Golder Associates

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BUREAU OF AIR REGULATION 093-89603

November 24, 2009

Mr. Al Linero
Program Administrator, Special Projects Section
Florida Department of Environmental Protection
2600 Blairstone Rd.
Tallahassee, FL 32399-2400

RE: REQUEST FOR ADDITIONAL INFORMATION
DEP FILE NUMBER: 0810226-001-AC
60 MEGAWATT (MW) BIOMASS-BASED ELECTRICAL GENERATING POWER PLANT

Dear Mr. Linero:

FBenergy is in receipt of the Department's Request for Additional Information (RAI) with respect to the above-referenced project. The air application was submitted on October 13, 2009. Pursuant to Rule 62-4.055(1), Florida Administrative Code (F.A.C.), the Department has reviewed the application and by letter, dated November 10, 2009, has requested the following additional information. The Department's comments are addressed in the order in which they were received.

1. Notice of Application: Please provide proof of publication of the Notice of Application that we provided on October 26, 2009.

Response: The Notice of Application was published in the Bradenton Herald on October 31, 2009. A copy of the proof of publication is provided as Attachment 1 to this letter response.

2. The Boiler Type: In Table 3-2 of the application, the type of boiler proposed for the project is described as a grate-type or circulating fluidized bed (CFB) type boiler, while on page 2 of the text of the application and the DEP application forms, the boiler is described as a grate-type. Please clarify what type of boiler will be used in the project. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: While the two types of boiler configuration were under consideration prior to the filing of the air application, the project will be based on the grate-type boiler design. Integral to the boiler design will be the use of a Detroit Hydro-Grate, which provides a controlled NOx emission leaving the boiler, as the starting point for the SCR design. Detroit Stoker, the supplier of the Hydro-Grate, guarantees NOx and CO emissions leaving the boiler, and provides the overfire air (OFA) system which is the key to this performance. Detroit Stoker has an extensive list of installations as the basis of its guarantees. Overall, the boiler is a conventional 2-drum water-wall unit, similar to many installations in paper mills and independent power plants.

3. NOx Boiler Emissions: In the application, NOx emissions from the boiler with Selective Catalytic Reduction (SCR) as the pollution control device are estimated to be 0.02 pounds per million British thermal units (lb/mmBtu on a long-term average) with 10 parts per million (ppm) of ammonia slip. Please provide your basis for assurances that the proposed NOx value can be achieved in practice. [Rule 62-4.070, F.A.C. Reasonable Assurance]

BEST FIRMS to Work For 2008

Golder Associates Inc.
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Tampa, FL 33609 USA
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Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

Response: While the emission estimates were provided on a lb/mmBtu basis, FBenergy requests that the permitted emission limits be on a lb/hr basis, with a 12-month rolling average. FBenergy recognizes that the emission estimates proposed are lower than required by applicable requirements, but wanted to set a standard for a low emission biomass project. While the NOx guarantee is provided by the boiler supplier as a part of his "chute-to-stack" responsibility, the SCR catalyst will be supplied and guaranteed by Haldor Topsoe, who has extensive experience of this application. It is worthy of note that Haldor Topsoe works closely with the overall AQCS supplier, PPC, who jointly provide the correct arrangement of ammonia distribution and control of particulate matter – wood ash carry-over – upstream of the catalyst by use of the hot ESP. Without the hot ESP, catalyst life and performance would be degraded. Haldor Topsoe's catalyst details are provided in Attachment 2. When referring to the attachment, please note that FBenergy has selected the three-year option (i.e., the catalyst performance is guaranteed for 24,000 hours at the stated removal efficiency).

4. Wood Waste Biomass Material: Please provide a clearer description of the biomass that will be utilized at the FB Energy facility. In various places in the application, boiler fuel is described as biomass, wood chips and wood waste material. For an example of a clearer description of woody biomass, see the draft permit and technical evaluation for the ADAGE LLC project in Hamilton County, Florida. The permit and technical evaluation for the ADAGE project may be found at the following link: www.dep.state.fl.us/Air/emission/construction/adage.htm. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: The feedstock will consist of woody biomass, which will be processed at a remote fuel preparation area. At this remote area, the feedstock will be sorted, screened and chipped to size. Although some leaves and small branches may inadvertently find their way into the feedstock, the focus is on producing wood chips from the woody biomass. Fuel availability appears to be both predictable and plentiful going forward, with the only real concern involving transportation costs. In addition, a fuel crop is under consideration to supplement available feedstock supplies. FBenergy is being somewhat opportunistic in their feed stock approach, meaning that they will contract for some supplies, but will also take advantage of more economic market opportunities when possible.

5. Maximum Heat Input Rate to the Biomass Boiler: The nominal heat input rate to the boiler stated in the application is 757 mmBtu/hr. Is this the maximum heat input rate to the boiler anticipated for this project and, if so, what is the averaging time for the heat input? If this is not the maximum heat input rate, what is the maximum heat input rate and averaging time for the boiler? [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: FBenergy was reconsidering the requested heat input limit, even if the Department had not rasied this as an issue. Consequently, FBenergy requests that the heat input limit be increased by 10 percent, to 833 mmBtu/hr, due to: 1) the need for operational flexibility due to the probable variation in biomass moisture content, which from time to time could be higher than initially assumed, and 2) the potential slight variations between the test method used to determine heat input vs. the basis for the vendor heat input estimate. Finally, based on a review of the ADAGE air permit, FBenergy understands that the method to be used for the calculation of heat input is Section 5 of Appendix F, 40 CFR 75, using F-Factors. This method of heat input calculation is acceptable to FBenergy at the higher proposed heat input rate and utilizing a 4-hour average.

6. Material Handling and Storage Best Management Practices (BMP) Plan: Please provide a BMP plan including a clearer description of the material handling and storage system to insure that biomass materials are taken in and then used on a first-in/first-out basis. Include descriptions of the storage pile management system and reasonable precautions to avoid fugitive emissions, odors and spontaneous combustion such as by minimizing drop distances, misting of material if needed, etc. Also indicate whether dust collectors will be utilized at the drop and transfer points of the fuel handling and storage system. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: The wood-handling industry is well aware of the tendency of an un-managed pile of wood-waste to overheat and result in spontaneous combustion. Accordingly, FBenergy's Best Management Plan to manage the fuel pile will have as its goals:

1. Avoidance of conditions giving rise to spontaneous combustion, supported by the fire control systems to be provided after approval by State and insurance entities, which specifically will provide fuel pile fire control, and these systems will be reviewed and approved as part of the overall fire prevention plans by the County Fire Marshall;

2. Minimization of fugitive dust emissions, also using fuel pile fire protection facilities for dust suppression as required; and

3. Blending of the various fuels received to ensure reasonably consistent fuel properties as delivered to the boiler.

The following preliminary BMP for fuel handling dust control is subject to the provision of further detail and adjustment during the project's detailed design phase to reflect final equipment selection:

Measures to Minimize Spontaneous Combustion.

1. Daily inspection for fire hazards, plus video surveillance;

2. The stack-out/reclaim plan will ensure reclaim of older material to avoid accumulation of fuel with a significant age. The first-in/first-out (FIFO) procedure will be slightly modified to ensure blending of older and newer fuel for consistent fuel properties. The equipment, by design, will manage and handle the approximate 12 to 14 day supply of fuel (approximately 20,000 to 25,000 tons depending on moisture content). This will ensure a quick turnover of feedstock in order to make more room for deliveries. Additional space has been reserved for the potential short term handling of material such as processed storm debris from sources such as FEMA, the County and State. Short term material stored on-site will be protected from fire hazard and will be moved to the primary fuel storage, generally within 14 to 21 days.

3. Use of daily inspections and fire-water cannons, mounted on elevated structures, together with mobile equipment to uncover and rapidly extinguish any smoldering materials found; and

4. The size of the fuel storage pile will not exceed the design value – this is a primary control measure, based upon the limited on-site fuel storage of about 2 weeks' worth of fuel. Specifically, the stacker will build a pile in zones up to 40 feet high and the reclaimer will start with the first zone built and reclaim the pile down to within two inches of grade.

Measures to Minimize Fugitive Dust.

1. The size of the fuel storage pile, about 2 weeks' worth of fuel, minimizes the area subject to wind erosion and reduces the travel time required for mobile equipment;

2. Conveyor transfer points are enclosed or partially enclosed;

3. Drop points to the fuel storage areas are designed to minimize the exposed drop height;

4. Transfer points and fuel bins are equipped with vent filters;

5. Underpile fuel reclaimers do not generate fugitive dust;

6. Fuel handling equipment is observed daily for proper operation and for maintenance requirements;

7. Plant fuel handling personnel will implement a procedure for observing and controlling unplanned fugitive dust emissions, including truck handling and unloading, and dirt or fuel on roads; and

8. All major roadways will be paved. Plant personnel will spray, scrape, or otherwise remove dirt or spilled fuel on plant roads.

Storage Pile Management.

1. Operational plans will recognize conditions such as high winds likely to result in excessive fugitive dust and will curtail movement of fuel by mobile equipment under such conditions; and

2. Mobile equipment will be used to maintain the pile's design shape and to ensure adherence to FIFO in reclaim operations.

3. The area surrounding the fuel storage as well as bordering the property will have significant landscape screening that will provide further shielding of the fuel pile from winds.

7. Methods of Compliance for Emission Limits: Neither the application text nor the application forms at the end of the application include compliance methods for proposed pollutant emissions limits. Based on past biomass energy projects, the Department will require continuous emission monitoring systems (CEMS) for criteria pollutants such as NOx and SO_2. Does FB Energy propose different methods of compliance for criteria pollutants? [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: As the emission unit is subject to the requirements of the Acid Rain program, FBenergy had assumed that compliance with the SO_2 and NOx emission limits would be based on the CEMS systems required by the Acid Rain program. In addition, FBenergy understands that the use of CEMS will be required for HCl emissions to provide reasonable assurance that the project will not exceed the HAP major source threshold. Compliance with other criteria pollutant emission limits will be determined by either an initial (one-time, in the case of VOCs) or annual compliance test (i.e., PM/PM_{10} and CO).

8. Biomass Fuel Delivery: It is stated on page 2 of the application text that trucks will deliver biomass fuel to the project site 6 days a week and 12 hours a day. Is the daily delivery schedule from 6:00 am to 6:00 pm? Also, is this delivery schedule final or will some flexibility be required. [Rule 62-4.070, F.A.C. Reasonable Assurance].

Response: The majority of truck deliveries are expected to occur 6 days per week and 12 hours per day. However to maintain operational flexibility and electric generation capacity, the Project must maintain fuel delivery flexibility including evening and night deliveries as well as 7 day per week delivery. Fuel delivery flexibility is essential to the Project to protect against lost generation due to temporary fuel supply obstacles such as weather, traffic, harvesting time, etc. The proposed site is in an industrial area and the Port Encouragement Zone, so 24/7 deliveries are not a concern. In spite of the Department's perception, due to the narrative description of the delivery schedule, the air dispersion modeling impacts provided in the application are consistent with the flexible fuel delivery schedule and are predicted for 24-hours per day.

9. Please provide a more complete analysis to show that emissions of no single hazardous air pollutant (HAP) will equal or exceed 10 tons per year (TPY). In particular, provide additional supporting information that hydrogen chloride (HCl) will not exceed 10 TPY and the method of compliance proposed for HCl emissions. Also, provide additional information supporting that all emissions of all HAPs will not equal or exceed 25 TPY. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: The only significant sources of HAPs from this project would result from combustion in the biomass boiler. HAP emission estimates were previously provided in the air application for this emission unit, but have now been combined into one comprehensive table for all emission units for ease of review (Attachment 3).

10. HCl CEMS: The estimated emissions of HCl from the biomass boiler are listed as 9.83 TPY. For the ADAGE bio-energy project and Highland's ethanol project, the Department requires HCl-CEMS to demonstrate that the HCl emissions will actually be less than 10 TPY. How does FB Energy propose to demonstrate that HCl emissions from its operations will actually be less than 10 TPY? [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: As provided in the response to Question 7 above, FBenergy understands that the use of CEMS will be required for HCl emissions to provide reasonable assurance that the project will not exceed the HAP major source threshold.

11. SCR Bypass: During the startup, shutdown and malfunction of the grate-type biomass boiler will there be provisions to bypass the SCR unit? If so, what are the procedures, conditions and timeframes proposed by FBenergy to bypass the SCR unit? [Rule 62-4.070, F.A.C. Reasonable Assurance].

Response: No SCR bypass is necessary or will be provided. During start-up and shut down, boiler flue gas temperatures change slowly, and with the reduced flue gas volume, the lower SCR catalyst activity at, for example 400 F, should still allow for the emission unit to achieve the requested NOx emission limit (i.e., on a lb/hr basis and a 30-day rolling average). The ESP which protects the catalyst is fully functional during start-up and shut-down. The Department should recognize that this is a base load unit and periods for startup and shutdown will be minimal. During these infrequent periods, it is requested that the Department's standard language allowing for excess emissions be provided in the permit.

12. Biomass Quality Assurance (QA) and Quality Control Plan (QC): Provide a QA and QC plan dealing with biomass acceptance/rejection criteria. For example, some operators provide a very detailed wood fuel quality control plan. Refer for example to the style of one filed (for a different fuel slate) for the Robbins Community Power project in Illinois that was incorporated in the air permit available at: www.epa.state.il.us/public-notices/2008/robbins-power/draft-permit.pdf [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: The Robbins Community Power project is designed around a C&D waste stream from landfills and is not directly applicable to this project. A review of the ADAGE BMP indicated that there were sections addressing fugitive dust, storage pile management, fire prevention and feedstock quality assurance. In FBenergy's response to the Department's Question No. 6, preliminary details of a proposed BMP are provided for fuel handling dust control, storage pile management and fire prevention, subject to the provision of further detail and adjustment during the project's detailed design phase to reflect final equipment selection. In addition, FBenergy would accept the following with respect to feedstock quality assurance:

Best Management Practice – Quality Assurance of Clean Woody Biomass

- The feedstock for the boiler will consist of clean woody biomass that will be processed off-site and delivered as chipped material properly sized and sorted.

- The permittee will contract for woody biomass consisting of: clean untreated wood or untreated wood products, including clean untreated lumber, trees and tree stumps, tree limbs, slash, forest understory and overstory from healthy forest management. This also includes, but is not limited to, wood, wood residue, bark, or any derivative fuel or residue thereof, and processed pellets made from wood or other forest residues. Additionally woody biomass may include trimmings,

brush, cleared right of way trimmings and woody waste, and energy crops grown specifically for use in the project boiler.

- The woody biomass feedstock will be delivered to the FBenergy Manatee Facility in vehicles designed to secure the materials until receipt at the project site.

- For each shipment of woody biomass, the permittee shall record the date, quantity and a description of the material received.

- The permittee shall inspect each shipment of woody biomass upon receipt for any material not specifically identified in this plan. If the permittee identifies any such material, the material shall be rejected and/or marshaled in specified areas until proper disposal can be arranged. Rejected materials shall be moved off site in a logistically reasonable time period.

- The permittee shall maintain records of rejected shipments and disposition thereof. Such records shall be made available to the Department upon request.

13. Land Use for Meteorology: Provide additional information regarding the meteorological files. Provide information that was used in determining the land use characteristics of the Sarasota-Bradenton airport. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: The land use was determined using the latest guidance suggested in the AERMOD implementation guide (March, 2009) and the AERSURFACE user's manual (January 2008). The surface roughness was based on the average land use within 1 km of the met tower at the airport. The Albedo and Bowen ratio were based on the average values for those parameters within 10 km of the met tower at the airport. The land use categories were obtained using the AERSURFACE tool which used 1992 land use data from the USGS website. A summary of the land use categories around the airport is provided in Attachment 4.

14. Truck Traffic: Explain how the emission rates for the truck traffic were determined. Explain how the emission rates for the modeled truck sources relate to the emission rates from Tables 3-7 and 5-4 in the application. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: The emission rates for truck traffic include fuel delivery trucks, sorbent delivery trucks, and ash shipping trucks. Emission estimates from these sources are provided in Appendix B, Table B-1A. U.S. EPA AP-42, Section 13.2.1.3, factors for paved roads, was utilized to estimate emissions from these sources. Predicted maximum throughput of each material was utilized, as well as the distance of the proposed truck routes, to estimate PM, PM_{10} and $PM_{2.5}$ emissions. The equations utilized, as well as all input data, is detailed in Table B-1A of the application. PM_{10} emissions from Table B-1A have been input into the dispersion model and are provided in Table 5-4. Table 5-4 Volume Model Source ID "TRUCK01-TRUCK30" represents the fuel delivery trucks. Table 5-4 Volume Model Source ID "TRUCK24-TRUCK35" represents the sorbent, ash delivery and shipping trucks. These trucks were modeled together because they have the same truck route. Table 3-7 summarizes all the PM emissions from the material handling operations, including truck traffic.

15. PM_{10} Modeling: The Department was unable to replicate the PM_{10} modeling results. Verify the modeling results. The Department has the input and output files available for comparison if needed. [Rule 62-4.070, F.A.C. Reasonable Assurance].

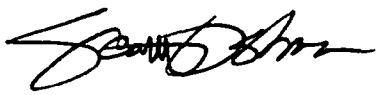
Response: Per discussion with the Department's modeling staff on November 17, 2009, the modeling files have been verified.

Rule 62-4.050(3), F.A.C., requires that all applications for a construction permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. Therefore, this RAI response package includes a new certification statement by the authorized representative, as well as a new P.E. certification statement by the professional engineer. Where appropriate, new calculations, assumptions, reference material and appropriate revised pages of the application form have also been included.

If you should have any questions, please contact me at (813) 287-1717.

Sincerely,

GOLDER ASSOCIATES INC.



Scott Osbourn, P.E.
Project Manager

cc: Rick Jensen, FBenergy
Andrew Grant, FBenergy

Attachments

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name :
   Rick Jensen, President
2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **FBenergy, LLC**
   Street Address: **9040 Town Center Parkway**
   City: **Bradenton** State: **FL** Zip Code: **34202**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(941) 567 - 1631** ext. Fax: ( ) -
4. Owner/Authorized Representative E-mail Address:
5. Owner/Authorized Representative Statement:

   I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.

Richard Jensen — Signature

11/23/09 — Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Scott H. Osbourn**
   Registration Number: **57557**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Golder Associates Inc. ****
   Street Address: **5100 West Lemon Street, Suite 114**
   City: **Tampa** State: **FL** Zip Code: **33609**
3. Professional Engineer Telephone Numbers...
   Telephone: **(813) 287-1717** ext.**53304** Fax: **(813) 287-1716**
4. Professional Engineer E-mail Address: **sosbourn@golder.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

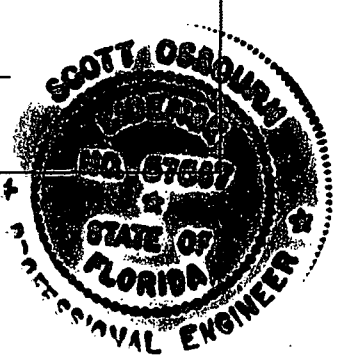
(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here [X], if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here , if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☐, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature Date 11/24/09

(seal)



* Attach any exception to certification statement.

**** Board of Professional Engineers Certificate of Authorization #00001670**

ATTACHMENT 1

BRADENTON HERALD

WWW.BRADENTON.COM
P.O. Box 921
Bradenton, FL 34206-0921
102 Manatee Avenue West
Bradenton, FL 34205-8894
Ph: 941-745-7066
Fax: 941-708-7758

Bradenton Herald
Published Daily
Bradenton, Manatee County, Florida

STATE OF FLORIDA
COUNTY OF MANATEE

Before the undersigned authority personally appeared Danica Sherrill, who, on oath, says that she is a Legal Advertising Representative of the Bradenton Herald, a daily newspaper published at Bradenton in Manatee County, Florida; that the attached copy of the advertisement, **NOTICE OF APPLICATION** as published in said newspaper in the issue **10/31/2009.**

Affiant further says that the said publication is a newspaper published at Bradenton, in said Manatee County, Florida, and that the said newspaper has heretofore been continuously published in said Manatee County, Florida, each day and has been entered as second-class mail matter at the post office in Bradenton, in said Manatee County, Florida, for a period of 1 year next preceding the first publication of the attached copy of advertisement; and affiant further says that she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

(Signature of Affiant)

Sworn to and subscribed before me this
2 Day of NOV, 2009

FLORENCE KONESKO
Notary Public - State of Florida
My Comm. Expires Sep 20, 2013
Commission # DD 926599

SEAL & Notary Public

Personally Known_____ OR Produced Identification_____
Type of Identification Produced_____

BRADENTON HERALD
CLASSIFIED ADVERTISING

Order:	131932120	Pubs:	1,9	Rate:	LE
Phone:	9415671631	Class:	4995	Charges:	$ 0.00
Account:	H983584	Start Date:	10/31/2009	List Price:	$ 175.77
Name:	Jensen, Rick	Stop Date:	10/31/2009	Payments:	$ 0.00
Firm:	FB Energy	Insertions:	2	Balance:	$ 175.77

NOTICE OF APPLICATION
STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL
PROTECTION

DEP File No. 0810226-001-AC

Florida Biomass Energy, LLC
Woody Biomass Electric
Power Plant
Manatee County

The Department of Environmental Protection (Department) announces receipt of an application for an air construction permit from Florida Biomass Energy, LLC. The application is to construct a 60 megawatts (net) woody biomass electric power plant located at 11805 US Highway 41 North in Port Manatee, Palmetto, Manatee County. Following is the applicant's description of the project:

The project consists of a biomass fuel (wood chips) delivery/handling system, the use of a grate-type suspension boiler, an air quality control system, cooling towers, emergency generator, emergency firewater pump and ancillary equipment. The emergency generator and firewater pump will be fueled by biodiesel. The biomass fuel (wood chips) will be chipped to size and screened at a remote location. The fuel preparation process will be owned and operated by others. Biomass fuel will be delivered by trucks.

The initial application was received on October 13, 2009. The application is under review by the Department to determine whether it is complete. The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at the following Department offices:

Department of
Environmental Protection
Bureau of Air Regulation
111 South Magnolia Drive,
Suite 4
Tallahassee, Florida 32399-2400
Telephone: 850/414-7268
or 921-9523
Fax: 850/921-9533

Department of Environmental
Protection
Southwest District Office –
Air Program
13051 N. Telecom Parkway
Temple Terrace, Fl. 33637
Phone: 813/632-7600
Fax: 813/632-7665

The application can be accessed at the Department's website at:
www.dep.state.fl.us/Air/emission/construction/port manatee.htm
10/31/2009

ATTACHMENT 2

HTI QUOTATION FOR SCR Catalyst: PPC Air for Manatee County, Tampa, FL
HALDOR TOPSOE QUOTATION NUMBER: 09-6306-R2
DATE: September 16, 2009
Table 1: Scope of Supply

Table 3 : Product Specifications

Catalyst type	DNX - 949	DNX - 949
Physical properties		
- Hydraulic diameter, mm	4.3	4.3
- Wall thickness, mm	0.4	0.4
- Cell pitch, mm	5.1	5.1
- Void, %	80	80
- Specific area, sq. meter/cubic meter	741	741
Chemical composition		
- Tungsten trioxide, % by weight	5-10	5-10
- Vanadium pentoxide, % by weight	0-4	0-4
- Titanium dioxide, % by weight	80-90	80-90

Table 4 : SCR Reactor Design

Case	94%, 16,000 Hours (*)	94%, 24,000 Hours (*)
Catalyst type	DNX - 949	DNX - 949
Volume per Unit, cubic meter	< or = 71	< or = 98
Number of Units	1	1
Flow Direction	Vertical Down	Vertical Down
Number of Layers	2	3
Number of Elements per Layer	300	300
Element Size , mm, L x W x H	466 x 466 x 612	466 x 466 x 572
Element Arrangement, L x W	20L x 15W	20L x 15W
Required reactor dimensions, ft, L x W	**31.1' x 23.1'**	**31.1' x 23.1'**
Total Number of Elements	600	900
Weight of Elements, lbs	95	90
Total weight of all Elements, lb	57,000	81,000
Catalyst depth, meter	1.08	1.50

Table 5 : Expected and Guaranteed Performance

Case	**16,000 Hours**	**24,000 Hours**
Calculation Number	1172967	1172968
Expected NOx Outlet, ppmvd @ 3 % O2	< or = 11.5	< or = 11.5
Expected NOx Removal, %	94.00%	94.00%
Expected NH3 slip, ppmvd @ 3 % O2	< or = 10	< or = 10
Expected SO2 oxidation, %	< or = 0.1	< or = 0.1
Expected flue gas pressure drop, inches WC	< or = 0.80	< or = 1.10
Expected Ammonia Consumption as 100 % NH3 Solution, lb/hr	< or = 79.8	< or = 79.8
Expected Service Life to meet Guaranteed Conversion	2 years	3 years
Calculation Number	1172967	1172968
Guaranteed NOx Outlet, ppmvd @ 3 % O2	< or = 11.5	< or = 11.5
Guaranteed NOx Removal, %	94.00%	94.00%
Guaranteed NH3 slip, ppmvd @ 3 % O2	< or = 10	< or = 10
Guaranteed SO2 Oxidation, %	< or = 0.5	< or = 0.5
Guaranteed flue gas pressure drop, inches WC	0.90	1.20
Guaranteed Ammonia Consumption as 100 % NH3 Solution, lb/hr	< or = 92	< or = 92
Guaranteed Service Life	16000 hrs. or 2.5 years after delivery whichever comes first	24000 hrs. or 3.5 years after delivery whichever comes first
Minimum Operating Temperature, °F	N/A	N/A
Maximum Operating Temperature, °F	800	800

Table 6 : SCR Flue Gas Design Parameters

Case Number	16,000 Hours	24,000 Hours
Flow, lb/hr.	959,397	959,397
Temperature, °F	500	500
Pressure, in WG	0	0
NOx, lb/MMBtu (ppmvdc @ 3% O2)	0.3 (191.7)	0.3 (191.7)
SOx, lb/MMBtu	< or = 0.1	< or = 0.1
H2O, % vol	18.6	18.6
O2, % vol	4.0	4.0
CO2, % vol	12.7	12.7
N2, % vol	65.0	65.0
Ar, % vol	1	1
Particulate, lb/hr	19.05	19.05
Flue gas maldistribution, + / - % RMS Deviation	15	15
Ammonia-to-NOx maldistribution, + / - % RMS Deviation	5	5
Temperature maldistribution, + / - °F	25	25

The flue gas and ammonia to NOx maldistributions stated above are meant to be standard deviations.

*** There will be a 6' gap between layers for maintenance purposes.**

"This Quotation is valid for ordering through November 16, 2009 for a firm commitment, and is subject to the negotiation and execution of a mutually acceptable contract between the parties. In the absence of such a contract, this Quotation is conditioned on the following appearing on the purchase order: "The Haldor Topsoe, Inc. Primary Terms & Conditions of Catalyst Supply dated April 30, 2009, are the primary terms and conditions applicable to this purchase order." Please refer to the attached Haldor Topsoe, Inc. Primary Terms & Conditions of Catalyst Supply dated April 30, 2009."

HTI QUOTATION FOR SCR Catalyst: PPC Air for Manatee County, Tampa, FL

HALDOR TOPSOE QUOTATION NUMBER: 16-Sep-09 09-6306-R2

Loading Diagram: E=Element

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Row 20	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 19	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 18	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 16	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 15	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 14	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 12	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 10	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 9	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 8	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 4	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Row 1	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E

31.1’

23.1’

ATTACHMENT 3

TABLE 1 ATTACHMENT 3
SUMMARY OF TOATL HAZARDOUS AIR POLLUTANTS EMISSIONS
FOR THE BOILER, THE EMERGENCY GENERATOR AND THE FIRE WATER PUMP (IC ENGINES)

Parameter	Emissions (TPY)			Total
	Boiler	Emergency Generator	Fire Water Pump	
Organics				
1,1,1-Trichloroethane	2.57E-02	--	--	2.57E-02
1,2-Dibromoethene	4.56E-02	--	--	4.56E-02
1,2-Dichloroethane	2.40E-02	--	--	2.40E-02
1,2-Dichloropropane	2.74E-02	--	--	2.74E-02
2,3,7,8-Tetrachlorodibenzo-p-dioxins	7.13E-09	--	--	7.13E-09
2,3,7,8-Tetrachlorodibenzo-p-furans	7.46E-08	--	--	7.46E-08
2,4,6-Trichlorophenol	1.82E-05	--	--	1.82E-05
2,4-Dinitrophenol	1.49E-04	--	--	1.49E-04
2-Nitrophenol	1.99E-04	--	--	1.99E-04
4-Nitrophenol	9.12E-05	--	--	9.12E-05
Acenaphthene	--	5.82E-06	1.54E-06	7.37E-06
Acenaphthylene	--	1.15E-05	3.04E-06	1.45E-05
Acetaldehyde	6.88E-01	3.14E-05	8.31E-06	6.88E-01
Acetophenone	2.65E-06	--	--	2.65E-06
Acrolein	3.32E+00	9.81E-06	2.60E-06	3.32E+00
Anthracene	--	1.53E-06	4.06E-07	1.94E-06
Benzene	3.48E+00	9.66E-04	2.56E-04	3.48E+00
Benzo(a)anthracene	--	7.74E-07	2.05E-07	9.79E-07
Benzo(a)pyrene	--	3.20E-07	8.48E-08	4.05E-07
Benzo(b)fluoranthene	--	1.38E-06	3.66E-07	1.75E-06
Benzo(g,h,i)perylene	--	6.92E-07	1.83E-07	8.75E-07
Benzo(k)fluoranthene	--	2.71E-07	7.19E-08	3.43E-07
bis(2-Ethylhexyl)phthalate	--	--	--	0.00E+00
Bromomethane	1.24E-02	--	--	1.24E-02
Carbazole	1.49E-03	--	--	1.49E-03
Carbon tetrachloride	3.73E-02	--	--	3.73E-02
Chlorine	6.55E-01	--	--	6.55E-01
Chlorobenzene	2.74E-02	--	--	2.74E-02
Chloroform	2.32E-02	--	--	2.32E-02
Chloromethane	1.91E-02	--	--	1.91E-02
Chrysene	--	1.90E-06	5.05E-07	2.41E-06
Dibenzo(a,h)anthracene	--	4.31E-07	1.14E-07	5.45E-07
Dichloromethane	2.40E-01	--	--	2.40E-01
Ethylbenzene	2.57E-02	--	--	2.57E-02
Fluoanthene	--	5.01E-06	1.33E-06	6.34E-06
Fluorene	--	5.56E-06	1.47E-06	7.04E-06
Formaldehyde	3.65E+00	9.82E-05	2.60E-05	3.65E+00
Indo(1,2,3-cd)pyrene	--	5.15E-07	1.37E-07	6.52E-07
Naphthalene	8.04E-02	1.62E-04	4.29E-05	8.06E-02
Pentachlorophenol	4.23E-05	--	--	4.23E-05
Phenanthrene	--	1.31E-06	3.46E-07	1.65E-06
Phenol	4.23E-02	--	--	4.23E-02
Propionaldehyde	5.06E-02	--	--	5.06E-02
Propylene	--	3.47E-03	9.20E-04	4.39E-03
Pyrene	--	4.62E-06	1.22E-06	5.84E-06
Styrene	1.57E+00	--	--	1.57E+00
Tetrachlorodibenzo-p-dioxins	3.90E-07	--	--	3.90E-07
Tetrachlorodibenzo-p-furans	6.22E-07	--	--	6.22E-07
Toluene	7.63E-01	3.50E-04	9.27E-05	7.63E-01
Trichloroethene	2.49E-02	--	--	2.49E-02
Xylene	--	2.40E-04	6.37E-05	3.04E-04
Metals				
Antimony	5.24E-04	--	--	--
Arsenic	1.46E-03	4.98E-06	1.32E-06	1.47E-03
Beryllium	7.29E-05	3.73E-06	9.89E-07	7.77E-05
Cadmium	2.72E-04	3.73E-06	9.89E-07	2.77E-04
Chromium	1.39E-03	3.73E-06	9.89E-07	1.40E-03
Cobalt	4.31E-04	--	--	--
Copper	--	7.47E-06	1.98E-06	9.45E-06
Lead	1.59E-01	1.12E-05	2.97E-06	1.59E-01
Manganese	1.06E-01	7.47E-06	1.98E-06	1.06E-01
Mercury	1.16E-02	3.73E-06	9.89E-07	1.16E-02
Nickel	2.19E-03	3.73E-06	9.89E-07	2.19E-03
Selenium	1.86E-04	1.87E-05	4.95E-06	2.09E-04
Zinc	--	4.98E-06	1.32E-06	6.30E-06
HAPs (Total)	15.1	0.005	0.001	**15.1**
Maximum Individual HAP	3.6	0.003	0.001	**3.6**

Source: Golder, 2009.
Boiler Emission Factors from EPA AP-42, Table 1.6-3 and 1.6-4. See also Table 3-5 and 3-6 of the FBE Application Report.
Emergency Generator and Water Pump Emission Factors from EPA AP-42, Table 3.4, and Table 1.3. See also Table 3-10 of the FBE Application Report.

ATTACHMENT 4

LAND USE DATA: TABLE 2 ATTACHMENT 4

Land Cover Counts (With 10 km of AQQ ASOS Tower): Bowen Ratio and Albedo

Category	Description	Count	Percent
11	Open Water:	33494	30.0
12	Perennial Ice/Snow:	0	0.0
21	Low Intensity Residential:	23952	21.5
22	High Intensity Residential:	17565	15.7
23	Commercial/Industrial/Transp:	13150	11.8
31	Bare Rock/Sand/Clay:	235	0.2
32	Quarries/Strip Mines/Gravel:	0	0.0
33	Transitional:	160	0.1
41	Deciduous Forest:	0	0.0
42	Evergreen Forest:	2437	2.2
43	Mixed Forest:	0	0.0
51	Shrubland:	948	0.8
61	Orchards/Vineyard/Other:	2704	2.4
71	Grasslands/Herbaceous:	4729	4.2
81	Pasture/Hay:	3533	3.2
82	Row Crops:	721	0.6
83	Small Grains:	0	0.0
84	Fallow:	0	0.0
85	Urban/Recreational Grasses:	1723	1.5
91	Woody Wetlands:	4755	4.3
92	Emergent Herbaceous Wetlands:	1450	1.3
99	Missing Data:	0	0.0
	Total:	*111556*	100

Land Cover Counts (Within 1 km of AQQ ASOS Tower): Surface Roughness

		WD SECTOR:	1	2	3	4	5	6	7	8	9	10	11	12		
Category	Description	Starting Direction:	0	30	60	90	120	150	180	210	240	270	300	330	Total	Percent
11	Open Water:		1	5	2	0	0	3	1	0	0	0	0	3	15	0
12	Perennial Ice/Snow:		0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Low Intensity Residential:		20	5	0	0	0	0	1	41	66	27	10	46	216	6.2
22	High Intensity Residential:		46	1	0	0	0	0	29	112	103	19	18	62	390	11.2
23	Commercial/Industrial/Transp:		120	135	226	216	245	272	245	126	115	240	131	56	2127	61.0
31	Bare Rock/Sand/Clay:		0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	Quarries/Strip Mines/Gravel:		0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Transitional:		14	34	1	0	0	0	0	0	0	0	4	27	80	2.3
41	Deciduous Forest:		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
42	Evergreen Forest:		1	1	1	0	0	0	0	0	0	1	18	3	25	0.7
43	Mixed Forest:		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
51	Shrubland:		14	25	18	0	0	1	0	0	0	0	0	0	58	2
61	Orchards/Vineyard/Other:		1	2	2	0	0	0	1	0	0	0	5	1	12	0
71	Grasslands/Herbaceous:		28	24	10	0	0	0	0	1	0	1	32	39	135	4
81	Pasture/Hay:		7	9	11	0	0	0	0	0	0	0	8	18	53	1.5
82	Row Crops:		0	1	1	0	0	0	0	0	0	0	1	2	5	0.1
83	Small Grains:		0	0	0	0	0	0	0	0	0	0	0	0	0	0
84	Fallow:		0	0	0	0	0	0	0	0	0	0	0	0	0	0
85	Urban/Recreational Grasses:		23	15	10	73	48	13	7	8	6	0	39	5	247	7.1
91	Woody Wetlands:		7	27	10	0	0	1	2	1	0	0	19	18	85	2.4
92	Emergent Herbaceous Wetlands:		5	9	0	0	0	2	2	2	1	1	6	10	38	1.1
99	Missing Data:		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total:		*287*	*293*	*292*	*289*	*293*	*292*	*288*	*291*	*291*	*289*	*291*	*290*	3486	100