

TAMPA FLORIDA MCKAY BAY REFUSE TO ENERGY FACILITY RETROFIT PROJECT: OPEN PROCUREMENT PROCESS POTENTIALLY SAVES MILLIONS AND ESTABLISHES EMISSION GUARANTEES ABOVE AIR PERMIT THRESHOLDS

Samuel M. Rosania, III
Malcolm Pirnie, Inc.
Tampa, FL

ABSTRACT

The McKay Bay Refuse-to-Energy Facility Retrofit Project will be the first of its kind in this country. Where other waste-to-energy facilities are being retrofitted with only new air pollution control equipment, this project will consist of: replacing the existing four air-cooled furnaces/rotary kilns/water-walled boilers with modified mass-burn, grate-fired furnace system and water-walled boilers; replacing existing air pollution control equipment with a spray dryer absorber, mercury/dioxin control (carbon injection) system, NOx control system, baghouse, and a single shell multiflued stack; replacing the existing bottom ash drag chain conveyor and trommel system; furnishing and installing new motor control centers to serve all equipment furnished; and evaluating and upgrading as needed existing plant auxiliaries as to their design, compatibility, and condition to determine their ability to sustain the 20-year minimum operating life. In order to maximize the benefits relative to financial risk allocation and price, the City of Tampa (the "City") developed a procurement process that prequalified potential contractors and solicited competitive technical proposals utilizing three proposed service agreements that would be used to govern the retrofit, and the operation and maintenance of the City's 1,000 ton per day refuse-to-energy facility. The procurement process and the thorough preconstruction effort resulted in a competitive price for the project, with a bond issue amount acceptable to the City and most importantly with environmental and financial provisions as originally anticipated. Not only did the City address significant legal and technical issues from the previous contract, the City was able to obtain the important environmental benefit of more stringent air emissions limitations than are required under the facility's air emissions permit.

PROJECT OVERVIEW

Community Background Information

The City of Tampa is located on the west coast of Florida. It is the largest city in the County in terms of size and population. Tampa is also the third most populous city in the State of Florida. In 1998, the Hillsborough County Planning Commission estimated a population of 293,920 or approximately 31 percent of the total population of the County. Also worth noting, the City is a major employment center in southwest Florida. According to the 1990 US Census Bureau Journey to Work data, 266,441 workers aged 16 years or older work within the City limits. Furthermore, of those 266,441 workers, only 101,704 workers reside within the City, which is an increase in the City's daytime population of about 58 percent.

McKay Bay Refuse-to-Energy Facility

The City of Tampa, through its Solid Waste Department has been responsible for the collection and disposal of its solid waste since 1927. Disposal was primarily by means of landfilling until 1967, when the Facility was constructed as a municipal solid waste incinerator without energy recovery capabilities. The Facility was closed in 1979 due to environmental regulations promulgated at that time. In 1982, the City awarded a contract to reconstruct the Facility to comply with these regulations. The original incinerator was reconstructed and rebuilt by Waste Management, Inc. (from 1982 to 1985), to include a refuse-fired steam generating system capable of processing up to 1,000 tons per day ("tpd") of solid waste.

The Facility, as currently configured, consists of four 250 tpd mass-burn combustion units providing steam to a turbine generator capable of generating 22.5 megawatts of electricity, yet with a capacity commitment of only

15.5 megawatts per month. Each combustion unit consists of a mass-burn grate and rotary kiln furnace system supplied by Volund Miljoteknik A/S of Copenhagen, Denmark, a waste heat boiler, an electrostatic precipitator, an ash discharge system, and various auxiliary equipment common to all four combustion trains. Steam produced by the four combustion units is converted to electricity using a steam turbine.

During Fiscal Year 1998, the Facility received and processed 319,192 tons of City Processible Waste and 11,518 tons of County Processible Waste, for a total of 330,710 tons of Processible Waste received. Ash production for this reporting period, net of ferrous recovered, was 88,284 tons, resulting in a total ash generation rate of 29.7 percent. Ferrous metal recovery during was 9,777 tons or approximately 3 percent of waste processed. The Facility also produced for sale an average of 10,113 megawatt-hours (MWh) of electricity per month. The 12-month rolling average of net megawatt generation averaged 89.37 percent in Fiscal Year 1998.

Salient Agreements

The City has an existing electric contract, pursuant to the Small Power Production Agreement, in which TECO has contracted to purchase electricity generated from the Facility and pay the City on the basis of a capacity commitment of 15.5 MW per month, provided that the Facility maintains a 12-month rolling average of 10.85 MW, the 70 percent capacity commitment. The 12-month rolling average as of December 1998 was 89.63. Under this Agreement, the City currently receives \$15.29 per kilowatt per month of committed capacity and a rate of approximately \$0.02 per kilowatt hour of electricity produced for sale.

The City also has a Settlement Agreement with Hillsborough County which provides that both parties will minimize the landfilling of Processible Waste in order to extend the effective life of the Hillsborough County Southeast Landfill. Of particular importance is the Modification Agreement, which was approved by the City and Hillsborough County to provide for a special disposal rate of \$32.07/ton for the disposal of diverted Processible Waste to the Hillsborough County Southeast Landfill during the retrofit and interim operating period.

Purpose and Scope

The primary purpose of the McKay Bay Refuse-to-Energy Facility (the "Facility") retrofit is to enable the

Facility to meet the new emissions guidelines required by the USEPA and FDEP. Although the Facility is currently operational and in compliance with its performance requirements, the existing air pollution control system will not be capable of meeting the new emission guidelines (40 C.F.R. 60, Subpart Cb), as promulgated by the United States Environmental Protection Agency ("USEPA") in the Federal Register, under the Clean Air Act Amendments of 1990, and as adopted by the Florida Department of Environmental Protection ("FDEP"). The Facility must comply with these regulations by November 13, 2000. To accomplish this, the City of Tampa (the "City") procured a contractor to retrofit the Facility by replacing the Facility's chute-to-stack to provide an additional 20 year operating life. The retrofit will be completed two lines at a time so that two lines can remain operational during the retrofit construction period. The first two combustion lines will be reconstructed and tested by August, 2000, and the remaining two combustion units are planned to be operational by November 2001.

Project Goals

The primary goal of this Project is to provide a reliable, environmentally sound, and cost-efficient method of processing and disposing of the City's solid waste for at least the next 20 years. To achieve this goal, the City went through a procurement process that resulted in Wheelabrator McKay Bay, Inc., being selected as the Contractor, to design and retrofit the Facility pursuant to the Retrofit Design, Procurement, and Construction Agreement (the "Retrofit Agreement"); to operate and maintain the Facility and McKay Bay Transfer Station prior to completion of the Retrofit, in accordance with the Interim Operation and Maintenance Agreement (the "Interim Agreement"); and subsequent to completion of the Retrofit and satisfaction of applicable Acceptance Tests, to receive and process solid waste, generate steam and electricity and operate and maintain the Facility for 20 years pursuant to the Operation and Maintenance Agreement (the "O & M Agreement").

In order for the City to achieve its goals, the City established an "open" procurement process that would continually solicit input from the private sector through the entire selection process. Meetings and discussions were held with interested contractors and vendors at every juncture to obtain as much input as possible prior to developing the selection criteria, the final technical specifications, operating and performance requirements, and three separate contract agreements.

THE PROCUREMENT PROCESS

Background

An evaluation process was completed by the City in 1995, which reviewed various options for the long-term disposal of solid waste generated by the City. The evaluation included options for the demolition of the Facility and construction of a new waste-to-energy facility on the McKay Bay site; the closing and demolition of the Facility, and choosing an alternative disposal option; and the retrofit and reconstruction of the Facility. In October 1995 the City determined that the retrofit and reconstruction of the Facility was the most economical alternative for the City.

In 1996, the City completed a comprehensive technical assessment of the Facility that resulted in the determination that the Facility would need to be retrofitted to meet the new Clean Air Act requirements. The City developed a project approach that provided for the retrofit of the Facility under a design/build contractual arrangement that included both an interim and long-term operating contract. The procurement process, developed to select a full service contractor, included a Request for Letters of Interest ("RLOI"), Request for Qualifications ("RFQ"), and Request for Proposals ("RFP"). This procurement process lasted from September 1996 through December 1998. The ultimate selection of a contractor to design, build, and operate the retrofitted Facility was based on the lowest responsive net present value cost proposal submitted to the City in response to the RFP. Wheelabrator McKay Bay, Inc., the current Facility operator, was selected and awarded the retrofit contract. Their previous operating contract was terminated on March 31, and are now responsible for the operation and maintenance of the Facility pursuant to the Interim O&M Agreement dated December 28, 1998.

Request for Qualifications: The City solicited Letters of Interest from interested vendors affirming their interest in providing services required for the retrofit of the Facility on September 25, 1996. Responses were received by October 11, 1996 from vendors providing a Letter of Interest. The City then proceeded with preparing a Request for Qualifications ("RFQ").

A draft RFQ was published on November 11, 1996. Any potential contractor or vendor interested in the project was encouraged to obtain a copy and provide comments to the City. The City then incorporated many of the

comments received from the private sector into the final RFQ

On May 1, 1997, the City issued the RFQ to firms interested in providing full-service contracts to design and retrofit the Facility and to assume responsibility for the interim and long-term operation and maintenance of the Facility. The City received eight Statements of Qualifications ("SOQs") from interested vendors on June 13, 1997. The City evaluated the SOQs that were submitted by interested firms based on their responsiveness to the RFQ, their proposed technology, operating and retrofit experience, and their financial capability to complete the retrofit of the Facility and to operate the Facility for up to 20 years. Six firms were determined to be qualified to submit a proposal in response to the City RFP (i.e. the "Prequalified Respondents"). The Prequalified Respondents chosen were: ML Corporation (Lurgi Corporation), ML Corporation/STEAG AG, Montenay International Corporation, Ogden Waste to Energy, Inc., SMM McKay Bay, L.L.C., and Wheelabrator Environmental Systems, Inc.

Request for Proposals: Continuing with the open procurement process, over a seven-month period (September 5, 1997 to April 1, 1998), a series of draft RFPs were issued to the Prequalified Respondents. The issuance of the draft RFPs were followed by meetings with each of the Prequalified Respondents to solicit their input and come to a consensus on the contents of the final RFP. At this point in the procurement process, and as will be described later in more detail, the RFP solicitation was split into two primary phases. In the first phase, the Prequalified Respondents submitted unpriced technical proposals and then in the second phase, submitted priced proposals along with signed Agreements. In the first phase, the Prequalified Respondent's unpriced proposals were clarified and evaluated to determine whether they met the minimum technical requirements stated in the RFP. In the second phase, each Prequalified Respondent's priced proposal with signed unmodified Agreements was evaluated by the City utilizing an economic evaluation model provided in the RFP. From among the priced proposals that were determined to be complete and met the minimum technical requirements, the City selected the priced proposal with the lowest net present value cost pursuant to the requirements of the RFP.

The first phase began with the issuance by the City of the RFP requesting Unpriced Proposals on June 10, 1998 to the Prequalified Respondents. On August 21, 1998,

the City received Unpriced Proposals from three Prequalified Respondents: Lurgi Corporation, Ogden Waste to Energy, Inc., and Wheelabrator Environmental System, Inc. The Prequalified Respondents' Unpriced Proposals consisted of an Executive Summary, a Technical Proposal, a Business/Financial Proposal, their written comments on both the technical specifications and contract agreements, but did not include a price. The City conducted a completeness check, technical review, and a review of the comments on the technical specifications and contract agreements from August 22, 1998 through September 15, 1998. During this review, the City determined that the Unpriced Proposals required further clarification and amendment in order to be acceptable to the City.

The first Request for Clarification ("RFC") was issued in response to the Prequalified Respondents' Unpriced Proposals on September 16, 1998. Two additional RFCs were issued as a result of the Prequalified Respondents' responses to the initial RFC, one on October 9, 1998 and one on October 21, 1998. Based upon the Prequalified Respondents' responses to the RFCs, it was determined that each of the Prequalified Respondents had sufficient information on the technical and contractual requirements of the project to submit a priced proposal, which could not deviate from the unpriced proposal and include their fixed price for the Project. On November 19, 1998, the City received priced proposals from three Prequalified Respondents, Lurgi Corporation, Ogden Waste to Energy, Inc. and Wheelabrator Environmental Systems, Inc.

Economic Evaluation: The City performed a completeness and technical review of the priced proposals prior to conducting an economic evaluation using the economic model from the RFP. The economic evaluation determined the net present value cost of each priced proposal. Table 1, Pricing Summary From Agreements, provides each of the Prequalified Respondents' pricing from their priced proposals, and Table 2, Net Present Value Analysis presents the results of the economic evaluation conducted to determine the lowest net present value cost to the City of each priced proposal. As can be seen, the Prequalified Respondent, Wheelabrator Environmental Systems, Inc. provided the City with the lowest fixed capital cost price (Table 1) and the lowest Net Present Value Cost (Table 2). The Wheelabrator Environmental Systems proposal results in a \$290,953,000 Net Present Value Cost to the City as compared to the second lowest Net Present Value Cost of \$301,097,000 submitted by Ogden Waste to Energy, Inc.

THE PROJECT

Overview of Retrofit Phases

The Facility Retrofit will include the design, demolition, procurement, construction, Demonstration Testing and Acceptance Testing of the Facility by the Contractor to provide a Facility which operates efficiently and meets or exceeds the air emission requirements of the Facility's FDEP Air Emissions Permit. The FDEP emissions permit requirements for mercury exceed the emission guidelines promulgated by the EPA. The Facility Retrofit will take place in three distinct phases:

- Phase I is the period from issuance of the Notice of Commencement to the permanent shut down of Combustion Lines 3 and 4;
- Phase II is the period commencing upon the permanent shut down of Combustion Lines 3 and 4 (i.e. the end of Phase I), and ending upon the permanent shut down of Combustion Lines 1 and 2; and
- Phase III is the period from the permanent shut down of Combustion Lines 1 and 2 (i.e. the end of Phase II), through the Acceptance of the Retrofitted Facility by the City.

In order for the City to continue the operation of the Facility beyond the November 13, 2000 deadline, at a minimum, Phase II should be completed by November 13, 2000 and retrofitted Combustion Lines 3 and 4 should be on-line and in compliance with the FDEP Air Emissions Permit. The current Project schedule depicts Phase II completion (i.e. City approval to commence Phase III) as August 14, 2000, and the completion of Phase III and City Acceptance of the Facility as November 5, 2001.

The Retrofit

The work scope of the retrofit will include modification or replacement of four individual waste combustion systems to meet designated combustion and heat recovery requirements and emission limits. The retrofitted systems and equipment will include, but may not be limited to, the charging hoppers, feed chutes, grate systems, furnaces, combustion air systems, combustion control system, boilers, economizers, superheaters, flue gas spray dryer absorbers ("scrubbers"), lime injection systems, carbon injection system, ammonia (or urea) injection systems, continuous emission monitoring system ("CEMS"), fabric filter houses ("baghouses"), induced draft ("ID") fans, stacks, fly-ash and bottom ash handling equipment, and plant auxiliaries equipped with all necessary instrumentation, electrical, piping, foundation, steelwork, and ductwork. The Retrofit also

will include refurbishing the refuse cranes, supplying a new ash management building, ash handling and ferrous recovery systems, scalper building, and maintenance/warehouse building, and upgrading and repairing certain buildings and structures. Site work will include modifying roads and underground utilities, providing parking lots, wastewater settling basin and storage tank, and a storm water collection and retention system.

The Facility retrofit, design, and construction, along with all equipment, components, and auxiliaries must conform to all applicable governmental and industry codes and standards. Existing buildings and structures must be properly incorporated into the Retrofit design by the Contractor. The Contractor is required to retrofit the Facility to meet the minimum technical specifications and requirements described in the City's RFP. In addition, the retrofit of the Facility must be designed, constructed, and maintained to provide a minimum of 20 years of service following commencement of the O&M Agreement (i.e. City Acceptance).

Interim Operations and Maintenance

The Contractor is required to operate and maintain the Facility to provide for the processing and disposal of non-recycled solid waste and the production of energy for sale, and operate the Transfer Station for the City during the retrofit of the Facility.

Permits

There are numerous environmental and construction permits required for the Project. The following is a list of the required permits:

- 1) Solid Waste Facility Operations Permit - This permit is for the continued operation of the Facility.
- 2) Solid Waste Facility Construction Permit - This permit will allow construction of the Project.
- 3) Air Emissions Permit - This permit is required for modification (construction) of an air pollution source.
- 4) NPDES Multi-Sector Group Permit - This permit is EPA's approval to discharge stormwater runoff from the Facility to receiving waters or to a separate municipal storm sewer system, subject to conditions. The permittee must have, and operate in compliance with, a Stormwater Pollution Prevention Plan.
- 5) NPDES Permit for Construction - This permit is required because the proposed construction involves more than five acres.
- 6) Environmental Resource Permit - This permit is FDEP's approval to construct/alter the stormwater management system, subject to conditions.

- 7) Environmental Protection Commission of Hillsborough County ("EPC") Director's Authorization for Construction of the Project - This permit is required because EPC considers that the Facility retrofit construction will take place over solid waste filled areas (buried ash).
- 8) EPC Director's Authorization for Construction of the Wet Detention Area- This permit is required because EPC considers that the proposed wet detention area will be constructed in a solid waste filled area.
- 9) Site Plan Approval (approved by City of Tampa Development review).
- 10) Building Permits.

Environmental Guarantees

Air Emissions: For the existing combustion units, the Facility must meet all requirements specified in the McKay Bay Air Emissions Permit No. AO29-206279. For the Retrofitted combustion units, the units must meet the requirements of air permit PSD-F1-086(A) as amended on April 1, 1998, and also meet the emission limitations depicted in Table 3, Additional Air Emissions Requirements. In addition, the Facility's air emissions compliance and monitoring will be in accordance with 40 CFR Part 60.58b requirements and the air emissions permit requirements relative to the retrofitted combustion units. An independent testing firm acceptable to the City will perform all sampling, testing and analysis specified in the permits.

Waste Water Discharges: Sanitary sewer discharges from the Facility must meet the applicable industrial pretreatment standards specified by the Wastewater Discharge Permit, No. 1054, as amended.

Storm Water Discharges: Discharges from the Facility must meet the applicable industrial pretreatment standards specified by the applicable regulatory jurisdictions.

Demonstration Test

The Demonstration Test must be conducted upon substantial completion of Phase II construction activities. The Contractor must perform the Demonstration Testing for Phase II of the retrofitted Facility as required by the Retrofit Agreement. The Demonstration Test must determine the ability of the Contractor to reliably operate the two retrofitted units (Units 3 and 4) and demonstrate the capability of meeting the Phase II Demonstration Standards (the "Demonstration Standards") for these units as specified in the Retrofit Agreement.

The Demonstration Test to be performed on the two retrofitted units will include the following individual tests:

1. Throughput Capacity Demonstration Test;
2. Unit Steam Production Demonstration Tests;
3. Residue Quality Test; and
4. Air Emissions Test.

The Full Demonstration Standards for the Demonstration Test shall have been met if all of the following criteria are satisfied:

1. Guaranteed Demonstration Test Throughput Capacity	3,500 Tons total and 1,600 Tons per processing unit per week.
2. Minimum Steam Production Guarantee	2.40 pounds of steam per pound of Processible Waste Processed per unit. A minimum steam temperature of 705°F exiting the steam generator. (Exiting steam pressure shall be no less than that proposed to meet the 600 psig at turbine inlet condition).
3. Residue Quality Guarantee	An unburned carbon content of 4.0 percent by dry weight as adjusted for the carbon injection system.
4. Air Emissions Guarantee	Full compliance with the requirements in Section 1.0 of Schedule 9 of the Retrofit Agreement, excluding the fugitive ash emissions.

If any of the Full Demonstration Standards are not met, then the following Minimum Demonstration Standards for the Demonstration Test must be met:

1. 3,150 Tons total for the Throughput Capacity Test
2. 100 percent of the Steam Production Guarantee
3. 100 percent of the Residue Quality Guarantee for carbon content
4. Full compliance with the Facility's air permit for the Air Emissions Test (except for dioxin and fugitive ash emissions) instead of the Air Emissions Guarantee in Schedule 9 of the Retrofit Agreement
5. Full compliance with all applicable permits

Acceptance Test

The Acceptance Test will be conducted once all four units have been retrofitted to determine the ability of the Contractor to reliably operate all four retrofitted units of

the Facility and demonstrate the capability of meeting the Acceptance Standards specified in the Retrofit Agreement.

The Acceptance Test shall include the following individual tests:

1. Reliability Test
2. Throughput Capacity Test
3. Electricity Generation Efficiency Test
4. Unit Steam Production Tests
5. Residue Quality Test
6. Air Emissions Test
7. Ferrous Recovery Efficiency Test
8. Effluent Test

The Full Acceptance Standards for the Acceptance Test shall have been met if all of the following criteria are satisfied:

1. Reliability Guarantee: 12,600 Tons and no Processing downtime caused by the furnace, grate or heat recovery system during the two week period. At the City's sole discretion, the City may accept up to eight (8) hours of total downtime, provided the throughput capacity of 12,600 Tons is achieved within the two week test period.
2. Guaranteed Throughput Test Capacity: 7,000 Tons total and 1,600 Tons per combustion line per week.
3. Net Electricity Generation Test Guarantee: 390 kWh/Ton.
4. Minimum Steam Production Guarantee: 2.40 pounds of steam per pound of Processible Waste Processed per combustion line. Steam at the turbine inlet meeting the conditions of 700°F and 600 psig.
5. Residue Quality Guarantee: An unburned carbon content of 4.0 percent by dry weight as adjusted for the carbon injection system.
6. Ferrous Recovery Efficiency Guarantee: 80 percent of ferrous greater than 1 inch in diameter.
7. Air Emissions Guarantee: Full compliance with the requirements in the Retrofit Agreement, except for the fugitive emissions requirements.
8. Effluent Guarantee: Full compliance with the requirements in the Retrofit Agreement.

If any of the Full Acceptance Standards are not met, the Contractor will be subject to damages in accordance with the Retrofit Agreement. In addition, however, the Retrofit Agreement sets forth terms for Acceptance after

buy-down damages are paid if the Contractor fails to achieve the Full Acceptance Standards, but has met the Minimum Acceptance Standards. The Minimum Acceptance Standards for the Acceptance Test shall have been met, if all of the following criteria are satisfied:

1. 100 percent of the Reliability Guarantee
2. 6,300 Tons total for the Throughput Capacity Test
3. A net of 380 kWh/Ton for the Electricity Generation Efficiency Test
4. 100 percent of the Steam Production Guarantee
5. 100 percent of the Residue Quality Guarantee for carbon content.
6. 87.5 percent of the Ferrous Recovery Efficiency Guarantee
7. Full compliance with the Facility's air permit for the Air Emissions Test instead of the Air Emissions Guarantee required by Schedule 9 of the Retrofit Agreement
8. Full compliance with Effluent Guarantee

SUMMARY

The procurement process and the thorough preconstruction effort resulted in a competitive price for the project, with a bond issue amount acceptable to the City and most importantly with environmental and financial provisions as originally anticipated. The City addressed significant legal and technical issues from the previous operations agreement and was able to obtain the important environmental benefit of more stringent air emissions limitations than are required under the facility's air emissions permit.

TABLE 1

PRICING SUMMARY FROM AGREEMENTS

<u>RETROFIT CONSTRUCTION AGREEMENT</u>	<u>WESI</u>	<u>OGDEN</u>	<u>LURGI</u>
A. Fixed Price	\$87,650,000	\$105,750,000	\$127,440,000
B. Unit Price for additional work regarding concrete repairs in the waste storage pit	\$2.50/ft ²	\$40/ft ²	\$100/ft ²
<u>INTERIM OPERATION AND MAINTENANCE AGREEMENT</u>			
A. O & M Fee for the period between NOC until end of Stage 3	\$75.70/ton	\$66.71/ton	\$51.52/ton
B. Processing Guarantee for the period between NOC until end of Stage 3	446,000 tons	442,000 tons	391,000 tons
C. Waste Transfer Fees			
WTF ₁ (to S. East County Landfill)	\$5.50	\$29.41	\$8.00
WTF ₂ (to Recycled Wood Products)	\$3.00	\$29.41	\$7.00
WTF ₃ (to the Facility)	\$2.00	\$29.41	\$0.00
<u>OPERATIONS AND MAINTENANCE AGREEMENT</u>			
A. Base O & M Fee (first 260,000 tons)	\$44.07/ton	\$38.13	\$51.00
B. Excess O & M Fee (next 50,000 tons)	\$21.40/ton	\$16.51	\$12.00

TABLE 2
NET PRESENT VALUE ANALYSIS

VENDOR:	Lurgi	Ogden	Wheelabrator
INTERIM OPERATING PERIOD:			
32 Month Processing Guarantee (tons):	391,000	442,000	446,000
32 Month O&M Fee (\$/ton of net waste):	\$51.52	\$66.71	\$75.70
Landfill Waste Transfer Fee (\$/ton):	\$ 8.00	\$29.41	\$ 5.50
Yard Waste Transfer Fee (\$/ton):	\$ 7.00	\$29.41	\$ 3.00
RTE Waste Transfer Fee (\$/ton):	\$ 0.00	\$29.41	\$ 2.00
OPERATING PERIOD:			
Base O&M Fee (\$/ton):	\$51.00	\$38.13	\$44.07
Excess O&M Fee (\$/ton):	\$12.00	\$16.51	\$21.40
RETROFIT CONSTRUCTION:			
Retrofit Fixed Price (\$):	\$127.44	\$105.75	\$87.65
Waste Storage Pit Unit Cost (\$/sf):	\$100.00	\$ 40.00	\$ 2.50
NET PRESENT VALUE (Discount Factor = 6%):			
NPV O&M over life of project (\$ millions):	\$195.767	\$174.097	\$185.767
Proposed Construction Fixed Price (\$ millions):	\$127.440	\$105.750	\$87.650
Facility Financing Costs (\$ millions):	25.488	\$ 21.150	\$ 17.530
Total Net Present Value Project Cost (\$ millions)	\$348.695	\$300.997	\$290.947
Waste Storage Pit Cost (\$ millions)	\$ 0.250	\$ 0.100	\$ 0.006
TOTAL NPV COST (\$millions)	\$348.945	\$301.097	\$290.953

TABLE 3
ADDITIONAL AIR EMISSIONS REQUIREMENTS

Parameter	Limit*
Carbon Monoxide (CO)	100 ppmv 4-hour average
MWC Organics (as measured as total mass dioxin/furans)	13 nanograms/dscm
Particulate Matter (PM)	24 mg/dscm (0.010 gr/dscf)
Opacity	10 percent (6-minute average)
Cadmium (Cd)	0.020 mg/dscm
Lead (Pb)	0.20 mg/dscm
Mercury (Hg)	0 µg/dscm or 85% reduction in Hg emissions (whichever is less stringent)
Hydrogen Chloride (HCl)	25 ppmv or 95% reduction in HCL emissions (whichever is less stringent)
Nitrogen Oxides (NO _x)	180 ppmv during the first year of operation and 150 ppmv thereafter
Fluoride (F)	1.5 lb/hr
Beryllium (Be)	0.000115 lb/hr
Fugitive Ash Emissions (for the Facility)	Visible emissions 5 % of the observation period (i.e., 9 minutes per 3-hour period) from the Process Residue transfer system except for maintenance and repair activities

*All concentration levels in the above listing are corrected to 7 percent O₂, dry basis.