Lee County Board Of County Commissioners
Agenda Item Summary

Blue Sheet No. 20051721

1. ACTION REQUESTED/PURPOSE:
Waive formal procurement procedures and approve award and issuance of a purchase order to Covanta Energy, Inc., the sole-source provider, meeting all project requirements for a Continuous Emissions Monitoring System (CEM) including engineering, and all equipment, in the not to exceed amount of $583,000.00 that includes an allowance of $10,890.00 for field start-up labor and expenses.

2. WHAT ACTION ACCOMPLISHES:
Provides the necessary CEM equipment/system for the Waste To Energy Expansion Project.

3. MANAGEMENT RECOMMENDATION: Staff recommends approval of this request.

4. Departmental Category: 8 A 8 A		**5. Meeting Date:** 12-13-2005
6. Agenda:	**7. Requirement/Purpose:** *(specify)*	**8. Request Initiated:**
____ **Consent**	____ **Statute**	**Commissioner**
X **Administrative**	____ **Ordinance**	**Department** Public Works
____ **Appeals**	X **Admin. Code** 4-1	**Division** Solid Waste
____ **Public**	____ **Other**	**By:** **Lindsey J. Sampson**
____ **Walk-On**		Lindsey J Sampson

9. Background:

As part of the waste to energy expansion project with Covanta, it is required that Covanta procures and assembles all of the necessary continuous emissions monitoring equipment to be used for measuring the emissions of the third combustion unit. This requirement is related to Covanta's provision for environmental emission guarantees. Covanta has submitted a proposal to the County that meets all technical requirements for this system and equipment. After review and conformance for technical and commercial requirements the Solid Waste Division recommends to award to Covant Lee, Inc.

Funds are available in account string: 200923 40102.506540

Attachments: Covanta Proposal dated November 4, 2005

10. Review for Scheduling:

Department Director	Purchasing or Contracts	Human Resources	Other	County Attorney	Budget Services				County Manager/P.W. Director
					Analyst	Risk	Grants	Mgr.	
11.28.05	NA per JS	NA	DAD 11-28	11/28/05			11/29/05	11/29/05	11.28.05

11. Commission Action:
____Approved
____Deferred
____Denied
____Other

RECEIVED BY COUNTY ADMIN: 11-28-05 4:30PM
COUNTY ADMIN FORWARDED TO: 11-30-05 4:30PM

Rec. by CoAtty
Date: 11/28/05
Time: 10:05AM
Forwarded To: Barbara 11/28/05 1:15PM

COVANTA
ENERGY

CONTINUOUS EMISSION MONITORING SYSTEM

PROPOSAL

FOR THE

LEE COUNTY RESOURCE RECOVERY FACILITY

EXPANSION PROJECT

PREPARED BY

COVANTA LEE, INC.
FAIRFIELD, NJ

June 8, 2005

Revised September 14, 2005
Revised November 4, 2005

Rev'd November 4, 2005

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SECTION **PAGE**

CEM PROTOCOL

Drawings Attached:

LE3-1033-00 SH.1, Rev.0	CEM FUNCTIONAL BLOCK DIAGRAM, UNIT-3
LE3-1033-02 SH.1, Rev.0	CEM SAMPLE SYSTEM FLOW DIAGRAM, UNIT-3, ECONOMIZER OUTLET
LE3-1033-02 SH.2, Rev.0	CEM SAMPLE SYSTEM FLOW DIAGRAM, UNIT-3, STACK OUTLET

1.0 CEMS INTRODUCTION AND SCOPE

Covanta's Energy Technical Services Group has reviewed the continuous emission monitoring system (CEMS) permit requirements for the Lee County Resource Recovery Facility Expansion Project (Projeet). The CEMS proposed herein is based on this review and is recommended for Lee County's approval and purchase for the Projeet. Upon receipt of a mutually aeeeptable purehase order from Lee County, Covanta Lee, Ine. (Covanta) shall proceed with the engineering, eomponent purchases, assembly, programming, factory testing and delivery of the CEMS for the Project.

The continuous emission monitoring system for the Project will be designed to continuously measure parameters defined in the Permit No. PSD-FL-151C at Seetion III; B13. The system will also meet the applieable requirements of the existing Title V permit for the faeility.

The proposal for the CEMS includes dedicated emission measurement for monitoring at the economizer outlet and the fabric filter (FF) outlet. The economizer outlet is a dedicated single point system for monitoring SO_2 and O_2 emissions. The FF outlet is also a dedicated single point system but will monitor SO_2, NOx, CO and O_2 emissions, and opacity. A stand alone Ammonia (NH_3) monitoring system is ineluded at the FF outlet.

The data aequisition system (DAS) will include a programmable logie controller (PLC) which transmits information to a IBM Pentium IV compurer supporting Traee Environmental software. There is a dedicated DAS for the boiler. The DAS computer will be eonnected ro the existing local area network (LAN) with a dedicated file server. See attached drawing LE3-1033-00, Sh. 1, Rev. 0, CEM Funetional Block Diagram for illustration of communication block diagram. The DAS will monitor and store all process parameters required by 40 CFR 60 Subpart Cb.

Housing of the CEMS will be accomplished in a shelter of approximately 8'(h) x 10'(w) x 22'(l). The sheltcr is constructed of aluminum and insulated. The interior of the shelter is environmentally controlled by the installed heating and air conditioning units. The shelter's interior finishes shall include seamless floed linoleum flooring, surface mounted fluorescent lighting, and flat aluminum wall panels. The shelter will be incompliance with all the building and electrical codes and standards that apply. Covanta shall apply for local permits if required, however no local permit fees are included in this proposal. Road permits required for delivery of the system are included in this proposal. An internal vestibule is provided at one end of the shelter to prevent thc dirccl exposure to exterior elements. The shelter is equipped with an escape hatch for emergency exit.

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2.0 CEMS SAMPLING SYSTEM

2.1 System Description

The Covanta Technical Services Group has reviewed the permit and designed a CEMS based on this review. The references made in this description apply to the FF outlet (I.D. fan outlet duct) sample system flow diagram. The economizer and FF outlet sample system and sequencing are virtually identical. The FF and the economizer sample system component number references are distinguished by adding 10 to the reference number (i.e. SV-1 at the FF is SV-11 at the economizer).

The NH3 CEMS will be operated in the same manner as deseribed for the outlet system. The NH3 monitoring system will require unique, advanced technologies to comply with permit requirements at section B10 (5) and B13. These technologies do not have long term experience as NH3 CEMS, therefore, there are uncertainties with these applieations. The permit states at section B13 that the NH3 CEMS is "used for informational purposes rather than continuous compliance....". The system is therefore not subject to the provisions at 40CFR60, Appendix F, however it is recommended that quarterly Reference Method 320 tests be performed to assure that the NH3 CEMS is reliable for meeting the conditions at permit section B10 (5).

There may be additional County costs assoeiated with performing the "RATA" of the NH3 system using "CTM-27" as required by permit section B13. There may also be additional County costs implications associated with using the NH3 CEMS to satisfy the permit provisions at section B10 (5). The NH3 system is being provided to meet the requirements in the permits but monitor performance is limited to the monitor manufacturer's warranty only. No other warranty (explicit or implied) is provided by Covanta. If additional services are required from Covanta, a written estimate of any additional costs required for the NH3 CEMS to meet permit requirements shall be submitted to the County for approval prior to providing these services .

Deleted: The cost of such test shall be processed as a pass through cost. Covanta and the County may determine after the initial two (2) years of quarterly testing if such testing should be continued. ¶

The Covanta CEM system is an extractive type system which filters, transports, and conditions the sample prior to instrumental measurement of the gaseous components. Eaeh sample probe consists of an in-situ sintered stainless steel 20 micron coarse filter element and a heated 3 micron stainless steel filter element located inside the probe body. The fine filter is maintained at 350°F to prevent condensation. The coarse filter element is protected by an impact shield to deflect particulate matter from directly impacting on the filter.

Particulate matter is removed from the in-situ coarse filter during the purge sequence. The sequence is controlled by a programmed logic controller Allen Bradley Compact Logix (AB-PLC). The sequence begins

with the activation of the isolate solenoid valve (SV6) located in the CEMS shelter (See attached drawing LE-1033-02, sh. 2, Rev. 0, CEM Sample System Flow Diagram, Unit-3, Stack Outlet). When solenoid SV6 is opened, plant instrument air (80 psi) activates the isolate bellows valve in the probe body. This closes off the filter elements from the sample system. The purge air solenoid (SV5) located in the CEMS shelter is activated one seeond after the solenoid valve (SV6). A check valve in the valve body assures unidirectional flow of instrument air (80 psi) to the coarse filter. The sample probe is purged for 60 seconds. The purge frequency is 1 purge/3 hours (the frequency may be adjusted to accommodate sampling conditions). The system resumes sampling effluent when SV5 and SV6 are closed.

Calibration gas is injected as close as practicable to the probe filters. The calibration sequences are also controlled by the AB-PLC. The AB-PLC begins a calibration sequence with the activation of isolate solenoid SV6. This isolates the sample probe filter elements and the effluent from the calibration gas path, preventing the dilution of the calibration gas during the sequence.

The main calibration solenoid valve (SV4) is activated 5 seconds after SV6. This allows the flow of calibration gases from the gas cylinders ro the probe body when the individual calibration gas solenoid valves (SV1, SV2, or SV3) are activated. The calibration gas travels from the calibration solcnoids (in the shelter) to the probe body by a 0.25 inch teflon tube. It passes through a check valve in the probe body, then into the 0.375 in. sample line to the sample conditioning system. These calibration gases follow the same path as the extracted sample gas. When SV1 opens, all of the instruments are zeroed with nitrogen gas. The remaining solenoid valves (SV2, SV3) are opened sequentially to provide span gas mixtures to the instrumentation.

Calibration gas 1, 2, and 3 are controlled by solenoid valve 1, 2, and 3 respectively. Typieally each gas flows for five minutes. The calibration sequence is automatically activated once each 24 hours. The sequence can be started manually on demand. Table 1 below indicates the concentrations and manufacturers of the calibration gas.

Analyzer	Gas Manufacturer	Gas Type	Instrument Span Value	Calibration Gas
O_2 Econ	Spectra Gases	EPA G2	25%	18-21%
SO_2 Econ	Spectra Gases	EPA G2	500 ppm	425 ppm
O_2 Stack	Spectra Gases	EPA G2	25%	21 %
SO_2 Stack	Spectra Gases	EPA G2	200 ppm	185 ppm
NO_X Staek	Spectra Gases	EPA G2	500 ppm	425 ppm
CO Srack	Spectra Gases	EPA G2	500/2000 ppm	425/1700 ppm
NH_3	Spectra Gases	EPA G2	100 ppm	10 ppm

TABLE 1: Proposed Daily Calibration gas values

Teflon tubing contained in an electrically heat traced sample line bundle is used to transport extracted sample from the sample probe to the environmentally controlled enclosure. The bundle maintains flue gas above the moisture dewpoint, preventing the sample gas from dissolving into solution.

The sample line bundle consists of one 0.375 in diameter Teflon tube for sample transport to the enclosure, and three 0.25 in. diameter Teflon tubes (spare tubes are not necessary and are not provided in this bundle). One 0.25 in. tube is used for transport of instrument air to the bellows valve for isolation during purge and calibration periods. The second tube transports instrument air used to purge the probe coarse filter. The third tube transports calibration gases from the main analyzer enclosure to the probe during calibration periods.

Heated Sample Line Bundle Specifications

Application Type - High Temperature Design
Operating Temperature (-20°F) 300°- 325°F (± 25°F)
Operating Voltage - 208 VAC
Heater Type (1 ea.) – Hybrid Series Resistance

The heated sample gas transports the gas sample to the main analyzer enclosure. The gas then enters an M & C Products sample conditioner. The conditioner cools the sample gas to approximately 34^{0}F in a three-pass heat exchanger. A Type-J thermocouple is inserted into the third pass impinger. The temperature of the exit gas is continuously monitored and recorded. The sample flows through the first two stages of condensation coils then past the vacuum transducer and through a 4.5 micron polypropylene filter into the sample pump. The pump pushes the gases into the third stage condenser coil. The sample exits this condenser then flows through a 1 micron ceramic filter, a moisture sensor and a pressure transducer to four rotameters (plumbed in parallel) that control flow to each analyzer. The flow is adjusted with the rotameter to approximately 1 liter per minute. Excess sample flows through the back pressure regulator (BPR-1), and a rotameter (RM-1) to be safely vented to atmosphere outside of the enclosure. Sample pressure to the analyzers can be regulated by adjusting BPR-1. Condensate collected in the conditioner is continuously drained using a peristaltic pump for each condensation stage (condensate is drained to the facility sump system). A warning signal will be generated by the data acquisition system (DAS) computer any time the sample gas temperature exiting the unit exceeds 40°F. See attached drawings LE3-1033-02, sh. 1, Rev. 0, CEM Sample System Flow Diagram, Unit-3, Economizer Outlet and LE3-1033-02, sh. 2, Rev. 0, CEM Sample System Flow Diagram, Unit-3, Stack Outlet for illustration of sample system flow.

The NH3 monitoring system will incorporate an FTIR spectrometer for the measurement of NH3 and H2O. This monitor provides the needed resolution for the measurement of NH3 in the effluent matrix. The anticipated concentrations of NH3 may vary widely. The FTIR measurement technique can reliably analyze NH3 concentrations from parts per billion to parts per million levels.

3.0 DATA ACQUISITION - ODESSA DSM3260 WITH AUXILIARY CONTROL RACK

3.1 DATA Acquisition System

Covanta shall provide a programmable logic controller (PLC) compatible with the existing Facility's systems (either an Allen Bradley Compact Logix Programmable logic controller (AB-PLC) or a H2NS CPP) for primary data acquisition from each gas monitor. These units are used for data capture, computation, and archiving. They also provide complete system sequencing and control.

Deleted: CEM projects utilizes a PLC

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The PLC interfaces with system components and controls all component interaction between the sample system and the PLC. This system will provide:

1. Automatic and manual control of the sample conditioning system
2. System calibration at 24 hour intervals or on demand
3. Probe purge at preset intervals
4. Primary data collection of analogue signals
5. Analogue to digital conversion
6. System status alarm information to the data acquisition system (DAS) computer
7. Analogue input and to the plant distributive control system (DCS)
8. Back-up data storage in the event of a major computer outage
9. Direct RS-232 link with its host computer for continuous logging of data and system status information

3.2 Trace DAS 2000 Software

The Trace Software System includes several operating program packages for the DAS. The programs provide communication and data base functions for the system. The site has an existing license for the Trace software and which will require expansion for the new polling computer. The Trace program allows two-way communication between the PLC (data acquisition/control units) and the primary polling computer. With this versatile program, a PC Workstation can serve as a SCADA (Supervisory Control and Data Acquisition) system. Because Trace is a windows based system, functions are operared by selecting from on-screen menus and filling on-screen forms, the program is simple to use.

The following are the main features of the Trace DAS 2000:

1. Up to ninety-nine loeal and remote data acquisition locations
2. Data reeovery from local and remote solid state eartridges
   Communication with remote units via telephone dial up, leased line, radio, or
   Direct RS232 connections Formatted data listings and reports
3. DOS command aecess from within DAS 2000
4. Automatic and On-Demand polling of local and remote sites
5. Real time display of polled data and alarms in numerical and graphically trended forms
6. Computed data channels
7. Data, status, and calibration alarms
8. Automatic printer log of data, status, calibrations, and alarms
9. Operator entry of reason and aetion eodes for excess emissions
10. Three-level password protection for Trace procedures

3.3 Data Acquisition – IBM Pentium IV with Trace Software

The DAS for the Project's CEMS includes a primary polling computer work station which will be integrated into the existing Facility's computer network with dedicated file server computer, engincering workstation and alarm workstation. The economizer outlet and FF outlet monitoring systems interface with a primary polling station. These two primary computers are linked to a Windows 2000 loeal area network (LAN) operated by the dedicated file server.

Each polling computer station is comprised of a Pentium IV, operating at 1.8 GHz, with associated hardware, supported by the Trace communications software. The primary polling Station provides data computation functions for each boiler train. The file server will store these data for reporting and archiving. Report requests are input to the server from the engineering workstations.

Primary Polling Computer Station Specifications (Unit 3)

- Pentium IV 1.8 GHz
- 80 GB Hard Drive
- VGA Color Monitor
- Keyboard
- RS-232/422 Communications Port
- LAN Card

File Server Specifications (Existing)

- IBM X220 Server Pentium IV
- 60 gigabyte Hard Drive (larger fixed drive will be used if available)
- Parallel Printer Port
- LAN Card

Alarm Workstation (Existing)

- Pentium IV 1.8 GHz
- 80 GB Hard Drive
- VGA Color Monitor
- Keyboard
- RS-232/422 Communications Port
- LAN Card

Engineering Workstation (Existing)

- Pentium IV 1.8 GHz
- 80 GB Hard Drive
- CD/DVD Read/Write Drive
- VGA Color Monitor
- Keyboard
- RS-232/422 Communieations Port
- Modem
- LAN Card

3.4 Reporting Periods

Data is collected for each parameter monitored every ten seconds by the PLC. These data are used to form one minute averages which are stored at the PLC in RAM memory. (Table 3.1) These data are sent every minute via RS232 link to the corresponding primary polling computer station.

PLC Channel	Parameter
1	O_2 Stack
2	CO_{low} Stack
3	CO_{high} Stack
4	SO_2 Stack
5	NO_x Stack
6	O_2 Economizer
7	SO_2 Economizer
8	Opacity
9	Chiller Temp
10	Lime Flow
11	Carbon Flow
12	Steam Flow
13	Super Heater Temp
14	NH3
15	BH inlet Temp
16	Spare

Table 3.1 DAS Parameters

The polling station will form the averages needed for reporting purposes (Table 3.2) from the one minute data. The one minute data and the averaged data are used to update data files at the file server. All one minute data and averaged periods are stored to the fixed drive. These data can be retrieved for any one minute or averaged data period on demand. The CEM will be capable of capturing at a minimum of ninety (90) percent valid data for the calendar quarter, in the units of the standard, based on the source operating time. The Continuous Opacity Monitoring system (COM) will be capable of capturing at a minimum of ninety-five (95) percent valid data for the calendar quarter, in the units of the standard, based on the source operating time. A minimum of one year of current data will be stored on the system. After six months, the data will be archived for 2 years on magnetic media.

Table 3.2 below illustrates the reporting periods required by the PSD Permit, APC# 85012. The sulfur dioxide (SO2) removal efficiency will be calculated from the parts per million (ppm) coneentrations at the economizer outlet and the FF outlet.

Table 3.2: PSD Permit, APC# 85012 Emission Limits

Parameter	Permit Limit	Averaging Time Period
SO_2	26 ppmdv @ 7% O_2 or 80 %, whichever is less stringent	24 hour geometric mean
CO	80 ppmdv @ 7% O_2 100 ppmdv @ 7% O_2	12 month rolling 4 hour block
NO_X	140 ppmdv @7 % O_2 (a) 110 ppmdv @ 7 % O2 (b) 150 ppmdv @ 7% O_2	12 month rolling 12 month rolling Daily
NH_3	15 ppmdv @ 7% O_2	Daily and 3-month average
Opacity	10 %	6 minute block

(a) For the intial 12 month period after initial operation with initial operation being defined as thc initial compliance test.

(b) The 140 ppmdv @ 7 % O2 limit transitions to a 110 ppmdv @ 7 % O2 limit over a 12 month period where the limit is reduced by 2.5 ppmdv @ 7 % O2 per month.

4.0 PRICING

Total lump sum firm price for the CEMS (equipment supply only).....$572,110 Deleted: 581,110

Seope Listing and Pricing Breakdown:

Equipment - $379,073	Qty
SO2 Analyzers	2
O2 Analyzers	2
NOx Analyzer	1
CO Analyzer	1
NH3 Analyzer	1
Opacity Meter	1
Sampling Systems (Inlet, Outlet, & NH3)	3
Sample probes	2
Sample Lines	As Required
Gas Regulators	4
Computer Network (additional components)	1
Shelter	1
Electrical System Certification	-
Freight	-
Labor - $202,037*	**Hours**
Professional (Supervision & Management) Staff	362
Technical/Engineering Staff	288
Administrative Staff	50
Shop Labor & Technicians	780
Total Delivered Cost	**$581,110**
Discounted Price to County	**$572,110**

*Based on the manhour rates in Attachment A escalated to firm price for an order by December 3, 2005. Deleted: a September 1, 2006 delivery

Additional Estimated County Costs:

Reimbursable Field Support	Estimate
Field labor – 40 hours estimated	$7,487**
Travel expenses – 1 trip estimated	$1,500
CEM Certification – By County	**Estimate**
Testing Contractor	$18,000***
Quarterly RM320 Testing of NH3 CEM	**Estimate**
$7,500 per quarter for minimum of first 2 years	$60,000

** Based on the Technical Staff manhour rate in Attachment A, escalated to January 2007.

***Assumes certification is performed by County's Environmental Testing Contractor simultaneously with Environmental Testing. Contractor to be subject to Covanta's approval.

5.0 PAYMENT SCHEDULE

Payment of Order Price shall be paid in the following portions upon achieving the milestone events specified:

5%	upon Order placement
15%	upon delivery of shelter to Covanta's place of assembly (substantiated by delivery report)
15%	upon delivery of SO2, O2, and NOx inlet and outlet monitors to Covanta's place of assembly (substantiated by delivery reports)
10%	upon delivery of CO inlet and outlet monitor to Covanta's place of assembly (substantiated by delivery report)
10%	upon delivery of inlet and outlet sampling systems to Covanta's place of assembly (substantiated by delivery report)
10%	upon delivery of Opacity outlet monitor to Covanta's place of assembly (substantiated by delivery report)
20%	upon delivery of NH3 outlet monitor to Covanta's place of assembly (substantiated by delivery report)
10%	Completion of shop assembly of all components. (substantiation subject to County inspection)
5%	upon delivery of the CEM shelter with the shop assembled continuous emission monitoring equipment
100%	Total

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3% upon delivery of NOX outlet monitor to Covanta's place of assembly (substantiated by delivery report)¶

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Deleted: upon delivery of the AB-PLC computer network to Covanta's place of assembly (substantiated by delivery report)¶

6.0 DELIVERY SCHEDULE

CEMS shelter with assembled components shall be delivered FOB jobsite in approximately 14 months from receipt of a purchase order and a notice to proceed. An earlier delivery shall require additional cost, not included in this proposal, for accelerating shelter and component deliveries, and or premium time for shop assembly.

7.0 PURCHASE CONDITIONS

Commercial terms and conditions "For Covanta's CEMS Equipment Supply" dated October 14, 2005 are attached and are applicable to this proposal.

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ATTACHMENT A

COVANTA MANPOWER RATES

Professional Staff	$194.35* per man hour
Technieal Staff	S166.03* per man hour
Administrative Staff	$ 65.80* per man hour
Shop Labor & Technicians	$ 88.01* per manhour

*These man hour rates are based on January 2004 rates. These rates are subject to escalation where such escalation shall be made using CWUR0300SAO South Urban Cities, Base Month January 2004 = 175.0 as the base for sueh adjustment. Man hour rates do not include travel/non payroll expenses, which will be billed separately.