ
- Submitted to 44 companies

RFQ – Key Factors

- Quantify the diversion amount (>60%).
- Is the design modular and will it operate for 20 years.
- Capital and annual O & M cost for 100,000 tpy facility.
- Identify markets for end products.
- Have operating facilities to visit.
- Intellectual properties, covered by technology.
- Labor requirements and job classifications.
- Provide pro forma analysis.
- List subs, key employees, and associated companies.
- Describe community education, publicity, marketing experience.
- Detail the permitting experience.

Evaluation: 44 RFQ's to 16 Respondents

- Pyrolysis to energy
- Ethanol (hydrolysis and fermentation)
- In-vessel fermentation to energy
- Autoclaving to pulp recovery
- Microwave reduction
- Mixed alcohols for feed stock
- Plasma gasification to energy
- Catalytic thermal reformer

Products Proposed

- Methane Gas
- Electricity
- Heat
- Daily Cover
- Fertilizer
- Carbon Dioxide Offsets
- Renewable Energy Credits
- Gypsum
- MRF recyclables
- Compost
- Alcohol
- Mixed Alcohol
- Carbon black
- Protein Cream for cattle
- Diesel
- Hydrogen

Results

- Operating facilities: 5-50 tpd (4), 51-100 tpd (2), >100 tpd (4).
- Most technologies were operating in Europe.
- CA diversion rules inhibit some technologies, i.e. pyrolysis.
- Capital costs ranged from \$9M to \$56M.
- Operation & maintenance ranged from \$0.9M to \$5.9M.
- Power requirements varied from 25 hp to 1.1 MW.

The Final Four

- Pyrolysis to Electricity.
- In-vessel fermentation to electricity, classical MRF (2).
- In-vessel fermentation to electricity, floating sort.

Final Two

- Pyrolysis to Electricity. Questions about operating experience, CA diversion credit and feedstock.
- In-vessel fermentation to electricity (classical MRF).
- In-vessel fermentation to electricity (floating sort).

In-vessel fermentation the final two;

- Lowest capital cost
- Most operating experience in industry
- Experienced engineering partners
- Energy product component well-known
- Available financing

Issues and Hurdles with the Final Two:

- Electricity revenue estimates
- What to do with the resultant compost?
- Water usage/Moisture content
- Need private financing
- Current waste characterization study?
- Projected tip fee
- Project timeline

Final Selection

- The submittal by the team of Waste Recovery Systems Inc. (WRSI), Valorga International SAS and Shaw Environmental/Emcon was selected unanimously to move forward towards contract negotiations.

Cost Breakdown

- Conversion Facility - \$45 per ton
- Average tonnage @ EHTS - 1447 tpd
- Need 400 tons to get 300 diverted tons

Therefore:

1047 tons @ \$34.51

400 tons @ \$45.00

400 tons @ \$ 6.30 (processing, capital reimbursement, host fee)

100 tons @ \$30.11 (diposal, transportation, loading)

End result: A blended rate of \$41.23 per ton.

Coachella Valley Diversion Information

- "Current" diversion numbers:

<u>Jurisdiction</u>	<u>2003**</u>
Cathedral City	44
Coachella	43
Desert Hot Springs	20
Indian Wells	58
Indio	52
La Quinta	57
Palm Desert	61
Palm Springs	57
Rancho Mirage	44
Uninc. Riv. County	47

**Without biomass credits

Phased Approach

- Phase One – Participating Jurisdictions to commit fair share of preliminary engineering, environmental studies and permitting costs.
- Approximately \$400,000
- Several committee meetings with Coachella Valley Association of Governments

Current status

- WMoD (including EHTS Lease) currently being purchased by Burrtec Waste Industries

