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U.S.ECOGEN

Application for Minor Source Air Permit to Construct 63-Megawatt (MW) U.S. EcoGen Polk Biomass Generating Facility

Request For:

U.S. EcoGen Polk, LLC
Proposed U.S. EcoGen Polk Biomass Generating Facility
Polk County, Florida

Application Date: April 13, 2012

U.S.ECOGEN

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DIVISION OF AIR
RESOURCE MANAGEMENT

April 13, 2012

Florida Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road, M.S. 5505
Tallahassee, Florida 32399-2400

Attention: Ms. Lynn Scearce (Administrative Assistant), Office of Permitting and Compliance

Re: Application of U.S. EcoGen Polk, LLC for Minor Source Air Permit to Construct Proposed 63-Megawatt (MW) U.S. EcoGen Polk Biomass Generating Facility To be located in Polk County, Florida (the "Plant")

U.S. EcoGen Polk, LLC (U.S. EcoGen) is proposing the construction of a nominal 63-megawatt (MW) clean woody biomass electrical generating facility (the Plant) in central Florida. The Plant will be located in the city of Fort Meade, in Polk County, Florida. The Plant is being constructed in support of Florida's Renewable Energy Targets to provide electrical power production from renewable energy sources.

U.S. EcoGen, a limited liability company, will be the owner of the Plant and is excited about the opportunity to bring renewable energy to the state of Florida. Renewable energy is a critical element of our national plan to create clean energy and to make us less dependent on imported fuels. The design being proposed is a closed-loop concept where eucalyptus trees will be grown locally to support the Plant as the primary fuel source (i.e., clean woody biomass). Using a locally grown fuel source will minimize impacts to current and future trees grown in Florida or other geographical locations.

The Plant being proposed by U.S. EcoGen will be capable of producing a nominal 63 MW of electrical power through the use of a highly efficient bubbling fluidized bed (BFB) boiler, which is ideal for combusting woody biomass materials. The Plant will incorporate into its design proven and highly efficient control technologies and techniques for the reduction of potential emissions of air pollutants. The primary fuel for the proposed BFB boiler will be limited to clean woody biomass, with natural gas to be utilized only for boiler startup, shutdown and boiler bed stabilization.

U.S.ECOGEN

Enclosed with this cover letter is an application containing an official request from U.S. EcoGen to construct the proposed biomass electrical generating facility in Polk County. Included in the application is documentation that the Plant will be in compliance with state and federal air pollutant regulations. The Plant being proposed by U.S. EcoGen will be a new minor stationary source of air pollutants and will not trigger the requirements of the Prevention of Significant Deterioration (PSD) regulations, nor the Maximum Achievable Control Technology (MACT) requirements for major stationary sources implemented by the Environmental Protection Agency (EPA).

Included in this application are the results of a voluntary air quality impact evaluation performed by U.S. EcoGen that demonstrates the Plant's air pollutant emissions will meet state/federal air quality standards, thus not adversely impacting human health and welfare. Please refer to Section 7 of the application for the results of this air quality impact evaluation.

Also, it is our understanding that an application fee in the amount of $7,500 payable to the Florida Department of Environmental Protection is required as part of the application process to cover the fee to review the request for construction permit. Two (2) compact discs (CDs) have also been enclosed containing the application in an electronic version and supporting documentation (input and output files) for the voluntary air quality impact evaluation. The first CD containing the electronic files is for the FDEP so that the application can be placed on the FDEP application computer web page, while the second CD contains the supporting documentation for the air quality impact evaluation that was performed for the Plant. As requested by the Bureau, three (3) copies of this application are enclosed.

If you should have any questions regarding our request for permission to construct the proposed biomass electrical generating facility, please contact Mr. Steven Frey, Associate Vice President Air Quality, of ARCADIS at (847) 517-4062 or by email at steve.frey@arcadis-us.com at your earliest convenience. As part of this application process, we would like to recommend that a meeting by conference call be held within the next couple of weeks to discuss this project and to answer any questions the FDEP may have pertaining to the request for construction. We look forward to working with the Bureau on issuance of a minor source construction permit for the proposed Plant.

Very truly yours,
U.S. EcoGen Polk, LLC

William F. Quinn, P.E.
President

U.S.ECOGEN

Cc:

Bureau of Air Regulation, Division of Air Resource Management:
Mr. Al Linero and Mr. David Read

Bureau of Air Regulation – Southwest District Office (Temple Terrance, Florida):
Mr. Gary Colecchio, Director

U.S. EcoGen Polk, LLC:
Mr. William Harper, Vice President, Engineering

ARCADIS U.S., Inc.:
Mr. Steven Frey, Associate Vice President – Air Quality

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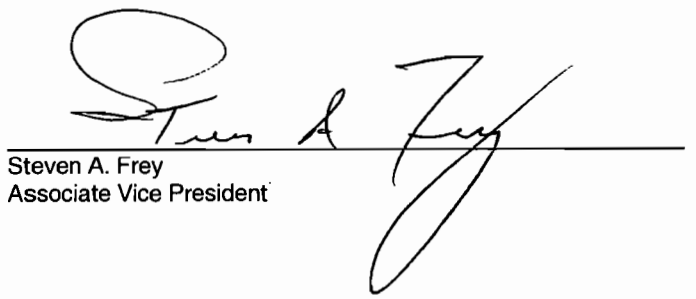

Steven A. Frey
Associate Vice President

Application for Minor Source Air Permit to Construct 63-Megawatt (MW) U.S. EcoGen Polk Biomass Generating Facility

Prepared for:
U.S. EcoGen Polk, LLC
Polk County, Florida

Prepared by:

ARCADIS
1515 East Woodfield Rd. Suite 360
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Point of Contact:
Steven A. Frey

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Email: Steve.Frey@arcadis-us.com

Our Ref.:
28918001.0000

Date:
April 13, 2012

Figures

Tables

1. Introduction

U.S. EcoGen Polk, LLC (U.S. EcoGen) is proposing the construction of a 63-megawatt (MW) clean woody biomass electrical generating facility (herein referred to as the "Plant") located in the city of Fort Meade, in Polk County, Florida.

The Plant is being constructed in support of Florida's Renewable Energy Targets to provide electrical power production from renewable energy sources. Accordingly, U.S. EcoGen has executed a 29.5 year Renewable Energy Power Purchase Agreement ("PPA") with Progress Energy Florida for the full output of the Plant. Further, on September 20, 2011 the Florida Public Service Commission approved the PPA.

The Plant being proposed by U.S. EcoGen will be capable of producing a nominal 63 MW of electrical power through the use of a highly efficient bubbling fluidized bed (BFB) boiler, which is ideal for combusting woody biomass materials. The Plant will consume approximately 6 MW of electrical power for station load, which will result in the Plant having a net electrical output of approximately 57 MW. The net output takes into account electrical demands required by plant operations, which can vary depending on plant operations and climate conditions. The Plant will incorporate, into its design, proven and highly efficient control technologies and techniques for the reduction of potential emissions of air pollutants. The primary fuel for the proposed BFB boiler will be limited to clean woody biomass, with natural gas to be utilized only for boiler startup, shutdown and boiler bed stabilization. The maximum design heat input of the BFB boiler while combusting clean wood will be 740 MMBtu/hr, while natural gas will be limited to a maximum design heat input of 160 MMBtu/hr.

The Plant will involve four (4) specific process areas. These process areas include:

- Fuel (i.e., clean woody biomass – chipped and logs) receiving, handling, storage and processing (Plant is being designed to utilize eucalyptus trees as the primary woody biomass fuel);
- Power Island, including a bubbling fluidized bed boiler and steam turbine / generator;
- Ash (i.e., fly and bottom) handling, storage and shipment; and

- Emergency support equipment (i.e., generator and fire pump).

These process areas will have the potential to emit minor levels of regulated air pollutants and will be subject to the Florida Department of Environmental Protection's (FDEP) minor source construction permitting requirements. Appropriate air pollutant emission controls/techniques, measurement, testing and recording of operational parameters will be performed to confirm the plant's minor source levels of regulated air pollutant emissions. These emissions will result in the plant having no adverse impact to human health and welfare.

1.1 Site Information

The proposed Plant will be located on a 1,163-acre parcel in the city of Fort Meade in Polk County, Florida (Plant Site). U.S. EcoGen has executed an Option to Purchase Agreement with the current land owner of the Plant Site and will exercise such purchase option at the construction finance closing of the Plant. Figure 1-1 identifies the location of the Plant in relationship to U.S. Highway 17 and Fort Meade. Refer to Figure 1-2 for an aerial view of the proposed site boundary. Figure 1-3 shows a county map of Florida including the location of the proposed site in Polk County.

The Plant is located at the following coordinates:

- UTM: 24° 247'3.6" North & 81°49'27.6" West
- Latitude: 418,788 m Easting
- Longitude: 3,073,584 m Northing
- UTM Zone 17 & WGS 84 datum

The coordinates selected represent the center point of the proposed Plant location and not the center point of the Plant Site to be owned by U.S. EcoGen.

This site was selected based on a variety of factors including existing infrastructures, as well as new infrastructures being constructed in the vicinity of the site. Some of these critical infrastructures are listed below:

- Existing electrical transmission lines owned by Progress Energy Florida;

- Existing natural gas transmission facility;
- Close proximity to major roadways to allow fuel supply trucks easy access into and out of the proposed plant site;
- Zoning changes for industrial use are expected; and
- Located away from sensitive receptors such as hospitals, schools, nursing homes, and highly populated residential areas. The closest sensitive receptors are located in Fort Meade, Florida.

1.2 Regulatory Drivers – Permission to Construct the Plant

As discussed above, the Plant will have the potential to emit minor levels of regulated air pollutants. According to Florida's Administrative Code (F.A.C.) Chapter 62-4 "Permits", any stationary installation which will reasonably be expected to be a source of pollution shall not be operated, maintained, constructed, expanded, or modified without the appropriate and valid permits issued by the FDEP.

The Plant will also be subject to other requirements contained within FDEP's F.A.C. air quality regulations. These regulations impose specific requirements and standards for stationary sources of air pollutants. Detailed discussions of these regulations as they pertain to the air pollutant sources at the Plant are provided in Section 3.

F.A.C. 62-4.050 "Procedures to Obtain Permits and Other Authorizations; Applications" states that any person that wishes to apply for a permit with the FDEP should apply on state forms and include any additional information requested by the Department. According to F.A.C. 62-4.210 "Construction Permits", applicants applying for a construction permit shall submit the following:

- Completed application forms – **Refer to Section 8.**
- Engineering report including:
  - Plant description and operations – **Refer to Section 2;**
  - Types and quantities of all air pollutants to be generated – **Refer to Section 2;**

- Proposed air pollutant technologies and techniques – **Refer to Section 2**;
- Objectives of air pollutant control technologies and techniques – **Refer to Section 2**;
- Design criteria on which control technologies and techniques are based – **Refer to Section 2**; and
- Other information deemed relevant – **Refer to Sections 1 through 8**.

- Owner's written guarantee to meet design criteria – **Refer to Section 1.3 and signed application form in Section 8**.

The information required, as listed above, is provided in this application request for a minor source construction permit.

1.3 Application Requirements – Construction Application and Instructions

As stated in F.A.C. 62-4.050, procedures to obtain permits must also meet the following requirements:

- Any person desiring to obtain a permit from the FDEP shall apply on forms prescribed by the FDEP. **Refer to Section 8 of this application request for the completed FDEP construction forms**;
- All applications and supporting documents shall be filed in quadruplicate with the FDEP. **U.S. EcoGen is providing four (4) copies of this application request to the FDEP**;
- All applications for a Department permit shall be certified by a certified professional engineer registered in the State of Florida. **Refer to Section 8 of this request for the required certification**;
- Emission units that are not subject to Prevention of Significant Deterioration (PSD) or Nonattainment Area review and do not currently have an operating permit are required to pay a processing fee. This processing fee is based on the potential emissions in tons per year.

The proposed Plant will have four emission groups that have the potential to emit regulated air pollutants. The appropriate fee for each of these groups is defined below based on the fee structure contained in F.A.C. Chapter 62-4.050(4)(a)(2).

Emission Unit	Potential Emissions	Fee
EU-001 – Fuel Receiving, Handling, Storage and Processing	> 25 tpy and < 50 tpy	$2,000
EU-002 – Power Island	>100 tpy	$5,000
EU-003 – Ash Handling, Storage and Shipment*	< 5 tpy	$250
EU-004 – Emergency Support Equipment*	< 5 tpy	$250
All Emission Units	–	**$7,500**

* Note: Under 62-210.300 "Permit Required", Subsection 3 contains specific exemptions from the requirement to obtain an air construction permit. EU-003 meets the exemption under (3)(b) "Generic and Temporary Exemptions," and the emergency equipment under EU-004 meet the exemption under (3)(a)(35). U.S. EcoGen is providing information related to these exempt units to demonstrate the proposed Plant will be a minor stationary source. Thus, the appropriate fee has been included with this application request.

The resultant total fee for processing of this construction air permit application is $7,500. A check made payable to the FDEP for a sum of $7,500 has been included with this application. Refer to Appendix D.

1.4 F.A.C. 62-4.055 – Permit Processing

It is U.S. EcoGen's understanding that the Department shall review the permit application and request any necessary additional information within thirty (30) days after receiving the permit application and the appropriate processing fee. The applicant then has ninety (90) days to submit any additional information requested by the Department. Within thirty (30) days of receipt of additional information, the Department shall review the information and may only request information needed to clarify the additional information or to answer any new questions related directly to the additional information.

Permits shall be approved or denied within ninety (90) days of receipt of the original application, the last item of timely requested material, or the applicant's written request to begin processing the application, whichever occurs last. The final construction permit may contain conditions and an expiration date. Once the permit is issued, the permittee is allowed a specific period of time to construct, operate and test to determine compliance.

U.S. EcoGen will work with the FDEP to develop a construction permit in a timely manner. A pre-application meeting was held with the FDEP on March 7, 2012 to discuss the proposed project and the applicable state and federal air pollution requirements.

1.5 Request for Construction Permit Issuance

U.S. EcoGen is hereby requesting that the FDEP issue a construction permit to allow for construction of the air pollutant emitting units associated with the proposed Plant. It is U.S. EcoGen's understanding that as defined in F.A.C. Chapter 62-210.200(94), construction is defined as:

> *"The act of performing on-site fabrication, erection, installation, or modification of an emission unit or facility of a permanent nature, including installation of foundations or building supports; laying of underground pipe work or electrical conduit; and fabrication or installation of permanent storage structures, component parts of an emissions unit or facility, associated support equipment, or utility connections. Land clearing and other site preparation activities are not a part of the construction activities."*

U.S. EcoGen understands based on the definition of "Construction" contained in Chapter 62-210.200(94) that it is not allowed to perform any on-site fabrication, erection, installation of an emission unit or facility of a permanent nature, including installation of foundations or building supports, laying of underground pipe work or electric conduit, and fabrication or installation of permanent storage structures, component parts of an emission unit, associated support equipment, or utility connection. U.S. EcoGen, however, is allowed to perform land clearing and other site preparation activities.

A separate application will be submitted by U.S. EcoGen for a Title V operating permit after commencement of operation of the Plant.

The following individual will be the primary contact for answering any questions the FDEP may have related to the application request for construction:

Contact Name: Mr. Steve Frey
Phone Number: (847) 517-4062
Email: steve.frey@arcadis-us.com

It is anticipated that U.S. EcoGen will initiate construction of the project in the summer/fall of 2012 and begin operation during 2014. U.S. EcoGen hereby agrees as part of the construction issuance process to meet the design criteria as accepted by the FDEP and to abide by Chapter 403, F.S. and the rules of FDEP regarding the quantities and types of materials to be discharged from the installation of the Plant.

1.6 Exempt from Permitting Requirements

The Plant will contain operations, equipment and building structures that are exempt from the FDEP air permitting requirements. F.A.C. Chapter 62-4.040 stipulates the following for permit exemptions:

"(1) The following installations are exempted from the permit requirements of this chapter. The following exemptions do not relieve any installation from any other requirements of Chapter 403, F.S., or rules of the Department. Other installations may be exempted under other chapters of Title 62.

(a) Structural changes which will not change the quality, nature or quantity of air and water contaminant emissions or discharges or which will not cause pollution.

(b) Any existing or proposed installation which the Department shall determine does not or will not cause the issuance of air or water contaminants in sufficient quantity, with respect to its character, quality or content, and the circumstances surrounding its location, use and operation, as to contribute significantly to the pollution problems within the State, so that the regulation thereof is not reasonably justified. Such a determination is agency action and is subject to Chapter 120, F.S. Such determination shall be made in writing and filed by the Department as a public record. Such

determination may be revoked if the installation is substantially modified or the basis for the exemption is determined to be materially incorrect."

The following items related to the Plant meet the exemption provisions and do not have the potential to cause pollution:

- Main Step-Up Transformer;
- Feedwater Heaters (steam exchange);
- Plant PDC;
- Remote Operated Gate;
- Unit Aux Transformer;
- Service/Fire Water Tank;
- Demin Water Tank;
- Administrative Building;
- Demin Water Trailer Pad;
- Fire Pump Enclosure;
- Warehouse;
- Control Room;
- Switchyard; and
- Crane Pad.

Chapter 62-210.300 also contains specific exemptions for equipment not requiring an air construction permit. The specific list of exemptions is found in Subsections (3)(a) "Categorical and Conditional Exemptions" and (3)(b) "Generic and Temporary Exemptions." The following equipment being proposed by U.S. EcoGen has been included in this application to ensure minor source status, however these pieces of equipment also satisfy the exemption criteria.

- Emergency Support Equipment (EU-004) – exempt per (3)(a)(35); and
- Ash Handling System (EU-003) – exempt per (3)(b).

1.7 Florida's Renewable Energy Targets

The Florida Senate and House of Representatives recently passed legislation which would establish additional requirements and incentives for utilities to

purchase renewable energy through the existing Standard Offer Contract Process. The following excerpt from the new legislation further describes the intent of the Florida Legislature:

- *366.91 Renewable Energy.-*

  (1) The Legislature finds that it is in the public interest to promote the development of renewable energy resources in this state. Renewable energy resources have the potential to help diversify fuel types to meet Florida's growing dependency on natural gas for electric production, minimize the volatility of fuel costs, encourage investment within the state, improve environmental conditions, and make Florida a leader in new and innovative technologies.

The Plant being proposed by U.S. EcoGen is being constructed to provide home grown renewable electrical energy to Progress Energy Florida to help meet their Renewable Energy Targets for the State of Florida.

1.8 Florida Power Plant Siting Act

The Power Plant Siting Act (PPSA) is the State of Florida's process for the licensing of large power plants. A certification constitutes the sole license of the state and any agency as to the approval of the location of the site and any associated facility. The PPSA provides for certification of any electric power plant which generates 75 MW or more in capacity, and was constructed after October 1, 1973.

The Plant being proposed by U.S. EcoGen will have a gross nominal 63-MW capacity, which is below the 75 MW referenced above. As a result, the Plant does not trigger the licensing requirements under the PPSA.

1.9 Contents of This Application Request

To assist the FDEP in approval and issuance of a construction permit, the following information is provided in this application request:

- **Section 2: Description of Proposed Plant** – This section contains a description of the process equipment, a description of control technologies and methods to be used, a description of the methods used to estimate the potential emissions of regulated air pollutants, and

tables summarizing the estimated potential to emit (PTE) regulated air pollutant emission rates;

- **Section 3: Regulatory Applicability** – This section discusses the pertinent federal and state air pollution control regulations that may be applicable to the proposed Plant. This section also provides a PSD applicability determination;

- **Section 4: Methods of Compliance** – This section discusses the various compliance methods used to show compliance with the applicable state and federal rules;

- **Section 5: Florida Department of Environmental Protection Requirements** – This section discusses the Department requirements pertaining to the issuance or denial of a permit;

- **Section 6: Permit Support Information** – This section provides information to support preparation of the FDEP-issued construction permit and technical support document;

- **Section 7: Air Quality Impact Evaluation** – Included in this section are the results of a voluntary air quality impact evaluation performed in support of the Plant. The results demonstrate that emissions of regulated criteria air pollutants from the Plant will not cause or contribute to an exceedance of a National Ambient Air Quality Standard (NAAQS);

- **Section 8: Application Forms** – This section provides a list of the application forms required by FDEP;

- **Appendix A: FDEP Application Forms** – Appendix A includes the appropriate completed FDEP application forms required for a construction permit;

- **Appendix B: Air Dispersion Modeling Protocol and FDEP Acceptance** – Appendix B includes the Air Dispersion Modeling Protocol, which contains the methods used to perform the voluntary air quality impact evaluation. The Protocol was submitted to the FDEP on March 12, 2012 and approved by the FDEP on March 21, 2012. The

email indicating FDEP's acceptance of the protocol is included in Appendix B;

- **Appendix C: Compact Discs (CDs) Containing:**
  1) **Application Document in PDF**; and
  2) **Air Dispersion Modeling Files**; and
- **Appendix D: Application Fee** – Appendix D contains a check in the amount of $7,500, payable to the FDEP, to cover the application fee.

2. Description of Proposed Plant

U.S. EcoGen is proposing the construction of a 63-MW clean woody biomass electrical generating facility in Polk County, Florida. The plant will consist of four (4) specific process areas:

- Fuel (i.e., clean woody biomass) receiving, handling, storage and processing;
- Power Island including a bubbling fluidized bed (BFB) boiler and steam turbine/generator;
- Ash (i.e., fly and bottom) handling, storage and shipment; and
- Emergency support equipment.

The process areas noted above will have the potential to emit minor levels of regulated air pollutants and will be subject to the FDEP's minor source construction permitting requirements. Proven and highly efficient air pollutant emission control technologies and techniques will be utilized to minimize potential air emissions. Continuous emission measuring, stack and material testing, as well as recording of operational parameters will also be performed, as appropriate, to confirm the plant's minor source levels of regulated air pollutant emissions. These emissions will result in the Plant having no adverse impact to human health and welfare.

To support the conclusion that no adverse impacts will occur to human health and welfare, U.S. EcoGen has conducted a voluntary air quality impact evaluation for potential emissions of regulated air pollutants from the Plant. The results of that evaluation, including a demonstration of compliance with the National Ambient Air Quality Standards is included in Section 7 of this minor source construction permit application.

The general configuration of the Plant is provided in Figure 2-1. Generic process flow diagrams depicting the equipment associated with each of the four (4) process areas, as well as the regulated air pollutants potentially emitted from each process area are provided in Figures 2-5 through 2-12.

This section contains a discussion of the process equipment, a description of the air pollution control technologies / management practices to be used, the methods used to estimate the potential (limited) emissions of regulated air pollutants, and tables summarizing the estimates of these regulated air pollutant emission rates. Tables 2-1A and 2-1B identify the initial list of equipment with the potential to emit regulated air pollutants, including stack information and natural gas combustion devices. Summaries of project related estimated emissions of regulated air pollutants, including criteria air pollutants, hazardous air pollutants (HAPs) and greenhouse gases (GHG), are provided in Tables 2-2 and 2-14, respectively. As shown in these tables, the proposed Plant is classified as a minor stationary source of regulated air pollutants as defined under state and federal air regulations.

conservatively estimate emissions of regulated air pollutants from the proposed Plant. As part of the emission estimation process, U.S. EcoGen obtained confirmation from the boiler vendor selected for fabrication of the BFB boiler on their commitment to specific air pollutant emission levels for the proposed BFB boiler. Potential HAP emission rates were obtained from U.S. EPA's database that was used to develop the original boiler Maximum Achievable Control Technology (MACT) standards. This database contains stack testing results for various boilers, fuel combusted and specific regulated HAP tested emission rates. Emission estimates for the fuel receiving, handling and storage operations, ash handling and storage operations and emergency support equipment were based on a) U.S. EPA established emission factors and methodologies; b) vendor estimates; and c) state/federal emission standards.

For purposes of this application, any reference to particulate matter (PM) also includes particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers (PM_{10}) and particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$).

Provided below is a discussion on each process area to be preformed within the Plant. To assist FDEP in their development of the Plant's construction permit, emission identification numbers have been included that follow the numbering scheme typically employed by the FDEP in their construction permits.

2.1. Fuel Receiving, Handling, Storage and Processing Area

The fuel receiving, handling, storage and processing area is being designed to accommodate primarily woody biomass in the form of pre-processed chips and logs. The pre-processed chipped wood storage area is being designed to accommodate approximately 10-days of BFB boiler fuel. The log storage area is being designed to handle between 10 and 20 days of BFB boiler fuel. U.S. EcoGen is proposing to utilize wood chips and logs primarily from eucalyptus trees. As part of the Plant's design, U.S. EcoGen's affiliate U.S. EcoGen Trading, LLC will be growing and harvesting eucalyptus trees (i.e., eucalyptus tree plantation) for use as the primary fuel source for the Plant's BFB boiler. This approach will result in the Plant being considered a "closed-loop" design. This means that the BFB boiler associated with the Plant will utilize eucalyptus trees grown and harvested in close proximity to the Plant. This approach will 1) ensure the Plant has a consistent supply of biomass fuel at a competitive price and 2) minimize cutting and processing of trees in central Florida to support this project. Simple process flow diagrams are provided in Figures 2-6, 2-7 and 2-9. It should be noted that the equipment type (including storage areas) and locations are being provided for information purposes only and are subject to change pending final engineering. The equipment type (i.e., conveyor, drop points, storage piles) and location are intended to represent the greatest likelihood for potential emissions of a regulated air pollutant. Thus, the application is conservative in that the actual configuration should result in a lower potential to emit than what has been conservatively assumed in the application.

During initial startup of the Plant, U.S. EcoGen will rely on clean woody biomass from local waste (i.e., clean and non-contaminated) wood sources, including but not limited to forest residue, commercial tree trimming, whole tree chips and clean waste wood. These sources of woody biomass will be utilized until the eucalyptus tree plantations are capable of producing 100% of the fuel supply for the Plant. The use of other wood sources prior to use of the plantation wood is classified as a "bridge biomass fuel." The eucalyptus tree plantation is anticipated to reach maturity in approximately two (2) years after initial planting.

2.1.1 Chipped Wood Handling

As shown in Figure 2-7, woody biomass in the form of pre-processed chips will be brought to the site in trucks. The trucks will enter most likely on the south side of the Plant and will proceed to the scale station for weighing. The trucks will then proceed to the truck dumping stations where the contents (i.e. chipped biomass) of the truck will be emptied into above ground receiving hoppers. Receiving hoppers that can be accessed by material handling equipment will also be installed as part of the material handling operations. The primary source of woody biomass to be received by the Plant will be chipped. Figure 2-2 provides a photograph of a representative fuel receiving operation.

The contents of chipped woody biomass emptied into the receiving hoppers will be sent through a covered conveyor system (certain portions of the conveyor system will be open to allow for material inspections and removal on unwanted materials) to the primary wood storage area. Mechanical means (i.e., front end loaders) will be used to groom the chipped wood pile and to move chipped wood to the reclaim areas. The initial estimate of the handling capacity of the open bulk chipped wood storage area has been determined to be approximately 19,000 tons.

Partially covered (i.e., top of conveyor will be equipped with a cover to protect chipped material from exposure to rain; cover will not totally enclose the conveyor system) conveyor systems will also be utilized to transfer materials to and from the storage areas and to the boiler building for combustion in the BFB boiler. Small portions of the conveyor system will not be covered to allow for inspection and removal of non-acceptable woody biomass by plant personnel. Fuel bins will be utilized to store the woody biomass prior to combustion and will be equipped with screw feeders to manage wood chip discharge from these bins prior to combustion in the BFB boiler. Transfer points between conveyor systems will utilize an equipment design that minimizes exposure of the woody biomass to wind that may be present at the Plant.

Also associated with this process area will be a metal magnet detection system, enclosed hog and partially enclosed screen, and reclaim feeders. Refer to Table 2-1A for a listing of emissions sources associated with the Plant. Table 2-1B provides a listing of the type of exhaust discharge for each of these emission sources. Figure 2-7 provides a picture of a

representative fuel conveyance system with covered conveyors and transfer points. The conveyor drop points to the storage pile will not be enclosed; however, they will be designed to minimize excessive dust formation.

2.1.2 Log Wood Handling

The Plant will also be designed to accommodate eucalyptus tree logs. Refer to Figure 2-1 which depicts the preliminary location and layout of the log storage area. The log storage area will contain various piles where logs will be stored in a vertical fashion.

Logs will be brought to the Plant via trucks, which will enter the property on the south boundary. Trucks will be weighed and then will proceed to the log storage area. Once trucks enter the log storage area, the roadway will become unpaved. A majority of the Plant roadway will be paved in order to handle chipped/log trucks entering the Plant, as well as trucks providing materials to support the Power Island (i.e., aqueous ammonia, BFB boiler ash).

Logs will be removed from the trucks by equipment designed to pick up the logs from the truck and place them on the log storage piles. This equipment will also be used to take logs from the log pile and place them on trucks that will transport the logs to the log loading deck. As show in Figure 2-6, logs will be placed on the deck and conveyed to a log chipper (i.e., electrically driven) that will cut the logs into chips. The chipper will be located in an enclosed structure. Chipped materials will leave the enclosure via a conveyor system that will be connected to the BFB boiler fuel feed bins.

2.1.3 Operational Procedures for Wood Handling

Operational procedures to minimize spontaneous combustion from storage of the woody biomass materials are being incorporated into the final design of the Plant. These procedures include the following:

1. The facility will contact the local fire marshal to develop a fire management plan. The plan will be maintained onsite, and will include:
    a. Requirements to train facility personnel to identify potential fire hazards and respond to incipient fires; and
    b. Requirements to install and maintain fire response equipment for personnel use.
2. Plant personnel will conduct daily observations of the woody biomass storage areas (i.e., chipped and logs) to identify potential fire hazards;
3. Incoming unprocessed materials will be stored in areas with a clearance between each storage area;

4. Mixing of chipped materials will be performed at the site. However, the stacking/reclaiming equipment design will maximize the removal of older chipped material in order to minimize the stacking of newer chipped material on top of older chipped material;
5. Storage sites shall be level and on firm ground to avoid potential leaching of the pile materials to the subsurface;
6. Concentrations of fine wood materials during pile build-up will be minimized; and
7. Chipped wood pile compaction will be minimized.

The fuel receiving, handling, storage and processing system has been identified as air emission group EU-001. A description of the fuels to be handled is provided in Section 2.2.4.

2.1.4 Potential Air Pollutant Emission Sources

Since the fuel handling operations will involve solid type materials, potential particulate matter (PM) emissions may occur from a) unloading of chipped woody biomass from the trucks; b) transferring of the chipped material from one conveyor to another; c) dropping of the chipped materials from the conveyor system to the non-covered storage piles; d) moving the chipped materials by front end loaders to reclaim areas; e) fugitive dust from vehicle traffic on the plant roads (i.e., paved and unpaved); and f) wind erosion from the chipped woody biomass storage area. It is important to note that the conveyors and conveyor transfer drop points associated with this process area will be covered to the extent physically possible. Potential PM emissions from the chipped/log storage areas will be minimal based on the moisture content of the materials. PM emissions from the storage areas (i.e., chipped and log) and equipment to be utilized to place and remove these materials from this storage area will also be negligible due to the use of larger sized pieces of materials, high moisture content of the raw materials and low speed of the vehicles moving the materials.

The log storage area will have minimal emissions of PM during the actual storage. Emissions of PM may occur from the grappling equipment traveling in and around the log storage area as it places and removes logs within this area. These emissions would occur from this equipment moving on the unpaved roadways. Emissions of PM should be minimal; however, Table 2-7A provides an estimate of these potential emissions. Since the equipment is considered mobile equipment and not stationary, any emissions from the combustion of fuel in the equipment's engine were not quantified; these combustion related emissions should not be significant.

Another potential source of PM emissions will be from the log chipper. Since chipping will be done in an enclosed area, any emissions of PM should be minimal. The chipper will be electrically driven, thus will not be a source of combustion related air pollutants.

Potential fugitive dust emission rates were estimated using the recommended methods developed by EPA (i.e., AP-42). Emission source types for this process include material handling (i.e., conveyor transfer points or material drop points), paved/unpaved road (truck traffic on these paved/unpaved roads), equipment (i.e., front end loaders / grappling equipment) utilized to maintain the storage areas, and wind erosion from the proposed outside storage areas. Details of the calculations and the resulting emission estimates can be found in Tables 2-6 through 2-10. Appropriate control efficiencies have been incorporated to reflect equipment installed to minimize exposure to wind during the actual transfer of material from one conveyor to another or dropping of the material onto a storage pile.

2.1.5 Air Pollution Control Devices/Technologies

All conveyor systems in the fuel receiving, handling, storage, and processing system will be designed to minimize fugitive dust emissions through use of best management practices, including partial covers of conveyors (except for inspection areas) and, to the extent physically possible, covered chutes for dropping fuel to and from conveyors (referred to as conveyor transfer points). It is important to note that specific sections of the conveyor system will be uncovered to allow for visual inspection of the chipped woody biomass. Foreign or unacceptable materials must be removed prior to being processed. One of these areas will occur immediately following the truck receiving operations on the primary conveyance system to the primary screen/hog operation. Dropping chipped woody biomass onto the outdoor storage area will be designed to minimize excessive dust. U.S. EcoGen will be implementing best management practices, which represent the best available control technology for minimizing PM emissions from the fuel (i.e., chipped/log) receiving, handling, storage and processing operations. Inherent to those best management practices will be the fuel itself. The chipped woody biomass to be utilized will be moist, in the normal range of 35 to 55%. The composition of the fuel itself inherently reduces the potential for PM emissions.

Table 6-7 provides a preliminary best management practices (BMP) plan for minimization of fugitive dust, pile management and fire prevention for the fuel handling system. This preliminary BMP plan will be updated by U.S. EcoGen as the engineering of the fuel receiving, handling, storage and processing emission unit (EU-001) is finalized.

U.S. EcoGen will use Best Management Practices (BMP) in its fuel receiving, handling, storage and processing areas in order to minimize particulate emissions from these operations. BMP for these areas as listed in Table 6-7 includes the following practices:

- Conveyor systems will be partially covered (except for a portion required to be open for visual inspection of woody biomass material) and associated drop points will be covered or partially covered to minimize exposure of the woody biomass to area winds;

- Drop points to chipped woody biomass storage areas will be designed to minimize the overall exposed (or exposed to atmosphere) drop height;
- Periodic equipment maintenance will be performed to maintain conveyor systems and associated drop point integrity. Appropriate plant records will be maintained on equipment maintenance performed;
- Fuel bins will be equipped with vent screens;
- Daily observations of the conveyor systems and associated drop point integrity to identify any equipment abnormalities;
- Plant personnel will be knowledgeable on identification of warning signs for potential equipment malfunction;
- Plant personnel will visually observe truck unloading operations, and if excessive fugitive dust is detected appropriate fugitive dust minimization techniques will be implemented. Plant personnel will be knowledgeable on procedures for defining and minimizing excessive dust from the truck unloading operations;
- All major roadways at the plant will be paved. Roadways surrounding the log storage area will be unpaved. Unpaved roadways will be maintained to minimize dust potential;
- Mud, dirt or similar debris will be removed promptly from the paved roads; and
- Plant personnel will be knowledgeable on what constitutes excessive dust on the paved roadways and will maintain the unpaved roadways.

2.1.6 Type of Release (Point or Fugitive)

The air emission groups associated with the Plant will have the potential to emit minor levels of regulated air pollutants. The release of these air pollutants will either occur as a fugitive or as a point source. A fugitive source is any type of emission release that does not pass through a stack, chimney, or equivalent type of opening. A point source release is a release that occurs from a stack, chimney, vent, or similar type of opening. The specific type of releases associated with the fuel receiving, handling, storage and processing emission group are identified below.

- Conveyor drop points and storage silos are considered point sources.
- Wind erosion off the storage area is considered fugitive.
- Utilization of equipment to move storage area material is considered fugitive.

2.1.7 Calculation of Air Pollutant Emission Basis and Supporting Documentation

Potential fugitive PM emission rates were estimated using the recommended methods developed by EPA (i.e., AP-42). Fugitive emission sources include material handling (i.e., conveyor transfer points or material drop points), paved/unpaved roads (i.e., truck traffic on these paved/unpaved roads), equipment (i.e., front end loaders) utilized to maintain the storage areas, and wind erosion from the proposed outside storage areas. Details of the calculations and the resulting emission estimates can be found in Tables 2-6 through 2-9.

2.1.8 Proposed Emission Monitoring and Compliance Methods

Emission monitoring and compliance requirements are imposed by state and federal air statutes, as well as by the FDEP to ensure compliance with state and federal air regulations. A summary of the emission monitors or appropriate compliance methods to be installed or used for each air emissions unit to assure requirements will be met are provided below. Refer to Section 4 for a detailed description of the emission limits and compliance methods being proposed by U.S. EcoGen for the Plant.

Best management practices (BMP) to be implemented include:

1) Periodic maintenance and visual emission (VE) observations;
2) Initial Method 9 VE observation of potential PM emission sources (truck receiving drop points, transfer points and vent screens) upon commencement of operation of the Plant; and
3) Annual VE observation of potential PM emission sources as defined above.

2.2. Power Island Process Area

U.S. EcoGen will be utilizing a bubbling fluidized bed (BFB) boiler. This type of boiler has been proven to be very efficient at combusting woody biomass. U.S. EcoGen proposes to fuel the new boiler with only clean woody biomass under normal operation. Natural gas will be used for startup, shutdown and bed stabilization of the boiler only. Refer to Section 2.2.4 for a discussion on the types of fuels to be combusted in the proposed BFB boiler. As discussed in this section, the BFB boiler will be capable of accommodating the following: 1) natural gas for boiler startup, shutdown and boiler bed stabilization; and 2) woody biomass for normal operation. The boiler is not being designed to combust natural gas as a secondary fuel for power generation. The boiler heat input capacity for natural gas fuel will be rated at 160 million British thermal units per hour (MMBtu/hr). The anticipated maximum design heat input of the boiler while combusting woody biomass at 50% moisture will be 740 MMBtu/hr. U.S. EcoGen is requesting that the maximum heat input be established at 740 MMBtu/hr (annual average) for the BFB boiler. This rate is reflected in the draft permit conditions provided in Section 6 of this application.

BFB boilers are capable of more efficiently combusting woody biomass than conventional types of boilers. A fluid-like mixture of bed material (such as sand) mixed with the biomass fuel is suspended in the BFB boiler's combustion chamber by a turbulent upward air flow. The turbulent mixing provides for greater chemical reaction efficiency in the BFB boiler. A diagram of a representative BFB boiler can be found in Figures 2-3 and 2-4.

Combustion of woody biomass (normal operation) and natural gas (startup, shutdown and bed stabilization operation only) in the proposed BFB boiler produces the bulk of the potential to emit regulated air pollutant emissions from the Plant. A discussion of the control technologies and methods to be used, along with the related estimated air pollutant emission rates is provided below in Subsections 2.2.1 and 2.2.3, respectively.

A simplified process flow diagram indicating the main equipment, control technologies, and material flows for systems based on a BFB boiler can be found in Figure 2-5. As depicted in these figures, natural gas will be provided via pipeline, and woody biomass will be provided by wood suppliers via incoming trucks and stored on-site. A process flow diagram of the U.S. EcoGen Polk Power Island, including identification of the regulated air pollutants potentially emitted from this process area, can be found in Figure 2-10.

Also as part of the Power Island process area, U.S. EcoGen will be installing a sand material silo with either a breather vent or vent filter to store the sand required to support the proposed BFB boiler. Potential emissions of PM have been determined to be minimal. The silo anticipated to be installed is as follows:

- Sand storage silo with breather vent or vent filter to support boiler operation.

To further support the Power Island, the Plant will utilize an air cooled condenser and an auxiliary cooling tower.

- Cooling of spent steam in the steam turbine power system will be provided by an air cooled condenser unit. Because no water is required to cool the steam and no particulate emissions result from cooling tower drift, this unit will provide superior environmental performance to traditional condensers. The condensed steam will be recycled through the steam generation system in a closed loop operation further minimizing the requirement for water from the environment. The air cooled condenser does not have the potential to emit regulated air pollutants.

- The auxiliary cooling tower will provide cooling for various components, including turbine lube oil, BFB lube oil, and generator coolers. It will most likely be a galvanized induced draft cooling tower and will utilize city water as its water source. The auxiliary cooling tower has the potential to emit a small amount of PM in the form of mist, which will be minimized by the incorporation of a drift eliminator.

The Power Island (bubbling fluidized bed (BFB) boiler) has been identified as air emission group EU-002.

2.2.1. Air Pollution Control Devices/Technologies

The estimated PTE of regulated criteria air pollutant emission rates are calculated in Table 2-3 for the BFB boiler. The emission factors used to estimate these potential emissions are summarized in Table 2-4. The operating scenarios defined for the boiler are based on the maximum number of hours which the boiler could operate annually in startup, shutdown and bed stabilization modes burning natural gas and normal mode burning clean woody biomass. To allow for testing of the BFB boiler during the first year of operation, the potential hours of operation on natural gas for startup, shutdown and bed stabilization were estimated at the worst case potential rate of 8,760 hours. Estimated emission rates for the boiler combusting clean woody biomass were based on the anticipated maximum design heat input of the boiler (i.e., 740 MMBtu/hr at 50% moisture, annual average) and maximum operating hours per year (i.e., 8,760 hrs/yr). It should also be noted that maximum short and long term emission estimates were based on the maximum design heat input of 740 MMBtu/hr at 50% moisture. Table 2-5 provides a summary of predicted emission rates during startup events.

Potential emissions of regulated HAPs, as defined under Section 112 (b) of the Clean Air Act, due to combustion in the BFB boiler were also estimated. As indicated in Table 2-15, potential HAP emissions from combustion of natural gas were based on AP-42 emission factors. Estimated emission rates were based on the maximum design heat input (i.e., 160 MMBtu/hr) and maximum operating hours per year (i.e., 8,760) while combusting natural gas.

The calculated potential HAP emission rates due to woody biomass combustion are presented in Table 2-16. Potential HAP emissions from clean woody biomass combustion were based on a combination of 1) the boiler MACT database, 2) emission factors customized for fluidized bed boilers from the AP-42 backup database, 3) standard EPA recommended AP-42 emission factors and 4) customized emission factors based on analyses of representative fuel samples. As recommended to the Maine Air Toxics Initiative (MATI) in a November 1, 2005 memo from David Dixon, the acrolein emission factor developed by the National Council for Air and Stream Improvement (NCASI) for wood-fired boilers was used in lieu of the AP-42 emission factor.

The proposed BFB boiler will utilize proven and efficient control devices/techniques to minimize potential emissions of regulated air pollutants. A discussion of these devices/techniques, along with the air pollutant being controlled is provided below.

2.2.1.1 Fabric Filter (Baghouse): Particulate Emissions Control

Emissions of particulate matter (PM) will be controlled by a fabric filter commonly referred to as a baghouse. Modern baghouses can provide a high level of control efficiency in the reduction of particulate emissions. The baghouse to be utilized will be a pulse jet design with a fiberglass/PTEE membrane for the filter media.

Emission factors for uncontrolled emissions of several trace elements (metals) were developed based on testing a sample of representative woody biomass fuel. It was assumed that the baghouse would provide control for emissions of these compounds as they are bound in the particulate fraction of the flue gas.

2.2.1.2 Spray Dryer Absorber (SDA) or Multilevel / Multipoint Dry Sorbent Injection (DSI) and Multicylone System: Acid Gas Control

The BFB boiler vendor has informed U.S. EcoGen that the efficient combustion nature of the BFB when combusting wood, and inclusion of a baghouse downstream of the BFB boiler, may be sufficient to minimize the formation of HCl emissions to less than 10 tons/year. Initial indications are that the fly ash to be collected by the BFB baghouse will coat the bags contained within the baghouse and may be a good adsorbent of chlorine.

To further ensure that the BFB boiler will result in HCl emissions that will be below the major source threshold level of 10 tons/year, U.S. EcoGen will be installing a spray dryer absorber (SDA) system or multilevel / multipoint dry sorbent injection (DSI) and multicyclone system which may, if necessary be used to meet the HCl limit.

The SDA is a versatile semi-dry absorption process developed to remove acidic pollutants, heavy metals, and dust from flue gases. The process basically consists of an absorber chamber, a rotary atomizer, a flue gas disperser, a downstream dust collection, and an absorbent feed preparation system. Refer to Figure 2-5A for a drawing of a typical SDA system.

As the hot, untreated flue gas is introduced into the absorber module via the flue gas dispersers for optimum flue gas distribution, it comes into contact with a highly reactive alkaline absorbent (i.e., lime slurry and recycled fly ash) sprayed by the rotary atomizer. The alkaline absorbent neutralizes the absorbed acid (HCl). The desired reaction product is formed while water is evaporated simultaneously. A fraction of the dried end-product drops to the bottom of the absorber chamber and is discharged, while the main part is taken to the downstream dust collector with the cooled flue gas, and removed from the now clean gas. The clean gas passes from the dust collector to the stack without re-heating.

Alternatively, U.S. EcoGen may use a multilevel/multipoint dry sorbent injection (DSI) and multicyclone system for reducing HCl emissions. This system would involve finely milled

sodium bicarbonate multi-level injection after the economizer and just before the baghouse, with addition of multicyclone separator prior to baghouse inlet.

2.2.1.3 Selective Catalytic Reduction (SCR): Nitrogen Oxide (NO_x) Control

A selective catalytic reduction (SCR) system will be utilized for controlling NO_x emissions from the BFB boiler. The SCR process chemically reduces the NO_x molecule into molecular nitrogen and water vapor. A nitrogen-based reactant such as ammonia or urea is typically injected into the ductwork, downstream of the combustion unit. The waste gas mixes with the reagent and enters a reactor module containing a catalyst. The hot flue gas reagent diffuses through the catalyst. The reagent reacts selectively with the NO_x within a specific temperature range and in the presence of the catalyst and oxygen. For this Plant, aqueous ammonia (19% concentration level or less) will be used as the reactant and will be stored onsite in a 10,000 gallon pressurized horizontal tank. Refer to Figure 2-5A for a drawing of a typical SCR system.

2.2.1.4 Good Combustion Practices: Carbon Monoxide and Volatile Organic Compound Control

Carbon monoxide (CO), volatile organic compounds (VOCs) and some regulated HAPs are emitted from combustion sources as a result of incomplete combustion of fuel. Emissions of these air pollutants may be very effectively controlled by maintaining good combustion practices. For example, ensuring that sufficient temperature and oxygen levels are maintained in the BFB boiler will prevent the formation of incomplete combustion products such as CO, VOC and some types of HAPs.

The design of BFB boilers greatly supports good combustion practices relative to older, more traditional boiler designs. Addition of sand to the combustion chamber helps maintain high temperatures, and the flow of air which creates the fluidized bed helps maintain sufficient oxygen levels to promote complete combustion.

2.2.1.5 Drift Eliminator: Particulate Emissions Control

The proposed auxiliary cooling tower will incorporate a drift eliminator to minimize PM in the form of mist from the cooling tower. The drift eliminator can eliminate drift to approximately 0.05% of circulating water.

2.2.2. Type of Release (Point or Fugitive)

The air emission groups associated with the Plant will have the potential to emit minor levels of regulated air pollutants. The release of these air pollutants will either occur as a fugitive or as a point source. A fugitive source is any type of emission release that does not pass through a stack, chimney, or equivalent type of opening. A point source release is a release that occurs from a stack, chimney, vent, or similar type of opening. The

specific type of releases associated with the power island emissions group are identified below:

- Point Source. One stack for the BFB boiler. Stack discharge height of approximately 180 feet. Stack discharge diameter of approximately 11 feet.
- Sand silo with breather vent is considered a point source.
- Auxiliary cooling tower is considered a point source..

2.2.3. Calculation of Air Pollutant Emission Basis and Supporting Documentation

Emissions of regulated criteria air pollutants were based on engineering design, estimates, regulatory limits or EPA emission factors. Emissions of regulated criteria air pollutants from natural gas combustion in the BFB boiler were estimated using the recommended methods developed by EPA (i.e., AP-42). Details of the calculations and the resulting emission estimates for the BFB boiler can be found in Tables 2-3 and 2-4. Emission estimates for the Sand Silo can be found in Table 2-9A, while emission estimates for the Cooling Tower can be found in Table 2-13.

2.2.4. BFB Boiler Fuels

The proposed BFB boiler will be designed to accommodate natural gas (i.e., startup/boiler stabilization only), which is defined as a fossil fuel and woody biomass, which is defined as a renewable energy fuel. Specifics associated with the fuels to be combusted in the BFB boiler are noted below.

- **Natural Gas Fuel Combustion**

The boiler will be designed to accommodate natural gas fuel for boiler startup, shutdown and boiler bed stabilization only. The burners that will only combust natural gas within this boiler will be designed to have a maximum heat input of 160 MMBtu/hr. This maximum heat input rating will result in the boiler **not being classified** as one of the twenty-eight designed source categories under the PSD regulations (i.e., F.A.C. 62-212.400(3)(b)). The source categories contained in that PSD listing which involve fossil fuel combustion are provided below:

- Fossil-fuel boilers (or combustion thereof) totaling more than 250 million British thermal units per hour heat input; and
- Fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input.

- **Woody Biomass**

As discussed throughout this application the BFB boiler will be used to combust clean woody biomass, a source of renewable energy. A general description of the woody biomass to be utilized is provided below.

- **Description of Woody Biomass to be Utilized**

U.S. EcoGen will be using clean woody biomass in the proposed BFB boiler. The clean wood will primarily be chipped eucalyptus trees from a reasonably close tree plantation. U.S. EcoGen will also initially utilize local waste wood sources, including but not limited to forest products residue, commercial tree trimmings, whole tree chips, and clean waste wood. These sources of wood will be utilized as a "bridge fuel" until the trees in the plantation are ready for harvesting.

2.2.5. Proposed Emission Monitoring and Compliance Methods

Emission monitoring and compliance requirements are imposed by state and federal air statutes, as well as by the FDEP to ensure compliance with state and federal air regulations. A summary of the emission monitors or appropriate compliance methods to be installed or used for each air emissions unit to assure requirements will be met are provided below. Refer to Sections 4 and 6 for a detailed description of the emission limits and compliance methods being proposed by U.S. EcoGen for the Plant.

- Continuous emission monitor (CEM) for measuring NO_x emissions from the BFB boiler to comply with NSPS Db, acid rain provision, and for tracking NO_x pound per hour (12-month, rolled monthly) emissions from the BFB boiler.
- CEM for measuring CO emissions from the BFB boiler and for tracking CO pound per hour (12-month, rolled monthly) emissions from the BFB boiler.
- Continuous opacity monitor (COM) for measuring opacity from the BFB boiler to show compliance with NSPS Db and opacity limitations of 20%.
- CEM for measuring SO_2 emissions from the BFB boiler to comply with acid rain provisions and for tracking SO_2 pound per hour (12-month, rolled monthly) emissions from the BFB boiler.
- A diluent (O_2 or CO_2) monitor will also be installed.
- Good combustion practices and incorporation of a baghouse to be implemented for controlling $PM/PM_{10}/PM_{2.5}$ emissions from the BFB boiler. Initial compliance stack test to be used to ensure $PM/PM_{10}/PM_{2.5}$ emissions meet state/federal emission limits.
- Good combustion practices to be implemented for VOC emissions from the BFB boiler.

- A spray dryer absorber (SDA) will be used as needed to comply with a ton/year limit for hydrochloric acid from the BFB boiler. CEM or alternative method to be used to confirm tons/year rate.
- Good combustion practices will be followed during startup, shutdown and malfunctions.
- 40 CFR Part 75, Appendix F will be used to identify the heat input, expressed in MMBtu/hr during startup, shutdown and normal BFB operations.
- Initial stack tests for emissions of NH_3, CO, NO_x, PM/PM_{10}/$PM_{2.5}$, SO_2, THC and opacity from the BFB boiler.
- A device to continuously measure and record the pressure drop across each compartment of the BFB boiler baghouse.
- Operation of a bag leak detection system on the BFB boiler baghouse.
- Install, calibrate, operate and maintain a flow meter to measure and record the ammonia injection rate for the SCR system associated with the BFB boiler.

2.3. Ash Handling, Storage and Shipment Process Area

The combustion of biomass in the proposed BFB boiler will result in the formation of bottom ash and fly ash. The resultant amount of ash is a reflection of the non-combustibles in the fuel. Bottom ash will be in the form of large solid particles and will be removed from the boiler and stored in a metal container for future removal off-site. The fly ash consists of the particulates captured by the BFB boiler baghouse. An enclosed conveyor or similar system will be used to transport the fly ash from the baghouse to the fly ash storage silo. The storage silo will be equipped with a vent filter for minimizing any PM from the storage silo. The PM outlet concentration of the vent filter is rated at 0.01 grains per dry standard cubic feet. Fly ash from the storage silo will be sent to a truck loading operation for removal off-site. The conveyor system will be enclosed, and the chute used to dispense fly ash into the truck will be designed to minimize PM emissions.

Initial estimate of PM emissions from this process area (even without taking credit for PM removal by the fly ash storage silo vent filter) as discussed below is less than 1.0 tons/year. As stated in Section 1.0, this process area is considered exempt under F.A.C. Section 62-210.300(3)(b), since potential emissions are less than 5.0 tons per year. Emission estimates have been provided in this application to confirm minor source status of the Plant.

The ash handling, storage and shipment system has been identified as air emission group EU-003.

2.3.1. Potential Air Pollutant Emission Sources

A process flow diagram of the ash handling, storage, and shipment system is provided in Figures 2-8 and 2-11. This process area will involve the transfer of baghouse fly ash from the baghouse to the fly ash storage silo. A series of enclosed conveyors and transfer points will be utilized. The use of this type of equipment to transfer fly ash will result in minor emissions of PM.

It is important to note that the conveyance system associated with this process area will be enclosed. Emission estimates have been performed for the fly ash silo and truck loading operation since they reflect the only operations that have a potential to emit PM.

2.3.2. Air Pollution Control Devices/Technologies

The fly ash silo will be equipped with a vent filter for minimizing any fly ash dust that may result from loading fly ash into the silo. The vent filter will have a PM outlet rating of 0.01 grains per dry standard cubic foot. Appropriate techniques will also be utilized during truck loading operations to minimize PM emissions.

2.3.3. Type of Release (Point or Fugitive)

The air emission groups associated with the Plant will have the potential to emit minor levels of regulated air pollutants. The release of these air pollutants will either occur as a fugitive or as a point source. A fugitive source is any type of emission release that does not pass through a stack, chimney, or equivalent type of opening. A point source release is a release that occurs from a stack, chimney, vent, or similar type of opening.

- The fly ash storage silo with vent filter is considered a point source.
- The truck loading operation is considered a fugitive source.

2.3.4. Calculation of Air Pollutant Emission Basis and Supporting Documentation

Potential fugitive emission rates from the fly ash handling were estimated using the recommended methods developed by EPA (i.e., AP-42 emission estimation guidance document). Details of the calculations and the resulting emission estimates can be found in Table 2-9. Emission estimates for the fly ash storage silo can be found in Table 2-9A, while emission estimates for the truck loading operation can be found in Table 2-6.

2.3.5. Proposed Emission Monitoring and Compliance Methods

Emission monitoring and compliance requirements are imposed by state and federal air statutes, as well as by the FDEP to ensure compliance with state and federal air regulations. A summary of the emission monitors or appropriate compliance methods to

be installed or used for each air emissions unit to assure requirements will be met are provided below. Refer to Sections 4 and 6 for a detailed description of the emission limits and compliance methods being proposed by U.S. EcoGen for the Plant.

Best management practices (BMP) to be implemented, including:

1) Periodic maintenance and visual emission (VE) observations;
2) Initial Method 9 VE observation of the potential PM emission sources (fly ash silo and truck loading operations) within 180 days of commencement of operation of the equipment; and
3) Annual VE observation of the potential PM emission sources. A bag leak detection system will be installed and continuously operated.

2.4. Emergency Support Equipment Process Area

The proposed Plant will require an emergency generator and emergency fire water pump. These pieces of emergency equipment will be fueled with ultra low sulfur distillate fuel oil (diesel) and operate only a limited number of hours (250 hours per year or less) for testing purposes under normal conditions. A simplified process flow diagram of the emergency support equipment systems is provided in Figure 2-12.

The emergency fire water pump is considered exempt under F.A.C. Section 62-210.300(3)(a)(35). The fuel usage of this general purpose internal combustion engine will not exceed 3,100 gallons of diesel fuel. Emission estimates have been provided in this application to confirm minor source status of the proposed Plant.

A summary of the emergency equipment is provided below:

Emergency Generator

- Equipment Rating – 670 hp (500 kW);
- Type of Fuel – Low sulfur diesel fuel; and
- Fuel Storage – Engine is equipped with a 600 gallon (approximate) diesel fuel storage tank. Storage tank is equipped with an emergency pressure relief vent cap.

Emergency Fire Water Pump

- Equipment Rating – 200 hp (150 kW);
- Type of Fuel – Low sulfur diesel fuel; and
- Fuel Storage – Engine is equipped with a 200 gallon (approximate) diesel fuel storage tank. Storage tank is equipped with an emergency pressure relief vent cap.

The emergency support equipment has been identified as air emissions group EU-004.

2.4.1. Potential Air Pollutant Emission Sources

Potential regulated air pollutant emission rates were estimated using the emission standards imposed by NSPS Subpart IIII and the recommended methods contained in EPA's guidance document AP-42. Details of the calculations and the resulting emission estimates for the emergency generator and emergency fire water pump are provided in Table 2-11 and Table 2-12, respectively.

2.4.2. Air Pollution Control Devices/Technologies

The proposed emergency equipment will be designed to meet the strict emission limits imposed by NSPS Subpart IIII, as well as the applicable provisions of the area source rule for reciprocating internal combustion engines defined under MACT Subpart ZZZZ. In addition, ULSD fuel will be utilized, along with limited hours of operation (i.e., 250 hours per year or less). The fuel oil storage tanks will only be designed to store low volatility distillate fuel oil and will be equipped with a conservation vent.

2.4.3. Type of Release (Point or Fugitive)

The air emission groups associated with the proposed Plant will have the potential to emit minor levels of regulated air pollutants. The release of these air pollutants will either occur as a fugitive or as a point source. A fugitive source is any type of emission release that does not pass through a stack, chimney, or equivalent type of opening. A point source release is a release that occurs from a stack, chimney, vent, or similar type of opening.

The emergency equipment is considered a point source, with one stack for each emergency piece of equipment. Stack height and diameter are to be established by the engine manufacturer.

2.4.4. Calculation of Air Pollutant Emission Basis and Supporting Documentation

Potential emission rates from diesel fuel combustion were estimated using the appropriate limits found in NSPS Subpart IIII, recommended methods developed by EPA (i.e., AP-42), or engineering estimates provided by the vendor. Details of the calculations and the resulting emission estimates can be found in Tables 2-11, 2-11A and 2-12.

Emissions of regulated air pollutants (i.e., primarily VOCs) from the diesel fuel storage tanks have been assumed to be negligible based on the low volatility of the diesel fuel, fuel storage capacity and fuel throughput rate.

2.4.5. Proposed Emission Monitoring and Compliance Methods

Emission monitoring and compliance requirements are imposed by state and federal air statutes, as well as by the FDEP to ensure compliance with state and federal air regulations. A summary of the emission monitors or appropriate compliance methods to be installed or used for each air emissions unit to assure requirements will be met are provided below. Refer to Sections 4 and 6 for a detailed description of the emission limits and compliance methods being proposed by U.S. EcoGen for the Plant.

Best management practices to be implemented include limited hours of operation and compliance with applicable requirements within NSPS Subpart IIII and MACT Subpart ZZZZ.

3. Regulatory Applicability

The proposed Plant will be subject to FDEP's Florida Administrative Code (F.A.C.), which contains air quality regulations. These regulations impose permitting requirements and specific standards for expected air emissions. Detailed discussions of these regulations, which include state and federal provisions as they pertain to the Plant, are provided in the following section.

This section discusses the pertinent federal and state air pollution control regulations that may be applicable to the Plant. These types of regulations typically include:

- Requirements to obtain a construction permit prior to commencing construction;
- Emission limitations;
- Monitoring and testing requirements; and
- Recordkeeping and reporting requirements.

This section also includes a discussion on how the proposed Plant will comply with these applicable regulations.

The following sections are intended to provide the following:

- **Section 3.1. Air Quality Status** – This section identifies the current air quality status for Polk County, which depending on specific air quality designation status will dictate specific air permitting requirements that must be satisfied before a construction permit can be issued.

- **Section 3.2. Permitting Requirements** – This section identifies the permitting requirements required by federal and state regulations, including PSD applicability, which must be satisfied prior to construction permit issuance.

- **Section 3.3. State Requirements** – This section identifies the state air pollutant regulations. Table 3-4 lists the FDEP air regulations. Those regulations that have been deemed applicable to the Plant's emission sources have been highlighted. A discussion on how U.S. EcoGen will comply with these requirements is provided in the subsections of Section 3.3.

- **Section 3.4. Federal Requirements, Section 3.5. NSPS Requirements and Section 3.6. NESHAP Requirements** – These sections identify the federal air pollutant regulations. Included in these sections are tables listing the federal air regulations, including Table 3-1 which summarizes the federal air pollution regulations, Table 3-2a which lists the New Source Performance Standards (NSPS) and Table 3-3a which lists the National Emission Standards for Hazardous Air Pollutants (NESHAPs). Those regulations that have been deemed applicable to the Plant's emission sources have been highlighted in the tables. A discussion on how U.S. EcoGen will comply with these requirements is provided in the subsections of Sections 3.4, 3.5 and 3.6. Highlighted are only those regulations that impose emission standards or limits, establish monitoring and testing requirements or enforce other relevant requirements that are intended to protect human health and welfare. Applicable requirements that identify general administrative type requirements have not been identified.

3.1 Air Quality Status

The Plant will be located in Polk County, Florida. The current air quality status of the county is as follows:

AIR POLLUTANT	ATTAINMENT STATUS
Nitrogen Dioxides (NO_2)	Attainment
Sulfur Dioxide (SO_2)	Attainment
Particulate Matter less than 10 microns (PM_{10}) and 2.5 microns ($PM_{2.5}$)	Attainment
Carbon Monoxide (CO)	Attainment
Ozone (O_3)	Attainment
Lead (Pb)	Attainment

Since the Plant site area is classified as attainment for all regulated air pollutants, the proposed project would be governed by the regulations for attainment areas, as defined in the Florida rules. Attainment areas are areas defined by EPA as meeting the National Ambient Air Quality Standards (NAAQS), which were established to protect human health and welfare.

3.2 Permitting Requirements

This section identifies the permitting requirements required by state and federal regulations, including PSD applicability.

3.2.1 State Requirements

62-212.400 of the F.A.C. regulations includes PSD requirements. The requirements contained in 62-212.400 have adopted and incorporated the federal PSD requirements. The FDEP has not created any new PSD requirements nor have they modified the federal PSD requirements.

3.2.2 PSD Applicability

The PSD regulations specify that any **major** new stationary source within an air quality attainment area must undergo PSD review. A major source is defined as:

- Any source type in any of 28 designated industrial source categories (62-212.400(3)(b)) having potential emissions of 100 tons per year (tpy) or more. Refer to 62-210.200(195); or
- Any other source having potential emissions of 250 tpy or more of any pollutant regulated under the Clean Air Act. Refer to 62-210.200(195).

If the proposed project is one the 28 designated stationary sources specified in Table 3-1A, then it is subject to a PSD threshold limit of 100 tons per year. Any stationary source which is not one of the 28 designated source categories is subject to a PSD threshold of 250 tons per year or more of a regulated air pollutant.

Fossil fuel boilers which combust fossil fuels such as natural gas at a heat input rate of greater than 250 MMBtu/hr are one of the 28 designated source categories which are considered major sources under PSD regulations when potential emissions of any regulated criteria air pollutant from the source exceeds 100 tons per year. As discussed previously, the proposed Plant will not have equipment with capabilities exceeding 250 MMBtu/hr of fossil fuel heat input and as a result will not be classified as one of the 28 designated source categories.

Since the Plant is not one of the 28 designated source categories, the PSD applicability threshold is 250 tons/year of a listed criteria air pollutant. Based on the estimated regulated criteria air pollutant emission rates associated with the Plant (refer to Table 2-2), emissions of $PM/PM_{10}/PM_{2.5}$, NO_x, CO, SO_2 and VOC will not exceed the PSD major source applicability threshold of 250 tons/year. Consequently, the Plant will be classified as a minor source of regulated air pollutants and does not trigger applicability of the PSD regulations, as defined under F.A.C. 62-212.400.

3.3 Applicable State Requirements

Standards and limitations for visible and particulate matter emissions, sulfur emissions, organic material emissions, carbon monoxide emissions, and nitrogen oxide emissions are also contained in the state rules and regulations. These are discussed below, along with any emission standards or limitations contained in these rules that may apply to the sources associated with the proposed Plant. Table 3-4 provides a list of applicable and non-applicable state air pollution regulations.

3.3.1 Chapter 62-4 – Permits

The regulations contained in this part set forth the procedures on how to obtain a permit from the FDEP. This part also provides requirements and procedures for the issuance, denial, renewal, extension, transfer, modification, suspension and revocation of any permit required by the Department of Environmental Protection.

3.3.1.1 62-4.050 - Procedure to Obtain Permits and Other Authorizations; Applications

F.A.C. 62-4.050 "Procedures to Obtain Permits and Other Authorizations; Applications" states that any person who wishes to apply for a permit with the FDEP should apply on state forms and include any additional information requested by the Department.

This section requires that all applications for construction permits include a fee payable to the FDEP for processing of the application. This processing fee is based on the potential emissions in tons per year.

This section also states that in order to ensure the protection of public health, safety and welfare, any construction or operation of a potential source of pollution shall be in accordance with sound professional engineering practices pursuant to Chapter 471 of the Florida Statutes. All applications for a FDEP permit shall be certified by a professional engineer registered in the State of Florida. Documents submitted to the Department for public record shall be signed and sealed by the professional who approved them.

U.S. EcoGen as part of this application has addressed the requirements referenced above.

3.3.1.2 64-4.210 Construction Permits

According to F.A.C. 62-4.210 "Construction Permits", applicants applying for a construction permit shall submit the following:

- Completed application forms;
- Engineering report including:
  - Plant description and operations;
  - Types and quantities of all waste materials to be generated;
  - Proposed waste control facilities;
  - Treatment objectives;
  - Design criteria on which control facilities are based; and
  - Other information deemed relevant.
- Owner's written guarantee to meet design criteria.

U.S. EcoGen as part of this application has provided the information required by this subpart.

3.3.2 62-210 Stationary Sources – General Requirements

The Department of Environmental Protection adopted this chapter to establish general requirements for stationary sources of air pollutant emissions and definitions for use in this chapter. This chapter provides criteria for determining the need for an owner or operator to obtain

Department authorization, by individual air permit, or by air general permit, to conduct certain activities involving sources of air pollutant emissions. It provides procedures to apply for an air construction or non-Title V air operation permit, or to register for use of an air general permit. It establishes public notice requirements, reporting requirements, and requirements related to estimating emissions and using air quality models. This chapter also sets forth special provisions related to compliance monitoring, stack heights, circumvention of pollution control equipment, and excess emissions.

3.3.2.1 62-210.300 Permits Required

According to F.A.C. 62-210.300(1)(a), an air construction permit shall be obtained for any proposed new, reconstructed, or modified facility or emissions unit, or any new pollution control equipment prior to the beginning of construction. The construction permit shall be issued for a period of time sufficient to allow construction of the facility or emissions unit or addition of the air pollution control equipment; and operation while the owner or operator of the new facility or emissions unit or the new pollution control equipment is conducting tests or otherwise demonstrating initial compliance with the conditions of the construction permit.

U.S. EcoGen is aware of this requirement and is applying for an air construction permit for the proposed Plant.

3.3.2.2 62-210.350 Public Notice and Comment

According to F.A.C. 62-210.350(a)(1), a public notice of proposed agency action shall be published for any applicant requesting a construction permit. F.A.C. 62-210.350 provides that each notice of intent to issue an air permit shall provide a 14-day period for submittal of public comments for a minor source air construction permit. F.A.C. 62-110.106(2) states that "receipt of notice of agency action" means either receipt of written notice or publication of the notice in a newspaper of general circulation in the county or counties in which the activity is to take place, whichever first occurs.

F.A.C. 62-110.106(5) "Notices: General Requirements" also states that the applicant shall provide proof of the publication to the Department within seven days of the publication. 62-110.106(6) specifies the notice shall be published by the applicant one time only within fourteen days after a complete application

is filed and shall contain the name of the applicant, a brief description of the project and its location, the location of the application file, and the times when it is available for public inspection. According to 62-110.106(9), no application for a permit or other authorization for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in Section 50.051 of the Florida Statutes, to the office of the Department issuing the permit or other authorization. Failure to publish any notice of application, notice of intent to issue permit, or notice of agency action required by the Department shall be an independent basis for the denial of the permit or other pertinent approval or authorization (62-110.106(11)).

U.S. EcoGen is aware of the public notice requirements and will work with the FDEP to meet these requirements.

3.3.2.3 62-210.550 Stack Height Policy

The degree of emission limitation required of any emissions unit for control of any air pollutant on a continuous basis shall not be affected by so much of any emission unit's stack height that exceeds Good Engineering Practices (GEP) or by any other dispersion technique. GEP stack height means the greater of the following:

- 65 meters, measured from the ground-level elevation at the base of the stack; or
- Hg = H + 1.5L, where

  Hg = good engineering practice stack height, measured from the ground-level elevation at the base of the stack,

  H = height of nearby structure(s) measured from the ground-level elevation at the base of the stack,

  L = lesser dimension, height or projected width, of nearby structure(s) provided that the EPA, Department, or local air program may require the use of a field study or fluid model to verify GEP stack height for the emissions unit; or

- The height demonstrated by a fluid model or a field study approved by the EPA, Department, or local air program which ensures that the emissions from a stack do not result in excessive concentrations of any air pollutant as a result of atmospheric downwash, wakes, or eddy effects created by the emissions unit itself, nearby structures, or nearby terrain features.

The specific requirements of this policy will not be applicable to the proposed stack associated with the bubbling fluidized bed boiler. The height of the stack or dispersion techniques will not be adjusted / implemented to establish the degree of emission reduction from the proposed boiler. The voluntary air quality impact evaluation that is provided in Section 7 of this minor source application demonstrates that the criteria of this policy were satisfied.

3.3.3 Chapter 62-212 Stationary Sources – Preconstruction Review

This chapter establishes the preconstruction review requirements for proposed new emissions units or facilities, and proposed modifications. The requirements of this chapter apply to those proposed activities for which an air construction permit is required for units subject to Prevention of Significant Deterioration (PSD) and Non-Attainment Area Preconstruction Review.

Based on the location of the Plant and limited potential emissions of regulated air pollutants from the Plant, the Plant will not trigger applicability of either of these regulatory requirements. Thus, this regulation will not apply.

3.3.4 Chapter 62-296 Stationary Sources – Emission Standards

The chapter includes emission limitations for specific categories of facilities and emissions units, and it establishes reasonably available control technology requirements.

3.3.4.1 62-296.320 General Pollutant Emission Limitation Standards

- Volatile Organic Compounds (VOC) Emissions

No person shall store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department.

- Objectionable Odor

  No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor.

- Open Burning

  Open burning in connection with industrial, commercial, institutional, or governmental operations is allowed only as provided at Chapter 62-256, F.A.C., or when:

  (a) Open burning is determined by the Department to be the only available method of disposal and is authorized by an air permit; and

  (b) Such open burning does not involve any material prohibited from being burned at Rule 62-256.300, F.A.C.

U.S. EcoGen is aware of the above requirements and has designed the Plant and will implement good operating practices to meet these requirements.

- Particulate Emission Standards

  The following emission limiting standards shall apply to emissions units of particulate matter not subject to a particulate emission limit or opacity limit set forth in or established elsewhere in this chapter.

  The process weight rate rule applies to any emissions unit which processes raw materials to produce a finished product through a chemical or physical change except emission units which: a) burn fuel to produce heat or power by indirect heating where the products of combustion do not come in contact with the process materials; b) burn refuse; and c) salvage materials by burning.

The proposed wood handling and fly ash handling emission units will not be subject to the process weight rate rule. The handling of the wood and fly ash does not involve a chemical or physical change to produce a product. The standard also makes reference to a stack or vent. The Plant's material handling operations involve fugitive type PM emission sources, that do not generally incorporate a stack or vent.

- Visible Emission Standards

  No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20 percent opacity).

  U.S. EcoGen will develop and implement good operating practices for operations performed at the Plant to minimize excessive opacity.

- Fugitive Particulate Emissions

  No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction, alteration, demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions. The following control procedures can be implemented to reduce fugitive particulate emissions:

  - Paving roads;
  - Application of water or chemicals;
  - Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads;
  - Removal of particulate matter from roads and other paved areas;
  - Landscaping or planting of vegetation;

- Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter;
- Confining abrasive blasting where possible; and
- Enclosure or covering of conveyor systems.

U.S. EcoGen will develop and implement a fugitive dust control program, including several of the control procedures mentioned above, to reduce the formation of fugitive particulate emissions from the Plant.

3.3.4.2 62-296.406 Fossil Fuel Steam Generators with Less Than 250 Million Btu per Hour Heat Input, New and Existing Emission Units

The following emission standards appear to be applicable to the proposed BFB boiler while combusting natural gas for startup, shutdown and bed stabilization:

- Visible Emissions – 20% opacity for any 6-minute period per hour during which opacity shall not exceed 27 percent, or one two-minute period per hour during which opacity shall not exceed 40 percent;
- Particulate Matter – Best Available Control Technology; and
- Sulfur Dioxide – Best Available Control Technology.

The combustion of natural gas for startup, shutdown and boiler bed stabilization should easily meet the 20% opacity requirement. The use of only natural gas and good combustion practices when utilizing this fuel in the BFB boiler meet the Best Available Control Technology requirements. There are no other PM and SO_2 control technologies or techniques that could be installed or implemented during the combustion of natural gas during startup, shutdown or bed stabilization in the BFB boiler that would be technically feasible. Thus, the combustion of natural gas and good combustion practices in the BFB boiler is considered BACT for emissions of PM and SO_2.

3.3.4.3 62-296.410 Carbonaceous Fuel Burning Equipment

The proposed BFB boiler is subject to the following emission limits for new emission units with a heat input equal to or greater than 30 MMBtu/hr:

- Visible Emissions – 30% opacity except that 40% is permissible for not more than two minutes in any one hour; and
- Particulate Matter – 0.2 lbs/MMBtu of heat input of carbonaceous fuel plus 0.1 pounds per million Btu heat input of fossil fuel.

All visible emission tests should be performed in accordance with DEP Method 9 and all particulate emission tests should be performed in accordance with EPA Method 5.

The proposed boiler will combust natural gas fuel during startup, shutdown and boiler bed stabilization. During combustion of clean woody biomass, good combustion practices will be utilized in combination with a baghouse on the exhaust gas stream of the BFB boiler to minimize PM emissions.

The combination of these control technologies will meet the limitations (0.1 lbs of PM/MMBtu for natural gas and 0.2 lbs/MMBtu for woody biomass) imposed by this regulation. U.S. EcoGen will also be installing a continuous opacity monitor (COM) on the BFB boiler that will be used to show compliance with the opacity standard (30%). In fact, the BFB boiler is subject to a more stringent opacity standard of 20% under NSPS Db, which will be satisfied by incorporation of a baghouse with the BFB boiler.

3.3.4.4 62-296.470 Implementation of Federal Clean Air Interstate Rule

Florida has adopted EPA's 40 CFR 96 CAIR NO_x and SO_2 Trading Programs for State Implementation Plans by reference in Section 62-204.800, F.A.C. Florida's implementation of the Federal CAIR is set forth in Rule 62-296.470, F.A.C.

U.S. EcoGen is aware of this requirement and will work with the FDEP to obtain the required permits prior to Plant operation.

3.3.5 Chapter 62-297 Stationary Sources – Emissions Monitoring

This chapter establishes test procedures that shall be used to determine the compliance of air pollutant emissions units with emission limiting standards.

U.S. EcoGen is aware of these test procedures and will follow these procedures when required.

3.3.5.1 62-297.320 Standards for Persons Engaged in Visible Emissions Observations

According to 62-297.320, all persons engaged in determining the opacity of visible emissions in Florida shall attend training and be certified by a training provider. Certification shall consist of satisfactory attendance and completion of a classroom lecture and a field qualification. Attendance at the classroom lecture is required no less frequently than every three years. Successful completion of the field qualification is required no less frequently than every six months. Proof of certification shall be made by including copies of the signed and dated certificates or cards issued by the training providers with documentation of visible emissions observations submitted to the Department, or otherwise upon request of the Department.

This section also provides specific requirements for training providers, classroom lectures and field quantification. Notification of training course offerings and persons receiving certification shall be sent to the Department within 30 days prior to training courses and 30 days after the conclusion of a course, respectively.

U.S. EcoGen is aware of these training and certification requirements and will follow these requirements as they pertain to the proposed Plant.

3.4 Applicable Federal Requirements

U.S. EPA has developed regulations that are designed to control air pollution. These regulations include permitting requirements for new or modified major stationary sources located in attainment and non-attainment areas, as well as Standards of Performance for certain types of new sources.

Provided below is a summary of the federal regulatory requirements potentially triggered by the proposed Plant. Other federal requirements not listed in the table below were determined to be not applicable to the proposed operations associated with the Plant.

Summary of Potentially Applicable Federal Regulatory Requirements

Air Regulation	Applicability Determination	Compliance Status
40 CFR Part 60 – New Source Performance Standards (NSPS)		
Subpart A – General Provisions	The proposed Plant is subject to this requirement because construction commenced after 1/5/1981. Applicability of the General Provisions is triggered based on the Plant triggering Subparts Db and IIII.	The proposed Plant will be in compliance with this Subpart.
Subpart Db – Industrial, Commercial, Institutional Steam Generating Units	Applies to any industrial, commercial or institutional steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity of > 100 MMBtu/hr. The proposed BFB will have a burner design heat input rate of 160 MMBtu/hr when combusting natural gas (startup and BFB bed stabilization operation only) and a heat input of 740 MMBtu/hr when combusting clean woody biomass.	The proposed BFB boiler will be in compliance with this Subpart.
Subpart IIII – Stationary Compression Ignition Internal Combustion Engines	The proposed diesel-fired emergency generator and fire pump are subject to this Subpart because they have displacement of less than 30 liters per cylinder and are 2007 model year or later.	The proposed emergency generator and fire pump will be in compliance with this Subpart.
40 CFR Part 63 – National Emission Standards for Hazardous Air Pollutants (NESHAPs) (MACT)		
40 CFR Part 63, Subpart A – General Provisions	The proposed Plant is subject to this Subpart because the Plant will be considered an area source of HAP emissions. Applicability of the General Provisions is trigged based on the emergency equipment triggering Subparts ZZZZ and JJJJJJ.	The Plant will be in compliance with this Subpart.

Air Regulation	Applicability Determination	Compliance Status
Subpart ZZZZ - Stationary Reciprocating Internal Combustion Engines	The proposed emergency generator is subject to this Subpart because the emergency equipment meets the definition of a reciprocating internal combustion engines (RICE). This Subpart has specific requirements for specified engine types at area and major sources of HAP emissions. The proposed fire pump will be rated below the applicability threshold under this rule.	The emergency equipment will be in compliance with this Subpart.
JJJJJJ - Area Sources: Industrial, Commercial, and Institutional Boilers	This Subpart applies to industrial, commercial, or institutional boilers located at an area source of HAPs. The proposed BFB boiler will be combusting biomass and will have a boiler heat input ≥ 10 MMBtu/hr. As such, the BFB boiler will meet the applicability requirements of this Subpart.	The BFB boiler while combusting biomass will be in compliance with this Subpart.
Additional Federal Regulations		
40 CFR Part 64 – Compliance Assurance Monitoring (CAM)	The proposed Plant is subject to this regulation since the Plant will utilize equipment with air pollution control devices.	The Plant will be in compliance with this regulation.
40 CFR Part 68 – Chemical Accident Prevention Provisions	U.S. EcoGen is proposing to use one chemical that is a listed substance in this regulation; ammonia (CAS # 7664-41-7). However, aqueous ammonia will be used that contains less than 20% ammonia. The applicability threshold is a concentration of ammonia at 20% or greater, thus use of the aqueous ammonia will not meet the applicability requirements of this regulation.	The Plant will be in compliance with this regulation.

Air Regulation	Applicability Determination	Compliance Status
40 CFR Parts 72 – 78 – Acid Rain Provisions	The goal of U.S. EPA's Acid Rain Program is to reduce the amount of sulfur dioxide and nitrogen oxides released to the atmosphere from power plants. Under this program, each utility unit must continuously measure and record its emissions of SO_2, NO_X and CO_2 as well as volumetric flow and opacity.	An acid rain permit application must be submitted to the FDEP 24 months prior to commencement of operation of the proposed Plant. U.S. EcoGen is aware of this requirement as well as the continuous emission monitoring requirements.
Cross-State Air Pollution Rule (CSAPR)	CSAPR replaces the Clean Air Interstate Rule (CAIR). CSAPR requires states to improve air quality by reducing power plant emissions that contribute to ozone and/or fine particle pollution in other states. CSAPR requires 28 states to reduce annual SO_2 emissions, annual NO_x emissions and/or ozone season NO_x emissions to assist in attaining the 1997 ozone and fine particle and 2006 fine particle National Ambient Air Quality Standards (NAAQS).	U.S. EcoGen is aware of this rule and will work with the FDEP to determine the specific requirements and their applicability to the Plant's BFB boiler.
U.S. Department of Transportation – Federal Aviation Administration (FAA)	Submit notification of construction for "*any construction or alteration of more than 200 feet in height above the ground level at its site*".	The Plant will be in compliance with this Subpart.
40 CFR Part 82, Subpart F – Recycling and Emissions Reduction	U.S. EcoGen does not anticipate producing or consuming any ozone-depleting substances that would trigger applicability of the protection of stratospheric ozone requirements. U.S. EcoGen will abide by the applicable requirements that involve replacement of ozone depleting substances in plant process equipment (i.e., air conditioners, refrigerators, chillers or freezers).	The Plant will be in compliance with this Subpart.

Refer to Tables 3-1, 3-2, 3-3A and 3-3B for inclusive lists showing applicable and non-applicable federal air pollution regulations for the proposed Plant. Further discussion on each applicable federal regulatory requirement is provided in the following sections.

3.5 New Source Performance Standards (NSPS)

The NSPS have been developed by U.S. EPA for specific source categories. These standards, which are codified in the Code of Federal Regulations (CFR) under Part 60 (40 CFR 60), apply to applicable equipment covered under each source category that is constructed, reconstructed or modified after a specific baseline date. A review of the existing NSPS, as well as any NSPS being proposed, was performed to determine applicability to the Plant. Refer to Table 3-2 for a list of the NSPS regulations.

3.5.1 40 CFR Part 60, Subpart Db – Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

40 CFR 60.40b(a) applies to any industrial, commercial or institutional steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr)). The proposed boiler will have a burner design heat input rate of 160 MMBtu/hr when combusting natural gas. The proposed boiler will also be capable of combusting wood at an estimated maximum design heat input rate of 740 MMBtu/hr (annual average). Based on the fuels to be combusted and maximum heat inputs, the proposed BFB boiler will meet the applicability requirements of NSPS Db. The following Subpart Db requirements are applicable to the proposed BFB boiler. These requirements are also summarized in Table 3-2A.

Emission Limitations

- **SO_2**: Units firing gaseous fuels, or a mixture of gaseous fuel with other fuels with a potential SO_2 emission rate of 0.32 lbs/MMBtu heat input or less, are exempt from the SO_2 emission limit of 0.2 lbs/MMBtu (40 CFR 60.42b(k)(2)). **The proposed boiler will have a potential SO_2 rate of less than 0.32 lbs/MMBtu, thus will satisfy the exemption criteria.**

- **PM**: (Filterable portion only) shall not exceed 0.030 lb/MMBtu (13 ng/J) as stipulated in 60.43b(h)(1), except during periods of startup, shutdown or malfunction as provided by 40 CFR 60.2, 60.11(c), 60.43b(g) and 60.46b(a). **The proposed boiler will achieve a PM**

rate (filterable portion only) of less than 0.030 lbs/MMBtu utilizing a baghouse.

- **Opacity**: 20% (6-minute average), except for one 6-minute period per hour of not more than 27% opacity pursuant to 40 CFR 60.43b(f). This standard shall apply at all times, except during periods of startup, shutdown or malfunction as provided by 40 CFR 60.2, 60.11(c), 60.43b(g) and 60.46b(a). **U.S. EcoGen has designed the equipment to minimize fugitive particulate matter. The proposed boiler will achieve 20% opacity through good combustion practices and utilization of a baghouse.**

- **NO_x (Natural Gas / Woody Biomass)**: 0.30 lbs/MMBtu (130 ng/J) heat input on a 30-day rolling average, pursuant to 40 CFR 60.44b(d). Applies if you simultaneously combust natural gas with wood, unless the annual capacity factor for natural gas is limited through an enforceable permit limitation of 10% or less. The proposed boiler will only combust natural gas during startup, shutdown and boiler bed stabilization and woody biomass during normal operation. U.S. EcoGen is not proposing to take a limitation to restrict natural gas to an annual capacity factor of 10 percent (0.10) or less. The limit applies during periods of startup, shutdown or malfunction, and compliance with the emission limits under this section is determined on a 30-day rolling average (40 CFR 60.44b(h) and (i)).

  During combustion of woody biomass, natural gas may also be co-fired as the boiler goes through startup, shutdown and boiler bed stabilization modes. Consequently, the 0.30 lbs/MMBtu NO_x limit has been determined to apply. The BFB boiler design in conjunction with clean burning fossil fuels will achieve this NO_x limitation. The BFB boiler vendor will commit to a NO_x emission rate of 0.076 lbs/MMBtu.

- **NO_x (Natural Gas Only)**: 0.10 lb/MMBtu (low heat release rate) or 0.20 lb/MMBtu (high heat release rate), pursuant to 40 CFR 60.44b(a)(1). Applies if you only combust natural gas. The limit applies during periods of startup, shutdown or malfunctions, and compliance with the emission limit under this section is determined on a 30-day rolling

average (40 CFR 60.44b(h) and (i)). **The BFB boiler vendor will commit to a NO_x emission rate of 0.076 lbs/MMBtu.**

Monitoring

- PM – Compliance with the PM emission standards under 60.43b shall be determined through performance testing (60.46b(b)). Performance testing is required within 60 days after achieving maximum output and no later than 180 days after commencing operation of the boiler.

- Performance testing shall be performed for PM using EPA Reference Method 5, 5B, or 17 of appendix A (60.46b(d)(2)).

- Opacity – Install, calibrate, maintain and operate a continuous opacity monitor (COM) for measuring the opacity of emissions discharged to the atmosphere and record the output of the system (60.48b(a)).

- NO_x – To determine compliance with the emission limits for NO_x required under 60.44b, the owner or operator shall conduct performance tests as required under 60.8 using the continuous system for monitoring NO_x under 60.48b.

- NO_x – Affected facilities subject to NO_x standards under 60.44b shall install, calibrate, maintain and operate CEM for measuring NO_x and O_2 (or CO_2) emissions discharged to the atmosphere (60.48b(b)(1)).

U.S. EcoGen is aware of these monitoring requirements and will meet these requirements.

Compliance Testing

- 60.46b(d) – To determine compliance with the PM emission limits and opacity limits under 60.43b, the owner or operator of an affected facility shall conduct an initial performance test as required under 60.8, and shall conduct subsequent performance tests as requested by the Administrator.

- 60.46b(e) – To determine compliance with the emission limit for NO_x required under 60.44b, the owner or operator of an affected facility shall

conduct the performance test as required under 60.8 using the continuous system for monitoring NO_x under 60.48(b).

U.S. EcoGen is aware of these testing requirements and will meet these requirements.

Recordkeeping

- 60.49b(d) - Record and maintain records of the amounts of each fuel combusted during each day and calculate the annual capacity factor.
- 60.49b(f) - Maintain records of opacity.
- 60.49b(o) – All records required under this section shall be maintained by the owner or operator of the affected facility for a period of 2 years following the date of such record.

U.S. EcoGen is aware of these recordkeeping requirements and will meet these requirements.

Reporting

- 60.49b(a) - Submit notification of the date of initial startup.
- 60.49b(b) – Submit to the Administrator the performance test data from the initial performance test and the performance evaluation of the CEMS using the applicable performance specifications in appendix B of this part. Submit to the Administrator the maximum heat input capacity data from the demonstration of the maximum heat input capacity of the affected facility.
- 60.49b(h) – Submit excess emission reports for any excess emissions (i.e., opacity and NO_x emissions) that occurred during the reporting period.
- 60.49b(w) – The reporting period for the reports required under this subpart is each 6 month period. All reports shall be submitted to the Administrator and shall be postmarked by the 30th day following the end of the reporting period.

U.S. EcoGen is aware of these reporting requirements and will meet these requirements.

3.5.2 40 CFR Part 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

This subpart applies to stationary compression ignition (CI) internal combustion engines (ICE) that commence construction after July 11, 2005, where the CI ICE are manufactured after April 1, 2006 (and are not fire pump engines), or manufactured after July 1, 2006 (for certified National Fire Protection Association fire pump engines).

NSPS Subpart IIII specifies emission limitations, monitoring, reporting, and recordkeeping requirements for NO_x, CO, non-methane hydrocarbons (NMHC) and PM. Applicable NSPS IIII emission standards for the emergency generator and fire water pump CI ICEs are summarized as follows:

- Owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards for new non-road CI engines in 40 CFR 60.4202, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary CI ICE.

- Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in Table 4 to NSPS Subpart IIII, for all pollutants.

NSPS Subpart IIII also stipulates specific sulfur requirements for diesel fuels. Beginning October 1, 2007, engines that use diesel fuel must meet a sulfur content of 0.05% by weight (40 CFR 80.510(a)). As of October 1, 2010 engines with a displacement of less than 30 liters/cycle and that use a diesel fuel must meet a sulfur content of 0.0015% by weight (40 CFR 80.510(b)).

U.S. EcoGen will be utilizing a diesel fuel with a sulfur content of 0.0015% by weight or less. The emergency generator and fire water pump are designed to have a displacement of less than 30 liters per cylinder and will comply with the applicable requirements of NSPS Subpart IIII. The applicable requirements of 40 CFR 60, Subpart IIII are summarized in Table 3-2B.

3.6 Hazardous Air Pollutant Regulations

The proposed Plant will have the potential to emit regulated HAPs in quantities **less than 10 tons/year as an individual HAP and 25 tons/year in aggregate**; therefore, the proposed Plant is considered a minor (i.e., area) source of HAPs.

On December 15, 1996, the USEPA promulgated the final regulations implementing Section 112(g). This section addresses new and reconstructed major sources of hazardous air pollutants (HAPs). A primary requirement of this section is that those sources apply Maximum Achievable Control Technology (MACT) for control of HAPs. Section 112(g) is intended to address those sources for which USEPA has not yet established an intended source category specific MACT standard. In this sense, Section 112(g) may be seen as the "case-by-case" MACT standard.

The proposed project will not trigger case-by-case MACT, since this requirement applies to new or reconstructed major stationary sources of hazardous air pollutant emissions.

U.S. EPA has developed National Emission Standards for Hazardous Air Pollutants (NESHAP) for numerous area source categories. Refer to Tables 3-3A and 3-3B for an all inclusive list of the NESHAP and MACT standards. The following MACT standards have been determined to be applicable to the Plant.

3.6.1 40 CFR Part 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants: Stationary Reciprocating Internal Combustion Engines

Pursuant to 40 CFR 63.6585, the proposed Plant, is subject to the NESHAP for Stationary Reciprocating Internal Combustion Engines, since it will utilize stationary internal combustion reciprocating engines (RICE). However, pursuant to 40 CFR 63.6590(a), the fire pump is not an affected source due to its size. Specifically, the fire pump will have an initial site-rating equal to or less than 200 brake horsepower. The proposed generator, however, will have an initial rating of 670 Hp thus making it an affected source.

U.S. EcoGen is aware of the requirements imposed by 40 CFR 63, Subpart ZZZZ and will be in compliance with these requirements. The

applicable requirements of 40 CFR 60, Subpart ZZZZ are summarized in Table 3-3C.

3.6.2 40 CFR Part 63, Subpart JJJJJJ – National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers

40 CFR Part 63, Subpart JJJJJJ applies to all industrial, commercial, or institutional boilers that are located at, or are part of, an area source of HAPs.

According to this Subpart, boiler means "*an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam or hot water. Controlled flame combustion refers to a steady-state or near steady-state, process wherein fuel and/or oxidizer feed rates are controlled. Waste heat boilers are excluded from this definition.*"

This Subpart only applies to area sources of HAP and contains specific requirements for industrial boilers that became effective on May 20, 2011. The specific requirements of this area source MACT are codified in 40 CFR 63.11193 through 63.11237. A new source is any industrial boiler constructed after June 4, 2010. The Plant's BFB boiler will be constructed after June 4, 2010 and will be classified as a new source and subject to the applicable requirements for new sources.

The following requirements are imposed for industrial boilers combusting biomass. No requirements apply while combusting natural gas.

- Table 1 requirements under this Subpart – New biomass fired boilers with heat input capacities of ≥ 30 MMBtu/hr must meet a PM limit of 0.03 lbs/MMBtu. This limit applies to filterables only.
- Table 2 requirements under this Subpart – Minimize the boiler's startup and shutdown periods following the manufacturer's recommended procedures and conduct a tune-up of the boiler biennially as specified in 40 CFR 63.11223.
- Table 3 requirements under this Subpart – Fabric filter control devices must meet 10% opacity or install and operate a bag leak detection system according to 40 CFR 63.11224.

The applicable requirements of 40 CFR Subpart JJJJJJ are summarized in Table 3-3D. U.S. EcoGen is aware of these requirements and will be in compliance with these requirements.

3.7 Acid Rain Provisions

The U.S. EPA's Acid Rain Program's goal is to reduce the amount of sulfur dioxide and nitrogen oxides released to the atmosphere from power plants. These two pollutants play a large role in the formation of acid rain. To achieve this goal at the lowest cost to society, the program employs both traditional and innovative, market-based approaches for controlling air pollution. In addition, the program encourages energy efficiency and pollution prevention. The U.S. EPA has set a limit on the amount of sulfur dioxide emissions and the emission rate of nitrogen oxides for regulated power plants. The requirements of this program have been established in 40 CFR Parts 72 through 78.

Under this program, each utility unit must continuously measure and record its emissions of SO_2, NO_X and CO_2 as well as volumetric flow and opacity. **A continuous emission monitoring (CEM) system must be used. U.S. EcoGen will be installing the appropriate CEM systems on the affected units in order to comply with the monitoring requirements set forth in the Acid Rain Program. An acid rain application will be submitted by U.S. EcoGen under separate cover.**

U.S. EcoGen will appoint a Designated Representative to represent the owners and operators of the proposed Plant in all matters relating to the holding and disposal of allowances for the affected unit. This Representative will file the acid rain permit application and compliance plan. **It is U.S. EcoGen's understanding that an acid rain permit application must be submitted to the FDEP 24 months prior to commencement of operation of the proposed BFB boiler (i.e., affected unit).**

3.8 Cross-State Air Pollution Rule (CSAPR)

On July 6, 2011, the U.S. Environmental Protection Agency (EPA) finalized a rule that protects the health of millions of Americans by helping states reduce air pollution and attain clean air standards. This rule, known as the Cross-State Air pollution Rule (CSAPR), requires states to significantly improve air quality by reducing power plant emissions that contribute to ozone and/or fine

particle pollution in other states. CSAPR requires a total of 28 states to reduce annual SO_2 emissions, annual NO_x emissions and/or ozone season NO_x emissions to assist in attaining the 1997 ozone and fine particle and 2006 fine particle National Ambient Air Quality Standards (NAAQS). On February 7, 2012, EPA issued two sets of minor adjustments to the Cross-Sate Air Pollution Rule (CSAPR).

This rule replaces EPA's 2005 Clean Air Interstate Rule (CAIR). A December 2008 court decision kept the requirements of CAIR in place temporarily but directed EPA to issue a new rule to implement Clean Air Act requirements concerning the transport of air pollution across state boundaries. This action responds to the court's concerns.

Emission reductions will take effect quickly, starting January 1, 2012 for SO_2 and annual NO_x reductions, and May 1, 2012 for ozone season NO_x reductions. By 2014, combined with other final state and EPA actions, the Cross-State Air Pollution Rule will reduce power plant SO_2 emissions by 73 percent and NO_x emissions by 54 percent from 2005 levels in the CSAPR region.

The following bulletins provide additional information about the CSAPR:

- December 30, 2011 – The U.S. Court of Appeals for the D.C. Circuit issued its ruling to stay the CSAPR pending judicial review. The court's decision is not a decision on the merits of the rule. EPA is ensuring the transition back to the Clean Air Interstate Rule (CAIR) occurs as seamlessly as possible.

- January 10, 2012 – EPA has returned the vintage 2012 CAIR allowances to allowance accounts. Additional allocations of 2012 allowances will be done as soon as the allocation files are submitted to EPA by the states.

- January 26, 2012 – EPA signed a notice, which will be published in the Federal Register, indicating that the Agency will not require compliance with the CSAPR supplemental rule while the stay is in effect. EPA finalized the supplemental rule on December 15, 2011 to include five additional states – Iowa, Michigan, Missouri, Oklahoma, and Wisconsin – in the ozone season NO_x program in the CSAPR.

- February 7, 2012 – EPA issued two sets of adjustments to the Cross-State Interstate Rule (CSAPR). These final rules maintain the significant health benefits of CSAPR, while making minor technical adjustments based on the latest and best data to ensure a smooth transition for utilities. The adjustments provide flexibility to states by increasing budgets in 17 states and easing limits on market-based compliance options.

- March 1, 2012 – EPA filed its brief on the merits of the legal challenges to the CSAPR. EPA's brief defends the rule and sets forth the reasons why the rule should be upheld by the court.

U.S. EcoGen is aware of these requirements and will work with the FDEP to determine the specific requirements and their applicability to the Plant's BFB boiler.

3.9 Title V Greenhouse Gas Tailoring Rule

The Greenhouse Gas Tailoring Rule sets thresholds for greenhouse gas (GHG) emissions that define when permits under the PSD and Title V Operating Permit programs are required for new and modified industrial facilities. The CAA permitting program emission thresholds for criteria pollutants such as lead, sulfur dioxide and nitrogen dioxide are 100 and 250 tons per year (tpy). While these thresholds are appropriate for criteria pollutants, they are not feasible for GHGs because GHGs are emitted in much higher volumes. Without the Tailoring Rule, the lower emissions thresholds would automatically take effect on January 2, 2011. EPA's Tailoring Rule phases in permitting requirements for GHGs in two initial steps.

3.9.1 Step 1 - January 2, 2011 – June 30, 2011

Step 1 states that the permitting requirements for GHG emissions would only be applicable to those sources currently subject to PSD requirements. BACT would need to be determined for sources that have an increase in total GHG emissions of at least 75,000 tpy, on a CO_2e basis. During this time, no sources would be subject to Clean Air Act permitting requirements due solely to GHG emissions.

3.9.2 Step 2 - July 1, 2011 – June 30, 2013

In Step 2, PSD permitting requirements will cover, for the first time, new construction projects that emit GHG emissions of at least 100,000 tpy, even if they do not exceed the permitting thresholds for other pollutants. Modifications at existing facilities that cause an increase of at least 75,000 tpy of GHG emissions will also be subject to the permitting requirements. During this step, operating permit requirements will apply to sources based on their GHG emissions even if they would not apply based on emissions of other pollutants. Facilities that emit at least 100,000 tpy CO_2e will be subject to Title V permitting requirements.

3.9.3 Deferral for CO_2 Emissions – Bioenergy Sources

On July 20, 2011, EPA issued a final rule (Federal Register – Volume 76, No. 139) that deferred for a period of three (3) years the application of the PSD and Title V permitting requirements to biogenic carbon dioxide (CO_2) emissions from bioenergy and other biogenic stationary sources. The result of this action is that during the three year period, biogenic CO_2 emissions are not required to be counted for applicability purposes under the PSD and Title V permitting programs. This action is effective on July 20, 2011, and the deferral is effective upon this publication date for the programs implemented by EPA. The three year deferral is from July 20, 2011 to July 19, 2014.

In the above ruling, EPA defined bioenergy to include the combustion of biomass. Stationary sources that combust biomass (or otherwise emit biogenic CO_2 emissions) and construct or modify during the deferral period (July 20, 2011 – July 19, 2014) will avoid the application of PSD to the biogenic CO_2 emissions resulting from those actions. The deferral only applies to biogenic CO_2 emissions and does not affect methane (CH_4) or nitrous oxide (N_2O) emitted from the combustion of biomass fuel.

The Plant being proposed by U.S. EcoGen will have potential emissions of non-deferred GHG emissions that are below the PSD applicability thresholds of 100,000 tons/year of CO_2e and 100/250 tons/year on a mass basis. As a result, emissions of GHGs from the Plant do not trigger PSD requirements.

3.10 Compliance Assurance Monitoring

Pursuant to requirements concerning enhanced monitoring and compliance certification under the Clean Air Act, EPA has promulgated regulations (40 CFR 64) to implement compliance assurance monitoring (CAM) for major stationary sources of air pollution that are required to obtain operating permits under Title V of the Act. The regulations require owners or operators of such sources to conduct monitoring that satisfies particular criteria established in the rule to provide a reasonable assurance of compliance with application requirements under the Act. Monitoring focuses on emissions units that rely on pollution control device equipment to achieve compliance with applicable standards. The effective date of this rule was November 21, 2007.

CAM Applicability

For a source to be subject to the CAM regulations, the pollutant-specific emission unit (PSEU) must meet **all** of the following criteria. Please note that the term "PSEU" means an emissions unit considered separately with respect to each regulated air pollutant.

- The PSEU is located at a major source that is required to obtain a Part 70 permit;
- The PSEU is subject to an emission limitation or standard for the applicable regulated air pollutant that is not exempt;
- The PSEU uses an add-on control device to achieve compliance with such an emission limitation or standard. An add-on control device is defined in 40 CFR Part 64 as:
    - *"Equipment, other than inherent process equipment, that is used to destroy or remove air pollutant(s) prior to discharge to the atmosphere. The types of equipment that may commonly be used as control devices include, but are not limited to, fabric filters, mechanical collectors, electrostatic precipitators, inertial separators, afterburners, thermal or catalytic incinerators, adsorption devices (such as carbon beds), condensers, scrubbers (such as wet collection and gas absorption devices), selective catalytic or non-catalytic reduction systems, flue gas*

recirculation systems, spray dryers, spray towers, mist eliminators, acid plants, sulfur recovery plants, injection systems (such as water, steam, ammonia, sorbent or limestone injection), and combustion devices independent of the particular process being conducted at an emissions unit (e.g., the destruction of emissions achieved by venting process emission streams to flares, boilers or process heaters). For purposes of this part, a control device does not include passive control measures that act to prevent pollutants from forming, such as the use of seals, lids, or roofs to prevent the release of pollutants, use of low-polluting fuel or feedstocks, or the use of combustion or other process design features or characteristics. If an applicable requirement establishes that particular equipment which otherwise meets this definition of a control device does not constitute a control device as applied to a particular pollutant-specific emissions unit, then that definition shall be binding for purposes of this part."

- The PSEU has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than major source thresholds; and

- The PSEU is not an exempt backup utility power emissions unit that is municipally owned.

CAM Plan Due Dates

- For large and other (PSEU) units, CAM plan is due as part of the first permit application under the Part 70 Operating Permit Program.

Summary of CAM Rule Exemptions

The following emission limitations or standards are exempted from the CAM rule:

a) Post – 11/15/90 NSPS or NESHAP standards, since those standards have been and will be designed with monitoring that provides a reasonable assurance of compliance;

b) Stratospheric ozone protection requirements under Title VI of the act;

c) Acid rain program requirements;

d) Emission limitations or standards or other requirements that apply solely under an approved emissions trading program;

e) Emissions cap that meets the requirements of 70.4(b)(12) or 71.6(a)(13);

f) Emission limitations or standards for which a Part 70 or 71 permit specifies a continuous compliance determination method, as defined in 40 CFR 64.1; and

g) Certain municipally-owned utility units, as defined in 40 CFR 72.2.

Please note that the emission unit is not exempted from the CAM rule if nonexempt emission limitations or standards (e.g. a state rule or an older NSPS emission limit) apply to the emissions unit.

U.S. EcoGen is aware of the CAM rule requirements and will address compliance with these requirements as part of the Plant's application for a major source (Part 70) operating permit. It appears that the only PSEU associated with the proposed Plant will be PM emissions from the BFB boiler. Potential emissions of NO_x should be exempt, since they are subject to the Acid Rain program requirements. Emissions of HCl from the BFB boiler may also be subject to the CAM requirements. Applicability will be determined after initial compliance testing is performed prior to commercial operation. U.S. EcoGen will be following EPA guidance on development of CAM plans for equipment utilizing fabric filter baghouses.

3.11 Chemical Accidental Release Provisions

Federal chemical accidental release prevention requirements have been established in 40 CFR Part 68. These requirements cover risk management planning at facilities with more than a threshold quantity of a listed regulated substance in a single process. The rule lists 77 acutely toxic substances with threshold quantities ranging from 500 to 20,000 pounds, and also lists an additional 63 flammable gases and volatile liquids, each with a 10,000 pound threshold quantity.

This regulation applies to any owner or operator of a stationary source that has more than a threshold quantity of a regulated substance in a process. A process is defined as any activity involving a regulated substance including any use, storage, manufacturing, handling, or on-site movement of such substances, or combination of these activities.

Compliance with the requirements established by the regulation must be by the date on which a regulated substance is first present above a threshold quantity in a process.

U.S. EcoGen is proposing to use ammonia in the SCR control technology system being proposed for the BFB boiler. U.S. EcoGen will be utilizing an aqueous ammonia which will contain less than 20% ammonia. Subsequently, use of the aqueous ammonia will not meet the applicability requirements of this regulation.

3.12 Protection of Stratospheric Ozone

The requirements for the protection of stratospheric ozone have been established in 40 CFR Part 82. These requirements were created to impose limits on the production and consumption of certain ozone-depleting substances. The purpose of 40 CFR 82 Subpart F, "Recycling and Emissions Reduction," is to reduce emissions of class I and class II refrigerants and their substitutes to the lowest achievable level by maximizing the recapture and recycling of such refrigerants during the service, maintenance, repair, and disposal of appliances. This Subpart applies to the servicing, maintaining, or repairing of appliances and also applies to the disposal of appliances.

U.S. EcoGen may be involved in the servicing, maintaining or repairing of equipment subject to the handling and recycling provisions of this subpart. U.S. EcoGen will follow the requirements as mandated by this subpart.

3.13 Mandatory Greenhouse Gas Reporting

40 CFR Part 98 established mandatory greenhouse gas (GHG) reporting requirements for owners and operators of certain facilities that directly emit GHGs, as well as for certain fossil fuel supplies and industrial GHG suppliers.

Included in this rule is the requirement to quantify and report GHG emissions on an annual basis. The first report was due to U.S. EPA on March 31, 2011 for emissions released during the calendar year 2010.

U.S. EcoGen is aware of this requirement and will evaluate its applicability and reporting requirements upon operation of the proposed Plant.

3.14 FAA Notification

The U.S. Department of Transportation – Federal Aviation Administration (FAA) regulation, 77.13(1) states that a notification of construction should be submitted for *"any construction or alteration of more than 200 feet in height above the ground level at its site".* The proposed biomass boiler stack has been initially designed to be less than 200 feet in height, thus based on this design height is not subject to the notification requirements set forth by the FAA.

If the design changes and the stack height exceeds 200 feet, according to 77.17, the notification should include FAA Form 7460-1, Notice of Proposed Construction or Alteration, and should be submitted to the Manager, Air Traffic Division, FAA Regional Office. This form shall be submitted at least 30 days before the earlier of the following dates: 1) the date proposed construction or alteration is to begin; or 2) the date an application for a construction permit is to be filed.

U.S. EcoGen is aware of the FAA regulations and will be notifying the southeast region of the FAA (i.e., submittal of one (1) page application form) if the height of the BFB boiler stack exceeds 200 feet. The purpose of this notification is for the FAA to define stack lighting and color requirements. U.S. EcoGen's initial design utilizes a stack height of less than 200 feet.

4. Methods of Compliance

As discussed within this application request for construction, the proposed 63-MW Plant will involve four (4) process areas that will have the potential to emit regulated air pollutants. These four areas are listed below along with the types of air pollutants that could potentially be emitted from these areas:

EMISSION GROUP	IDENTIFICATION #	REGULATED AIR POLLUTANTS*
Fuel Receiving, Handling, Storage and Processing	EU-001	PM, NO_x, SO_2, CO, VOC, HAPs
Power Island (BFB Boiler and Support Silos)	EU-002	PM, NO_x, SO_2, CO, VOC, H_2SO_4, Fluorides, HAPs (specifically HCl), GHGs
Ash Handling, Storage and Shipment	EU-003	PM
Emergency Support Equipment (Generator and Fire Pump)	EU-004	PM, NO_x, SO_2, CO, VOC HAPs (considered negligible), GHGs

*Note: Includes PM, PM_{10} and $PM_{2.5}$.

4.1. Emission Limit Compliance

Since each of the process areas will have the potential to emit regulated air pollutants, state and federal air regulations containing specific emission limits or standards may apply to these areas. Table 4-1 lists each of the four emission groups, along with the appropriate emission limit or standard required by state and federal air statutes. Also included in this table are emission limits expressed in tons per year being proposed by U.S. EcoGen to maintain the minor source status of this Plant under state and federal air permitting regulations. To demonstrate that the proposed emission limits or standards will be met by U.S. EcoGen, Table 4-1 includes the proposed method of compliance that demonstrates that these limits will be met initially, as well as on a continuous basis.

Numerous emissions standards and limits apply to boilers as well. Table 4-2 summarizes these standards and limits that could apply during the combustion of natural gas (startup/shutdown and bed stabilization only) and woody biomass (normal power generation) in the proposed BFB boiler.

5. Florida Department of Environmental Protection Requirements

The FDEP has established specific requirements, which are stipulated in the F.A.C. The requirements defined must be satisfied by any company requesting permission to construct an air emissions unit. Each of these requirements is presented below, along with justification to demonstrate that the proposed Plant and its associated air pollutant emission sources meet these standards for minor source construction permit issuance.

5.1. Standards for Issuing or Denying a Permit

F.A.C. 62-4.070 summarizes the standards for permit issuance or denial.

5.1.1. 62-4.070(1)

"A permit shall be issued to the applicant upon such conditions as the Department may direct, only if the applicant affirmatively provides the Department with reasonable assurance based on plans, test results, installation of pollution control equipment, or other information, that the construction, expansion, modification, operation, or activity of the installation will not discharge, emit, or cause pollution in contravention of Department standards or rules. However, for discharges of wastes to water, the Department may issue temporary operation permits under the criteria set forth in Section 403.088(3), F.S."

Included in this application request is specific information related to the proposed nominal 63-MW Plant. That information includes:

- Detailed description of the proposed Plant and identification of exempt and non-exempt air emission units;
- Estimates of regulated air pollutant emissions from each air emissions unit including supporting documentation and calculations;
- Identification of air pollution control devices and techniques to be installed/implemented for each air emissions unit;
- Identification of the physical capabilities of each air emissions unit and where appropriate, proposed limitations on hours of operation;

- Identification of applicable state and federal air regulations for each air emissions unit; and
- Method of compliance to be utilized to show compliance with each applicable requirement.

U.S. EcoGen is very confident that it has designed the Plant to not discharge, emit, or cause pollution in contravention of FDEP standards or rules. Sufficient information is included in this application to provide the FDEP with reasonable assurance that the standards and rules will be met.

5.1.2. 62-4.070(2)

"If, after review of the application and all the information, the Department determines that the applicant has not provided reasonable assurance that the construction, modification, expansion, or operation of the installation will be in accord with applicable laws or rules, including rules of approved local programs, the Department shall deny the permit."

Section 3 summarizes the state and federal regulations determined to be applicable to the Plant. U.S. EcoGen is confident that the applicable regulatory requirements (state/federal) have been addressed in this minor source construction permit application and the Plant will be in compliance with these applicable requirements.

5.1.3. 62-4.070(3)

"The Department may issue any permit with specific conditions necessary to provide reasonable assurance that Department rules can be met."

U.S. EcoGen is aware that the FDEP may find it necessary to issue permit conditions in order to insure that the Plant will meet the applicable FDEP rules. Included in Section 4 of this application is a summary of the identified applicable air emission standards and limits, along with methods of compliance to ensure that FDEP rules will be met.

5.1.4. 62-4.070(4)

"No Department permits shall be issued for a term of more than five (5) years unless otherwise specified by Statute, rule, or order of the Department. However, construction permits for air pollution sources may be issued for a period of time as necessary."

U.S. EcoGen is aware that operating permits are issued based on a five (5) year renewal period. U.S. EcoGen is also aware that there is a specific time limit for commencement of construction and commencement of operation. U.S. EcoGen is requesting that the construction permit be issued for a period of three (3) years with provisions to extend that construction to accommodate overall construction and initial startup of the Plant.

5.1.5. 62-4.070(5)

"The Department shall take into consideration a permit applicant's violation of any Department rules at any installation when determining whether the applicant has provided reasonable assurances that Department standards will be met."

U.S. EcoGen will make sure that there are no violations during construction or installation of the Plant. U.S. EcoGen is confident that the FDEP will be provided with reasonable assurances that standards will be met.

5.1.6. 62-4.070(6)

"The applicant shall be promptly notified if the Department intends to deny the application, and shall be informed of the reasons for the intended denial, and of the right to request an administrative hearing."

U.S. EcoGen is aware that the Department will notify them if they intend to deny this permit application and is also aware that they have the right to request an administrative hearing regarding the denial of this application.

5.1.7. 62-4.070(7)

"The issuance of a permit does not relieve any person from complying with the requirements of Chapter 403, F.S., or Department rules."

U.S. EcoGen is aware that once they are issued a permit from the FDEP, they must comply with the requirements set forth by the FDEP.

6. Permit Support Information Language

The purpose of this section is to provide FDEP with additional information to support preparation of the FDEP-issued construction permit and technical support document (TSD), including specific permit language. In order to expedite the permit writing process, U.S. EcoGen would like to provide FDEP with as much information as possible. Refer to Tables 6-1 through 6-6B, which suggest permit language for the individual emission units and follow the structure / format shown in previous permits issued by the FDEP. These tables include the following:

- Table 6-1 – Section I. General Conditions
- Table 6-2 – Section II. Administrative Requirements
- Table 6-3 – Section III.A. Fuel Receiving, Handling, Storage and Processing
- Table 6-4 – Section III.B. Power Island
    - Table 6-4A – Summary of Woody Biomass Fuel Descriptions
    - Table 6-4B – Methods of Compliance – Power Island
- Table 6-5 – Section III.C. Ash Handling, Storage and Shipment
- Table 6-6 – Section III.D. Emergency Support Equipment
    - Table 6-6A – Emission Limits – Emergency Equipment
    - Table 6-6B – Methods of Compliance – Emergency Equipment

Refer to Table 6-7, which provides a preliminary best management practices (BMP) plan for minimization of fugitive dust, pile management and fire prevention for the fuel (chipped/log woody biomass) handling system.

7. Voluntary Air Quality Impact Evaluation

This section contains the results of a voluntary air quality impact evaluation performed by U.S. EcoGen to demonstrate that emissions of regulated criteria air pollutants from the Plant will not cause or contribute to violation of any National Ambient Air Quality Standard (NAAQS). The U.S. EPA has established ambient air quality standards that are designed to protect human health and welfare with an adequate margin of safety. This section provides a discussion on the purpose of the voluntary air quality impact evaluation, a summary of the methods used to perform the voluntary air quality impact evaluation, and the results of that evaluation.

7.1. Purpose of this Voluntary Air Quality Impact Evaluation

The Clean Air Act was last amended in 1990 and requires EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. Primary standards set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

A voluntary air quality impact evaluation was performed by U.S. EcoGen to demonstrate that potential emissions of regulated criteria air pollutants from the Plant will not cause or contribute to a violation of the NAAQS. This evaluation was performed using tools and procedures developed by U.S. EPA. The tool that is used to perform air quality impact evaluations is referred to as air dispersion modeling. For purposes of this voluntary evaluation, the most sophisticated air dispersion model (i.e., AERMOD) developed to date and recommended as the preferred modeling tool for conducting air quality impact evaluations for electric generating plants by U.S. EPA was utilized by U.S. EcoGen. In conjunction with this dispersion modeling tool, actual hourly meteorological conditions (i.e., representative of the Polk County site) over a period of five (5) years were incorporated and evaluated.

The AERMOD dispersion model is a computerized program that requires information about the source (i.e., air pollutant emission rates and stack release characteristics) and meteorological conditions present in the area. The

model then utilizes the source information and meteorological conditions to simulate the potential impacts on ambient air quality. Potential impacts are expressed in micrograms per cubic meter ($\mu g/m^3$) which also correlates to the measurement units established by U.S. EPA for demonstrating compliance with the NAAQS.

The purpose of this voluntary evaluation is to demonstrate that the proposed clean woody biomass electrical generating facility (the Plant) will not cause or contribute to a violation of the NAAQS based on the results of the air dispersion modeling performed. No federal or State of Florida rule or regulation requires that an air quality impact evaluation be performed for minor sources of regulated criteria air pollutants such as the proposed U.S. EcoGen Plant. U.S. EcoGen has performed this evaluation on a voluntary basis.

7.2. Introduction to Air Quality Impact Evaluation – Protocol Used and Pollutants Evaluated

A protocol (refer to Appendix B) was submitted to FDEP on March 13, 2012 to obtain confirmation that the methods by which the air quality impact analysis was to be performed were consistent with the recommended practices of the FDEP. FDEP approved the protocol on March 21, 2012 (refer to Appendix B).

U.S. EcoGen performed a voluntary air quality impact analysis for emissions of the following criteria air pollutants associated with the Plant:

- Carbon monoxide (CO);
- Particulate matter less than 10 microns in aerodynamic diameter (PM_{10});
- Particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$).
- Oxides of nitrogen (NO_x); and
- Sulfur dioxide (SO_2).

7.3. Air Quality Regulations Applicable to the Air Quality Impact Analysis

Florida has adopted the U.S. EPA's NAAQS by reference. No state specific ambient air quality standards exist currently.

7.3.1. Ambient Air Quality Standards

Air dispersion modeling was performed to demonstrate that the Plant will not cause or contribute to a violation of NAAQS by comparing predicted concentrations due to regulated air pollutant emissions from the Plant with the appropriate NAAQS.

7.4. Selected Air Dispersion Model for the Project

The most recent version of the U.S. EPA regulatory model AERMOD (Version 12060), developed by The American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee (AERMIC) was utilized for this project. Regulatory default options available in the model were used for the compliance demonstrations.

BREEZE AERMOD was used to prepare the input for and process the output from AERMOD. BREEZE AERMOD provides a graphical interface with geographic information system (GIS) capabilities to enhance the AERMOD model and aid the user with setting up the AERMOD input file and organizing and evaluating AERMOD output files. The U.S. EPA's approved regulatory AERMOD code which is used to predict ambient concentrations is unaltered by BREEZE AERMOD.

The AERMOD model family consists of several supporting pre-processor models. The following list summarizes the versions of AERMOD family software that will be used for this air dispersion modeling analysis:

- AERMOD 12060;
- Building Profile Input Program for PRIME (BPIPPRM 04274); and
- AERMAP 11103.

7.5. Model Input and Support Data

Several data elements are required as input to support the dispersion model AERMOD, including:

- Representative hourly meteorological data;
- Potential points of predicted impacts, referred to as receptor points; and
- Terrain elevations for each individual receptor point.

Each of these data elements are discussed in the following subsections of this report.

7.5.1. Meteorological Data Selection and Pre-processing

FDEP provided an AERMOD-ready meteorological (met) data set consisting of five years of met data to the applicant by email. The met data set based on Orlando, Florida National Weather Service (NWS) surface data and Tampa Bay, Florida NWS upper air data from years 2006 – 2010 was assumed to be representative of the Project in Polk County, due to the proximity of the surface station to the Plant site and qualitative assessment of the similarity in surrounding land use. This met data was processed using AERMET 11059 (the latest version).

7.5.2. Coordinate System and Receptor Network

The AERMOD model objects were located using the Universal Transverse Mercator (UTM) Zone 17 coordinate system and the North American Datum of 1983 (NAD83), with standard units of meters. The receptor grid was designed to identify the maximum points of air quality impact due to the Plant and consisted of receptors extending at least 20 kilometers from the Plant site. The ambient air boundary was defined by features which preclude public access from the Plant site. Receptors were closely spaced (50 meters) along the Plant site's ambient air boundary to identify the influence of aerodynamic building downwash. The following receptor spacing was used for the receptor grid:

- 50-meter spacing along the ambient air boundary of the Plant site;

- 100-meter spacing from the Plant fence line to one kilometer out from the Plant site;
- 200-meter spacing from one kilometers to two kilometers from the Plant site;
- 500-meter spacing from two kilometers to five kilometers from the Plant site; and
- 1,000-meter spacing from five kilometers to twenty kilometers from the Plant site.

7.5.3. Terrain Data Selection and Pre-processing

Terrain data was assigned to the receptor networks using the latest version of AERMAP (11103) and national elevation data (NED) files at 1-arc second resolution obtained from the United States Geological Survey (USGS) seamless data warehouse server. The elevation of buildings and sources on the site was based upon the planned finished grading of the site.

7.6. Plant Emission Inventory

The emission inventory of the Plant was based on the allowable emission rates requested in this permit application. The inventory was described in detail and provided with detailed backup calculations in the air permit application (Refer to Section 2). Table 7-1, Table 7-2, Table 7-3, and Table 7-4 summarize the source characteristics and emission rates modeled for this voluntary ambient air quality impact evaluation.

Consistent with the guidance in the memo "Additional Clarification Regarding the Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" (March 1, 2011 U.S. EPA Office of Air Quality Planning and Standards), the emissions of emergency and limited use equipment were scaled by the ratio of their annual operating hours allowed for testing to the number of hours in a year. This guidance requires that compliance demonstrations "address emission scenarios that can logically be assumed to be relatively continuous or which occur frequently enough to contribute significantly" to the statistical form for the NAAQS of concern. Scaling the emission rate of these emergency and limited use sources better reflects the exposure risk associated with their air emissions. The

memorandum identified above for NO_2 was also applied to SO_2 emissions evaluated from emergency equipment associated with the Plant.

7.6.1. Boiler Heat Load Alternative Modeling Scenarios

The dispersive characteristics and emission rates of regulated air pollutants vary depending upon the operational conditions of the boiler. To insure that the maximum short-term ambient air concentrations due to potential boiler emissions were identified, the BFB boiler was modeled at the following operating conditions:

- 100% heating load with high-moisture woody biomass fuel;
- 100% heating load with low-moisture woody biomass fuel;
- 75% heating load with high-moisture woody biomass fuel;
- 75% heating load with low-moisture woody biomass fuel;
- Cold-furnace startup stage with natural gas fuel;
- Warm-furnace startup stage with natural gas fuel; and
- Transitional startup stage on with natural gas and woody biomass fuel at 50% boiler heating load.

Each boiler operating condition was modeled with all other Plant sources (i.e. emergency generator, fire pump, fuel handling sources, etc.) operating at the same time.

7.7. Pollutant Specific Considerations

7.7.1. NO_x and NO_2 Tiered Screening Analysis

It was conservatively assumed that 100% of the modeled NOx emissions convert to NO_2 in the atmosphere instead of using a Tier 2 screening analysis for demonstrating compliance with the NO_2 NAAQS. In a Tier 2 analysis the ambient ratios of NO_2 to NO_x are assumed to be 0.80 for the 1-hour averaging period and 0.75 for the annual averaging period, an approach which should be accepted without further justification per the recommendations of the EPA Office of Air Quality Planning and Standards memo "Additional Clarification

Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" issued March 1, 2011.

7.7.2. PM_{10} and $PM_{2.5}$ Filterable and Condensable Portions

The emission inventories of PM_{10} and $PM_{2.5}$ from the Plant included both the filterable and condensable portions of PM_{10} and $PM_{2.5}$ emissions for the air quality impact evaluation.

7.7.3. PM_{10} and $PM_{2.5}$ Precursors

The emission inventories of PM_{10} and $PM_{2.5}$ from the Plant included only direct emissions of PM_{10} and $PM_{2.5}$. Formation of PM_{10} and $PM_{2.5}$ in the atmosphere due to emissions of precursor chemicals was not considered (except to the extent which precursor emissions form particulate matter quantified as condensable particulate matter, which was included in the emission inventory as direct emissions of PM_{10} and $PM_{2.5}$). This approach is consistent with current EPA policy since no formal guidance or methodology exists for addressing precursors.

7.8. Demonstration of Compliance with the NAAQS

An air quality impact analysis including impacts due to emissions of existing non-Plant sources was performed to demonstrate that the Plant will not cause or contribute to a violation of the NAAQS. The analysis included background concentrations based on representative ambient monitoring data to account for the impacts of non-Plant sources. Table 7-5 provides a summary of the applicable NAAQS. The statistical form of the modeled concentration is based on a 5-year National Weather Service met data set.

7.8.1. Background Concentration Included in the NAAQS Compliance Demonstration

The NAAQS compliance demonstration for each pollutant included a background concentration for each pollutant to account for the impact of non-Plant sources to ambient air concentrations. The background concentrations were based on the ambient monitoring data summarized in the FDEP's "Air Monitoring Report 2010"

(http://www.dep.state.fl.us/air/publication/technical/amr.htm), the most recent report available when the modeling protocol was submitted.

The background concentration from Table 7-6 and modeled concentration due to emissions from the Project were summed and compared with the NAAQS in the Tier 1 screening method. The background concentration and the modeled concentration may occur at a different time from one another, but they are still summed for comparison with the NAAQS in this Tier 1 NAAQS analysis.

7.8.2. Results of the Voluntary Ambient Air Quality Impact Analysis

The voluntary ambient air quality impact analysis performed demonstrated that the Plant will neither cause nor contribute to non-compliance with the NAAQS. Table 7-7 contains a summary of the model predicted concentrations, background concentrations, cumulative maximum predicted impact (sum of model-predicted and background concentration), and NAAQS. Figure 7-4 depicts these maximum predicted concentrations and background concentrations graphically with the concentrations expressed as a percentage of the applicable NAAQS. Figure 7-5, Figure 7-6, Figure 7-7, Figure 7-8, and Figure 7-9 present concentration isopleths for 24-hour average PM_{10}, 24-hour average $PM_{2.5}$, annual average $PM_{2.5}$, 1-hour average NO_2, and 1-hour average SO_2, respectively. The isopleths contour lines indicate the maximum predicted impact to ambient air quality due to the Plant across the surrounding area with the concentrations expressed as a percentage of the NAAQS.

As indicated by the PM_{10} and $PM_{2.5}$ concentration isopleths in Figure 7-5, Figure 7-6, and Figure 7-7, the predicted impacts due to emissions of particulates from the Plant are extremely localized near the boundary of the Plant. The maximum predicted impacts of PM_{10} and $PM_{2.5}$ are largely due to emissions from fugitive sources of particulates. The predicted PM_{10} and $PM_{2.5}$ concentrations are quickly reduced as the distance from these fugitive particulate sources increases.

7.9. PSD Class I Screening Analysis

The Plant site is located approximately 120 kilometers from Chassohowitzka Fish & Wildlife Refuge and 210 kilometers from the Everglades National Park which are PSD Class I areas (Figure 7-10). Impacts to these areas were

analyzed using the following initial screening criteria recommended in "Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report – Revised (2010)" (Natural Resource Report NPS/NRPC/NRR-2010/232):

1. Define the Plant emissions "Q" as the sum of annual potential emissions (assuming 8,760 operating hours) of SO_2, NO_x, PM_{10}, and H_2SO_4 in tpy.
2. Define the distance "D" as the distance between the Plant site and the nearest edge of the PSD Class I Area (Mammoth Cave) in kilometers.
3. The Plant is considered to have negligible impacts with respect to Class I Air Quality Related Values (AQRVs), including PSD Class I Increments and visibility impairment, if the ratio of Q/D is less than 10. No further analysis, such as dispersion modeling, is required in this case.

The results of this analysis as indicated in Table 7-8 and Figure 7-10 demonstrate that the Plant will have a negligible impact to PSD Class I Area AQRVs. Because the Plant is not subject to PSD review, the Federal Land Manager (FLM) was not notified of the results of this screening analysis.

Please refer to Appendix C of this application for a compact disc (CD) containing the air dispersion modeling files.

8. Florida Application Forms

According to F.A.C. 62-210.900, this application must include the appropriate application forms. The forms are listed by rule number, which is also the form number, with the subject, title and effective date.

The "Application for Air Permit – Long Form" is to be used to apply for an initial, revised, or renewal Title V air operation permit; an initial federally enforceable state air operation permit (FESOP); or an air construction permit for one or more of the following situations: a proposed modification of a facility currently operating under a FESOP or a Title V air operation permit; a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment area new source review, or maximum achievable control technology (MACT); any source where the applicant is proposing to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, non-attainment area review, Title V, or MACT; or any source where the applicant is proposing to establish, renew or revise a plantwide applicability limit (PAL). Also, this form is to be used to apply for both an air construction permit and a revised or renewal Title V air operation permit incorporating the proposed project if requesting optional concurrent processing of both applications.

The required long form which should be included in an air permit application (refer to Appendix A for a completed copy of this form) is as follows:

- DEP Form No. 62-210.900(1) - Application for Air Permit – Long Form, Form and Instructions

The form is separated into specific sections:

- I. Application Information
    - Identification of Facility
    - Application Content
    - Application Processing Information
    - Purpose of Application
    - Application Comments

- Scope of Application
- Application Processing Fee
- Owner/Authorized Representative Statement
- Application Responsible Official Certification
- Professional Engineer Certification

- II. Facility Information
  - General Facility Information
    - Facility Location and Type
    - Facility Contact
    - Facility Primary Responsible Official
    - Facility Regulatory Classifications
    - List of Pollutants Emitted by Facility
  - Emission Caps
    - Facility-Wide or Multi-Unit Emission Caps
  - Facility Additional Information
    - Additional Requirements for All Applications, Except as Otherwise Stated
    - Additional Requirements for Air Construction Permit Applications
    - Additional Requirements for Facilities Subject to Acid Rain, CAIR, or Hg Budget Programs

- III. Emission Unit Information
  - General Emission Unit Information
    - Emission Unit Description and Status
    - Emission Unit Control Equipment/Method
  - Emission Unit Capacity Information

- Emission Unit Operating Capacity and Schedule

- Emission Point (Stack/Vent) Information
  - Emission Point Description and Type

- Segment (Process/Fuel) Information
  - Segment Description and Rate

- Emission Unit Pollutants
  - List of Pollutants Emitted by Emission Units

- Emission Unit Pollutant Detail Information – Potential, Fugitive, and Actual Emissions
  - Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

- Emission Unit Pollutant Detail Information – Allowable Emissions
  - Allowable Emissions

- Visible Emissions Information
  - Visible Emission Limitation

- Continuous Monitor Information
  - Continuous Monitoring System

- Emission Unit Additional Information
  - Additional Requirements for All Applications, Except as Otherwise Stated
  - Additional Requirements for Air Construction Permit Applications

8.1. Application Forms Included in this Application

U.S. EcoGen has completed and included the following application forms as part of this application request for construction. The forms have been

completed with the best data and information currently available. All data and information is intended to incorporate worst case design of the Plant. Information specific to equipment model and manufacturer will not be available until final engineering is performed for the proposed Plant. **The following forms have been completed and included in Appendix A of this document:**

- DEP Form NO. 62-210.900(1) provides specific information related to the Plant (i.e., 63-MW clean woody biomass electrical generating facility); and

- Emission unit information forms have been included for the following emission units associated with the proposed Plant:

    - EU-001 – Fuel Receiving, Handling, Storage and Processing;
    - EU-002 – Power Island;
    - EU-003 – Fly Ash Handling, Storage and Shipment; and
    - EU-004 – Emergency Support Equipment.

Location of Proposed Project Site

Fort Meade, Florida

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Figure 1-1. Location of Proposed Project Site in Relationship to Fort Meade, Florida

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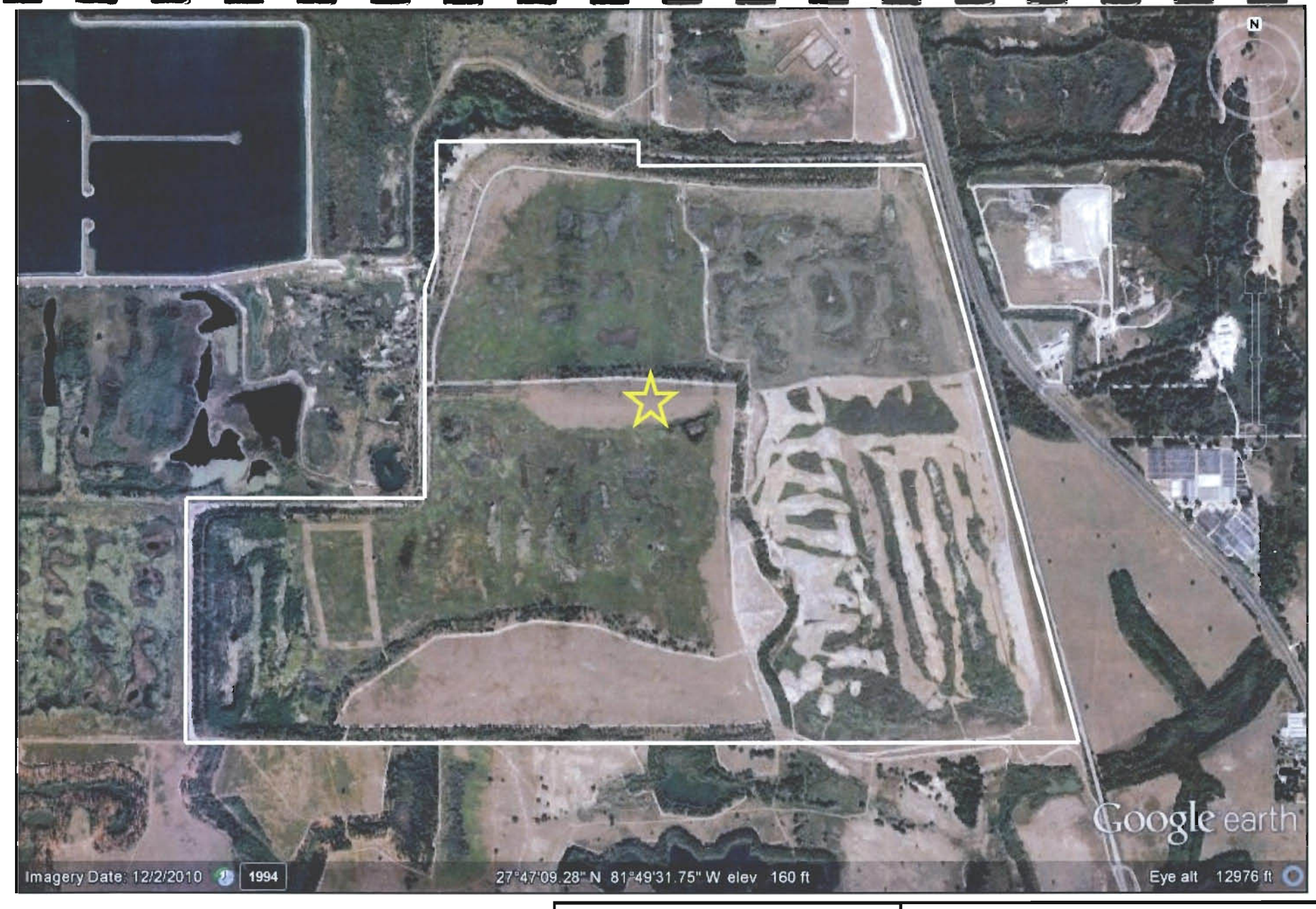

*Note: White lines identify boundary of proposed project site.

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Proposed Project Site

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Figure 1-2. Aerial View of Proposed Project Site

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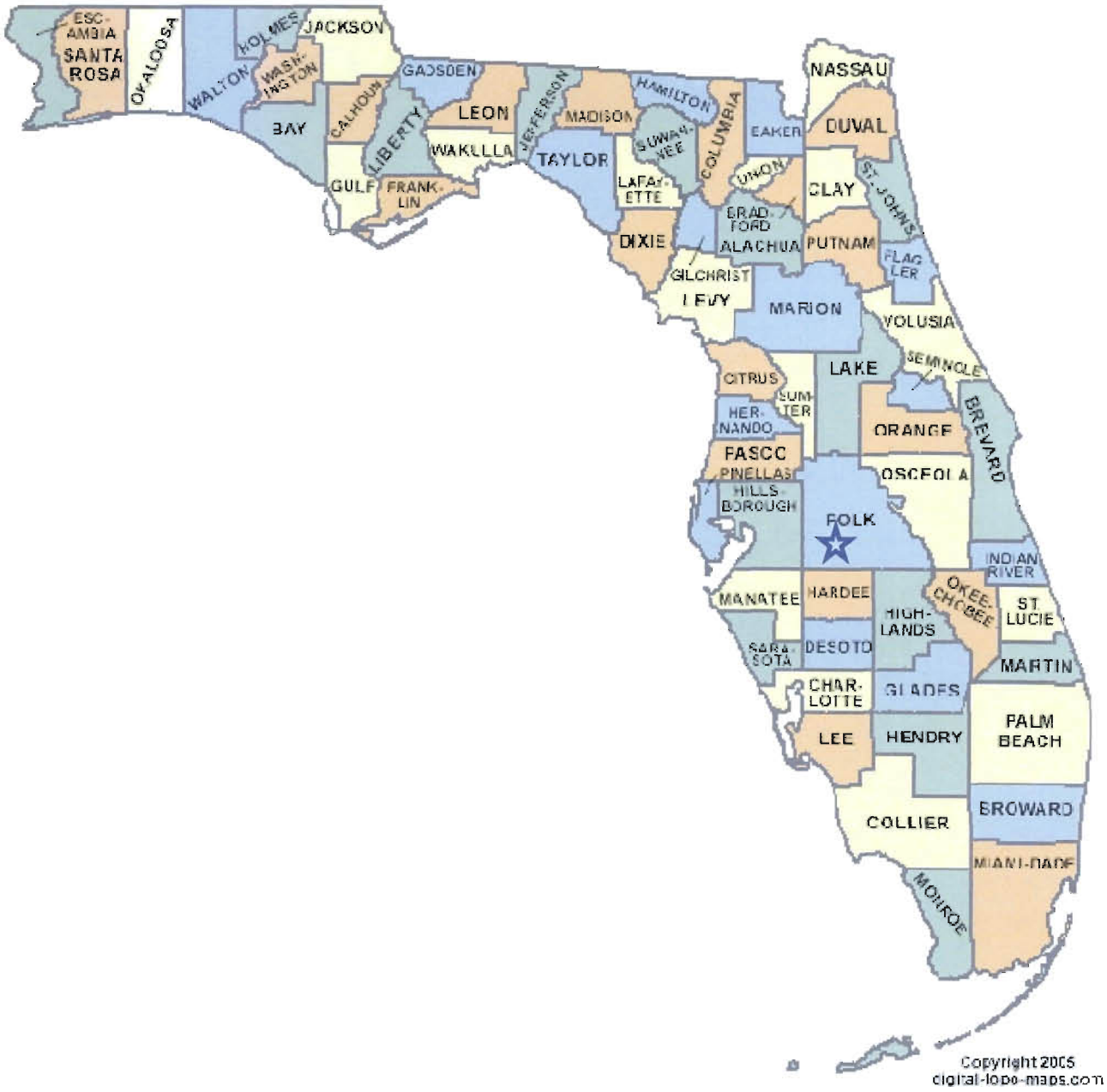
Polk County, Florida
April 2012



★ Proposed project to be located northwest of the town of Fort Meade in Polk County, Florida.

Figure 1-3. Location of Polk County in Florida

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Polk County, Florida
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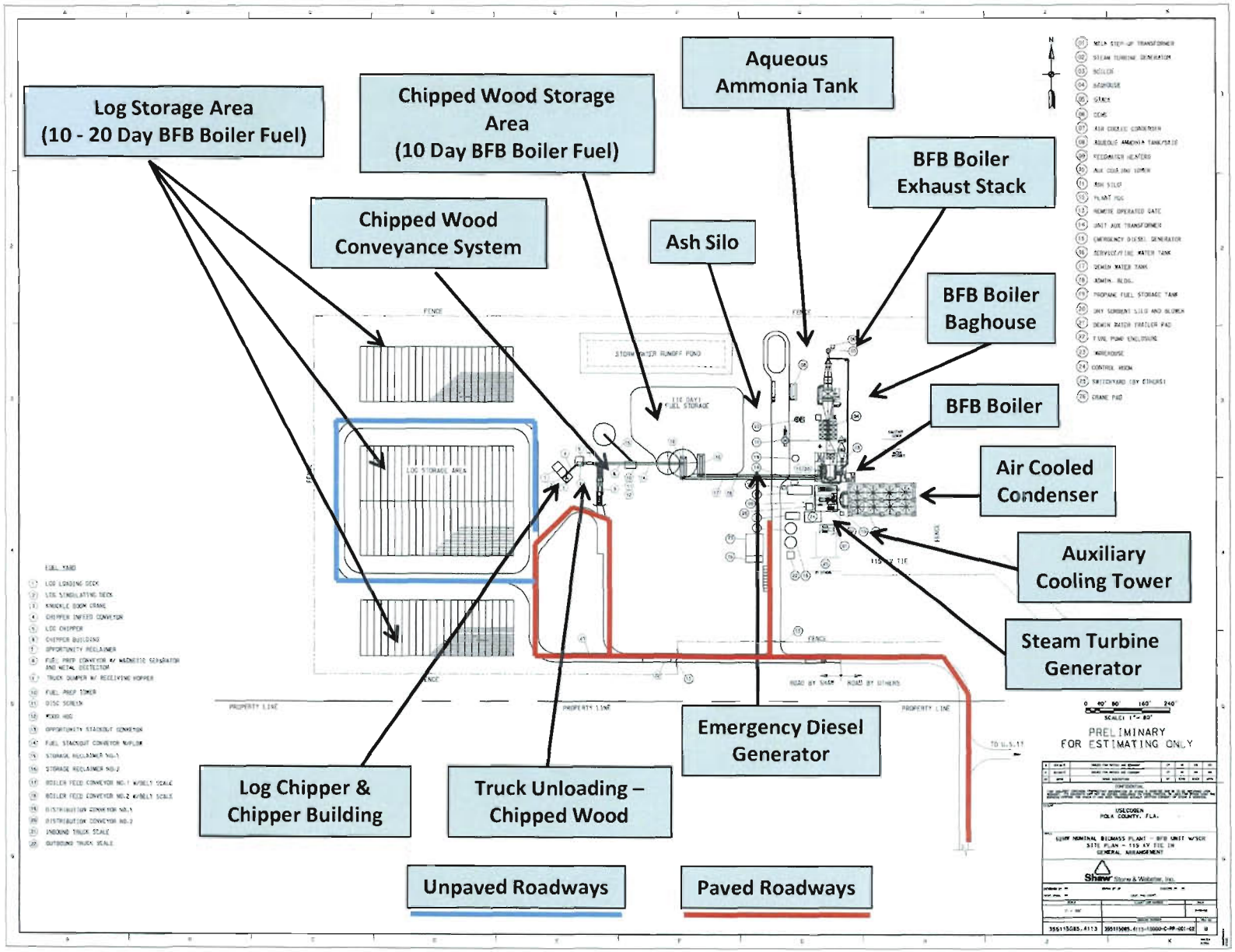

Figure 2-1. Preliminary Layout of Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

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PRE-PROCESSED CLEAN CHIPPED WOODY BIOMASS RECEIVING

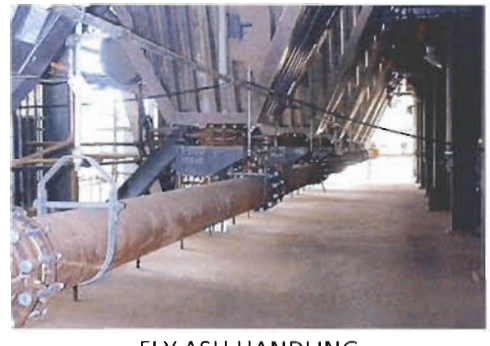
CLEAN CHIPPED WOODY BIOMASS CONVEYING WITH COVER

CLEAN CHIPPED WOODY BIOMASS FUEL STORAGE

FUEL (EUCALYPTUS) LOG HANDLING EQUIPMENT

FUEL (EUCALYPTUS) TREE FARM

FUEL (EUCALYPTUS) STORAGE PILE



FLY ASH HANDLING

FLY ASH SILO

INDUCED DRAFT SINGLE CELL COOLING TOWER

EMERGENCY FIRE WATER PUMP

EMERGENCY GENERATOR

Figure 2-2. Representative Photographs of Fuel Handling Operations, Biomass Grinder/Chipper, Fly Ash Handling and Emergency Equipment

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BFB Bottom Supported

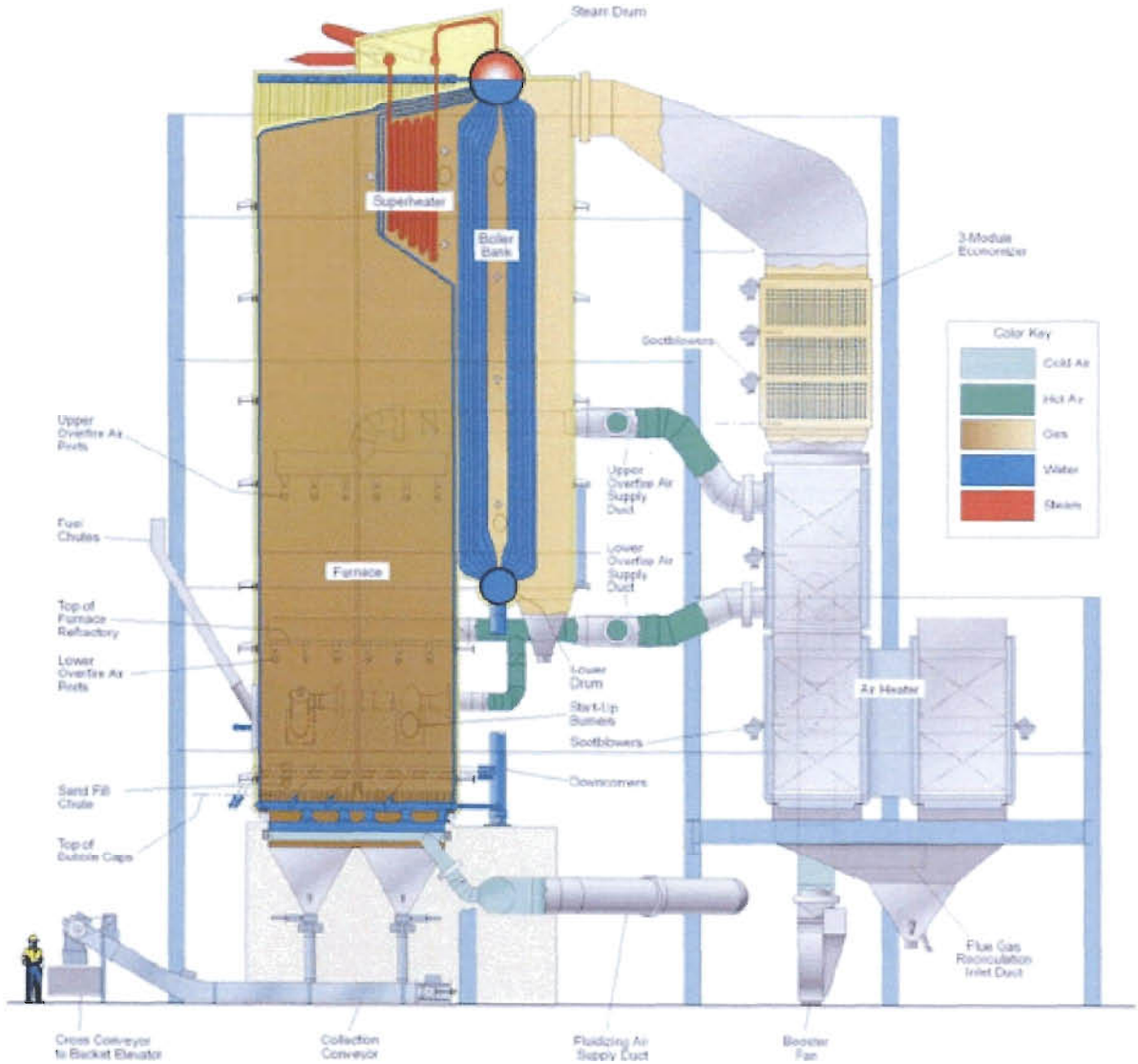

Figure 2-3. Diagram of Representative Bubbling Fluidized Bed Boiler

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Polk County, Florida
April 2012

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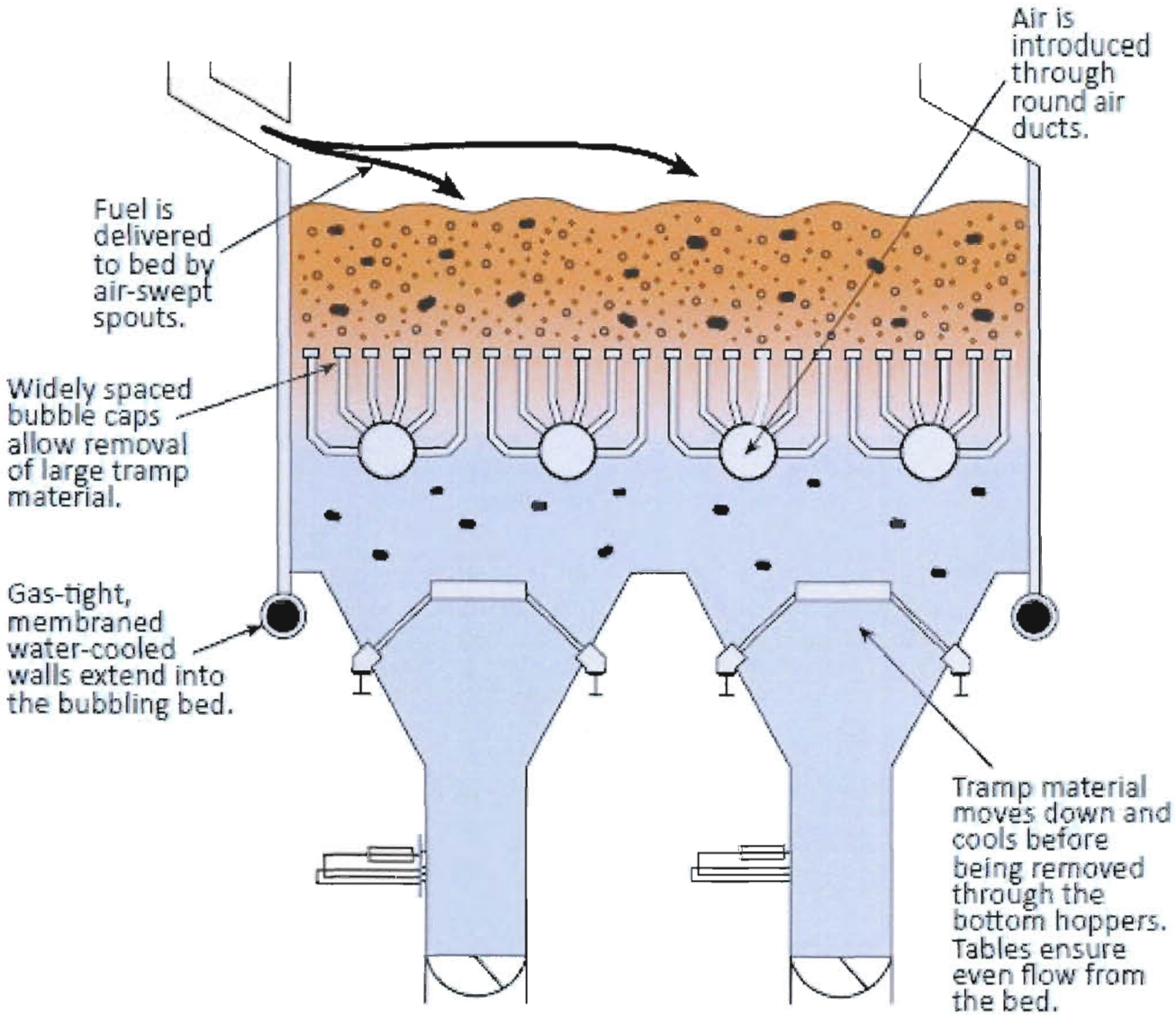

Figure 2-4. Diagram of Representative Bubbling Fluidized Bed Boiler Combustion Zone

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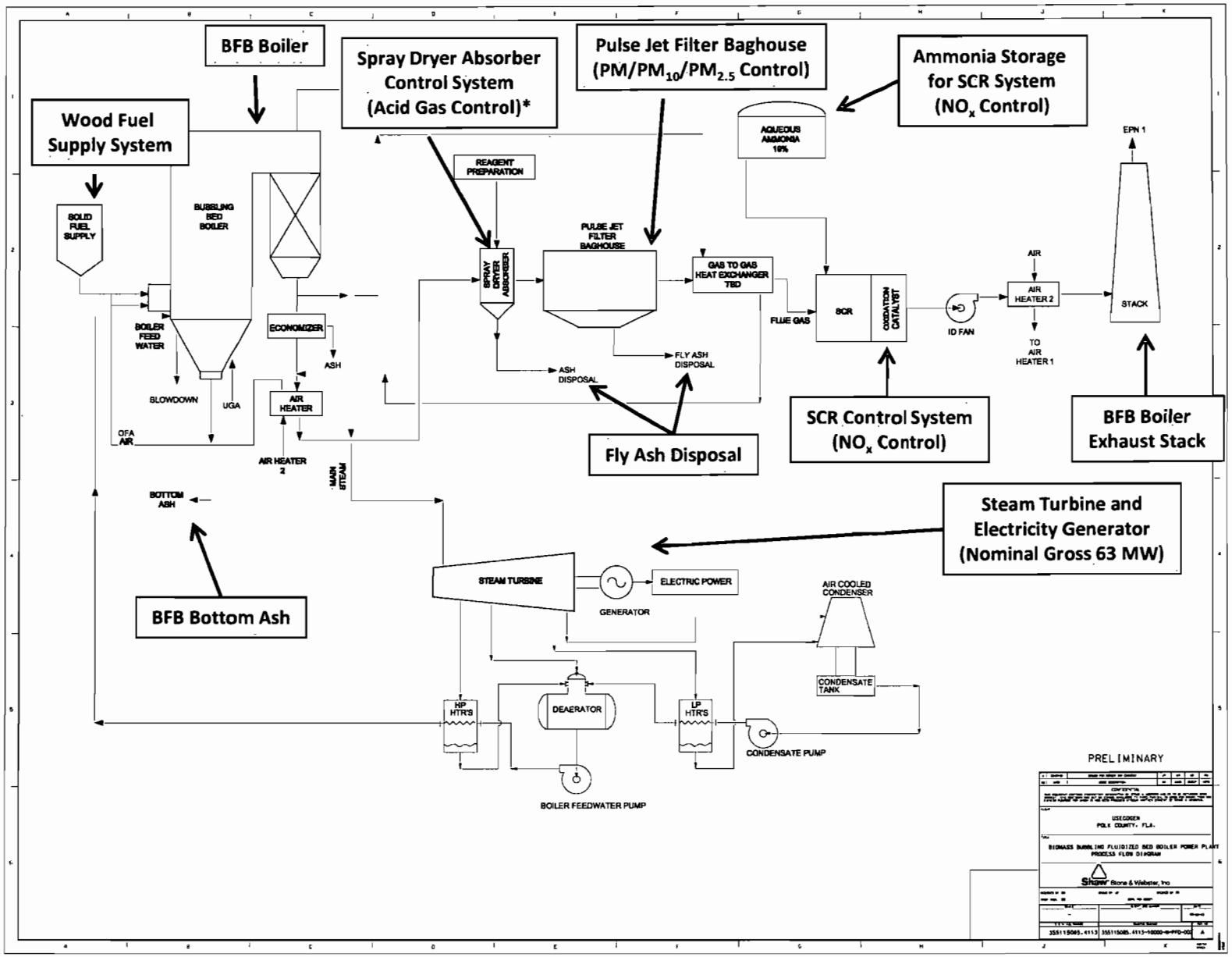

Note:
*U.S. EcoGen is also evaluating as an alternative for acid gas control a multilevel / multipoint dry sorbent injection (DSI) and multicyclone system.

Figure 2-5. Biomass Bubbling Fluidized Bed (BFB) Boiler and Supplemental Equipment Process Flow Diagram

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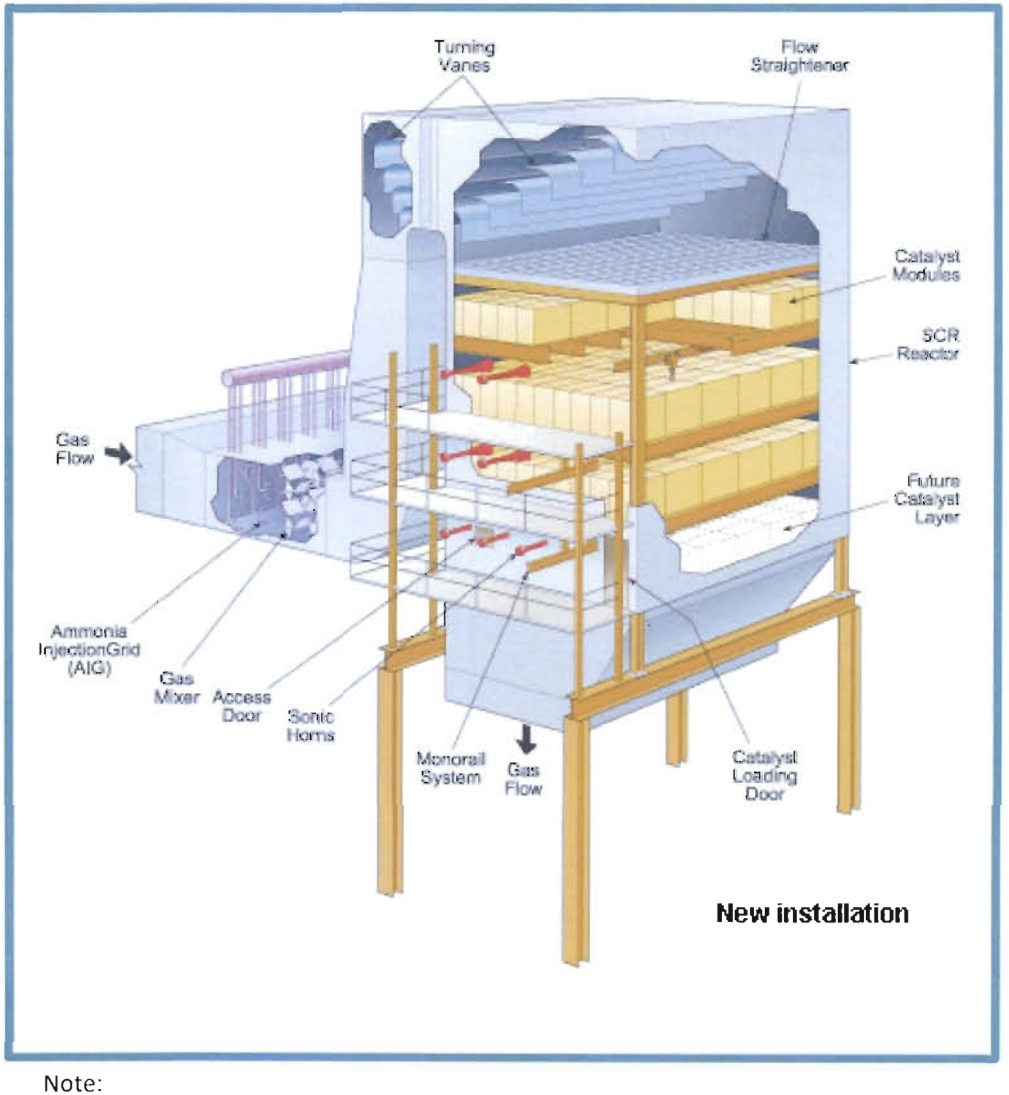
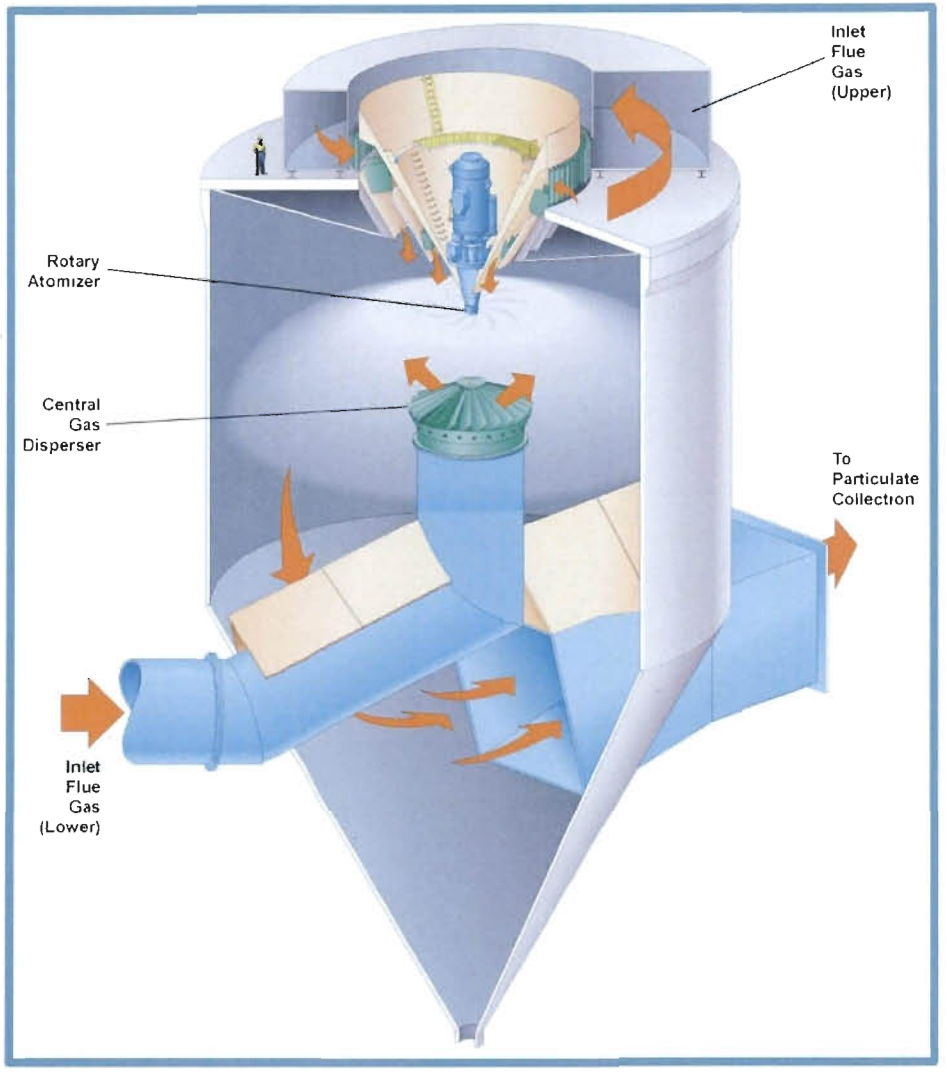
SELECTIVE CATALYTIC REDUCTION (SCR)



SPRAY DRY ABSORBER (SDA)*



Note:
*U.S. EcoGen is also evaluating as an alternative to the SDA a multilevel / multipoint dry sorbent injection (DSI) and multicyclone system for acid gas control.

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Figure 2-5A. BFB Boiler Control Equipment – Selective Catalytic Reduction (SCR) and Spray Dryer Absorber (SDA)

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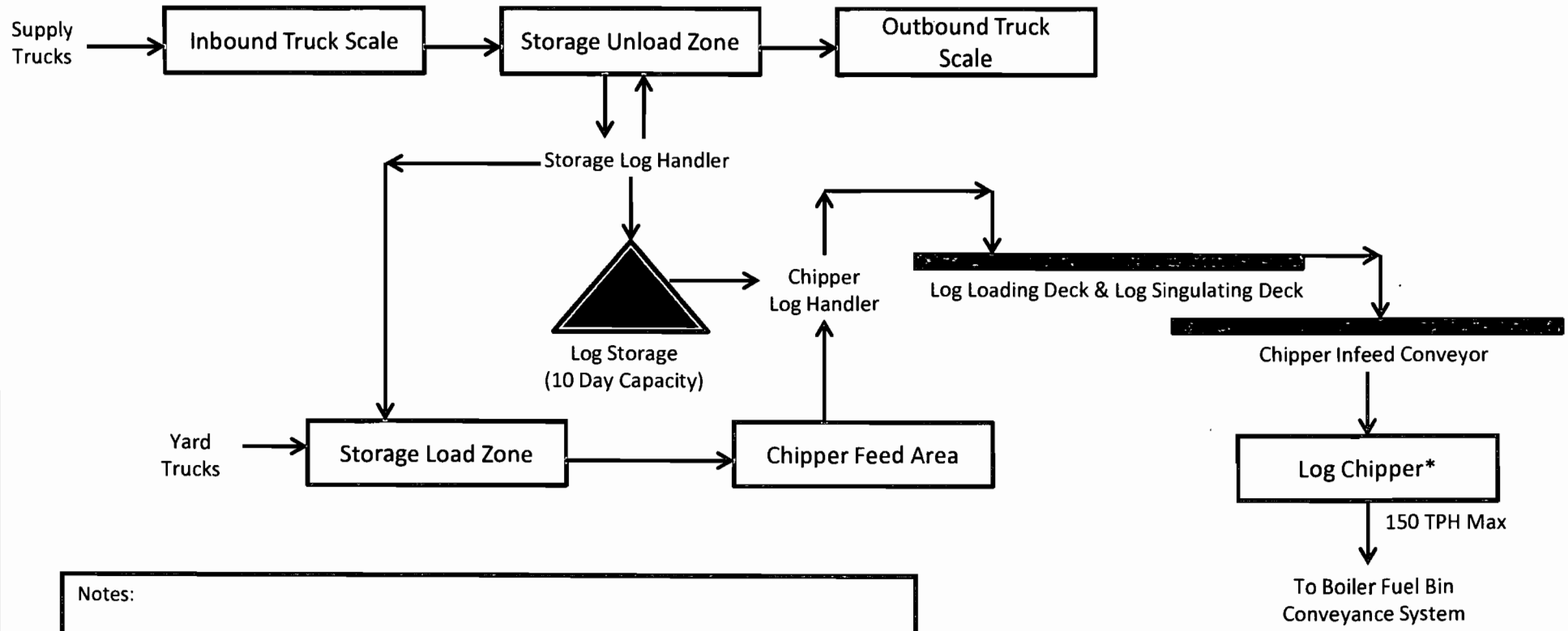

Notes:

*Log chipper to be located in the Chipper Building.

Maximum Consumption Rate (MCR)
15,000 TPW (Approx. 90 TPH)

Log Receiving Operations
6 days/week, 10 hours/day, 250 TPH
25 tons/truckload, 10 trucks/hour
8 tons/long handler grab, 32 grabs/hour

Chipper Feed Operations
5 days/week, 24 hours/day, 150 TPH
6 trucks/hour, 19 grabs/hour

Figure 2-6. Log Handling System (Fuel Yard) Process Flow Diagram

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Polk County, Florida
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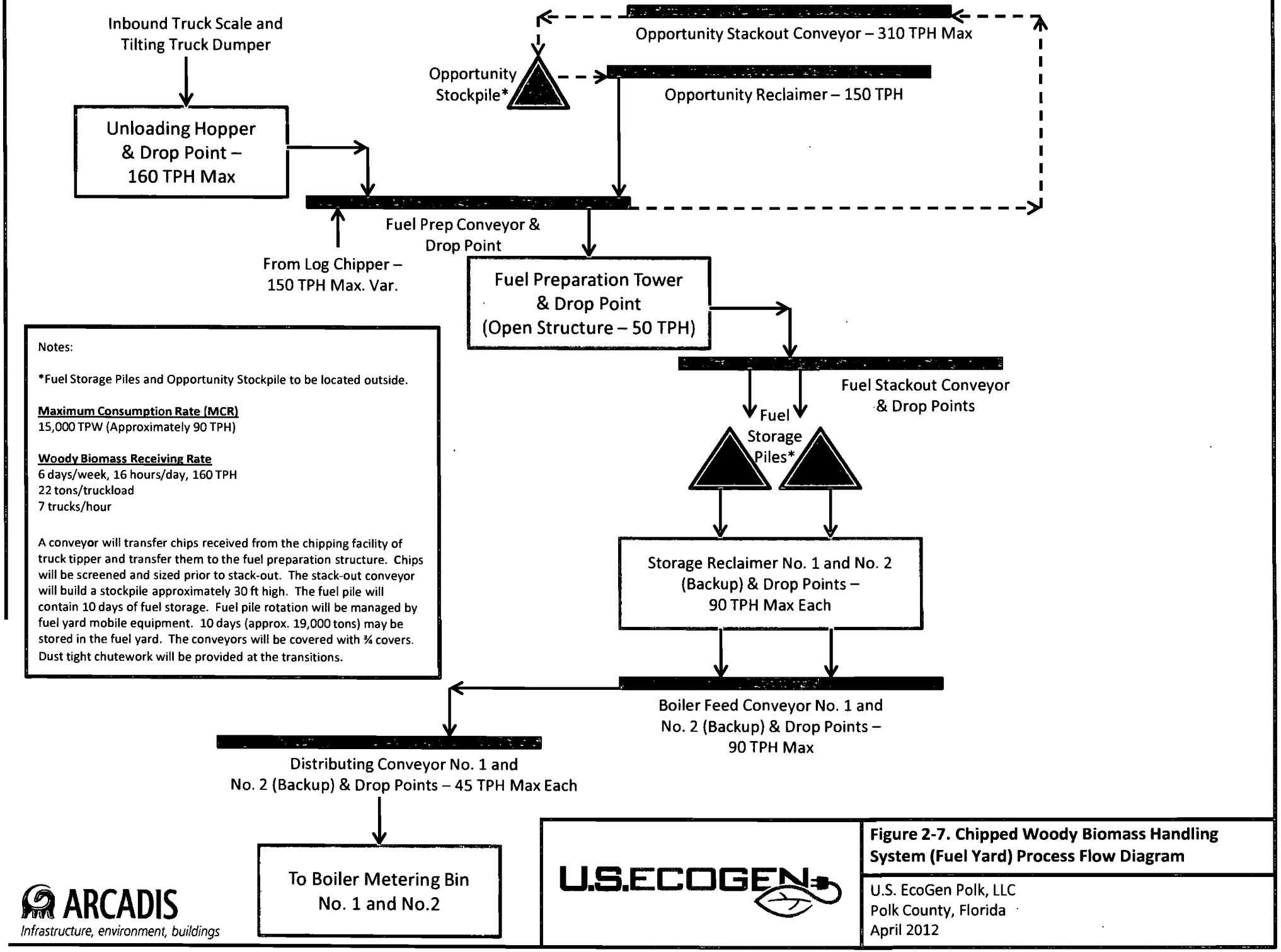

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Figure 2-7. Chipped Woody Biomass Handling System (Fuel Yard) Process Flow Diagram

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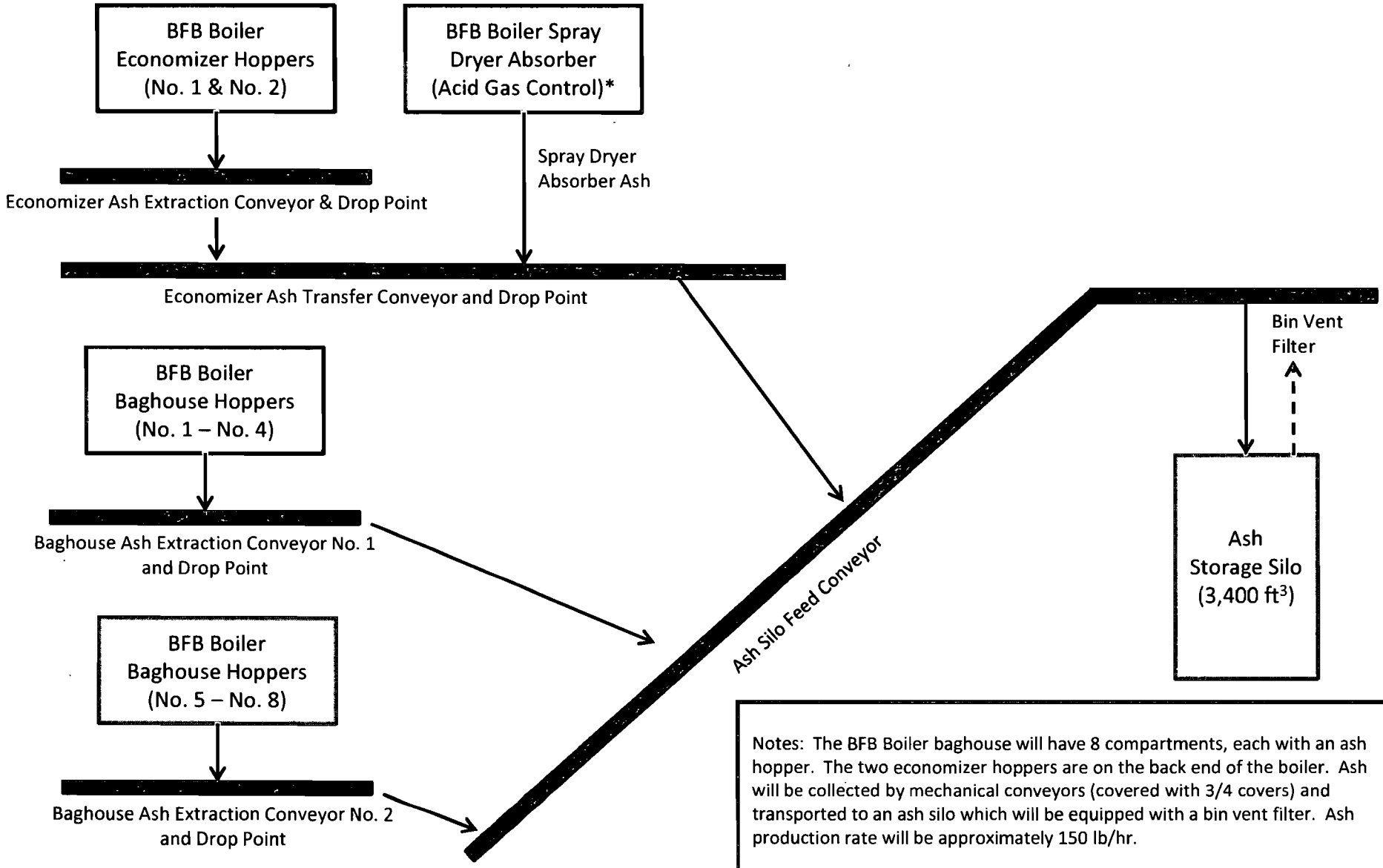

Notes: The BFB Boiler baghouse will have 8 compartments, each with an ash hopper. The two economizer hoppers are on the back end of the boiler. Ash will be collected by mechanical conveyors (covered with 3/4 covers) and transported to an ash silo which will be equipped with a bin vent filter. Ash production rate will be approximately 150 lb/hr.

Ash will be discharged from the silo through an ash conditioner which will add water to minimize dusting. Discharge rate will be approximately 80 tons/hour.

Note:
*U.S. EcoGen is also evaluating as an alternative to the SDA a multilevel / multipoint dry sorbent injection (DSI) and multicyclone system for acid gas control. If this system is chosen for acid gas control, there will be an additional fly ash pick up point at the new multi-cyclone In addition to the baghouse points.

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Figure 2-8. Fly Ash Handling System Process Flow Diagram

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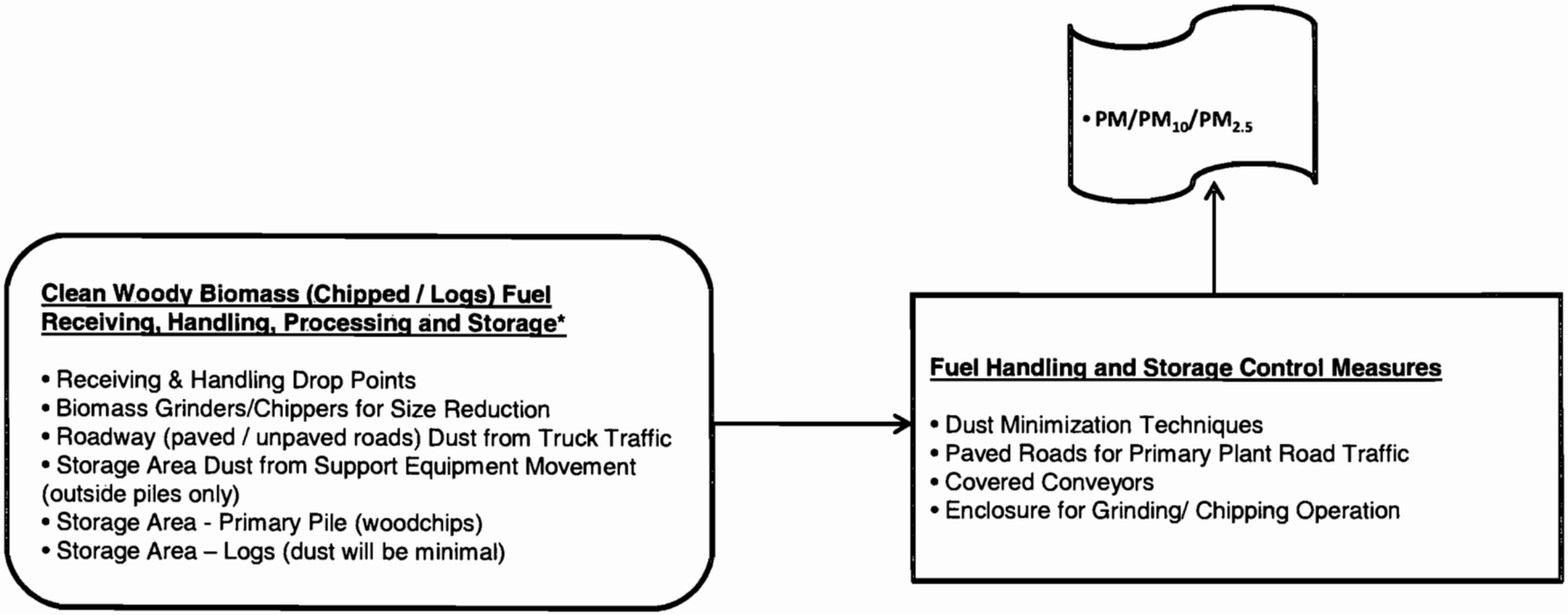

Notes:

*Stationary wood grinder/chipper (electric driven) will be used to chip stored solid or bundled wood.

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Figure 2-9. Fuel Receiving, Handling, Storage and Processing Process Flow Diagram

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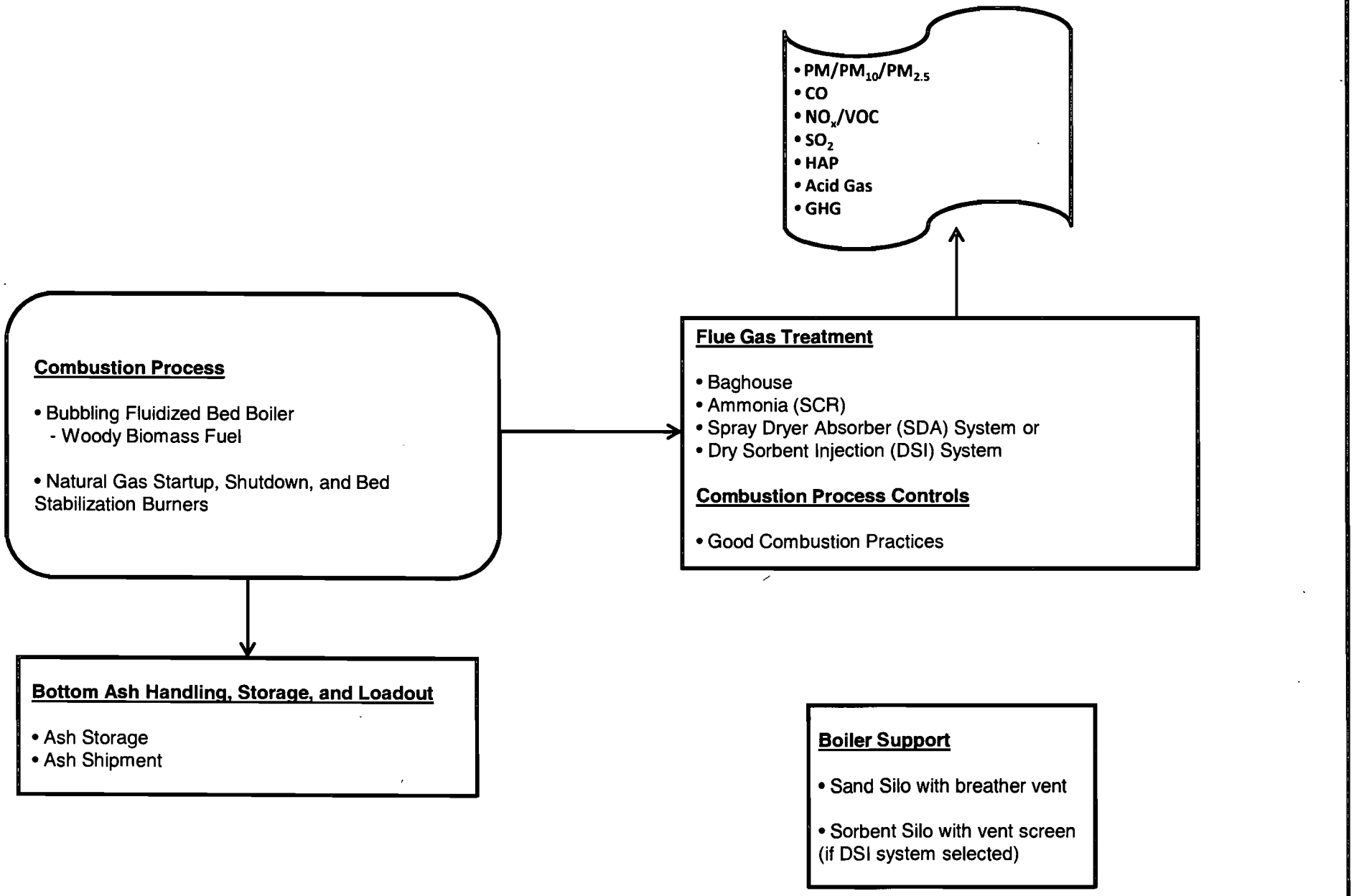

Figure 2-10. Power Island Process Flow Diagram

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Polk County, Florida
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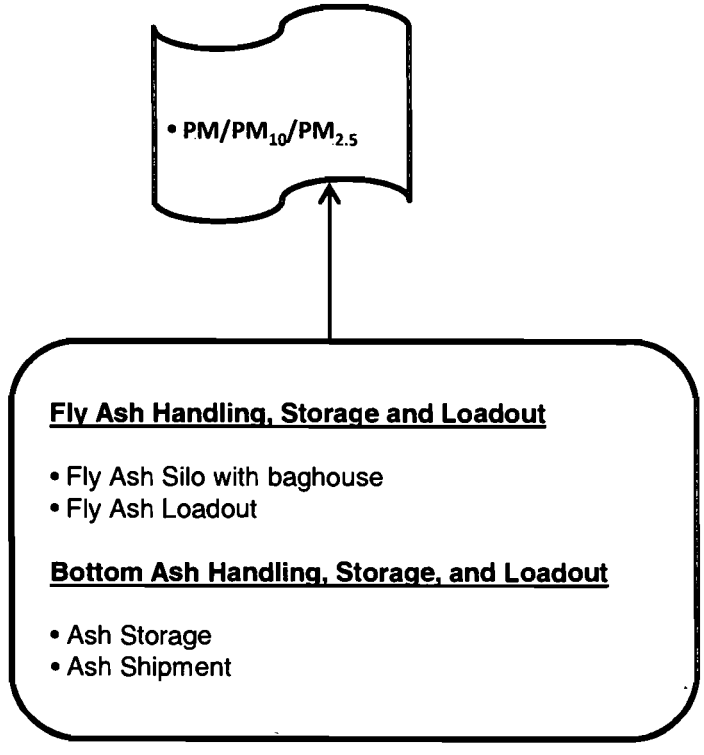

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Figure 2-11. Ash Handling, Storage and Shipment Process Flow Diagram

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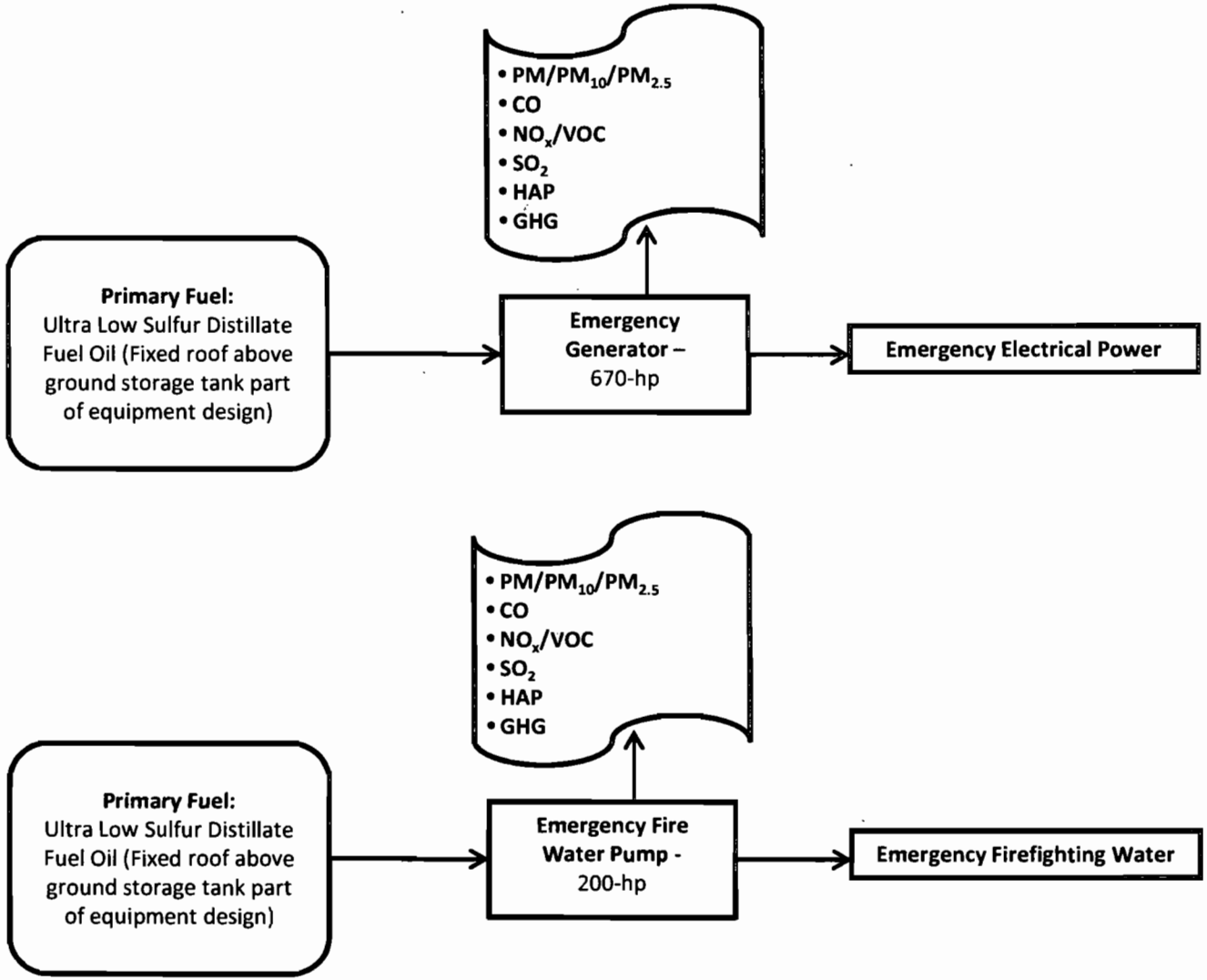

Notes: Ultra low sulfur distillate fuel is defined under NSPS as a distillate fuel oil with sulfur content of 0.0015% or less.

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Figure 2-12. Emergency Equipment Process Flow Diagram

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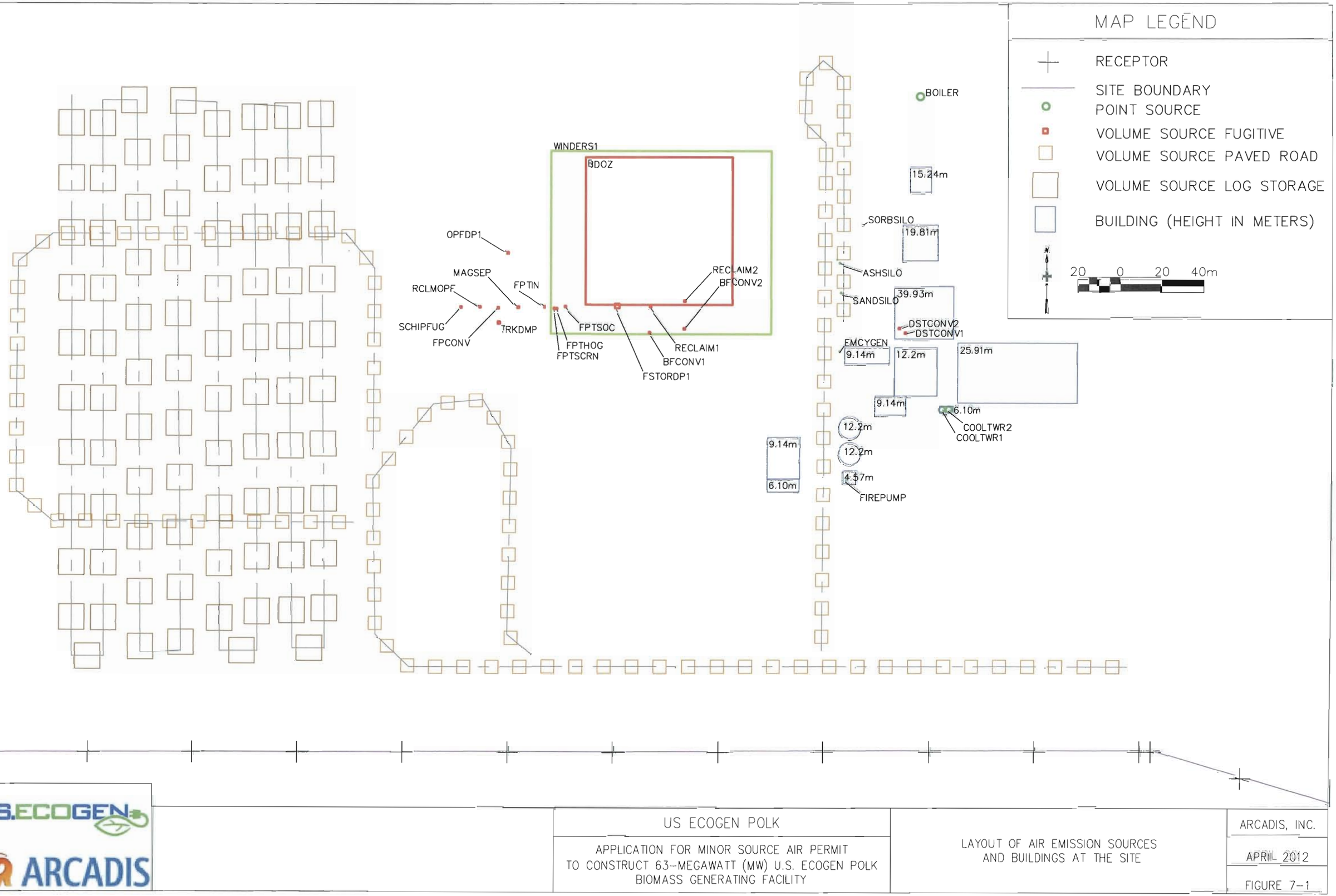

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US ECOGEN POLK

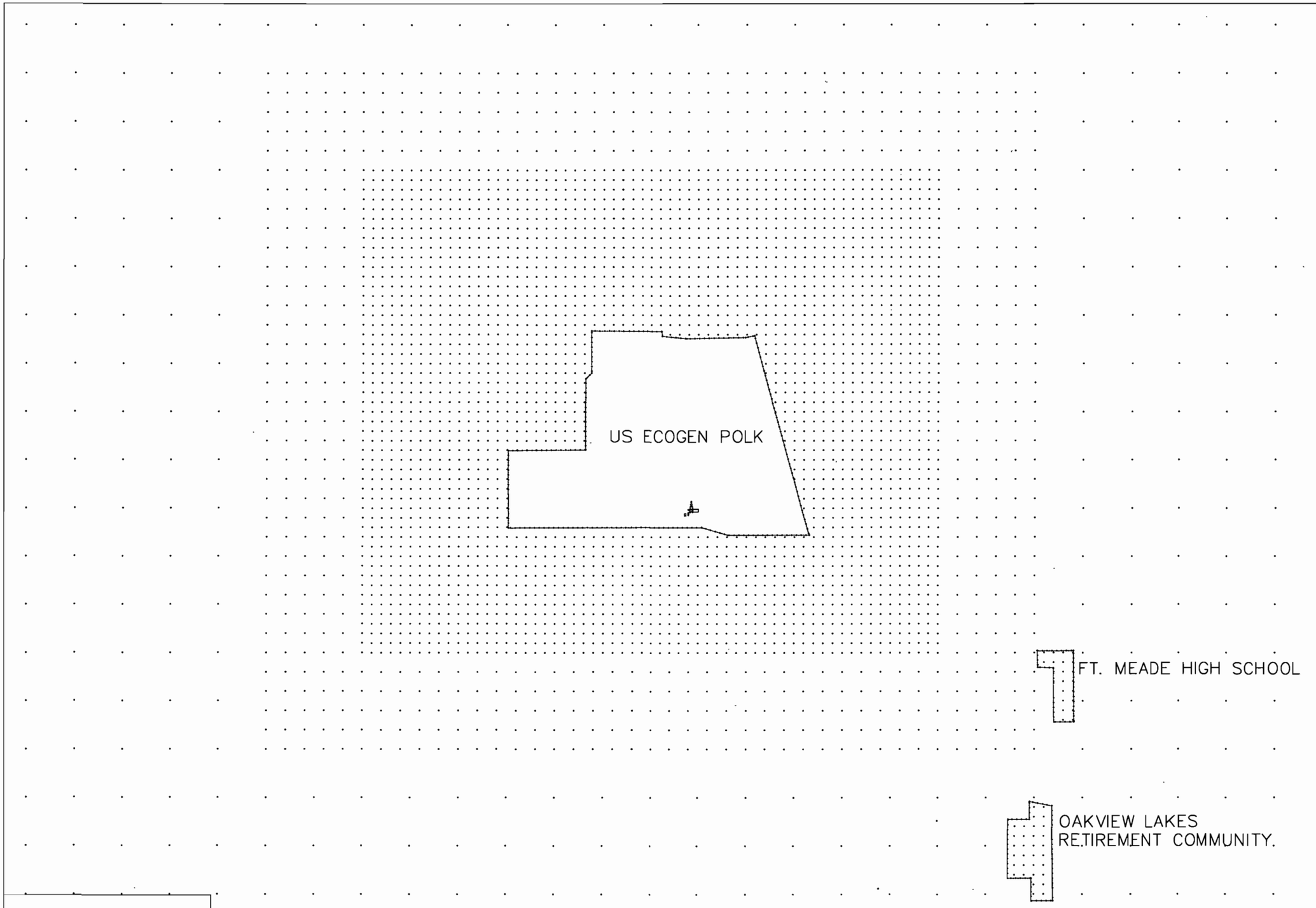
APPLICATION FOR MINOR SOURCE AIR PERMIT
TO CONSTRUCT 63-MEGAWATT (MW) U.S. ECOGEN POLK
BIOMASS GENERATING FACILITY

LAYOUT OF AIR EMISSION SOURCES
AND BUILDINGS AT THE SITE

ARCADIS, INC.

APRIL 2012

FIGURE 7-1



MAP LEGEND

- RECEPTOR
- SITE BOUNDARY
- BUILDING ON SITE

N

500 0 500 1,000m

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US ECOGEN POLK

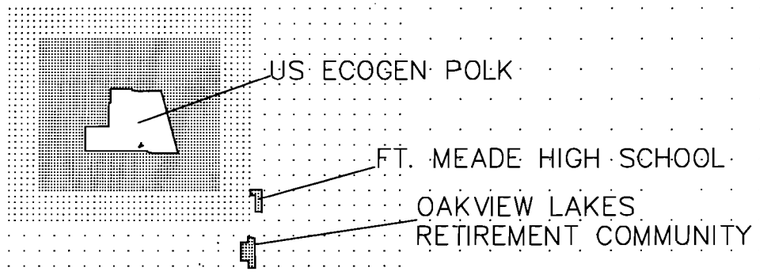
APPLICATION FOR MINOR SOURCE AIR PERMIT
TO CONSTRUCT 63-MEGAWATT (MW) U.S. ECOGEN POLK
BIOMASS GENERATING FACILITY

LAYOUT OF RECEPTORS WITHIN APPROXIMATELY
FIVE KILOMETERS OF PROJECT SITE

ARCADIS, INC.

APRIL 2012

FIGURE 7-2



MAP LEGEND

RECEPTOR

2.5 0 2.5 5.0km

THE FOLLOWING RECEPTOR SPACING WAS USED IN THE AIR DISPERSION MODELING ANALYSIS:

50-METER SPACING ALONG THE AMBIENT AIR BOUNDARY OF THE PROJECT SITE;

100-METER SPACING FROM THE PROJECT FENCE LINE TO ONE KILOMETER OUT FROM THE PROJECT SITE;

200-METER SPACING FROM ONE KILOMETERS TO TWO KILOMETERS FROM THE PROJECT SITE;

500-METER SPACING FROM TWO KILOMETERS TO FIVE KILOMETERS FROM THE PROJECT SITE; AND

1,000-METER SPACING FROM FIVE KILOMETERS TO TWENTY KILOMETERS FROM THE PROJECT SITE.

ADDITIONAL RECEPTORS WERE PLACED AT 50-METER SPACING ON THE BOUNDARY AND 100-METER SPACING ON THE SITE OF FORT MEADE HIGH SCHOOL AND OAKVIEW RETIREMENT COMMUNITY TO INSURE THAT THE MAXIMUM CONCENTRATION AT THESE SITES WAS PREDICTED DURING THE MODELING.

U.S.ECOGEN

ARCADIS

US ECOGEN POLK

APPLICATION FOR MINOR SOURCE AIR PERMIT
TO CONSTRUCT 63-MEGAWATT (MW) U.S. ECOGEN POLK
BIOMASS GENERATING FACILITY

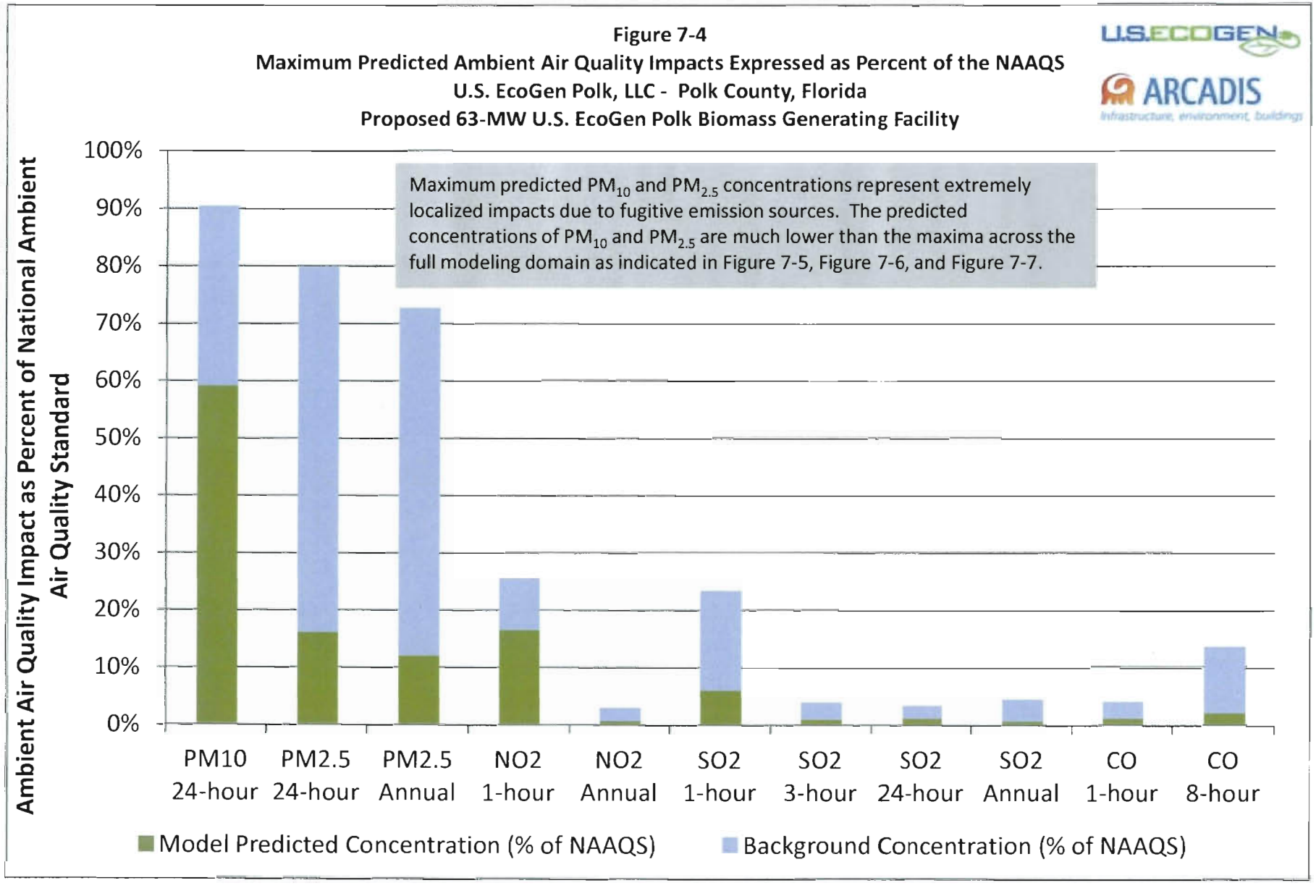
LAYOUT OF RECEPTORS
ACROSS THE ENTIRE MODELING DOMAIN

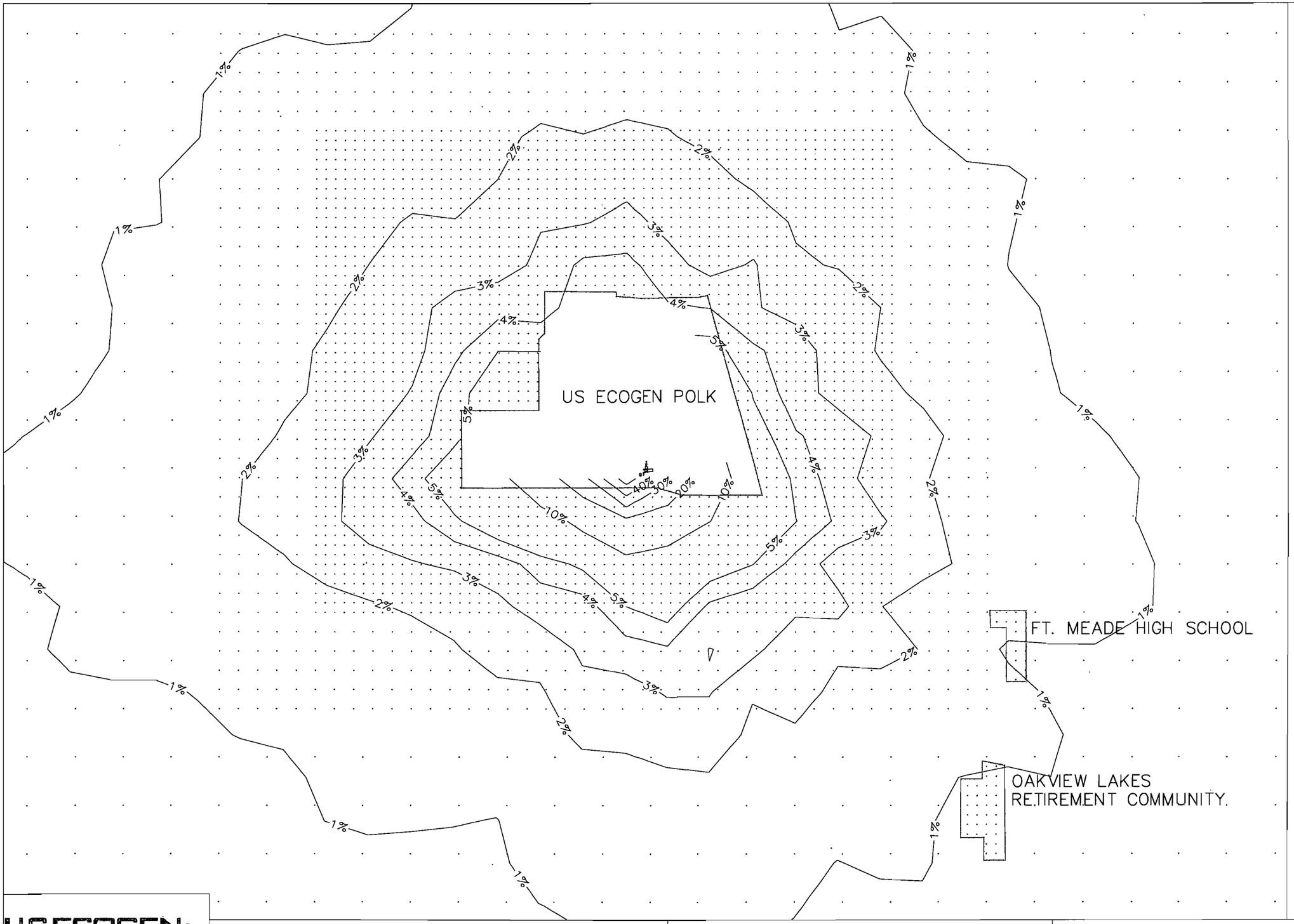
ARCADIS, INC.

APRIL 2012

FIGURE 7-3

Figure 7-4
Maximum Predicted Ambient Air Quality Impacts Expressed as Percent of the NAAQS
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility





MAP LEGEND

- · RECEPTOR
- – SITE BOUNDARY
- ▫ BUILDING ON SITE

N

500 0 500 1,000m

NOTES:

CONCENTRATION ISOPLETH CONTOUR LINES REPRESENT HIGHEST, SIXTH HIGH 24-HOUR AVERAGE PM10 CONCENTRATION OVER THE FIVE MODELED YEARS AS A PERCENTAGE OF THE PM10 24-HOUR AVERAGE NAAQS.

U.S.ECOGEN

ARCADIS

US ECOGEN POLK

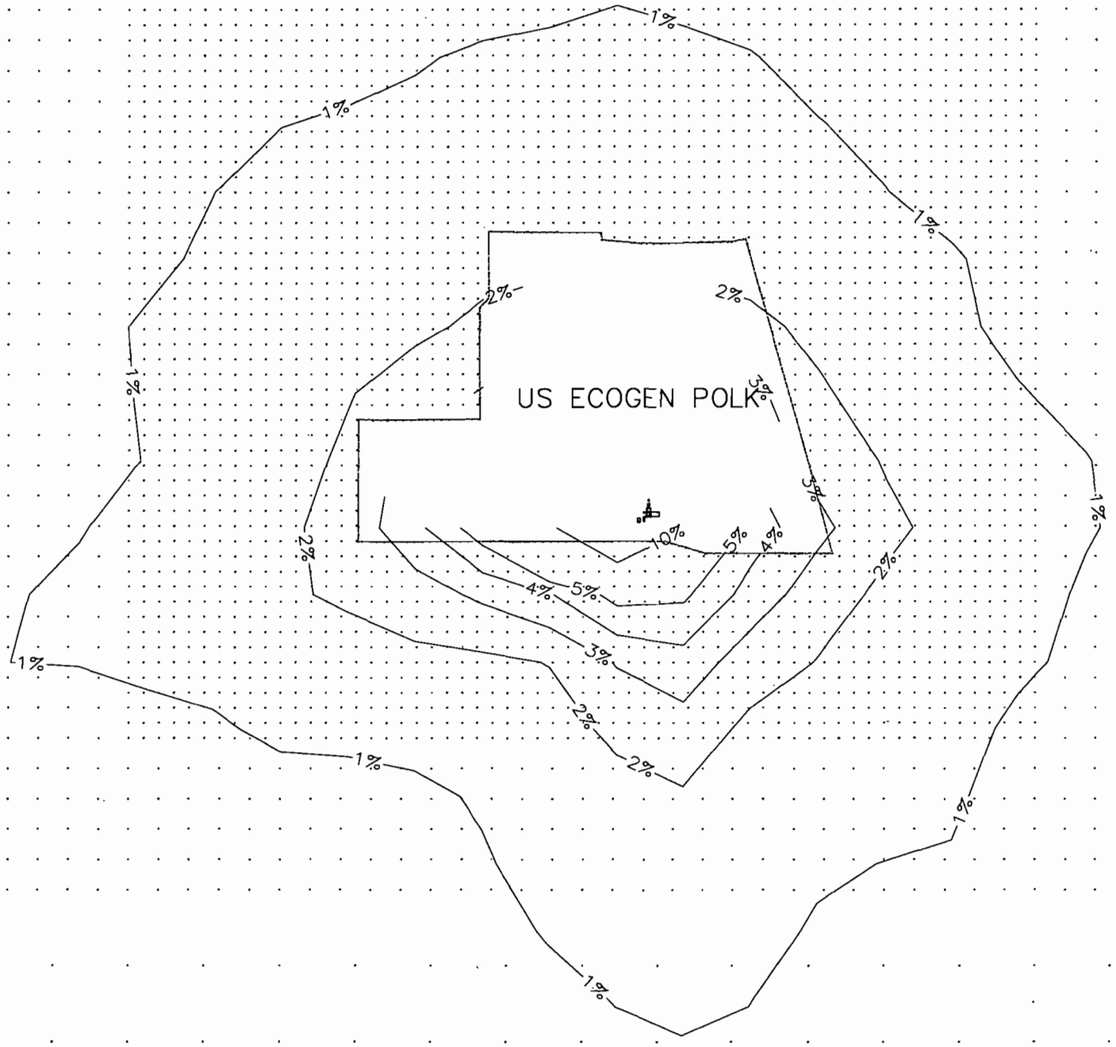
APPLICATION FOR MINOR SOURCE AIR PERMIT
TO CONSTRUCT 63-MEGAWATT (MW) U.S. ECOGEN POLK
BIOMASS GENERATING FACILITY

MAXIMUM PREDICTED 24-HOUR AVERAGE PM10 IMPACTS IN THE AREA DUE TO EMISSIONS FROM THE PROPOSED PLANT EXPRESSED AS PERCENT OF THE APPLICABLE NAAQS

ARCADIS, INC.

APRIL 2012

FIGURE 7-5



FT. MEADE HIGH SCHOOL

OAKVIEW LAKES
RETIREMENT COMMUNITY.

MAP LEGEND

- · RECEPTOR
- – SITE BOUNDARY
- ▫ BUILDING ON SITE

N

500 0 500 1,000m

NOTES:

CONCENTRATION ISOPLETH CONTOUR LINES REPRESENT AVERAGE EIGHTH HIGHEST 24–HOUR AVERAGE PM2.5 CONCENTRATION OVER THE FIVE MODELED YEARS AS A PERCENTAGE OF THE PM2.5 24–HOUR AVERAGE NAAQS.

U.S.ECOGEN

ARCADIS

US ECOGEN POLK

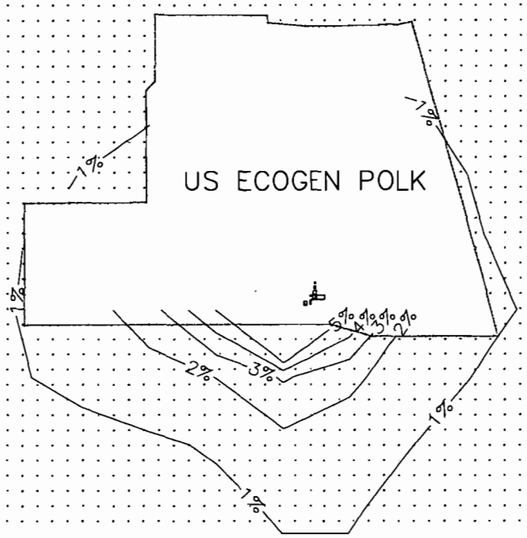
APPLICATION FOR MINOR SOURCE AIR PERMIT TO CONSTRUCT 62.5–MEGAWATT (MW) CLEAN WOODY BIOMASS POWER PLANT

MAXIMUM PREDICTED 24–HOUR AVERAGE PM2.5 IMPACTS IN THE AREA DUE TO EMISSIONS FROM THE PROPOSED PLANT EXPRESSED AS PERCENT OF THE APPLICABLE NAAQS

ARCADIS, INC.

APRIL 2012

FIGURE 7–6



FT. MEADE HIGH SCHOOL

OAKVIEW LAKES
RETIREMENT COMMUNITY.

MAP LEGEND

- RECEPTOR
- SITE BOUNDARY
- BUILDING ON SITE

500 0 500 1,000m

NOTES:

CONCENTRATION ISOPLETH CONTOUR LINES REPRESENT AVERAGE ANNUAL AVERAGE PM2.5 CONCENTRATION OVER THE FIVE MODELED YEARS AS A PERCENTAGE OF THE PM2.5 24-HOUR AVERAGE NAAQS.

U.S.ECOGEN

ARCADIS

US ECOGEN POLK

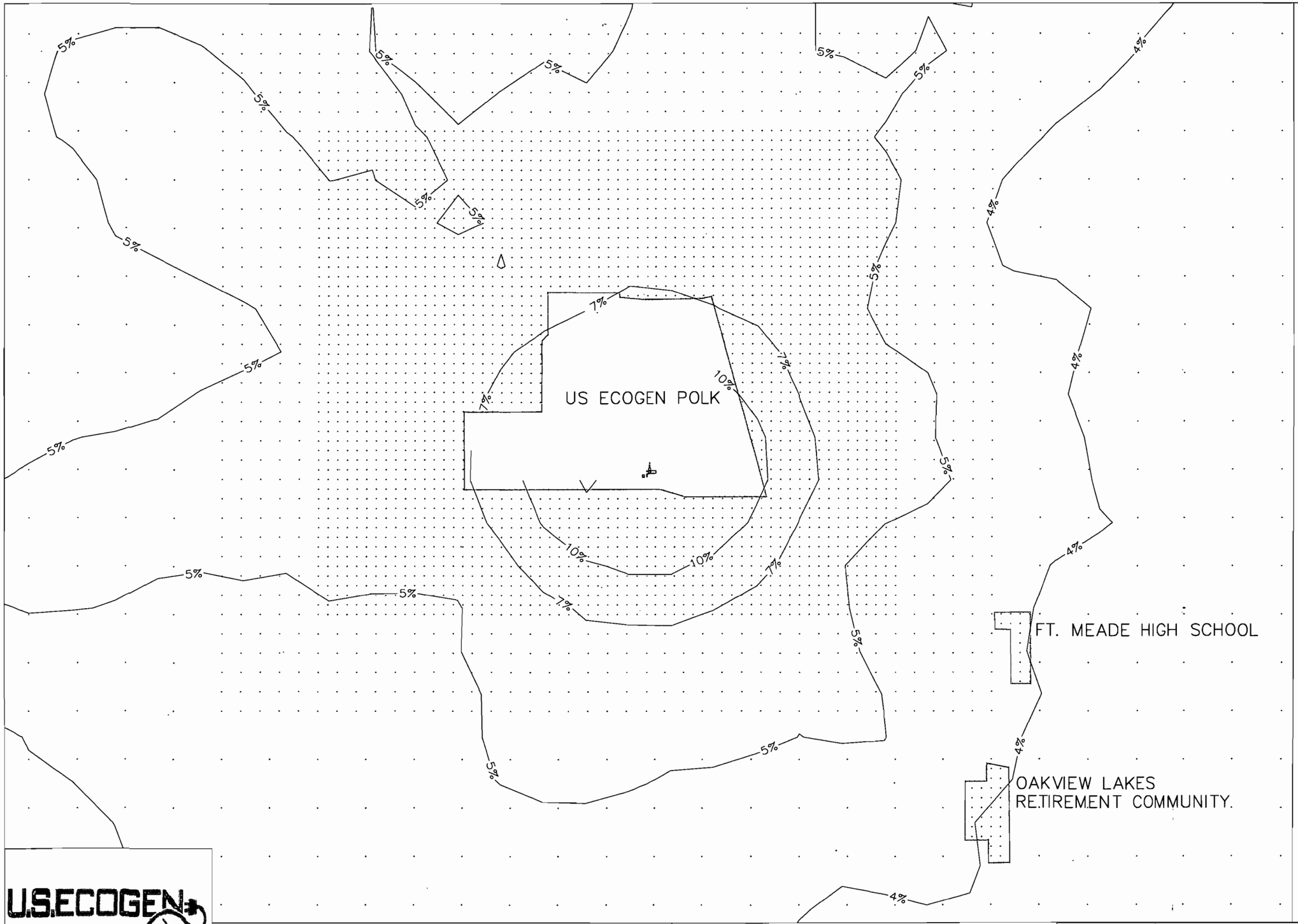
APPLICATION FOR MINOR SOURCE AIR PERMIT TO CONSTRUCT 62.5-MEGAWATT (MW) CLEAN WOODY BIOMASS POWER PLANT

MAXIMUM PREDICTED ANNUAL AVERAGE PM2.5 IMPACTS IN THE AREA DUE TO EMISSIONS FROM THE PROPOSED PLANT EXPRESSED AS PERCENT OF THE APPLICABLE NAAQS

ARCADIS, INC.

APRIL 2012

FIGURE 7-7



MAP LEGEND

- RECEPTOR
- SITE BOUNDARY
- BUILDING ON SITE

500 0 500 1,000m

NOTES:

CONCENTRATION ISOPLETH CONTOUR LINES REPRESENT AVERAGE OF EIGHTH HIGHEST MAXIMUM DAILY 1-HOUR AVERAGE NO2 CONCENTRATION OVER THE FIVE MODELED YEARS AS A PERCENTAGE OF THE NO2 1-HOUR AVERAGE NAAQS.

U.S.ECOGEN

ARCADIS

US ECOGEN POLK

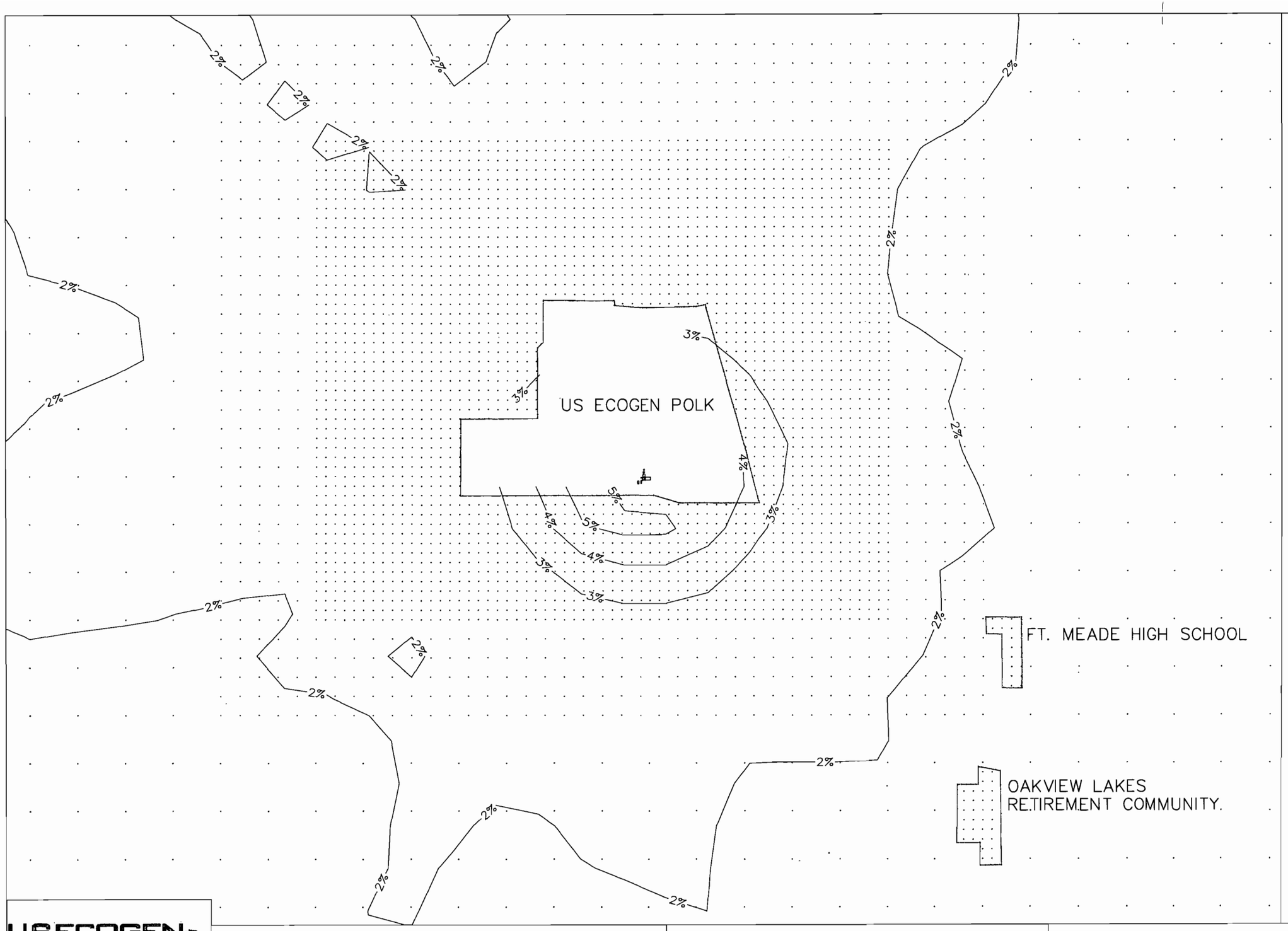
APPLICATION FOR MINOR SOURCE AIR PERMIT TO CONSTRUCT 62.5-MEGAWATT (MW) CLEAN WOODY BIOMASS POWER PLANT

MAXIMUM PREDICTED 1-HOUR AVERAGE NO2 IMPACTS IN THE AREA DUE TO EMISSIONS FROM THE PROPOSED PLANT EXPRESSED AS PERCENT OF THE APPLICABLE NAAQS

ARCADIS, INC.

APRIL 2012

FIGURE 7-8



MAP LEGEND

- RECEPTOR
- SITE BOUNDARY
- BUILDING ON SITE

N

500 0 500 1,000m

NOTES:

CONCENTRATION ISOPLETH CONTOUR LINES REPRESENT AVERAGE OF FOURTH HIGHEST MAXIMUM DAILY 1-HOUR AVERAGE SO2 CONCENTRATION OVER THE FIVE MODELED YEARS AS A PERCENTAGE OF THE SO2 1-HOUR AVERAGE NAAQS.

U.S.ECOGEN

ARCADIS

US ECOGEN POLK

APPLICATION FOR MINOR SOURCE AIR PERMIT TO CONSTRUCT 62.5-MEGAWATT (MW) CLEAN WOODY BIOMASS POWER PLANT

MAXIMUM PREDICTED 1-HOUR AVERAGE SO2 IMPACTS IN THE AREA DUE TO EMISSIONS FROM THE PROPOSED PLANT EXPRESSED AS PERCENT OF THE APPLICABLE NAAQS

ARCADIS, INC.

APRIL 2012

FIGURE 7-9

Estimated Potential to Emit (PTE) Criteria Air Pollutants 24-hr Average Emission Rate Expressed in Units of Tons/Year	PM_{10}	NO_x	SO_2	H_2SO_4	TOTAL
PROJECT TOTAL, Q (tons per year)	158	272	259	4	694

FLAG Screening[a] Results

PSD Class I Area	Distance from Project, D (km)	Q/D (tpy/km)	Q/D Screening Value <10?
Chassohowitzka Fish & Wildlife Refuge	120	5.8	ok, Q/D<10
Everglades National Park	210	3.3	ok, Q/D<10

Notes:

a) FLAG screening criteria considers a source locating greater than 50 km from a Class I area to have negligible impacts with respect to Class I AQRVs if its total SO_2, NO_x, PM_{10}, and H_2SO_4 annual emissions (in tons per year, based on 24-hour maximum allowable emissions), divided by the distance (in km) from the Class I area (Q/D) is 10 or less.

Figure 7-10. Location of Project and Nearest PSD Class I Areas

U.S. EcoGen Polk, LLC
Polk County, Florida
April 2012

Table 2-1A
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
List of Emission Sources

Emission Point ID	Description	Control Device ID*	Control Device Description*	Regulated Air Pollutants	Stack ID	Emission Point Description	Table Containing Emission Estimates
EU01	**Fuel Receiving, Handling, Storage and Processing**	--	--	--	--	--	
EU01-A	Fuel Receiving (Chips) - Supply Trucks Inbound and Outbound	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-6 and 2-9
EU01-B	Fuel Receiving (Logs) - Supply Trucks Inbound and Outbound	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-6 and 2-9
EU01-C	Mobile Equipment - Grapple Skidders for Loading/Unloading	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-7A
EU01-D	Mobile Equipment - Trucks Shuttling Logs from Storage to Chipper	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-7A
EU01-E	Bulldozing on Woody Biomass Storage Areas	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-7B
EU01-F	Woody Biomass Storage Areas	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-8
EU01-G	Opportunity Fuel Stackout Conveyor to Opportunity Fuel Pile	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-9
EU01-H	Opportunity Fuel Reclaimer	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-9
EU01-I	Fuel Prep Conveyor from Chipper and Truck Hopper	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-9
EU01-J	Magnetic Separator	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-9
EU01-K	Fuel Prep Tower In - Bypass Diverter Gate	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-9
EU01-L	Fuel Prep Tower - Screens	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-9
EU01-M	Fuel Prep Tower - Stackout Conveyor	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-9
EU01-N	Fuel Storage Drop Point	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-9
EU01-O	Fuel Reclaimers #1 and #2	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-9
EU01-P	Boiler Feed Conveyors #1 and #2	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-9
EU01-Q	Distribution Conveyors #1 and #2	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-9
EU01-R	Log Wood Chipper to Fuel Conveyor	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-9
EU01-S	Stationary Biomass Grinder/Chipper	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-10
EU01-T	Fuel Prep Tower Hog	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Material Storage and Conveyance - Fugitive	Table 2-10
EU02	**Power Island**	--	--	--	--	--	
EU02-A	Woody Biomass - Normal Operation	BFB-C1 BFB-C2 BFB-C3	BFB-C1 - Baghouse - PM Control BFB-C2 - SCR System - NO_x Control BFB-C3 - Spray Dry Absorber - Acid Gas Control	NO_x, CO, SO_2, VOC, $PM/PM_{10}/PM_{2.5}$, HAPs, GHGs	BFB-ST1	Bubbling Fluidized Bed Boiler Exhaust Stack - Point	Tables 2-3, 2-3A, 2-4, 2-16

Table 2-1A
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
List of Emission Sources

Emission Point ID	Description	Control Device ID*	Control Device Description*	Regulated Air Pollutants	Stack ID	Emission Point Description	Table Containing Emission Estimates
EU02-B	Natural Gas - Startup and Boiler Bed Stabilization	BFB-C1 BFB-C2 BFB-C3	BFB-C1 - Baghouse - PM Control BFB-C2 - SCR System - NO_x Control BFB-C3 - Spray Dry Absorber - Acid Gas Control	NO_x, CO, SO_2, VOC, $PM/PM_{10}/PM_{2.5}$, HAPs, GHGs	BFB-ST1	Bubbling Fluidized Bed Boiler Exhaust Stack - Point	Tables 2-3, 2-3B, 2-4, 2-5, 2-15
EU02-C	Sand Silo	SS-VF	Vent Filter	$PM/PM_{10}/PM_{2.5}$	--	Sand Silo - Fugitive	Table 2-9A
EU02-D	Ammonia Receiving - Trucks Inbound and Outbound	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$		Ammonia Receiving - Fugitive	Table 2-6
--	Ammonia Storage Tank for SCR System (NO_x Control)	--	--	Ammonia	--	Horizontal Pressurized Storage Tank - Point	--
EU02-E	Auxiliary Non-Contact Cooling Tower	CT-DE	Drift Eliminators	$PM/PM_{10}/PM_{2.5}$	--	Cooling Tower - Fugitive	Table 2-13
EU03	**Ash Handling, Storage and Shipment**	--	--	--	--	--	
EU03-A	Ash Haul Out - Trucks Inbound and Outbound	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Fly Ash Handling - Fugitive	Table 2-6
EU03-B	Fly Ash Baghouse Hoppers	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Fly Ash Handling - Fugitive	Table 2-9
EU03-C	Fly Ash Convection Pass Hoppers	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.6}$	--	Fly Ash Handling - Fugitive	Table 2-9
EU03-D	Fly Ash Transfer Conveyors	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.7}$	--	Fly Ash Handling - Fugitive	Table 2-9
EU03-E	Fly Ash Silo to Fly Ash Conditioner	BMP	Best Management Practices	$PM/PM_{10}/PM_{2.5}$	--	Fly Ash Handling - Fugitive	Table 2-9
EU03-F	Fly Ash Silo	FAS-VF	Vent Filter	$PM/PM_{10}/PM_{2.5}$	--	Fly Ash Handling - Fugitive	Table 2-9A
EU04	**Emergency Support Equipment**	--	--	--	--	--	
EU04-A	670 bhp Emergency Generator and Supporting Ultra Low Sulfur Diesel Fuel Storage Tank	GOP	Good Operating Practices	NO_x, CO, SO_2, VOC, $PM/PM_{10}/PM_{2.5}$, HAPs, GHGs	ESE-ST2	Emergency Generator - Point	Table 2-11
EU04-B	200 bhp Emergency Fire Water Pump and Supporting Ultra Low Sulfur Diesel Fuel Storage Tank	GOP	Good Operating Practices	NO_x, CO, SO_2, VOC, $PM/PM_{10}/PM_{2.5}$, HAPs, GHGs	ESE-ST3	Emergency Fire Pump - Point	Table 2-12

Note:
*Operations with no specific add-on control devices listed will utilize best management and operational practices to minimize excessive regulated air pollutant emission rates

Table 2-1B
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Emission Source and Stack Information

EMISSION POINT INFORMATION				Stack Parameters*				Fugitive Parameters**	
Emission Point									
Number	Stack Number	Name	Type	Height Above Ground (feet)	Exit Data: Diameter (feet)	Exit Data: Velocity (feet/second)	Exit Data: Temp (°F)	Type	Length / Width / Height (feet)
EU01 - Fuel Receiving, Handling, Storage and Processing									
EU01-A	--	Fuel Receiving (Chips) - Supply Trucks Inbound and Outbound	Fugitive	N/A	N/A	N/A	N/A	--	--
EU01-D	--	Mobile Equipment - Trucks Shuttling Logs from Storage to Chipper	Fugitive	N/A	N/A	N/A	N/A	--	--
EU01-G	--	Opportunity Fuel Stackout Conveyor to Opportunity Fuel Pile	Fugitive	N/A	N/A	N/A	N/A	--	--
EU01-H	--	Opportunity Fuel Reclaimer	Fugitive	N/A	N/A	N/A	N/A	--	--
EU01-I	--	Fuel Prep Conveyor from Chipper and Truck Hopper	Fugitive	N/A	N/A	N/A	N/A	--	--
EU01-J	--	Magnetic Separator	Fugitive	N/A	N/A	N/A	N/A	--	--
EU01-K	--	Fuel Prep Tower In - Bypass Diverter Gate	Fugitive	N/A	N/A	N/A	N/A	--	--
EU01-L	--	Fuel Prep Tower - Screens	Fugitive	N/A	N/A	N/A	N/A	--	--
EU01-M	--	Fuel Prep Tower - Stackout Conveyor	Fugitive	N/A	N/A	N/A	N/A	--	--
EU01-N	--	Fuel Storage Drop Point	Fugitive	N/A	N/A	N/A	N/A	--	--
EU01-O	--	Fuel Reclaimers #1 and #2	Fugitive	N/A	N/A	N/A	N/A	--	--
EU01-P	--	Boiler Feed Conveyors #1 and #2	Fugitive	N/A	N/A	N/A	N/A	--	--
EU01-Q	--	Distribution Conveyors #1 and #2	Fugitive	N/A	N/A	N/A	N/A	--	--
EU01-R	--	Log Wood Chipper to Fuel Conveyor	Fugitive	N/A	N/A	N/A	N/A	--	--
EU01-T	--	Fuel Prep Tower Hog	Fugitive	N/A	N/A	N/A	N/A	--	--
EU02 - Power Island									
EU02-A	BFB-ST1	Woody Biomass - Normal Operation	Point	180	11	54	295	--	--
EU02-B	BFB-ST1	Natural Gas - Startup and Boiler Bed Stabilization	Point	180	11	54	280	--	--
EU02-C	--	Sand Silo	Fugitive	N/A	N/A	N/A	N/A	--	--
EU02-D	--	Ammonia Receiving - Trucks Inbound and Outbound	Fugitive	N/A	N/A	N/A	N/A	--	--
--	--	Ammonia Storage Tank for SCR System (NOx Control)	Fugitive	N/A	N/A	N/A	N/A	--	--
EU02-E	--	Auxiliary Non-Contact Cooling Tower	Fugitive	N/A	N/A	N/A	N/A	--	--
EU03 - Ash Handling, Storage and Shipment									
EU03-A	--	Ash Haul Out - Trucks Inbound and Outbound	Fugitive	N/A	N/A	N/A	N/A	--	--
EU03-B	--	Fly Ash Baghouse Hoppers	Fugitive	N/A	N/A	N/A	N/A	--	--
EU03-C	--	Fly Ash Convection Pass Hoppers	Fugitive	N/A	N/A	N/A	N/A	--	--
EU03-D	--	Fly Ash Transfer Conveyors	Fugitive	N/A	N/A	N/A	N/A	--	--
EU03-E	--	Fly Ash Silo to Fly Ash Conditioner	Fugitive	N/A	N/A	N/A	N/A	--	--
EU03-F	--	Fly Ash Silo	Fugitive	N/A	N/A	N/A	N/A	--	--
EU-04 - Emergency Support Equipment									
EU04-A	ESE-ST2	670 bhp Emergency Generator and Supporting Ultra Low Sulfur Diesel Fuel Storage Tank	Point	14	0.32	237	799	--	--
EU04-B	ESE-ST3	200 bhp Emergency Fire Water Pump and Supporting Ultra Low Sulfur Diesel Fuel Storage Tank	Point	14	0.32	218	887	--	--

Notes:

*All stack information is subject to change based on final engineering design. Information provided is intended to best reflect the stack or source type and characteristics from a worst case point of atmospheric release.

**Fugitive parameter type includes volume and area sources (terminology associated with air quality impact evaluation). Refer to Section 7 of this Air Permit Application.

Table 2-2
Summary of Worst Case Potential to Emit Regulated New Source Review (NSR) Air Pollutants and NSR Regulatory Applicability
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Estimated Potential to Emit (PTE) Criteria Air Pollutants (tons per year)[b]											
Source Operation	**Reference**	**PM**	**PM_{10}**	**$PM_{2.5}$**	**NO_x**	**SO_2**	**H_2SO_4**	**CO**	**VOC**	**Fluorides**	**CO_2e[c]**
Woody Biomass Fluidized Bed Boiler	Tables 2-3, 2-3A, 2-3B & 2-4	152.3	152.3	152.3	246.3	226.9	4.5	246.3	64.8	0.2	684,364.9
Auxiliary Non-Contact Cooling Tower	Table 2-13	2.2	2.2	2.2	--	--	--	--	--	--	--
Woody Biomass Handling and Processing	Table 2-9	1.71	0.81	0.12	--	--	--	--	--	--	--
Fly Ash Handling, Storage & Shipping	Tables 2-9 and 2-9A	0.78	0.76	0.75	--	--	--	--	--	--	--
Boiler Support Material Handling	Table 2-9A	0.75	0.75	0.75	--	--	--	--	--	--	--
Emergency Generator & Storage Tank	Table 2-11 and 2-11A	0.03	0.03	0.03	0.6	0.001	0.0001	0.5	0.6	--	73.4
Emergency Fire Pump & Storage Tank	Table 2-11A and 2-12	0.01	0.01	0.01	0.2	0.00	0.00	0.1	0.2	--	
Project Total PTE Excluding Fugitive Sources		158	157	156	247	227	4	247	66	0.2	684,438
Major Source Threshold Rates[a] (tons per year)		250	250	250	250	250	250	250	250	250	100,000
Project Classified as Major Source Under PSD?		no	no	no	no	no	no	no	no	no	(C)
Fugitive Source Operation	**Reference**	**PM**	**PM_{10}**	**$PM_{2.5}$**	**NO_x**	**SO_2**	**H_2SO_4**	**CO**	**VOC**	**Fluorides**	**CO_2e**
In-plant Paved Roads	Table 2-6	21.7	4.2	0.6	--	--	--	--	--	--	--
In-plant Gravel Roads	Table 2-7A	3.7	1.1	0.1	--	--	--	--	--	--	--
Stationary Biomass Chipper Emissions	Table 2-10	8.76	0.44	0.22	--	--	--	--	--	--	--
Woody Biomass Pile Processing	Table 2-7B	1	0.05	0.01	--	--	--	--	--	--	--
Woody Biomass Pile Wind Erosion	Table 2-8	0.7	0.4	0.1	--	--	--	--	--	--	--
Total Fugitive Source PTE		36	6	1	0	0	0	0	0	0	0
Project Total PTE Including Fugitive Sources		194	163	157	247	227	4	247	66	0	684,438

Notes:
(a) Proposed woody biomass boiler will be capable of natural gas (classified as a fossil fuel) combustion for startup, shutdown, and bed stabilization purposes and clean woody biomass (classified as a renewable energy fuel) for normal operations. The heat input of the natural gas burners will be less than 250 MMBtu/hour. Because the boiler will not be capable of burning fossil fuels at a heat input rate of greater than 250 MMBtu/hour, the 100-ton/year major source threshold rate does not apply to this project.

(b) Ton per year (TPY) estimates based on boiler heat input of 740 MMBtu/hr, appropriate average emission factor (i.e., lbs/MMBtu) and 8,760 hours per year. The emission factor employed is a long term average, including curtailment and scheduled outages. Short term emissions may exceed this average factor.
(c) CO_2 emissions from the combustion of biomass fuels have been provided for information purposes. EPA has established a 3-year deferral (July 2011 - July 2014) from PSD applicability for CO_2 emissions from biomass sources.

Table 2-3
Estimated Potential to Emit Regulated NSR Air Pollutants from the Proposed Woody Biomass Fluidized Bed Boiler
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Operating Scenario		Startup, Shutdown, and Bed Stabilization[a]		Normal / Startup, Shutdown and Bed Stabilization Operating Modes[a]			Worst-Case	
		Natural Gas		Clean Woody Biomass Combustion Fuel (Normal Operation) / Natural Gas (Startup / Shutdown / Bed Stabilization)				
Applicable Time Period		Maximum Hourly	Maximum Annual	Maximum Hourly	Maximum 24-Hour[b]	Maximum Annual	Maximum Hourly (lb/hr)	Maximum Annual (tpy)
Heat Input, H (MMBtu/hr)		160	160	740	740	740	--	--
Annual Operating Hours, T (hours/year)		--	8760	--		8760	--	--
PM_f (Filterable)	Emission Factor (lb/MMBtu)	0.0056	0.0056	0.030	0.030	0.030	--	--
	Emission Rate	0.89 lb/hr	3.9 tpy	22 lb/hr	22 lb/hr	97 tpy	**22**	**97**
PM_c (Condensible)	Emission Factor (lb/MMBtu)	0.0019	0.0019	0.017	0.017	0.017	--	--
	Emission Rate	0.30 lb/hr	1.3 tpy	13 lb/hr	13 lb/hr	55 tpy	**13**	**55**
PM (Total)	Emission Factor (lb/MMBtu)	0.0075	0.0075	0.047	0.047	0.047	--	--
	Emission Rate	1.19 lb/hr	5.2 tpy	35	35	152 tpy	**35**	**152**
PM_{10}	Emission Factor (lb/MMBtu)	0.0075	0.0075	0.047	0.047	0.047	--	--
	Emission Rate	1.19 lb/hr	5.2 tpy	35 lb/hr	35 lb/hr	152 tpy	**35**	**152**
$PM_{2.5}$	Emission Factor (lb/MMBtu)	0.0075	0.0075	0.047	0.047	0.047	--	--
	Emission Rate	1.2 lb/hr	5.2 tpy	35 lb/hr	35 lb/hr	152 tpy	**35**	**152**
NO_x[b,c,d]	Emission Factor (lb/MMBtu)	0.3	0.2	0.3	0.076	0.076	--	--
	Emission Rate	48 lb/hr	140.2 tpy	222 lb/hr	56 lb/hr	246 tpy	**222**	**246**
SO_2[b,c]	Emission Factor (lb/MMBtu)	0.0006	0.0006	0.108	0.080	0.070	--	--
	Emission Rate	0.1 lb/hr	0.4 tpy	80 lb/hr	59 lb/hr	227 tpy	**79.9**	**227**
H_2SO_4 (Aerosols and Mist)	Emission Factor (lb/MMBtu)	0.00001	0.00001	0.0014	0.0014	0.0014	--	--
	Emission Rate	0.001 lb/hr	0.005 tpy	1.0 lb/hr	1.0 lb/hr	4.5 tpy	**1**	**4**
CO[c]	Emission Factor (lb/MMBtu)	0.208	0.082	0.24	0.24	0.076	--	--
	Emission Rate	33 lb/hr	57.7 tpy	178 lb/hr	178 lb/hr	246 tpy	**178**	**246**
VOC[c]	Emission Factor (lb/MMBtu)	0.0054	0.0054	0.02	0.02	0.020	--	--
	Emission Rate	0.9 lb/hr	3.8 tpy	15 lb/hr	15 lb/hr	65 tpy	**15**	**65**
Fluorides	Emission Factor (lb/MMBtu)	0.0000	0.0000	0.00005	0.00005	0.00005	--	--
	Emission Rate	0.0	0.0 tpy	0.04 lb/hr	0.04 lb/hr	0.2 tpy	**0**	**0**

Calculation Method:
Maximum Hourly Emission Rate (lb/hr) = Maximum Hourly Heat Input (mmBtu/hr) x Maximum Hourly Emission Factor (lb/mmBtu)
Annual Emission Rate (tons/year) = Average Heat Input (mmBtu/hr) x Average Annual Emission Factor (lb/mmBtu) x Annual Operating Hours (hr/year) / (2000 lb/ton)

Sample Calculations:
Maximum Hourly PM Emission Rate (Filterable) for Normal Operating Scenario,
22 lb/hr = 740 mmBtu/hr x 0.03 lb/mmBtu

Annual PM Emission Rate (Filterable) for Normal Operating Scenario,
97 ton/year = 740 mmBtu/hr x 0.03 lb/mmBtu x 8760 hours/year / (2000 lb/ton)

Notes:

(a) Normal operating fuel is woody biomass with natural gas for startup, shutdown and bed stabilization. Emission factors based on vendor estimates, NSPS limitations (Subpart Db),or fuel sampling (Refer to Table 2-4). Maximum hourly emission rates for NO_x, SO_2, CO and VOC reflect co-firing of fossil fuels (i.e., natural gas) during startup, shutdown or bed stabilization with woody biomass.

(b) Maximum 24-hour average emission factors are provided for informational purposes only. These emission estimates do not reflect regulatory limits but were used in the voluntary PSD Class I Area air quality related values screening analysis. Maximum 24-hour average emission factors were based on conservative assumptions which exceed vendor guaranteed emission rates.

(c) Maximum annual emission factor provided for informational puposes only. Continuous emission monitoring system (CEMS) will be used to demonstrate compliance with the federally enforceable annual emission limit. Maximum hourly emission rate while combusting woody biomass has been estimated to be 222 lbs/hr NO_x, 178 lbs/hr CO, and 80 lbs/hr SO_2 to account for any boiler upset conditions that may occur during short periods of time while combusting biomass.

(d) NO_x emission rate of 0.3 lbs/MMBtu from NSPS Db - Co-firing natural gas and wood. Emission rate of 0.2 lbs/MMBtu from NSPS Db - Natural gas combustion (high heat release rate).

Table 2-3A
Estimated Potential to Emit Regulated Greenhouse Gases from Woody Biomass Combustion
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Emission Factor Table

Fuel	Fuel Classification	Higher Heating Value (HHV)			CO_2 Emission Factor (EF)			CH_4 Emission Factor (EF)			N_2O Emission Factor		
		Value - HHV	Default - HHV[a]	Units	Value - EF	Default - EF[a]	Units	Value - EF	Default - EF[a]	Units	Value - EF	Default - EF[a]	Units
Wood and Wood Residuals	Biomass Fuels - Solid	15.38	15.38	MMBtu/ton	93.8	93.8	kg/MMBtu	0.032	3.2E-02	kg/MMBtu	0.0042	4.2E-03	kg/MMBtu

Notes:

a) Default values were obtained from the EPA Greenhouse Gas Reporting Rule (10/30/2009) Tables C-1 and C-2. Table C-1 - Default CO_2 Emission Factors and High Heat Values for Various Types of Fuel. Table C-2 - Default CH_4 and N_2O Emission Factors for Various Types of Fuel.

BFB Boiler Heat Input - Woody Biomass (MMBtu/hr)[c]	Hours of Operation (hrs/yr)	BFB Boiler Heat Input (MMBtu/yr)
740.0	8,760	6,482,400

Parameter	CO_2	CH_4	N_2O	TOTAL
EF[a] (kg/MMBtu)	93.8	0.032	0.0042	--
Estimated GHG Emissions (metric tons)	608,049.12	207.44	27.226	--
Estimated GHG Emissions (tons)	**670,259.42**	**228.66**	**30.01**	--
Global Warming Potential (GWP)[b] (kg CO_2e/kg)	1	21	310	--
Estimated GHG Emissions (metric tons CO_2e)	608,049.12	4356.173	8440.085	620,845.38
Estimated GHG Emissions (tons CO_2e)	**670,259.42**	**4801.859**	**9,303.60**	**684,364.88**

Notes:

a) Emission factors (EF) were obtained from Tables C-1 and C-2 of the EPA Greenhouse Gas Reporting Rule (40 CFR 98). Table C-1 - Default CO_2 Emission Factors and High Heat Values for Various Types of Fuel. Table C-2 - Default CH_4 and N_2O Emission Factors for Various Types of Fuel.

b) Global warming potentials (GWP) were obtained from Table A-1 of the EPA Greenhouse Gas Reporting Rule (40 CFR 98).

c) Maximum heat input for the boilers while combusting woody biomass.

Example Calculations

Estimated GHG Emissions (tons) = Boiler Heat Input (MMBtu/hr) * Emission Factor (kg/MMBtu) * 0.001 (metric tons/kg) * 1.1023113109

Estimated GHG Emissions (tons CO_2e) = Estimated GHG Emissions (tons) * Global Warming Potential (kg CO_2e/kg)

Table 2-3B
Estimated Potential to Emit Regulated Greenhouse Gases from Natural Gas Combustion
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Emission Factor Table

Fuel	Fuel Classification	Higher Heating Value (HHV)			CO_2 Emission Factor (EF)			CH_4 Emission Factor (EF)			N_2O Emission Factor		
		Value - HHV	Default - HHV[a]	Units	Value - EF	Default - EF[a]	Units	Value - EF	Default - EF[a]	Units	Value - EF	Default - EF[a]	Units
Natural Gas	Fossil-gaseous	0.00102	1.020E-03	MMBtu/scf	53.02	53.02	kg/MMBtu	0.001	1.0E-03	kg/MMBtu	0.0001	1.0E-04	kg/MMBtu

Notes:

a) Default values were obtained from the EPA Greenhouse Gas Reporting Rule (10/30/2009) Tables C-1 and C-2. Table C-1 - Default CO_2 Emission Factors and High Heat Values for Various Types of Fuel. Table C-2 - Default CH_4 and N_2O Emission Factors for Various Types of Fuel.

BFB Boiler Heat Input - Natural Gas (MMBtu/hr)[c]	Hours of Operation (hrs/yr)	BFB Boiler Heat Input (MMBtu/yr)
160.0	8,760	1,401,600

Parameter	CO_2	CH_4	N_2O	TOTAL
EF[a] (kg/MMBtu)	53.02	0.001	0.0001	--
Estimated GHG Emissions (metric tons)	74,312.83	1.40	0.140	--
Estimated GHG Emissions (tons)	**81,915.88**	**1.54**	**0.154**	--
Global Warming Potential (GWP)[b] (kg CO_2e/kg)	1	21	310	--
Estimated GHG Emissions (metric tons CO_2e)	74,312.83	29.43	43.45	74,385.72
Estimated GHG Emissions (tons CO_2e)	**81,915.88**	**32.44**	**47.89**	**81,996.22**

Notes:

a) Emission factors (EF) were obtained from Tables C-1 and C-2 of the EPA Greenhouse Gas Reporting Rule (40 CFR 98). Table C-1 - Default CO_2 Emission Factors and High Heat Values for Various Types of Fuel. Table C-2 - Default CH_4 and N_2O Emission Factors for Various Types of Fuel.

b) Global warming potentials (GWP) were obtained from Table A-1 of the EPA Greenhouse Gas Reporting Rule (40 CFR 98).

c) Maximum heat input for the boilers while combusting natural gas during startup, shutdown and malfunction.

Example Calculations

Estimated GHG Emissions (tons) = Boiler Heat Input (MMBtu/hr) * Emission Factor (kg/MMBtu) * 0.001 (metric tons/kg) * 1.1023113109

Estimated GHG Emissions (tons CO_2e) = Estimated GHG Emissions (tons) * Global Warming Potential (kg CO_2e/kg)

Table 2-4
Emission Factors and References Used for Estimating Criteria Air Pollutant Emissions from the Proposed Woody Biomass Boiler
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Regulated Air Pollutant		Startup, Shutdown and Bed Stabilization: Natural Gas Combustion		Normal: Woody Biomass Combustion	
Pollutant	Applicable Time Period	Emission Factor (lb/mmBtu)	Reference	Emission Factor (lb/mmBtu)	Reference
PM_f (Filterable)	Annual	0.0056	AP-42 Table 1.4-2	0.030	NSPS Subpart Db / MACT Subpart JJJJJJ[a]
	Hourly	0.0056	AP-42 Table 1.4-2	0.030	NSPS Subpart Db / MACT Subpart JJJJJJ[a]
PM_c (Condensable)	Annual	0.0019	AP-42 Table 1.4-2	0.017	Engineering Estimate[a]
	Hourly	0.0019	AP-42 Table 1.4-2	0.017	Engineering Estimate[a]
PM (Filterable + Condensable)	Annual	0.0075	Sum of PM_f and PM_c	0.047	Sum of PM_f and PM_c[a]
	Hourly	0.0075	Sum of PM_f and PM_c	0.047	Sum of PM_f and PM_c[a]
PM_{10}	Annual	0.0075	AP-42 Table 1.4-2	0.047	Assume PM_{10} = PM
	Hourly	0.0075	AP-42 Table 1.4-2	0.047	Assume PM_{10} = PM
$PM_{2.5}$	Annual	0.0075	AP-42 Table 1.4-2	0.047	Assume $PM_{2.5}$ = PM
	Hourly	0.0075	AP-42 Table 1.4-2	0.047	Assume $PM_{2.5}$ = PM
NO_x	Annual	0.2	NSPS Subpart Db	0.076	Engineering Estimate[b]
	24-hour	0.2	NSPS Subpart Db	0.076	Engineering Estimate[b]
	Hourly	0.3	NSPS Subpart Db	0.3	NSPS Subpart Db
SO_2	Annual	0.0006	AP-42 Table 1.4-2	0.054	Engineering Estimate[b]
	24-hour	0.0006	AP-42 Table 1.4-2	0.080	Engineering Estimate
	Hourly	0.0006	AP-42 Table 1.4-2	0.108	Engineering Estimate
H_2SO_4 (Aerosols and Mist)	Annual	0.00001	Engineering Estimate[c,d]	0.001	Engineering Estimate[c,d]
	Hourly	0.00001	Engineering Estimate[c,d]	0.001	Engineering Estimate[c,d]
CO	Annual	0.082	AP-42 Table 1.4-1	0.076	Vendor Estimate[e]
	Hourly	0.208	Engineering Estimate (startup)	0.24	Engineering Estimate (startup)
VOC	Annual	0.0054	AP-42 Table 1.4-2	0.02	Engineering Estimate
	Hourly	0.0054	AP-42 Table 1.4-2	0.02	Engineering Estimate
Fluorides	Annual	0	Engineering Estimate[f]	0.0001	Engineering Estimate[f]
	Hourly	0	Engineering Estimate[f]	0.0001	Engineering Estimate[f]

Notes:

(a) NSPS Db / MACT JJJJJJ limit of 0.03 lbs/MMBtu for PM (filterable only). AP-42 Table 1.6-1 emission factor is 0.017 lb/mmBtu condensable PM. The emission factor of 0.017 lb/mmBtu was used to provide a conservative estimate of the condensable fraction of PM emissions and to account for potential ammonium sulfate formation.

(b) Estimated annual average emission factor required to maintain minor source status. Continuous emission monitoring system (CEMS) will be used to demonstrate compliance.

(c) Assumed that 5% of the sulfur dioxide is further oxidized to sulfur trioxide and combined with water to form sulfuric acid.

(d) Factors are based on "Maximum Hourly" SO_2 emission factor as noted above.

(e) A long term CO emission rate of 0.076 lbs/MMBtu will be met to maintain minor source status.

(f) Based on the upper limit of 95% confidence interval for fluorine content of a sample of representative wood fuels. Assumed 100% of the fluorine in the fuel is emitted as hydrogen fluoride (HF).

Startup = Startup, Shutdown and Bed Stabilization

Table 2-5

Summary of Predicted Emission Rates During Startup Events[1]

U.S. EcoGen Polk, LLC - Polk County, Florida

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Startup Conditions up to 50% MCR (Maximum Continuous Rating) with Manual Control

Phase	Phase 1[2]		Phase 2[2]
Fuel	Natural Gas		Natural Gas and Biomass
Operating Conditions	A Cold Furnace	B Warm Furnace	C Fuel Transition Period
Assumed Heat Input	Up to 80 MMBtu/hr	Up to 160 MMBtu/hr	Up to 372 MMBtu/hr
Time Duration (hrs)	3 hours	5 to 6 hours	2 hours
Exhaust Gas Flow Rate (dscf/min.)[3]	11,613	23,227	55,875

Notes:

(1) Predicted emission rates assume an hourly average basis over the specified time duration (not a maximum instantaneous basis).

(2) Uncertainty band on Phase 1 or Phase 2 predicted emisison rates is plus or minus 50%.

(3) Exhaust gas flow rate based on F Factor (Fuel Factor) from 40 CFR Part 60, Appendix A-7, Table 19-2.

F Factor for Wood: Fd = 9,240 dscf/MMBtu

F Factor for Natural Gas: Fd = 8,710 dscf/MMBtu

Estimated Pound per Hour Emission Rates

Air Pollutant	Phase	Emission Rate (lb/hr)
NO_x	1A	≤ 8.0
NO_x	1B	≤ 24.0
NO_x	2C	≤ 93.0
CO	1A	≤ 40.0
CO	1B	≤ 40.0
CO	2C	≤ 186.0
SO_2	1A	Neglible
SO_2	1B	Neglible
SO_2	2C	≤ 10.0
$PM/PM_{10}/PM_{2.5}$	1A	≤ 3.0
$PM/PM_{10}/PM_{2.5}$	1B	≤ 5.0
$PM/PM_{10}/PM_{2.5}$	2C	≤ 12.0

Table 2-6

Estimated $PM/PM_{10}/PM_{2.5}$ Emission Rates Due to Vehicle Traffic on Paved Roads (In Plant Only)

U.S. EcoGen Polk, LLC - Polk County, Florida

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Technical Support Information

Process Supported by Traffic on In-plant Paved Roads	Average Vehicle Weight, W (tons)	Number of Trips per Day	Number of Trips per Year	Miles/Trip[c]	Annual VMT (miles)	Emission Factor, E (lb/VMT)			Potential to Emit[a] (tons/year)		
						PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
Fuel Receiving (Chips) - Full Truck (in)	37	116	42,473	0.4	16,989	--	--	--	5.9E+00	1.1E+00	1.6E-01
Fuel Receiving (Chips) - Empty Truck (out)	15	116	42,473	0.3	12,742	--	--	--	4.4E+00	8.4E-01	1.2E-01
Fuel Receiving (Logs) - Full Truck (in)	40	100	36,500	0.6	21,900	--	--	--	7.5E+00	1.4E+00	2.1E-01
Fuel Receiving (Logs) - Empty Truck (out)	15	100	36,500	0.3	10,950	--	--	--	3.8E+00	7.2E-01	1.0E-01
Ash Haul Out - Empty Truck (in)	15	1	277	0.2	55	--	--	--	1.9E-02	3.7E-03	5.3E-04
Ash Haul Out - Full Truck (out)	40	1	277	0.3	83	--	--	--	2.9E-02	5.5E-03	7.9E-04
Ammonia Receiving - Full Truck (in)	40	1	365	0.3	110	--	--	--	3.8E-02	7.2E-03	1.0E-03
Ammonia Receiving - Empty Truck (out)	15	1	365	0.3	110	--	--	--	3.8E-02	7.2E-03	1.0E-03
Dry Sorbent Receiving - Full Truck (in)[d]	40	1	365	0.2	73	--	--	--	2.5E-02	4.8E-03	7.0E-04
Dry Sorbent Receiving - Empty Truck (out)[d]	15	1	365	0.4	146	--	--	--	5.0E-02	9.6E-03	1.4E-03
Fleet VMT-weighted Average/Total	**29.7**				**63,158**	**0.69**	**0.13**	**0.02**	**21.7**	**4.2**	**0.6**

Notes:

(a) Potential to emit is based on worst-case assumptions and does not account for best management practices, which are to be utilized to minimize the potential for fugitive dust emissions.

(b) Road dust emissions from the handling equipment in the non-merchantable fuel yard are expected to be inconsequential due to the low operating speed of the equipment and the height of the solid/bundled wood stack rows, which will act to contain any potential fugitive dust emissions that may occur from the equipment moving throughout this storage area.

(c) Miles per trip based on trucks entering the south east corner of the property and proceeding along the south property westward to the staging area and then to the specific process areas. Additional travel distances have been included to account for any future changes to this truck route as well as any equipment moving in and around the non-merchantable storage area.

Calculation Method:

Estimate vehicle miles traveled (VMT) annually,

Annual VMT (miles) = Number of Trips per Day x 365 days/year x Miles/trip

Determine Emission Factor -- "Paved Road Modifications to AP-42 Background Documentation" (Midwest Research Institute, July 18, 2008)

$E = (k*(sL/2)^{0.8} * (W/3)^{0.8-C}) * (1 - P/(4N))$

Where:

E= Particulate Matter Emission Factor	varies	lb/VMT
kPM = Particle Size Number	0.12	unitless
kPM-10 = Particle Size Number	0.023	unitless
kPM-2.5 = Particle Size Number	0.0034	unitless
W = Fleet VMT-Weighted Average Vehicle Weight (tons)		
C = Exhaust Emission Factor (lb/VMT)	0.0005	
sL - Road Surface Silt Loading	2	g/m^2 (AP-42 Table 13.2.1-3, initial peak after addition of anti-skid abrasive for ADT <500)
P = Number of "wet" days during an averaging period	120	(AP-42 Figure 13.2.1-2) For Polk County Florida
N = number of days in averaging period	365	
VMT = vehicle miles traveled	varies by operation	

Estimate Emissions,

PTE = Annual VMT x E

Sample Calculations:

Fuel Receiving (Full Truck) annual VMT,

16989 miles = 116 trips/day x 365 days/year x 0.4 miles/trip

Fleet Total PM Emission Factor,

0.69 lb/VMT = 0.12 x (2/2)^0.65 x ((30/3)^1.5 - 0.0005) x (1 - 120/(4 x 365))

Fleet Total Estimated PTE PM,

21.7 tons/year = 63158 miles/year x 0.69 lb/VMT / (2000 lb/ton)

Fuel Receiving (Chips) - Full Truck (in) PTE PM,

5.9 tons/year = 21.7 tons/year x (16989 miles/year) / (63158 miles/year)

Table 2-7A
Estimated PM/PM_{10}/$PM_{2.5}$ Emission Rates Due to Vehicle Traffic on Gravel Roads (In Plant Only)
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Technical Support Information

Vehicle Type / Process Supported by Traffic on In-Plant Gravel Roads	Maximum Vehicle Weight, W (tons)	Number of Trips per Day	Number of Trips per Year	Miles/Trip	Annual VMT (miles)	Emission Factor, E (lb/VMT)			Uncontrolled Emissions[a] (tons/year)			Controlled Emissions[c] (tons/year)		
						PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
Mobile Equipment - Grapple Skidders for Loading/Unloading[b]	20	144	52,560	0.20	10,512	6.02	1.72	0.17	31.6	9.0	0.9	1.6	0.5	0.05
Mobile Equipment - Trucks Shuttling Logs from Storage to Chipper[b]	40	144	52,560	0.20	10,512	8.22	2.34	0.23	43.2	12.3	1.2	2.2	0.6	0.06
TOTALS		**288**	**105,120**		**21,024**				**74.8**	**21.3**	**2.1**	**3.7**	**1.1**	**0.1**

Notes:

(a) Based on worst-case assumptions and does not account for best management practices, which are to be utilized to minimize the potential for fugitive dust emissions.

(b) Road dust emissions from the material handling equipment in the storage yard are expected to be inconsequential due to the low operating speed of the equipment.

(c) Controlled emissions accounts for best management practices, which will be utilized to minimize the potential for fugitive dust emissions.

Calculation Method:

Estimate vehicle miles traveled (VMT) annually,

Annual VMT (miles) = Number of Trips per Day x 365 days/year x Miles/trip

Determine Emission Factor; AP-42, Section 13.2.2 - Unpaved Roads

$E = k*(s/12)^a * (W/3)^b * (N - P)/N$

Where:

E= Particulate Matter Emission Factor	varies	lb/VMT
s - Road Surface Silt Loading	8.4	% (Mean silt content from AP-42 Table 13.2.2-1 for "Lumber Sawmill - Log Yard")
W = Average Vehicle Weight (tons)	varies	
P = Number of "wet" days during an averaging period	120	(AP-42 Figure 13.2.2-1)
N = number of days in averaging period	365	
VMT = vehicle miles traveled	varies by operation	

	PM	PM_{10}	$PM_{2.5}$
k = Particle Size Factor	4.9	1.5	0.15
a = constant	0.7	0.9	0.9
b = constant	0.45	0.45	0.45

Estimate Emissions,

PTE = Annual VMT * E * (100 - C)/100

C = Control efficiency **95** %

Note: Control efficiency of 95% includes application of water or dust suppressant and limiting vehicle speed to less than 10 miles/hour.

Table 2-7B
Estimated $PM/PM_{10}/PM_{2.5}$ Emission Rates Due to Woody Biomass Pile Processing - Outdoor Storage Areas
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Process	Material Silt Content[(a)], S (%)	Material Moisture Content[(b)], M (%)	Number of Dozers, n	Annual Operating Hours, t (hr)	Emission Factor, EF (lb/hr/dozer)			Short-term PTE (lb/hr)			Long-term PTE (tpy)		
					PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
Bulldozing on Woody Biomass Storage Areas	0.37	35	10	8760	0.02	0.001	0.0002	0.2	0.01	0.002	1	0.05	0.01

Notes:
(a) Maximum silt content based on sieve analysis of representative fuels to be utilized at the proposed Plant.
(b) Moisture content is minimum moisture content in "as received" wood fuel samples representative of fuels to be utilized at the proposed Plant.

Calculation Method:
EF_{PM} (lb/hr/dozer) = (5.7 * $S^{1.2}$) / ($M^{1.3}$) -- AP-42 Table 11.9-1 (Bulldozing - Overburden)
EF_{PM10} (lb/hr/dozer) = (0.75 * $S^{1.3}$) / ($M^{1.5}$) -- AP-42 Table 11.9-1 (Bulldozing - Overburden)
$EF_{PM2.5}$ (lb/hr/dozer) = (0.105 * $S^{1.3}$) / ($M^{1.5}$) -- AP-42 Table 11.9-1 (Bulldozing - Overburden)
Short-term PTE = EF * n
Long-term PTE = EF * n * t

Sample Calculations:
PM10: EF = (5.7 * 0.37^1.2) / (35^1.3) = 0.001 lb-PM10/hr/dozer
PM10: Short-term PTE = 0.001 lb-PM10/hr/dozer * 10 dozers = 0.2 lb/hr
PM10: Long-term PTE = 0.2 lb/hr * 8760 hours / (2000 lb/ton)

Table 2-8

Estimated PM/PM_{10}/$PM_{2.5}$ Emission Rates Due to Wind Erosion on Outdoor Woody Biomass Storage Area(s)

U.S. EcoGen Polk, LLC - Polk County, Florida

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility[e]

Frequency of Disturbance (days/year)	365
Total Pile Surface Area, A (m^2)	9,083
Threshold Friction Velocity[a], u_t^* (m/s)	1.00
Anticipated Control Efficiency[b], C	0%

Particle Size Multiplier (k)		
PM	PM_{10}	$PM_{2.5}$
1	0.5	0.075

Erosion Potential During Each Disturbance

Disturbance Number[c], i	Fastest Mile Wind Speed for Disturbance[d], $u^+_{z,i}$ (m/s)	Reference Anemometer Height, z (m)	10-m Ref. Ht. Anemometer Fastest Mile, $u^+_{10,i}$ (m/s)	Friction Velocity, u^*_i (m/s)	Erosion Potential, P_i (g/m^2)	Uncontrolled Fugitive Emission Rate, R_i (tons/disturbance)		
						PM	PM_{10}	$PM_{2.5}$
25	19.7	10	19.67	1.04	1.17	0.01	0.01	0.00
68	19.7	10	19.67	1.04	1.17	0.01	0.01	0.00
89	27.3	10	27.27	1.45	22.63	0.23	0.11	0.02
95	19.7	10	19.67	1.04	1.17	0.01	0.01	0.00
166	20.1	10	20.12	1.07	1.91	0.02	0.01	0.00
169	31.3	10	31.29	1.66	41.61	0.42	0.21	0.03
252	19.7	10	19.67	1.04	1.17	0.01	0.01	0.00
x	x	x	x	x	x	x	x	x

Total Annual Erosion Potential

Emission Scenario	Fugitive Emission Rate (tons/year)		
	PM	PM_{10}	$PM_{2.5}$
Total Uncontrolled, R	0.71	0.36	0.054
Total Controlled, R_c	**0.71**	**0.36**	**0.054**

Notes:

(a) Threshold friction velocity based on sieve analysis of wood fuel aggregate and AP-42 Table 13.2.5-1.

(b) Assumed no control efficiency from best management practices.

(c) Disturbances with Erosion Potential of zero (threshold friction velocity was not exceeded) are not shown in table.

(d) Fastest mile wind speed data obtained from daily maximum 3-second wind speed as summarized in National Climatic Data Center (NCDC) Quality Controlled Local Climatological Data (QCLCD) for Orlando International Airport (Orlando, FL) for the year 2011.

(e) Potential emissions from the log storage area will be negligible due to the nature of the wood logs being stored.

Calculation Method & Sample Calculations (Based on AP-42 Chapter 13.2.5 - Industrial Wind Erosion):

$u^+_{10,i} = u^+_{z,i} (\ln(10/0.005) / \ln(z/0.005))$

$u^*_i = 0.053\, u^+_{10,i}$

$P_i = 58 (u^*_i - u_t^*)^2 + 25 (u^*_i - u_t^*)$, for $u^*_i > u_t^*$

$P_i = 0$, for $u^*_i \le u_t^*$

$R_i = k\, P_i\, A$

$R = S^i R_i$

$R_c = R (1 - C)$

R_i = 0 tons = 1 * 0 g/m2 * 9083 m2 / (453.59 g/lb) / (2000 lb/ton)

R = sum of all R_i

R_c = 0.71 tons/year = 0.71 tons/year x (1 - 0%)

where:

$u^+_{10,i}$ = fastest mile wind speed for the i'th disturbance normalized to 10-m anemometer height

$u^+_{z,i}$ = fastest mile wind speed for the i'th disturbance measured at anemometer with height of z meters

u^*_i = friction velocity for the i'th disturbance

u_t^* = threshold friction velocity

P_i = erosion potential for the i'th disturbance

R_i = emission rate for the i'th disturbance

k = particle size multiplier

R = total uncontrolled annual emission rate

C = control efficiency (%)

R_c = controlled emission rate

$u^+_{10}(P>1)$ = 18.9 m/s

Storage Pile Surface Area Calculation:

Assumed conical pile shape

Diameter, D (ft) = 50

Diameter, D (m) = 15.24

Height, H (ft) = 40

Height, H (m) = 12.19

Surface area, A (m^2) = 344

Number of Piles = 6

Total surface area, A (m^2) = 2,065

Table 2-9
Estimated $PM/PM_{10}/PM_{2.5}$ Emission Rates Due to Material Handling Operations
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Emission Source Operation	Wood Aggregate Throughput, T		Annual Operating Hours	Material Aggregate Annual Maximum, T_{ann} (tons/year)	Safety Factor	Effective Wood Aggregate Handled, T_{eff}		Mean Wind Speed, U (mph)	Minimum Material Moisture Content, M (%)	Air Pollutant Emission Factor, EF (lb-emitted/ton-throughput)			Uncontrolled Maximum Hourly Air Pollutant Emissions, Q_u (lb/hr)			Uncontrolled Annual Air Pollutant Emissions, Q_u (tons/year)			Control Efficiency, C (%)	Controlled Maximum Hourly Air Pollutant Emissions, Q_c (lb/hr)			Controlled Annual Air Pollutant Emissions, Q_c (tons/year)			Wood Aggregate Throughput (tons/hr)	Process Weight PM Emission Standard	
	Maximum (ton/hr)	Average (ton/hr)				Hourly (ton/hr)	Annual (ton/year)			PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$		PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$		(lb/hr)	(tons/year)
Fuel Handling																													
Truck Fuel Receiving Dumpers	160	160	8,760	1,401,600	2	320	2,803,200	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	2.1E-02	9.7E-03	1.5E-03	9.0E-02	4.3E-02	6.4E-03	0%	2.1E-02	9.7E-03	1.5E-03	9.0E-02	4.3E-02	6.4E-03	160	39.0	171
Opportunity Fuel Stackout Conveyor to Opportunity Fuel Pile	310	310	8,760	2,715,600	2	620	5,431,200	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	4.0E-02	1.9E-02	2.9E-03	1.7E-01	8.2E-02	1.2E-02	0%	4.0E-02	1.9E-02	2.9E-03	1.7E-01	8.2E-02	1.2E-02	310	43.3	190
Opportunity Fuel Reclaimer	150	150	8,760	1,314,000	2	300	2,628,000	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	1.9E-02	9.1E-03	1.4E-03	8.4E-02	4.0E-02	6.0E-03	0%	1.9E-02	9.1E-03	1.4E-03	8.4E-02	4.0E-02	6.0E-03	150	38.6	169
Fuel Prep Conveyor From Chipper & Truck Hopper	310	310	8,760	2,715,600	2	620	5,431,200	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	4.0E-02	1.9E-02	2.9E-03	1.7E-01	8.2E-02	1.2E-02	0%	4.0E-02	1.9E-02	2.9E-03	1.7E-01	8.2E-02	1.2E-02	310	43.3	190
Magnetic Separator	310	310	8,760	2,715,600	2	620	5,431,200	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	4.0E-02	1.9E-02	2.9E-03	1.7E-01	8.2E-02	1.2E-02	0%	4.0E-02	1.9E-02	2.9E-03	1.7E-01	8.2E-02	1.2E-02	310	43.3	190
Fuel Prep Tower In - Bypass Diverter Gate	310	310	8,760	2,715,600	2	620	5,431,200	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	4.0E-02	1.9E-02	2.9E-03	1.7E-01	8.2E-02	1.2E-02	0%	4.0E-02	1.9E-02	2.9E-03	1.7E-01	8.2E-02	1.2E-02	310	43.3	190
Fuel Prep Tower - Screens	310	310	8,760	2,715,600	2	620	5,431,200	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	4.0E-02	1.9E-02	2.9E-03	1.7E-01	8.2E-02	1.2E-02	0%	4.0E-02	1.9E-02	2.9E-03	1.7E-01	8.2E-02	1.2E-02	310	43.3	190
Fuel Prep Tower - Stackout Conveyor	310	310	8,760	2,715,600	2	620	5,431,200	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	4.0E-02	1.9E-02	2.9E-03	1.7E-01	8.2E-02	1.2E-02	0%	4.0E-02	1.9E-02	2.9E-03	1.7E-01	8.2E-02	1.2E-02	310	43.3	190
Fuel Storage Drop Point	310	310	8,760	2,715,600	2	620	5,431,200	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	4.0E-02	1.9E-02	2.9E-03	1.7E-01	8.2E-02	1.2E-02	0%	4.0E-02	1.9E-02	2.9E-03	1.7E-01	8.2E-02	1.2E-02	310	43.3	190
Fuel Reclaimer 1	90	90	8,760	788,400	2	180	1,576,800	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	1.2E-02	5.5E-03	8.3E-04	5.1E-02	2.4E-02	3.6E-03	0%	1.2E-02	5.5E-03	8.3E-04	5.1E-02	2.4E-02	3.6E-03	90	35.6	156
Fuel Reclaimer 2	90	90	8,760	788,400	2	180	1,576,800	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	1.2E-02	5.5E-03	8.3E-04	5.1E-02	2.4E-02	3.6E-03	0%	1.2E-02	5.5E-03	8.3E-04	5.1E-02	2.4E-02	3.6E-03	90	35.6	156
Boiler Feed Conveyor 1	90	90	8,760	788,400	2	180	1,576,800	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	1.2E-02	5.5E-03	8.3E-04	5.1E-02	2.4E-02	3.6E-03	0%	1.2E-02	5.5E-03	8.3E-04	5.1E-02	2.4E-02	3.6E-03	90	35.6	156
Boiler Feed Conveyor 2	90	90	8,760	788,400	2	180	1,576,800	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	1.2E-02	5.5E-03	8.3E-04	5.1E-02	2.4E-02	3.6E-03	0%	1.2E-02	5.5E-03	8.3E-04	5.1E-02	2.4E-02	3.6E-03	90	35.6	156
Distribution Conveyor 1	90	90	8,760	788,400	2	180	1,576,800	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	1.2E-02	5.5E-03	8.3E-04	5.1E-02	2.4E-02	3.6E-03	0%	1.2E-02	5.5E-03	8.3E-04	5.1E-02	2.4E-02	3.6E-03	90	35.6	156
Distribution Conveyor 2	90	90	8,760	788,400	2	180	1,576,800	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	1.2E-02	5.5E-03	8.3E-04	5.1E-02	2.4E-02	3.6E-03	0%	1.2E-02	5.5E-03	8.3E-04	5.1E-02	2.4E-02	3.6E-03	90	35.6	156
Log Wood Chipper to Fuel Pile/Conveyor (Drop Point)	200	200	480	96,000	2	400	192,000	6.8 [a]	35.0 [b]	6.4E-05	3.0E-05	4.6E-06	2.6E-02	1.2E-02	1.8E-03	6.2E-03	2.9E-03	4.4E-04	0%	2.6E-02	1.2E-02	1.8E-03	6.2E-03	2.9E-03	4.4E-04	200	40.4	177
SUBTOTAL: Fuel Handling	--	--	--	--	--	--	--	--	--	--	--	--	*0.41*	*0.20*	*0.03*	1.71	0.81	0.12	0%	*0.41*	*0.20*	*0.03*	1.71	0.81	0.12	310	43.3	190
Bottom Ash Handling & Shipment																													
Bed Hoppers	1	1	8,760	8,760	2	2	17,520	6.8	5 [c]	9.8E-04	4.6E-04	7.0E-05	2.0E-03	9.3E-04	1.4E-04	8.6E-03	4.1E-03	6.1E-04	0%	2.0E-03	9.3E-04	1.4E-04	8.6E-03	4.1E-03	6.1E-04	1.000	3.6	16
Bed Hopper Ash Collection Conveyor	1	1	8,760	8,760	2	2	17,520	6.8	5 [c]	9.8E-04	4.6E-04	7.0E-05	2.0E-03	9.3E-04	1.4E-04	8.6E-03	4.1E-03	6.1E-04	0%	2.0E-03	9.3E-04	1.4E-04	8.6E-03	4.1E-03	6.1E-04	1.000	3.6	16
Bed Hopper Ash Transfer Conveyor Drop to Bucket Elevator	1	1	8,760	8,760	2	2	17,520	6.8	5 [c]	9.8E-04	4.6E-04	7.0E-05	2.0E-03	9.3E-04	1.4E-04	8.6E-03	4.1E-03	6.1E-04	0%	2.0E-03	9.3E-04	1.4E-04	8.6E-03	4.1E-03	6.1E-04	1.000	3.6	16
Fly Ash Handling																													
Baghouse Hoppers	1	1	8,760	6,570	2	2	13,140	6.8	5 [c]	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e
Convection Pass Hoppers (Gen Bank and Econmizer)	1	1	8,760	6,570	2	2	13,140	6.8	5 [c]	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e
Collecting Conveyors	1	1	8,760	6,570	2	2	13,140	6.8	5 [c]	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e
Fly Ash Transfer Conveyors	1	1	8,760	6,570	2	2	13,140	6.8	5 [c]	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e
Fly Ash Storage																													
Fly Ash Transfer Conveyor	1	1	8,760	6,570	2	2	13,140	6.8	5 [c]	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e
Fly Ash Shipment																													
Fly Ash Silo to Fly Ash Conditioner Drop	80	5.5	8,760	48,180	2	160	96,360	6.8	5 [c]	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e
SUBTOTAL: Fly Ash Handling[f]	--	--		15,330		--	--	--	--	--	--	--	0.006	0.003	0.0004	0.03	0.01	0.002	0%	0.006	0.003	0.0004	0.03	0.01	0.002	1	3.6	16

Calculation Method:
Annual throughput, T_{ann} = T (ave. ton/hr) * Annual Operating Hours
Effective Short-term Throughput, T_{eff} (ton/hr) = T (max. ton/hr) * SF
Effective Annual Throughput, T_{eff} (tons/yr) = T_{ann} * SF
where:
T = Process Throughput
SF = Factor of Safety

Emission factor, EF ([lb]/ton) = k * (0.0032) * $(U/5)^{1.3}$ / $(M/2)^{1.4}$
where:
k = Particle Size Multiplier
U = Mean Wind Speed (mph (miles per hour))
M = Moister Content of Material (%)
Calculation Method Obtained From AP-42 Chapter 13.2.4 Equation 1
Particle Size Multipliers Obtained From AP-42 Chapter 13.2.4

Average Daily Wind Speed (mph): 6.8
Minimum moisture content of fuel (as rec'd) 35

Particle Size Multiplier, k		
PM	PM_{10}	$PM_{2.5}$
0.74	0.35	0.053

Calculation Method (continued):
Uncontrolled Air Emissions, Q_u (ton/year) = T_{eff} (ton) * EF ([lb]/ton) / (2000 lb/ton)
where:
Q_u = Uncontrolled Air Pollutant Emission Rate

Controlled Air Emissions, Qc (ton/year) = Qu (ton/year) * (1 - C
where:
Q_c = Controlled Air Pollutant Emission Rate
C = Control Efficiency (%)

Sample Calculations:
T_{eff} = 2803200 tons/year = 160 tons/year * 2 safety factor
EF = 0.0001 lb-emitted/ton-throughput = 0.74 * 0.0032 * (6.8/5)^1.3 / (35/2)^1.4
Q_u = 0.09 ton/year = 2803200 ton/year * 0.0001 lb-emitted/ton-throughput / (2000 lb/ton)
Q_c = 0.09 tons/year = 0.09 tons/year x (1 - 0%)

Notes:
a) Wind speed data obtained from National Climatic Data Center (NCDC) average wind speed for Orlando, FL.
b) Moisture content is minimum moisture content in "as received" wood fuel samples representative of fuels to be utilized at the proposed Plant.
c) Assumed minimum moisture content of 5% for fly ash.
d) Annual emission rate is based on average wood aggregate throughput rate at a theoretical worst-case operation time of 8,760 hours per year. Actual operation time and annual emissions are expected to be substantially less than this estimate.
e) Enclosed system - potential to emit particulate matter is considered negligible.
f) Fly ash throughput based on approximately 5.5% wood ash content and maximum boiler feed rate of 100 tons/hour.

Table 2-9A

Estimated $PM/PM_{10}/PM_{2.5}$ Emission Rates Due to Boiler Support and Ash Storage Silos

U.S. EcoGen Polk, LLC - Polk County, Florida

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Process	Flow Rate (dscfm)	Annual Operating	Emission Factor, EF (gr/dscf)			Short-term PTE (lb/hr)			Long-term PTE (tpy)		
			PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
Sand Silo loading (bin vent filter)	2,000	8,760	0.01	0.01	0.01	0.17	0.17	0.17	0.75	0.75	0.75
SUBTOTAL: Boiler Support	--	--	--	--	--	0.17	0.17	0.17	0.75	0.75	0.75
Ash Silo loading (bin vent filter)	2,000	8,760	0.01	0.01	0.01	0.17	0.17	0.17	0.75	0.75	0.75
SUBTOTAL: Ash Storage	--	--	--	--	--	0.17	0.17	0.17	0.75	0.75	0.75

Notes:

Short-term PTE (lb/hr) = Flow Rate (dscfm) x EF (gr/dscf) x 60 min/hr x (1-lb / 7000-gr)

Long-term PTE (tpy) = Short-term PTE (lb/hr) x Annual Operating Hours (hr/year) x (1-ton / 2,000-lb)

Table 2-10
Potential to Emit Regulated New Source Review (NSR) Air Pollutants and Hazardous Air Pollutants
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Biomass Grinder/Chipper - Fugitive Emissions

Equipment	Maximum Wood Throughput (tons/hour)	Annual Operating Time (hours/year)	Emission Factor[a,b,c] (lb/ton chipped)			Short-term Emissions (lb/hr)			Annual Emissions (tons/year)			Daily Emissions (g/s)		
			PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
Stationary Biomass Grinder/Chipper	150	8760	0.01	0.0005	0.00025	1.5	0.075	0.0375	6.6	0.3	0.2	0.189	0.009	0.005
Fuel Prep Tower Hog	50	8760	0.01	0.0005	0.00025	0.5	0.025	0.0125	2.2	0.1	0.1	0.063	0.003	0.002

Notes:

(a) PM emission factor is based on Idaho Department of Environmental Quality factor for similar source (wood debarking) as referenced in Idaho air permit number 4051-00.

(b) Assumed that PM_{10} emissions are 5% of PM emissions based on North Carolina Department of Environment and Natural Resources study "Estimating Emissions from Generation and Combustion of "Waste" Wood DRAFT" (July 15, 1998), which assumes that no PM_{10} is generated during milling and PM_{10} generated during sawing is at most 10% of PM.

(c) Assumed that $PM_{2.5}$ emissions are equal to 50% of PM_{10} emissions. Emission factor for stationary grinder/chipper has been adjusted by 50% to reflect the partial enclosure design of the grinding/chipping operation.

Table 2-11
Potential to Emit Regulated New Source Review (NSR) Criteria and Hazardous Air Pollutants
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
670-bhp Emergency Generator

Regulated Air Pollutant	Emission Factor		Emission Rate		Basis of Emission Estimate
			Maximum Hourly	Annual	
	lb/bhp-hr	g/bhp-hr	lb/hr	ton/year	
SO_2[(a)]	0.000012	0.0055	0.01	0.001	NSPS Subpart IIII
H_2SO_4[(b)]	0.0000008	0.0004	0.001	0.0001	Engineering Estimate
NO_2[(c)]	0.007	3	4.43	0.6	NSPS Subpart IIII
PM[(d)]	0.0003	0.15	0.22	0.03	NSPS Subpart IIII
CO	0.0057	2.6	3.84	0.5	NSPS Subpart IIII
VOC[(e)]	0.007	3	4.43	0.6	NSPS Subpart IIII

Speciated Hazardous Air Pollutants

Regulated Air Pollutant	Emission Factor[(f,g)]		Emission Rate		Basis of Emission Estimate
			Maximum Hourly	Annual	
	EF_{ch} (lb/mmBtu)	EF_m (lb/bhp-hr)	lb/hr	ton/year	
Benzene	7.76E-04	6.58E-06	4.41E-03	5.51E-04	AP-42, Table 3.4-3
Toluene	2.81E-04	2.38E-06	1.60E-03	2.00E-04	AP-42, Table 3.4-3
Xylene	1.93E-04	1.64E-06	1.10E-03	1.37E-04	AP-42, Table 3.4-3
Formaldehyde	7.89E-05	6.69E-07	4.48E-04	5.60E-05	AP-42, Table 3.4-3
Acetaldehyde	2.52E-05	2.14E-07	1.43E-04	1.79E-05	AP-42, Table 3.4-3
Acrolein	7.88E-06	6.68E-08	4.48E-05	5.60E-06	AP-42, Table 3.4-3
Naphthalene	1.30E-04	1.10E-06	7.39E-04	9.23E-05	AP-42, Table 3.4-4
PAH (POM)[(h)]	2.12E-04	1.80E-06	1.20E-03	1.51E-04	AP-42, Table 3.4-4
HAP Total			9.68E-03	1.12E-03	Sum of Speciated HAPs[(i)]

Engine Power (bhp) = 670
Hours of operation (hrs/year) = 250

Max Hourly (lb/hr) = Power (bhp) x Emission Factor (lb/bhp-hr)
Annual (ton/year) = Max Hourly (lb/hr) x Hours of Operation (hr/year) / (2000 lb/ton)
EF_m (lb/bhp-hr) = EF_{ch} (lb/mmBtu) x 0.002544 (mmBtu/bhp-hr) / Mechanical Efficiency

Notes:

(a) Diesel fuel sulfur content assumed to be 0.0015%, which is the maximum allowable under NSPS Subpart IIII. SO_2 emission factor calculation is based on AP-42 Table 3.4-1.

(b) Assumed that S% of the uncontrolled sulfur dioxide is further oxidized to sulfur trioxide and combined with water to form sulfuric acid.

(c) Based on NSPS limit for NMHC+NO_x. Emission estimate assumes that NO_x is 100% NO_2 for regulatory applicability determination.

(d) Based on NSPS limit for PM. Emission estimate assumes that PM_{10} and $PM_{2.5}$ emissions are equal to PM emissions.

(e) NSPS emission limit is placed on sum of Non-Methane Hydrocarbons (NMHC) and NO_x which is assumed equivalent to VOC.

(f) Assumed mechanical efficiency of 30% (mechanical energy output from engine per fuel energy input).

(g) EF_{ch} = chemical emission factor; EF_m = mechanical emission factor.

(h) Regulated HAP is polycyclic organic matter (POM). AP-42 emission factor for PAH is assumed equivalent to POM for regulatory purposes.

(i) Excludes naphthalene from HAP total because naphthalene is a subset of POM. POM is included in HAP total.

Table 2-11A
Estimated Potential to Emit Regulated Greenhouse Gases from Diesel Fuel Combustion
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Emission Factor Table

Fuel	Fuel Classification	Higher Heating Value (HHV)			CO_2 Emission Factor (EF)			CH_4 Emission Factor (EF)			N_2O Emission Factor		
		Value - HHV	Default - HHV	Units	Value - EF	Default - EF	Units	Value - EF	Default - EF	Units	Value - EF	Default - EF	Units
Diesel	Petroleum Products	0.138	1.380E-01	MMBtu/gal	73.96	73.96	kg/MMBtu	0.003	3.0E-03	kg/MMBtu	0.0006	6.0E-04	kg/MMBtu

Notes:

a) Default values for diesel fuel were obtained from the EPA Greenhouse Gas Reporting Rule (10/30/2009) Tables C-1 and C-2. Table C-1 - Default CO_2 Emission Factors and High Heat Values for Various Types of Fuel. Table C-2 - Default CH_4 and N_2O Emission Factors for Various Types of Fuel. Factors for CO_2 were taken from Table C-1 - Residual No. 2 Fuel Oil and factors for CH_4 and N_2O were taken from Table C-2 - Petroleum.

Annual Fuel Use - Emergency Generator (gallons/yr)[c]	Annual Fuel Use - Emergency Fire Pump (gallons/yr)[d]	Total Annual Fuel Use - Emergency Equipment (gallons/yr)
5,000	1,500	6,500

Parameter	CO_2	CH_4	N_2O	TOTAL
EF[a] (kg/MMBtu)	73.96	0.003	0.0006	--
Estimated GHG Emissions (metric tons)	66	0.003	0.0005	--
Estimated GHG Emissions (tons)	**73**	**0.003**	**0.0006**	--
Global Warming Potential (GWP)[b] (kg CO_2e/kg)	1	21	310	--
Estimated GHG Emissions (metric tons CO_2e)	66	0.06	0.17	66.6
Estimated GHG Emissions (tons CO_2e)	**73**	**0.06**	**0.18**	**73.4**

Notes:

a) Emission factors (EF) were obtained from Tables C-1 and C-2 of the EPA Greenhouse Gas Reporting Rule (40 CFR 98). Table C-1 - Default CO_2 Emission Factors and High Heat Values for Various Types of Fuel. Table C-2 - Default CH_4 and N_2O Emission Factors for Various Types of Fuel.

b) Global warming potentials (GWP) were obtained from Table A-1 of the EPA Greenhouse Gas Reporting Rule (40 CFR 98).

c) Emergency Generator - 20 US gph at full load. 20 x 250 = 5,000 gallons

d) Emergency Fire Pump - 6 US gph at full load. 6 x 250 = 1,500 gallons

Example Calculations

Estimated GHG Emissions (tons) = Fuel Use (gallons/year) * Emission Factor (kg/MMBtu) * High Heat Value (MMBtu/gal) * 0.001 (metric tons/kg) * 1.1023113109

Estimated GHG Emissions (tons CO_2e) = Estimated GHG Emissions (tons) * Global Warming Potential (kg CO_2e/kg)

Table 2-12
Potential to Emit Regulated New Source Review (NSR) Criteria and Hazardous Air Pollutants
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

200-bhp Emergency Fire Pump

Regulated Air Pollutant	Emission Factor		Emission Rate		Basis of Emission Estimate
			Maximum Hourly	Annual	
	lb/bhp-hr	g/bhp-hr	lb/hr	ton/year	
SO_2[(a)]	0.000012	0.0055	0.002	0.0003	NSPS Subpart IIII
H_2SO_4[(b)]	0.000001	0.0004	0.00016	0.00002	Engineering Estimate
NO_2[(c)]	0.007	3	1.32	0.2	NSPS Subpart IIII
PM[(d)]	0.0003	0.15	0.07	0.01	NSPS Subpart IIII
CO	0.0057	2.6	1.15	0.1	NSPS Subpart IIII
VOC[(e)]	0.007	3	1.32	0.17	NSPS Subpart IIII

Speciated Hazardous Air Pollutants

Regulated Air Pollutant	Emission Factor[(f,g)]		Emission Rate		Basis of Emission Estimate
			Maximum Hourly	Annual	
	EF_{ch} (lb/mmBtu)	EF_m (lb/bhp-hr)	lb/hr	ton/year	
Benzene	9.33E-04	7.91E-06	1.58E-03	1.98E-04	AP-42, Table 3.3-2
Toluene	4.09E-04	3.47E-06	6.94E-04	8.67E-05	AP-42, Table 3.3-2
Xylene	2.85E-04	2.42E-06	4.83E-04	6.04E-05	AP-42, Table 3.3-2
1,3-Butadiene	3.91E-05	3.32E-07	6.63E-05	8.29E-06	AP-42, Table 3.3-2
Formaldehyde	1.18E-03	1.00E-05	2.00E-03	2.50E-04	AP-42, Table 3.3-2
Acetaldehyde	7.67E-04	6.50E-06	1.30E-03	1.63E-04	AP-42, Table 3.3-2
Acrolein	9.25E-05	7.84E-07	1.57E-04	1.96E-05	AP-42, Table 3.3-2
Naphthalene	8.48E-05	7.19E-07	1.44E-04	1.80E-05	AP-42, Table 3.3-2
PAH (POM)[(h)]	1.68E-04	1.42E-06	2.85E-04	3.56E-05	AP-42, Table 3.3-2
HAP Total			4.99E-03	6.23E-04	Sum of Speciated HAPs[(i)]

Power (bhp) = 200
Hours of operation (hr/year) = 250

Max Hourly (lb/hr) = Power (bhp) x Emission Factor (lb/bhp-hr)
Annual (ton/year) = Max Hourly (lb/hr) x Hours of Operation (hr/year) / (2000 lb/ton)
EF_m (lb/bhp-hr) = EF_{ch} (lb/mmBtu) x 0.002544 (mmBtu/bhp-hr) / Mechanical Efficiency

Notes:

(a) Diesel fuel sulfur content assumed to be 0.0015%, which is the maximum allowable under NSPS Subpart IIII. SO_2 emission factor calculation is based on AP-42 Table 3.4-1.

(b) Assumed that 5% of the uncontrolled sulfur dioxide is further oxidized to sulfur trioxide and combined with water to form sulfuric acid.

(c) Based on NSPS limit for NO_x. Emission estimate assumes that NO_x is 100% NO_2 for regulatory applicability determination.

(d) Based on NSPS limit for PM. Emission estimate assumes that PM_{10} and $PM_{2.5}$ emissions are equal to PM emissions.

(e) NSPS emission limit is placed on Non-Methane Hydrocarbons (NMHC) which is assumed equivalent to VOC for regulatory purposes.

(f) Assumed mechanical efficiency of 30% (mechanical energy output from engine per fuel energy input).

(g) EF_{ch} = chemical emission factor; EF_m = mechanical emission factor.

(h) Regulated HAP is polycyclic organic matter (POM). AP-42 emission factor for PAH is assumed equivalent to POM for regulatory purposes.

(i) Excludes naphthalene from HAP total because naphthalene is a subset of POM. POM is included in HAP total.

Table 2-13
Potential Regulated Air Pollutant Emissions from Auxiliary Cooling Tower (Criteria Air Pollutants)
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

AUXILIARY COOLING TOWER SPECIFICATIONS

Emission Source	Circulation Rate (gal/hour)	TDS Content (average mg/l)	Drift Loss (percent of total ciruclation rate)	Operating Hours (hr/yr)
Auxiliary Non-Contact Cooling Tower	60,000	500	0.05%	8760

Assumptions:

1. Cooling Tower make up water contains 500 mg/l total dissolved solids (TDS). 937320
2. Cooling Tower will operate with 3-4 cycles of concentration (CC) and a circulating water flow rate (CW) of 1,000 gal/min.
3. Cooling Tower drift rate (DR) is 0.05% of circulating water.
4. Cooling Tower operation is continuous, 24 hours per day, 365 days per year.

CALCULATION OF POTENTIAL PM/PM_{10} EMISSIONS ASSOCIATED WITH THE PROPOSED COOLING TOWER

Circulating Water TDS = (CC) (TDS)

Circulating Water TDS = $\frac{[(4)\ (500\ mg/l)]\ (1.0g/1000\ mg)\ (3.785\ L/gal)}{(453.6\ g/lb)}$

Circulating Water TDS = 1.669E-02 lb/gal

Drift = (DR) (CW) = (0.0005) (60000 gal/hr) (8760 hr/yr)
Drift = 262,800 gal/year

Drift Particulate = (Drift) (Circulating Water TDS)
Drift Particulate = (262800 gal/yr) (0.01669 lb/gal) = 4,385.89 lb/yr

Drift PM/PM_{10} Emission Rate =	**4,385.89**	**=**	**0.5007**	**lb/hour =**	**2.193 tons/year**

Notes:
All PM is assumed to be PM_{10}, therefore PM = PM_{10}
Hazardous air pollutant component of Cooling Tower emissions assumed to be negligible.

CALCULATION OF POTENTIAL VOC EMISSIONS ASSOCIATED WITH THE PROPOSED COOLING TOWER

Emission Source	Circulation Rate (gal/hour)	VOM Emission Factor (lb/10^6 gal per hour)*	VOC (tpy)
Auxiliary Non-Contact Cooling Tower	60,000	0	0.00

*Cooling Tower will not use VOC/HAP-containing chemicals.

Table 2-14

Facility Wide Summary of Potential to Emit (PTE) Regulated Hazardous Air Pollutants (HAPs)

U.S. EcoGen Polk, LLC - Polk County, Florida

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Compound	ID/CAS Number[a]	Individual HAP[b] (X=yes)	POM (X=yes)	D/F (X=yes)	Woody Biomass Boiler Worst Case PTE (tpy)[h]			Diesel Support Equipment[g] PTE (tpy)	Facility Total PTE (tpy)	Major Source of HAP?[c]
					Wood	Natural Gas	Worst Case			
Inorganics										
Chlorine	7782-50-5	X			0.99		0.99		0.99	no
Hydrogen chloride	7647-01-0	X			9.9		9.9		9.9	no
Hydrogen fluoride	7664-39-3	X			0.16		0.16		0.16	no
Regulated Trace Elements	TRACE					3.8E-03				--
Arsenic	7440-38-2	X			3.38E-03	1.37E-04	3.38E-03		3.38E-03	no
Beryllium	7440-41-7	X			2.04E-04	8.24E-06	2.04E-04		2.04E-04	no
Cadmium	7440-43-9	X			1.72E-03	7.56E-04	1.72E-03		1.72E-03	no
Chromium, total	7440-47-3	X			3.62E-02	9.62E-04	3.62E-02		3.62E-02	no
Cobalt	7440-48-4	X				5.77E-05	5.77E-05		5.77E-05	no
Lead	7439-92-1	X			0.60		0.60		0.60	no
Manganese	7439-96-5	X			0.65	2.61E-04	0.65		0.65	no
Mercury	7439-97-6	X			2.34E-04	1.79E-04	2.34E-04		2.34E-04	no
Nickel	7440-02-0	X			1.77E-02	1.44E-03	1.77E-02		1.77E-02	no
Selenium	7782-49-2	X			2.05E-03	1.65E-05	2.05E-03		2.05E-03	no
Organics										
Acetaldehyde	75-07-0	X			0.15		0.15	1.81E-04	0.15	no
Acetophenone	98-86-2	X			1.04E-05		1.04E-05		1.04E-05	no
Acrolein	107-02-8	X			5.83E-02		5.83E-02	2.52E-05	5.84E-02	no
Benzene	71-43-2	X			5.72E-02	1.44E-03	5.72E-02	7.49E-04	5.80E-02	no
Di(2-ethylhexyl)phthalate	117-81-7	X			1.52E-04		1.52E-04		1.52E-04	no
Methyl Bromide	74-83-9	X			7.71E-03		7.71E-03		7.71E-03	no
Carbon tetrachloride	56-23-5	X			3.21E-02		3.21E-02		3.21E-02	no
Chlorobenzene	108-90-7	X			0.11		0.11		0.11	no
Chloroform	67-66-3	X			2.99E-02		2.99E-02		2.99E-02	no
Methyl Chloride	74-87-3	X			7.49E-02		7.49E-02		7.49E-02	no
Dibutylphthalate	84-74-2	X					0.0		0.0	no
1,4-Dichlorobenzene	106-46-7	X				8.24E-04	8.24E-04		8.24E-04	no
2,4-Dinitrophenol	51-28-5	X			5.83E-04		5.83E-04		5.83E-04	no
Ethylbenzene	100-41-4	X			0.10		0.10		0.10	no
Formaldehyde	50-00-0	X			6.52E-04	5.15E-02	5.15E-02	3.06E-04	5.18E-02	no
Hexachlorobenzene	118-74-1	X			1.68E-03		1.68E-03		1.68E-03	no
n-Hexane	110-54-3	X				1.2	1.2		1.2	no
Methyl chloroform	71-55-6	X			4.34E-02		4.34E-02		4.34E-02	no
Dichloromethane	75-09-2	X					0.0		0.0	no
4-Nitrophenol	100-02-7	X			3.57E-04		3.57E-04		3.57E-04	no
Pentachlorophenol	87-86-5	X			1.68E-03		1.68E-03		1.68E-03	no

Table 2-14

Facility Wide Summary of Potential to Emit (PTE) Regulated Hazardous Air Pollutants (HAPs)

U.S. EcoGen Polk, LLC - Polk County, Florida

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Compound	ID/CAS Number[a]	Individual HAP[b] (X=yes)	POM (X=yes)	D/F (X=yes)	Woody Biomass Boiler Worst Case PTE (tpy)[h]			Diesel Support Equipment[g] PTE (tpy)	Facility Total PTE (tpy)	Major Source of HAP?[c]
					Wood	Natural Gas	Worst Case			
Phenol	108-95-2	X			0.17		0.17		0.17	no
Propionaldehyde	123-38-6	X			0.20		0.20		0.20	no
Styrene	100-42-5	X			6.2		6.2		6.2	no
Perchloroethylene	127-18-4	X			4.10E-02		4.10E-02		4.10E-02	no
Toluene	108-88-3	X			8.04E-03	2.34E-03	8.04E-03	2.86E-04	8.32E-03	no
1,1,1-Trichloroethane	71-55-6	X			4.34E-02		4.34E-02		4.34E-02	no
Trichloroethene	79-01-6	X			4.29E-02		4.29E-02		4.29E-02	no
2,4,6-Trichlorophenol	88-06-2	X			7.13E-05		7.13E-05		7.13E-05	no
Vinyl Chloride	75-01-4	X			2.55E-02		2.55E-02		2.55E-02	no
Xylenes (mixed)	1330-20-7	X					0.0	1.97E-04	1.97E-04	no
o-Xylene	95-47-6	X			8.10E-02		8.10E-02		8.10E-02	no
Polycyclic Organic Matter (POM)[d]	POM	X			2.91E-02	4.8E-04	2.91E-02	1.86E-04	2.93E-02	no
1,3-Butadiene	106-99-0	X	X				0.0	8.29E-06	8.29E-06	no
Naphthalene	91-20-3	X	X		1.00E-02	4.19E-04	1.00E-02	1.10E-04	1.02E-02	no
Polychlorinated biphenyls (PCBs)	1336-36-3	X	X		3.18E-04		3.18E-04		3.18E-04	no
Dioxins and Furans (D/F)[e]	DF		X	X	1.43E-06		1.43E-06		1.43E-06	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	X	X	X	1.92E-09		1.92E-09		1.92E-09	no
Regulated HAP Total							**21.0**	**0.002**	**21.1**	**no**

Notes:

(a) Default CAS numbers were assigned to certain groups of compounds (i.e. "DF" for dioxins and furans) in order to facilitate programming of the spreadsheet in creation of this table. All CAS numbers containing only numerals are actual CAS numbers.

(b) Compounds indicated are regulated individual HAPs or group of HAPs as defined under the Clean Air Act (Section 112b) and 40 CFR 63 Subpart C (updates to the CAA 112b list).

(c) Project is considered a major source of HAP if potential emissions exceed 10 tpy of any individual regulated HAP or 25 tpy of total regulated HAPs.

(d) POM subtotal includes Dioxins and Furans (D/F) and Polychlorinated biphenyls (PCBs).

(e) D/F is not a regulated group of HAP but is shown for reference.

(f) Refer to Tables 2-11, 2-12, 2-15 and 2-16 for backup calculations.

(g) Diesel support equipment includes the emergency generator and emergency fire water pump.

(h) Emission estimates for natural gas provided to reflect worst case HAP emission rates assuming that these fuels would be combusted at a worst case maximum heat input of 160 MMBtu/hr and continuous operation throughout the year. This will not occur during actual operation of the Plant.

Table 2-15
Potential to Emit Regulated Hazardous Air Pollutants (HAPs) Due to Combustion of Natural Gas
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Regulated Hazardous Air Pollutant[a] (HAP)	ID/CAS Number	Emission Factor		Reference	Estimated Uncontrolled Emissions		Individual HAP (X=yes)	POM (X=yes)
		(lb/mmscf)	(lb/MMBtu)[b]		(lbs/hr)[c]	(tons/year)[d]		
Benzene	71-43-2	2.10E-03	2.06E-06	A	3.29E-04	1.44E-03	X	
Dichlorobenzene	106-46-7	1.20E-03	1.18E-06	A	1.88E-04	8.24E-04	X	
Formaldehyde	50-00-0	7.50E-02	7.35E-05	A	1.18E-02	5.15E-02	X	
n-Hexane	110-54-3	1.8	1.76E-03	A	2.82E-01	1.2	X	
Toluene	108-88-3	3.40E-03	3.33E-06	A	5.33E-04	2.34E-03	X	
Polycyclic Organic Matter (POM)[e,f]	POM				1.10E-04	4.80E-04	X	
Acenaphthene	83-32-9	1.80E-06	1.76E-09	A	2.82E-07	1.24E-06		X
Acenaphthylene	208-96-8	1.80E-06	1.76E-09	A	2.82E-07	1.24E-06		X
Anthracene	120-12-7	2.40E-06	2.35E-09	A	3.76E-07	1.65E-06		X
Benzo[a]anthracene	56-55-3	1.80E-06	1.76E-09	A	2.82E-07	1.24E-06		X
Benzo[b]fluoranthene	205-99-2	1.80E-06	1.76E-09	A	2.82E-07	1.24E-06		X
Benzo[k]fluoranthene	207-08-9	1.80E-06	1.76E-09	A	2.82E-07	1.24E-06		X
Benzo[g,h,i]perylene	191-24-2	1.20E-06	1.18E-09	A	1.88E-07	8.24E-07		X
Benzo[a]pyrene	50-32-8	1.20E-06	1.18E-09	A	1.88E-07	8.24E-07		X
Chrysene	218-01-9	1.80E-06	1.76E-09	A	2.82E-07	1.24E-06		X
Dibenzo[a,h]anthracene	53-70-3	1.20E-06	1.18E-09	A	1.88E-07	8.24E-07		X
7,12-Dimethylbenz[a]anthracene	57-97-6	1.60E-05	1.57E-08	A	2.51E-06	1.10E-05		X
Fluoranthene	206-44-0	3.00E-06	2.94E-09	A	4.71E-07	2.06E-06		X
Fluorene	86-73-7	2.80E-06	2.75E-09	A	4.39E-07	1.92E-06		X
Indeno[1,2,3-cd]pyrene	193-39-5	1.80E-06	1.76E-09	A	2.82E-07	1.24E-06		X
3-Methylchloranthrene	56-49-5	1.80E-06	1.76E-09	A	2.82E-07	1.24E-06		X
2-Methylnaphthalene	91-57-6	2.40E-05	2.35E-08	A	3.76E-06	1.65E-05		X
Naphthalene	91-20-3	6.10E-04	5.98E-07	A	9.57E-05	4.19E-04	X	X
Phenanthrene	85-01-8	1.70E-05	1.67E-08	A	2.67E-06	1.17E-05		X
Pyrene	129-00-0	5.00E-06	4.90E-09	A	7.84E-07	3.44E-06		X
Regulated Trace Elements	TRACE				8.72E-04	3.82E-03		
Arsenic	7440-38-2	2.00E-04	1.96E-07	B	3.14E-05	1.37E-04	X	
Beryllium	7440-41-7	1.20E-05	1.18E-08	B	1.88E-06	8.24E-06	X	
Cadmium	7440-43-9	1.10E-03	1.08E-06	B	1.73E-04	7.56E-04	X	
Chromium	7440-47-3	1.40E-03	1.37E-06	B	2.20E-04	9.62E-04	X	
Cobalt	7440-48-4	8.40E-05	8.24E-08	B	1.32E-05	5.77E-05	X	
Manganese	7439-96-5	3.80E-04	3.73E-07	B	5.96E-05	2.61E-04	X	
Mercury	7439-97-6	2.60E-04	2.55E-07	B	4.08E-05	1.79E-04	X	
Nickel	7440-02-0	2.10E-03	2.06E-06	B	3.29E-04	1.44E-03	X	
Selenium	7782-49-2	2.40E-05	2.35E-08	B	3.76E-06	1.65E-05	X	
HAP Total		--	--	--	**0.30**	**1.30**		

Equipment		Operation Time (hr/yr)	Heat Input Rate		
			Maximum (MMBtu/hr)	Average (MMBtu/hr)	Annual (MMBtu/yr)
Boiler Startup, Shutdown & Stabilization Burner[g]		8760	160	160	1,401,600
Total		--	**160**	**160**	**1,401,600**

Notes:
(a) Regulated under Section 112(b) of the Clean Air Act.
(b) Assumed Natural Gas Heat Content = 1,020 Btu/scf
(c) PTE (lb/hr) = Maximum Heat Input Rate (MMBtu/hr) x EF (lb/MMBtu)
(d) PTE (tons/yr) = Annual Heat Input Rate (MMBtu/yr) x EF (lb/MMBtu) x 0.0005 ton/lb
(e) Polycyclic Organic Matter (POM) subgroup is composed of compounds with two or more benzene rings and boiling point greater than or equal to 100°C.
(f) Subtotal includes estimated emissions from compounds which are not individually regulated HAPs
(g) Worst case theoretical operating time for natural gas HAP emissions. Actual emissions of HAP will be significantly less
(h) 8760 hours per year value used to estimate HAP emission rates for regulatory purposes. Actual combustion of this fuel will only be utilized during startup, shutdown, and bed stabilization which will be substantially less than the operation time specified.

References:
(A) AP-42 Natural Gas Combustion (7/98), Table 1.4-3
(B) AP-42 Natural Gas Combustion (7/98), Table 1.4-4

Table 2-16
Potential to Emit Regulated Hazardous Air Pollutants (HAPs) Due to Combustion of Woody Biomass in Fluidized Bed Boiler
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility[o]

Regulated HAP[a]	ID/CAS Number[b]	Selected Representative Emission Factor[c] (lb/mmBtu)	Emission Factor with Controls (lb/MMBtu)	Reference[c]	Comments	Federally Regulated Individual HAP[d] (X=yes)	POM[e,g] (X=yes)	D/F[f,g] (X=yes)	PTE (lb/hr)	PTE (tpy)[l]
Inorganics										
Ammonia	7664-41-7	6.92E-03	6.92E-03	Custom	Ammonia slip based on estimate by SCR vendor				5.1	22
Carbon monoxide	630-08-0	7.60E-02	7.60E-02	Custom	See Boiler Criteria Pollutant Emission Factor Table				56	246
Chlorine	7782-50-5	3.07E-04	3.07E-04	MACT FBC		X			0.23	0.99
Hydrogen chloride	7647-01-0	1.8E-02	3.06E-03	Custom	AP-42 Uncontrolled Rate[j,k]	X			2.3	9.9
Hydrogen fluoride	7664-39-3	5.02E-05	5.02E-05	MACT FBC		X			3.7E-02	0.16
Nitrogen Dioxide	10102-44-0	3.00E-01	3.00E-01	Custom	See Boiler Criteria Pollutant Emission Factor Table				222.0	246.3
Sulfuric Acid	7664-93-9	1.38E-03	1.38E-03	Custom	See Boiler Criteria Pollutant Emission Factor Table				1.0	4.5
Regulated Trace Elements	TRACE	--	--	--						
Antimony	7440-36-0	3.67E-08	3.67E-08	MACT FBC		X			2.7E-05	1.2E-04
Arsenic	7440-38-2	1.04E-06	1.04E-06	MACT FBC		X			7.7E-04	3.4E-03
Beryllium	7440-41-7	6.30E-08	6.30E-08	MACT FBC		X			4.7E-05	2.0E-04
Cadmium	7440-43-9	5.31E-07	5.31E-07	MACT FBC		X			3.9E-04	1.7E-03
Chromium, total	7440-47-3	1.12E-05	1.12E-05	MACT FBC		X			8.3E-03	3.6E-02
Chromium, hexavalent	18540-29-9	5.90E-08	5.90E-08	AP-42 FBC					4.4E-05	1.9E-04
Cobalt	7740-48-4	1.75E-06	1.75E-06	MACT FBC		X			1.3E-03	5.7E-03
Copper	7440-50-8	2.54E-06	2.54E-06	AP-42 FBC					1.9E-03	8.2E-03
Lead	7439-92-1	1.86E-04	1.86E-04	MACT FBC		X			0.14	0.60
Manganese	7439-96-5	1.99E-04	1.99E-04	MACT FBC		X			0.15	0.65
Mercury	7439-97-6	7.22E-08	7.22E-08	MACT FBC		X			5.3E-05	2.3E-04
Nickel	7440-02-0	5.46E-06	5.46E-06	MACT FBC		X			4.0E-03	1.8E-02
Phosphorus	7723-14-0	3.47E-04	3.47E-04	MACT FBC		X			0.26	1.1
Vanadium	7440-62-2	2.10E+01	2.10E+01	AP-42 Wood					15,540	68,065
Selenium	7782-49-2	6.33E-07	6.33E-07	MACT FBC		X			4.7E-04	2.1E-03
Organics										
Acetaldehyde	75-07-0	4.50E-05	4.50E-05	AP-42 FBC		X			3.3E-02	0.15
Acetophenone	98-86-2	3.20E-09	3.20E-09	AP-42 Wood		X			2.4E-06	1.0E-05
Acrolein	107-02-8	1.80E-05	1.80E-05	AP-42 FBC	Removed outlier from database[g]	X			1.3E-02	5.8E-02
Benzene	71-43-2	1.77E-05	1.77E-05	AP-42 FBC		X			1.3E-02	5.7E-02
bis(2-Ethylhexyl)phthalate	117-81-7	4.70E-08	4.70E-08	AP-42 Wood		X			3.5E-05	1.5E-04
Bromomethane	74-83-9	2.38E-06	2.38E-06	AP-42 FBC		X			1.8E-03	7.7E-03
Carbon tetrachloride	56-23-5	9.89E-06	9.89E-06	AP-42 FBC		X			7.3E-03	3.2E-02
Chlorobenzene	108-90-7	3.30E-05	3.30E-05	AP-42 Wood		X			2.4E-02	0.11
Chloroform	67-66-3	9.24E-06	9.24E-06	AP-42 FBC		X			6.8E-03	3.0E-02
Chloromethane	74-87-3	2.31E-05	2.31E-05	AP-42 FBC		X			1.7E-02	7.5E-02
2,4-Dinitrophenol	51-28-5	1.80E-07	1.80E-07	AP-42 Wood		X			1.3E-04	5.8E-04
Ethylbenzene	100-41-4	3.10E-05	3.10E-05	AP-42 Wood		X			2.3E-02	0.10

Table 2-16
Potential to Emit Regulated Hazardous Air Pollutants (HAPs) Due to Combustion of Woody Biomass in Fluidized Bed Boiler
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility[o]

Regulated HAP[a]	ID/CAS Number[b]	Selected Representative Emission Factor[c] (lb/mmBtu)	Emission Factor with Controls (lb/MMBtu)	Reference[c]	Comments	Federally Regulated Individual HAP[d] (X=yes)	POM[e,g] (X=yes)	D/F[f,g] (X=yes)	PTE (lb/hr)	PTE (tpy)[l]
Formaldehyde	50-00-0	2.01E-07	2.01E-07	MACT FBC		X			1.5E-04	6.5E-04
Hexachlorobenzene	118-74-1	5.18E-07	5.18E-07	AP-42 FBC		X			3.8E-04	1.7E-03
4-Nitrophenol	100-02-7	1.10E-07	1.10E-07	AP-42 Wood		X			8.1E-05	3.6E-04
Pentachlorophenol	87-86-5	5.18E-07	5.18E-07	AP-42 FBC		X			3.8E-04	1.7E-03
Phenol	108-95-2	5.10E-05	5.10E-05	AP-42 Wood		X			3.8E-02	0.17
Propionaldehyde	123-38-6	6.11E-05	6.11E-05	AP-42 FBC		X			4.5E-02	0.20
Styrene	100-42-5	1.90E-03	1.90E-03	AP-42 Wood		X			1.4	6.2
Tetrachloroethene	127-18-4	1.27E-05	1.27E-05	AP-42 FBC		X			9.4E-03	4.1E-02
Toluene	108-88-3	2.48E-06	2.48E-06	AP-42 FBC		X			1.8E-03	8.0E-03
1,1,1-Trichloroethane (Methyl Chloroform)	71-55-6	1.34E-05	1.34E-05	AP-42 FBC		X			9.9E-03	4.3E-02
Trichloroethene	79-01-6	1.32E-05	1.32E-05	AP-42 FBC		X			9.8E-03	4.3E-02
2,4,6-Trichlorophenol	88-06-2	2.20E-08	2.20E-08	AP-42 Wood	Factor represents all trichlorphenol isomers	X			1.6E-05	7.1E-05
Vinyl Chloride	75-01-4	7.86E-06	7.86E-06	AP-42 FBC		X			5.8E-03	2.5E-02
o-Xylene	95-47-6	2.50E-05	2.50E-05	AP-42 Wood		X			1.9E-02	8.1E-02
Polycyclic Organic Matter (POM)	POM	9.0E-06	9.0E-06	--	Group Regulated as Individual HAP[h,i]	X			6.6E-03	2.9E-02
Acenaphthene	83-32-9	2.60E-07	2.60E-07	AP-42 FBC			X		1.9E-04	8.4E-04
Acenaphthylene	208-96-8	2.63E-07	2.63E-07	AP-42 FBC			X		1.9E-04	8.5E-04
Anthracene	120-12-7	2.64E-07	2.64E-07	AP-42 FBC			X		2.0E-04	8.6E-04
Benzo(a)anthracene	56-55-3	5.18E-07	5.18E-07	AP-42 FBC			X		3.8E-04	1.7E-03
Benzo(a)pyrene	50-32-8	5.18E-07	5.18E-07	AP-42 FBC			X		3.8E-04	1.7E-03
Benzo(b)fluoranthene	205-99-2	3.45E-07	3.45E-07	AP-42 FBC			X		2.6E-04	1.1E-03
Benzo(e)pyrene	192-97-2	4.91E-08	4.91E-08	MACT Wood			X		3.6E-05	1.6E-04
Benzo(g,h,i)perylene	191-24-2	5.18E-07	5.18E-07	AP-42 FBC			X		3.8E-04	1.7E-03
Benzo(k)fluoranthene	207-08-9	5.18E-07	5.18E-07	AP-42 FBC			X		3.8E-04	1.7E-03
Chrysene	218-01-9	3.46E-07	3.46E-07	AP-42 FBC			X		2.6E-04	1.1E-03
Dibenzo(a,h)anthracene	53-70-3	5.18E-07	5.18E-07	AP-42 FBC			X		3.8E-04	1.7E-03
Fluoranthene	206-44-0	2.64E-07	2.64E-07	AP-42 FBC			X		2.0E-04	8.6E-04
Fluorene	86-73-7	2.63E-07	2.63E-07	AP-42 FBC			X		1.9E-04	8.5E-04
Indeno(1,2,3-cd)pyrene	193-39-5	5.18E-07	5.18E-07	AP-42 FBC			X		3.8E-04	1.7E-03
2-Methylnaphthalene	91-57-6	7.18E-08	7.18E-08	AP-42 FBC			X		5.3E-05	2.3E-04
Naphthalene	91-20-3	3.10E-06	3.10E-06	AP-42 FBC		X	X		2.3E-03	1.0E-02
Perylene	198-55-0	2.98E-09	2.98E-09	MACT Wood			X		2.2E-06	9.7E-06
Phenanthrene	85-01-8	2.77E-07	2.77E-07	AP-42 FBC			X		2.0E-04	9.0E-04
Pyrene	129-00-0	2.64E-07	2.64E-07	AP-42 FBC			X		2.0E-04	8.5E-04
Polychlorinated biphenyls (PCBs)	1336-36-3	9.8E-08	9.8E-08	AP-42 FBC	Subset of POM Group[i]. Calculated by total of indicated isomers		X		7.3E-05	3.2E-04
Decachlorobiphenyl	2051-24-3	1.87E-08	1.87E-08	AP-42 FBC			X		1.4E-05	6.1E-05
Dichlorobiphenyl	DiCBP	1.28E-08	1.28E-08	AP-42 FBC			X		9.5E-06	4.2E-05
Heptachlorobiphenyl	HepCBP	1.01E-08	1.01E-08	AP-42 FBC			X		7.5E-06	3.3E-05

Table 2-16
Potential to Emit Regulated Hazardous Air Pollutants (HAPs) Due to Combustion of Woody Biomass in Fluidized Bed Boiler
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility[o]

Regulated HAP[a]	ID/CAS Number[b]	Selected Representative Emission Factor[c] (lb/mmBtu)	Emission Factor with Controls (lb/MMBtu)	Reference[c]	Comments	Federally Regulated Individual HAP[d] (X=yes)	POM[e,g] (X=yes)	D/F[f,g] (X=yes)	PTE (lb/hr)	PTE (tpy)[i]
Hexachlorobiphenyl	HexCBP	9.94E-09	9.94E-09	AP-42 FBC			X		7.4E-06	3.2E-05
Monochlorobiphenyl	MonCBP	1.16E-08	1.16E-08	AP-42 FBC			X		8.5E-06	3.7E-05
Pentachlorobiphenyl	PenCBP	9.15E-09	9.15E-09	AP-42 FBC			X		6.8E-06	3.0E-05
Tetrachlorobiphenyl	26914-33-0	1.33E-08	1.33E-08	AP-42 FBC			X		9.8E-06	4.3E-05
Trichlorobiphenyl	25323-68-6	1.25E-08	1.25E-08	AP-42 FBC			X		9.2E-06	4.0E-05
Dioxins and Furans (D/F)	DF	4.4E-10	4.4E-10	MACT FBC	Subset of POM Group[i]		X	X	3.3E-07	1.4E-06
Heptachlorodibenzo-p-dioxins	37871-00-4	5.69E-12	5.69E-12	MACT FBC	Factor may not equal subtotal of indicated isomers		X	X	4.2E-09	1.8E-08
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	5.69E-12	5.69E-12	MACT FBC			X	X	4.2E-09	1.8E-08
Heptachlorodibenzo-p-furans	38998-75-3	1.86E-12	1.86E-12	MACT FBC	Factor may not equal subtotal of indicated isomers		X	X	1.4E-09	6.0E-09
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	1.66E-12	1.66E-12	MACT FBC			X	X	1.2E-09	5.4E-09
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.00E-13	2.00E-13	MACT FBC			X	X	1.5E-10	6.5E-10
Hexachlorodibenzo-p-dioxins	34465-46-8	5.11E-12	5.11E-12	MACT FBC	Factor may not equal subtotal of indicated isomers		X	X	3.8E-09	1.7E-08
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	1.36E-12	1.36E-12	MACT FBC			X	X	1.0E-09	4.4E-09
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	2.54E-12	2.54E-12	MACT FBC			X	X	1.9E-09	8.2E-09
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	1.21E-12	1.21E-12	MACT FBC			X	X	9.0E-10	3.9E-09
Hexachlorodibenzo-p-furans	55684-94-1	8.92E-12	8.92E-12	MACT FBC	Factor may not equal subtotal of indicated isomers		X	X	6.6E-09	2.9E-08
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.32E-12	3.32E-12	MACT FBC			X	X	2.5E-09	1.1E-08
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	3.46E-12	3.46E-12	MACT FBC			X	X	2.6E-09	1.1E-08
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	2.14E-12	2.14E-12	MACT FBC			X	X	1.6E-09	6.9E-09
Octachlorodibenzo-p-dioxins	3268-87-9	3.82E-12	3.82E-12	MACT FBC			X	X	2.8E-09	1.2E-08
Octachlorodibenzo-p-furans	OCDF	1.66E-12	1.66E-12	MACT FBC			X	X	1.2E-09	5.4E-09
Pentachlorodibenzo-p-dioxins	36088-22-9	2.16E-12	2.16E-12	MACT FBC	Factor may not equal subtotal of indicated isomers		X	X	1.6E-09	7.0E-09
1,2,3,7,8-Pentachorodibenzo-p-dioxin	40321-76-4	2.16E-12	2.16E-12	MACT FBC			X	X	1.6E-09	7.0E-09
Pentachlorodibenzo-p-furans	30402-15-4	9.68E-12	9.68E-12	MACT FBC	Factor may not equal subtotal of indicated isomers		X	X	7.2E-09	3.1E-08
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	4.26E-12	4.26E-12	MACT FBC			X	X	3.2E-09	1.4E-08
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	5.42E-12	5.42E-12	MACT FBC			X	X	4.0E-09	1.8E-08
Tetrachlorodibenzo-p-dioxins	41903-57-5	5.92E-13	5.92E-13	MACT FBC	Factor may not equal subtotal of indicated isomers		X	X	4.4E-10	1.9E-09
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	5.92E-13	5.92E-13	MACT FBC		X	X	X	4.4E-10	1.9E-09
Tetrachlorodibenzo-p-furans	30402-14-3	6.51E-12	6.51E-12	MACT FBC	Factor may not equal subtotal of indicated isomers		X	X	4.8E-09	2.1E-08
2,3,7,8-Tetrachlorodibenzo-p-furans	51207-31-9	6.51E-12	6.51E-12	MACT FBC			X	X	4.8E-09	2.1E-08

Color Code:

ID Number Represents Group of Compounds
Subtotal of Multiple Compounds

Table 2-16
Potential to Emit Regulated Hazardous Air Pollutants (HAPs) Due to Combustion of Woody Biomass in Fluidized Bed Boiler
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility[o]

Regulated HAP[a]	ID/CAS Number[b]	Selected Representative Emission Factor[c] (lb/mmBtu)	Emission Factor with Controls (lb/MMBtu)	Reference[c]	Comments	Federally Regulated Individual HAP[d] (X=yes)	POM[e,g] (X=yes)	D/F[f,g] (X=yes)	PTE (lb/hr)	PTE (tpy)[l]

Notes:

a) Pollutant regulated either individually or by membership in a group of HAPs which is regulated as an individual HAP (i.e. polycyclic organic matter).

b) CAS number was used where available. ID was created for compounds which represent a group of related compounds (i.e. "PenCBP" represents all pentachlorobiphenyl isomers).

c) **References** used in development of emission factors in order from most to least preferred reference:
(1) **Custom** - Developed specifically for this project. See notes for additional details.
(2) **MACT FBC** - Obtained from vacated boiler MACT backup database tests performed on wood-burning fluidized bed boilers.
(3) **AP-42 FBC** - Obtained from AP-42 (Section 1.6) backup database tests performed on wood-burning fluidized bed boilers.
(4) **MACT Wood** - Obtained from vacted boiler MACT backup database tests performed on wood-burning boilers of any configuration.
(5) **AP-42** - Obtained from AP-42 Table 1.6-3 or Table 1.6-5.

d) Indicates regulated individual HAP or group of HAPs as defined under the Clean Air Act (Section 112b) and 40 CFR 63 Subpart C (updates to the CAA 112b list).

e) Indicates compound classified as Polycyclic Organic Matter (POM). POM is defined as any compound with two or more benzene rings and boiling point greater than or equal to 100°C.

f) Indicates compound classified as a Dioxin or Furan (D/F).

g) Test which resulted in a clear outlier (ID "E942.002") was removed from database. This test reported an acrolein emission factor several orders of magnitude higher than any other acrolein test including a test performed by a different analytical method on the same emission unit and same day.

h) POM subtotal includes D/F.

i) Subtotal includes estimated emissions from compounds which are not individually regulated HAPs but are classified as POM, a group which is regulated as an individual HAP.

j) Selected emission factor represents uncontrolled emissions based on analysis of AP-42 Chapter 1.6 emission factor backup database

k) HCl and HF emission reduction estimated at 83% based on spray dry absorber (SDA) if needed. Compliance with emission rate limit in tons/year will be demonstrated by continuous emission monitoring system (CEMS)

l) Ton per year (TPY) estimates based on boiler heat input of 740 MMBtu/hr, appropriate average emission factor (i.e., lbs/MMBtu) and 8,760 hours per year. The emission factor employed is a long term average, including curtailment and scheduled outages. Short term emissions may exceed this average factor.

Calculation Method:

PTE (tpy) = Representative Emission Factor (lb/mmBtu) x Maximum Heat Input (mmBtu/hr) x Annual Operating Hours (hr/year) / (2000 lb/ton)
Controlled PTE (tpy) = PTE (tpy) x [1 - Control Efficiency]; as applicable to pollutants with specific controls (noted above).
Maximum heat input is defined as approximately 740 MMBtu/hr.

Ammonia Emission Factor Calculation:

Maximum Ammonia Slip (ppmv @ 7% oxygen)	10
Maximum Flow rate (acfm @ 3% oxygen)	306400
Stack Temperature (°F)	295
Moisture Content, MC (% water)	27.98

Maximum Ammonia Emission Rate (lb/hr)	5.24
Maximum Ammonia Emission Rate (tpy)	22.97
Equivalent Ammonia Emission Factor (lb/MMBtu)	6.9E-03

Standardized Flow (dscfm @ 7% O_2 and 68°F) = Actual Flow (acfm) x [(460+68°F)/(460+295°F)] x [1-(MC/100)] x [(20.9 %O_2 - 3 %O_2)/(20.9 %O_2 - 7 %O_2)]

NH_3 Rate (lb/hr) = Ammonia Slip (ppmv @ 7% O_2) x 10^{-6} parts/ppm x Standardized Flow (dscfm @ 7% O_2 and 68°F) x Molecular Weight NH4 (17 lb/lb-mol) / Molar Volume of Ideal Gas (386.5 scf/lb-mol)

Equivalent Ammonia Emission Factor (lb/MMBtu) = NH_3 Rate (lb/hr) / Heat Input Rate (MMBtu/hr)

Table 3-1
U.S. EcoGen Polk, LLC – Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
List of Applicable and Non-Applicable Federal Air Pollution Regulations

40 C.F.R. Part 50	National Primary and Secondary Ambient Air Quality Standards
40 C.F.R. Part 51	Requirements for Preparation, Adoption and Submittal of Implementation Plans
40 C.F.R. Part 52	Approval and Promulgation of Implementation Plans
40 C.F.R. Part 53	Ambient Air Monitoring Reference and Equivalent Methods
40 C.F.R. Part 54	Prior Notice of Citizen Suits
40 C.F.R. Part 55	Outer Continental Shelf Air Regulations
40 C.F.R. Part 56	Regional Consistency
40 C.F.R. Part 57	Primary Nonferrous Smelter Orders
40 C.F.R. Part 58	Ambient Air Quality Surveillance
40 C.F.R. Part 59	National Volatile Organic Compound Emission Standards for Consumer and Commercial Products
40 C.F.R. Part 60	**Standards of Performance for New Stationary Sources**
40 C.F.R. Part 61	National Emission Standards for Hazardous Air Pollutants
40 C.F.R. Part 62	Approval and Promulgation of State Plans for Designated Facilities and Pollutants
40 C.F.R. Part 63	**National Emission Standards for Hazardous Air Pollutants for Source Categories**
40 C.F.R Part 64	Compliance Assurance Monitoring
40 C.F.R. Part 65	Consolidated Federal Air Rule
40 C.F.R. Part 66	Assessment and Collection of Noncompliance Penalties by EPA
40 C.F.R. Part 67	EPA Approval of State Noncompliance Penalty Program
40 C.F.R. Part 68	Chemical Accident Prevention Provisions
40 C.F.R. Part 69	Special Exemptions from Requirements of the Clean Air Act
40 C.F.R. Part 70	State Operating Permit Programs
40 C.F.R. Part 71	Federal Operating Permit Programs
40 C.F.R. Parts 72,73,74,75,76,77 and 78	**Permits Regulation (Part 72) – Includes Acid Rain Program**
40 C.F.R. Parts 79 and 80	Registration and Regulation of Fuels and Fuel Additives (Sulfur Limits for Gasoline and Diesel Fuel)
40 C.F.R. Part 81	Designation of Areas for Air Quality Planning Purposes
40 C.F.R. Part 82	**Protection of Stratospheric Ozone**
40 C.F.R. Part 85	Control of Air Pollution from Mobile Sources
40 C.F.R. Part 86	Control of Emissions from New and In-Use Highway Vehicles and Engines
40 C.F.R. Part 87	Control of Air Pollution from Aircraft and Aircraft Engines

Table 3-1
U.S. EcoGen Polk, LLC – Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
List of Applicable and Non-Applicable Federal Air Pollution Regulations

40 C.F.R. Part 88	Clean-Fuel Vehicles
40 C.F.R. Part 89	Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines
40 C.F.R. Part 90	Control of Emissions from Nonroad Spark-Ignition Engines at or below 19 Kilowatts
40 C.F.R. Part 91	Control of Emissions from Marine Spark-Ignition Engines
40 C.F.R. Part 92	Control of Air Pollution from Locomotives and Locomotive Engines
40 C.F.R. Part 93	Determining Conformity of Federal Actions to State or Federal Implementation Plans
40 C.F.R. Part 94	Control of Air Pollution from Marine Compression-Ignition Engines
40 C.F.R. Part 95	Mandatory Patent Licenses
40 C.F.R. Part 96	**NO_x Budget Trading Program and CAIR NO_x and SO_2 Trading Programs for State Implementation Plans**
40 C.F.R. Part 97	Federal NO_x Budget Trading Program and CAIR NO_x and SO_2 Trading Programs
40 C.F.R. Part 98	**Mandatory Green House Gas Reporting**
40 C.F.R. Part 99	Reserved

Notes:

Shaded items identify those Federal air regulations that contain emission standards or limits, monitoring, testing or reporting requirements, or other relevant requirements that are intended to protect human health and welfare and have been determined to be applicable to the proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility located in Polk County, Florida.

Non-shaded regulations have been determined to be not applicable to the proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility located in Polk County, Florida.

Table 3-1A
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
List of 28 Designated Source Categories for PSD Permitting

PSD Listed Source Category	PSD Tons/Year Threshold*	Applicable to the Proposed U.S. EcoGen Project?**
Fossil Fuel-Fired Steam Electric Plants of More Than 250 Million Btu/hr Heat Input	100	No
Coal Cleaning Plants (with Thermal Dryers)	100	No
Kraft Pulp Mills	100	No
Portland Cement Plants	100	No
Primary Zinc Smelters	100	No
Iron and Steel Mill Plants	100	No
Primary Aluminum Ore Reduction Plants	100	No
Primary Copper Smelters	100	No
Municipal Incinerators Capable of Charging More Than 250 Tons of Refuse Per Day	100	No
Hydrofluoric Acid Plants	100	No
Sulfuric Acid Plants	100	No
Nitric Acid Plants	100	No
Petroleum Refineries	100	No
Lime Plants	100	No
Phosphate Rock Processing Plants	100	No
Coke Oven Batteries	100	No
Sulfur Recovery Plants	100	No
Carbon Black Plants	100	No
Primary Lead Smelters	100	No
Fuel Conversion Plants	100	No
Sintering Plants	100	No
Secondary Metal Production Plants	100	No
Chemical Process Plants	100	No
Fossil Fuel Boilers (or Combinations Thereof) Totaling More Than 250 Million Btu/hr Heat Input	100	No
Petroleum Storage and Transfer Units with a Total Storage Capacity Exceeding 300,000 Barrels	100	No
Taconite Ore Processing Plants	100	No
Glass Fiber Processing Plants	100	No
Charcoal Production Plants	100	No

*Please be aware that any other source which has the potential to emit 250 tons per year of any regulated pollutant is subject to PSD major source regulations regardless of the sources manufacturing operations.

**The proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility is not one of the 28 designated source categories, thus is subject to the 250 tons/year PSD applicability threshold.

Table 3-1B
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
PSD Significant Emission Rates

Pollutant	PSD Significant Emission Rates (tons/year)
Carbon Monoxide (CO)	100
Nitrogen Dioxide (NO_x)	40
Particulate Matter (PM)	25
Particulate Matter (PM_{10})	15
Particulate Matter ($PM_{2.5}$)	10
Volatile Organic Compounds (VOC)	40
Sulfur Dioxide (SO_2)	40
Lead	0.6
Fluorides	3
Sulfuric Acid Mist	7
Hydrogen Sulfide (H_2S)	10
Total Reduced Sulfur (Including H_2S)	10
Reduced Sulfur Compounds (Including H_2S)	10
Greenhouse Gases (GHG)	CO_2e - 75,000

Table 3-2
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Summary of Applicable New Source Performance Standards (NSPS)

Subpart Designation	Promulgated NSPS Standard (40 CFR Part 60)	Applicable to U.S. EcoGen?
A	**General Provisions**	**Yes**
B	Adoption and Submittal of State Plans for Designate Facilities	No
C	Emission Guidelines for Compliance Times	No
Ca	Reserved	No
Cb	Emission Guidelines and Compliance Times for Municipal Waste Combusters That Are Constructed on or Before September 20, 1994	No
Cc	Emission Guidelines for Compliance Times for Municipal Solid Waste Landfills	No
Cd	Emission Guidelines for Compliance Times for Sulfuric Acid Production Units	No
Ce	Emission Guidelines for Compliance Times for Hospital/Medical/Infectious Waste Incinerators	No
D	Fossil Fuel Fired Steam Generators for which Construction is Commenced After August 17, 1971	No
Da	Electric Utility Steam Generator Units for which Construction is Commenced After September 18, 1978	No
Db	**Industrial, Commercial, Institutional Steam Generating Units**	**Yes**
Dc	Small Industrial, Commercial, Institutional Steam Generating Units	No
E	Incinerators	No
Ea	Municipal Waste Combusters for Which Construction is Commenced After December 20, 1989 and On or Before September 20, 1994	No
Eb	Large Municipal Waste Combustors for Which Construction is Commenced After September 20, 1994 or for Which Modification or Reconstruction is Commenced After June 19, 1996	No
Ec	Hospital/Medical/Infectious Waste Incinerators for which Construction is Commenced on or after June 20, 1996	No
F	Portland Cement Plants	No
G	Nitric Acid Plants	No
H	Sulfuric Acid Plants	No
I	Hot Mix Asphalt Plants	No
J	Petroleum Refineries	No
Ja	Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007	No
K	Storage Vessels for Petroleum Liquids for which Construction, Reconstruction or Modification Commenced On or After June 11, 1973 and Prior to May 19, 1978	No
Ka	Storage Vessels for Petroleum Liquids for which Construction, Reconstruction or Modification Commenced After May 18, 1978 and Prior July 23, 1984.	No
Kb	Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction or Modification Commenced After July 23, 1984	No
L	Secondary Lead Smelters	No
M	Secondary Brass and Bronze Production Plants	No
N	Primary Emissions from Basic Oxygen Process Furnaces for which Construction is Commenced After June 11, 1973	No
Na	Secondary Emissions from Basic Oxygen Steelmaking Facilities for which Construction is Commenced After January 20, 1983	No
O	Sewage Treatment Plants	No
P	Primary Copper Smelters	No
Q	Primary Zinc Smelters	No
R	Primary Lead Smelters	No
S	Primary Aluminum Reduction Plants	No
T	Phosphate Fertilizer Industry - Wet Process Phosphoric Acid Plants	No

Table 3-2
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Summary of Applicable New Source Performance Standards (NSPS)

Subpart Designation	Promulgated NSPS Standard (40 CFR Part 60)	Applicable to U.S. EcoGen?
U	Phosphate Fertilizer Industry - Superphosphoric Acid Plants	No
V	Phosphate Fertilizer Industry - Diammonium Phosphate Plants	No
W	Phosphate Fertilizer Industry - Triple Superphosphate Plants	No
X	Phosphate Fertilizer Industry - Granular Triple Superphosphate Storage Facilities	No
Y	Coal Preparation and Processing Plants	No
Z	Ferroalloy Production Facilities	No
AA	Steel Plants - Electric Arc Furnaces Constructed After October 21, 1974 and On or Before August 17, 1983	No
AAa	Steel Plants - Electric Arc Furnaces and Argon Oxygen Decarbonization Vessels Constructed After August 17, 1983	No
BB	Kraft Pulp Mills	No
CC	Glass Manufacturing Plants	No
DD	Grain Elevators	No
EE	Surface Coating of Metal Furniture	No
FF	Reserved	No
GG	Stationary Gas Turbines	No
HH	Lime Manufacturing Plants	No
KK	Lead Acid Battery Manufacturing Plants	No
LL	Metallic Mineral Processing Plants	No
MM	Automobile and Light Duty Truck Surface Coating Operations	No
NN	Phosphate Rock Plants	
PP	Ammonium Sulfate Manufacture	No
QQ	Graphic Arts Industry - Publication Rotogravure Printing	No
RR	Pressure Sensitive Tape and Label Surface Coating Operations	No
SS	Industrial Surface Coating of Large Appliances	No
TT	Metal Coil Surface Coating	No
UU	Asphalt Processing and Asphalt Roofing Manufacture	No
VV	Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry (SOCMI) for Which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and On or Before November 7, 2006	No
VVa	Equipment Leaks of VOC in the SOCMI Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006	No
WW	Beverage Can Surface Coating Industry	No
XX	Bulk Gasoline Terminals	No
AAA	New Residential Wood Heaters	No
BBB	Rubber Tire Manufacturing Industry	No
CCC	Reserved	No
DDD	VOC Emission from the Polymer Manufacturing Industry	No
EEE	Reserved	No
FFF	Flexible Vinyl and Urethane Coating and Printing	No
GGG	Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After January 4, 1983, and On or Before November 7, 2006	No
GGGa	Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After November 7, 2006	No
HHH	Synthetic Fiber Production Facilities	No

Table 3-2
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Summary of Applicable New Source Performance Standards (NSPS)

Subpart Designation	Promulgated NSPS Standard (40 CFR Part 60)	Applicable to U.S. EcoGen?
III	VOC Emissions from the SOCMI Air Oxidation Unit Processes	No
JJJ	Petroleum Dry Cleaners	No
KKK	Equipment Leaks of VOC from Onshore Natural Gas Processing Plants	No
LLL	Onshore Natural Gas Processing - SO2 Emissions	No
MMM	Reserved	No
NNN	VOC Emissions from SOCMI Distillation Operations	No
OOO	Nonmetallic Mineral Processing Plants	No
PPP	Wool Fiberglass Insulation Manufacturing Plants	No
QQQ	VOC Emissions from Petroleum Refinery Wastewater Systems	No
RRR	VOC Emission from SOCMI Reactor Processes	No
SSS	Magnetic Tape Coating Facilities	No
TTT	Industrial Surface Coating - Surface Coating of Plastic Parts for Business Machines	No
UUU	Calciners and Dryers in Mineral Industries	No
VVV	Polymeric Coating of Supporting Substrates Facilities	No
WWW	Municipal Solid Waste Landfills	No
AAAA	Small Municipal Waste Combustion Units for which Construction Commenced After August 30, 1999 or Which Modification or Reconstruction is Commenced After June 6, 2001	No
BBBB	Emission Guidelines and Compliance Times for Small Municipal Waste Combustion Units for Which Construction Commenced On or Before August 30, 1999	No
CCCC	Commercial and Industrial Solid Waste Incineration Units for which Construction is Commenced After November 30, 1999 or for Which Modification or Reconstruction is Commenced On or After June 1, 2001	No
DDDD	Emission Guidelinds and Compliance Times for Commercial and Industrial Solid Waste Incineration Units for which Construction is Commenced On or Before November 30, 1999	No
EEEE	Other Solid Waste Incineration Units for which Construction is Commenced After December 9, 2004 or for Which Modification or Reconstruction is Commenced On or After June 16, 2006	No
FFFF	Emission Guidelines and Compliance Times for Other Solid Waste Incineration Units that Commenced Construction On or Before December 9, 2004	No
GGGG	Reserved	No
HHHH	Emission Guidelines and Compliance Times for Coal-Fired Electric Steam Generating Units	No
IIII	**Stationary Compression Ignition Internal Combustion Engines**	**Yes**
JJJJ	Stationary Spark Ignition Internal Combustion Engines	No
KKKK	Stationary Combustion Turbines	No
LLLL	New Sewage Sludge Incineration Units	No
MMMM	Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration Units	No

Existing requirement applicable to the proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility located in Polk County, Florida.

Table 3-2A
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
NSPS Subpart Db - Standards of Performance for Industrial - Commercial - Institutional Steam Generating Units
Applicability and Definitions

§ 60.40b Applicability and Delegation of Authority
(a) The affected facility to which this subpart applies is each **steam generating unit that commences construction, modification, or reconstruction after June 19, 1984** , and that has a **heat input capacity from fuels combusted** in the steam generating unit of **greater than 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr))** .
§ 60.4219 What Definitions Apply to this Subpart?
Annual Capacity Factor means the ratio between the actual heat input to a steam generating unit from the fuels listed in 60.42b(a), 60.43b(a) or 60.44b(a), as applicable, during a calendar year and the potential heat input to the steam generating unit had it been operated for 8,760 hours during a calendar year at the maximum steady state design heat input capacity. In the case of steam generating units that are rented or leased, the actual heat input shall be determined based on the combined heat input from all operations of the affected facility in a calendar year. **Fluidized Bed Combustion Technology** means combustion of fuel in a bed or series of bed (including but not limited to bubbling bed units and circulating bed units) of limestone aggregate (or other sorbent materials) in which these materials are forced upward by the flow of combustion air and the gaseous products of combustion. **Gaseous Fuel** means any fuel that is a gas at ISO conditions. This includes, but is not limited to, natural gas and gasified coal (including coke oven gas). **Heat Input** means heat derived from combustion of fuel in a steam generating unit and does not include the heat derived from preheated combustion air, recirculated flue gases, or exhaust gases from other sources, such as gas turbines, internal combustion engines, kilns, etc. **Municipal-Type Solid Waste** means refuse, more than 50% of which is waste consisting of a mixture of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustible materials, and noncombustible materials such as glass and rock. **Natural Gas** means: 1. A naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in geologic formations beneath the earth's surface, of which the principal constituent is methane; or 2. Liquefied petroleum gas, as defined by the American Society for Testing and Materials in ASTM D1835; 3. A mixture of hydrocarbons that maintains a gaseous state at ISO conditions. Additionally, natural gas must either be composed of at least 70% methane by volume or have a gross calorific value between 34 and 43 mega joules (MJ) per dry standard cubic meter (910 and 1,150 Btu per dry standard cubic foot). **Wood** means wood, wood residue, bark, or any derivative fuel or residue thereof, in any form, including, but not limited to, sawdust, sanderdust, wood chips, scraps, slabs,

Table 3-2A
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
NSPS Subpart Db - Standards of Performance for Industrial - Commercial - Institutional Steam Generating Units
Emission Standards

§ 60.42b Standard for Sulfur Dioxide (SO_2)

(k)(1) On and after the date on which the initial performance test is completed or required to be completed, whichever date comes first, no owner or operator of an affected facility that commences construction, reconstruction, or modification after February 28, 2005, and that combusts coal, oil, natural gas, a mixture of these fuels, or a mixture of these fuels with any other fuels shall cause to be discharged into the atmosphere any gases that contain SO_2 in excess of 87 ng/J (0.20 lb/MMBtu) heat input or 8% (0.08) of the potential SO_2 emission rate (92% reduction) and 520 ng/J (1.2 lb/MMBtu) heat input. No credit is provided for the heat input to the affected facility from the combustion of natural gas, wood, municipal-type solid waste, or other fuels or heat derived from exhaust gases from other sources, such as gas turbines, internal combustion engines, kilns, etc.

(2) Units firing only very low sulfur oil, gaseous fuel, a mixture of these fuels, or a mixture of these fuels with any other fuels with a potential SO2 emission rate of 140 ng/J (0.32 lb/MMBtu) heat input or less are exempt from the SO_2 emissions limit in paragraph (k)(1) of these section.

§ 60.43b Standard for Particulate Matter (PM)

(c) On and after the date on which the performance test is completed or is required to be completed under 60.8, whichever comes first, no owner or operator of an affected facility that commenced construction, reconstruction, or modification on or before February 28, 2005, and that combusts wood, or wood with other fuels, except coal, shall cause to be discharged from that affected facility any gases that contain PM in excess of the following emission limits:

(1) 43 ng/J (0.10 lb/MMBtu) heat input if the affected facility has an annual capacity factor greater than 30 percent (0.30) for wood.
(2) 86 ng/J (0.20 lb/MMBtu) heat input if (i) The affected facility has an annual capacity factor of 30 percent (0.30) or less for wood;
(ii) Is subject to a federally enforceable requirement limiting operation of the affected facility to an annual capacity factor of 30 percent (0.30) or less for wood; and
(iii) Has a maximum heat input capacity of 73 MW (250 MMBtu/hr) or less.

(f) On and after the date on which the initial performance test is completed or is required to be completed under 60.8, whichever date comes first, no owner or operator of an affected facility that can combust coal, oil, wood, or mixtures of these fuels with any other fuels shall cause to be discharged into the atmosphere any gases that exhibit greater than 20% opacity (6-minute average), except for one 6-minute period per hour of not more than 27% opacity. Owners and operators of an affected facility that elect to install, calibrate, maintain, and operate a continuous emissions monitoring system (CEMS) for measuring PM emissions according to the requirements of this subpart and are subject to a federally enforceable PM limit of 0.030 lb/MMBtu or less are exempt from the opacity standard specified in this paragraph.

(g) The PM and opacity standards apply at all times, except during periods of startup, shutdown, or malfunction.

(h)(1) Except as provided in paragraphs (h)(2), (h)(3), (h)(4), (h)(5), and (h)(6) of this section, on and after the date on which the initial performance test is completed or is required to be completed under 60.8, whichever date comes first, no owner or operator of an affected facility that commenced construction, reconstruction, or modification after February 28, 2005, and that **combusts coal, oil, wood, a mixture of these fuels, or a mixture of these fuels with any other fuels shall cause to be discharged into the atmosphere from that affected facility any gases that contain PM in excess of 13 ng/J (0.030 lb/MMBtu) heat input.**

§ 60.44b Standard for Nitrogen Oxides (NO_x)

(a)(1) Except as provided under paragraphs (k) and (l) of this section, on and after the date on which the initial performance test is completed or is required to be completed under 60.8, whichever date comes first, no owner or operator of an affected facility that is subject to the provisions of this section and that combusts only coal, oil, or natural gas shall cause to be discharged into the atmosphere from that affected facility any gases that contain NO (expressed as NO_2) in excess of the following emission limits:

Fuel/Steam Generating Type - Natural Gas and Distillate Oil - Low Heat Release Rate
Nitrogen Oxide Emission Limits (Expressed as NO_2) Heat Input - 43 ng/J; 0.10 lb/MMBtu

Fuel/Steam Generating Type - Natural Gas and Distillate Oil - High Heat Release Rate
Nitrogen Oxide Emission Limits (Expressed as NO_2) Heat Input - 86 ng/J; 0.20 lb/MMBtu

(d) On and after the date on which the initial performance test is completed or is required to be completed under 60.8, whichever date comes first, no owner or operator of an affected facility that simultaneously combusts natural gas with wood, municipal-type solid waste, or other solid fuel, except coal, shall cause to be discharged into the atmosphere from that affected facility any gases that contain NOx in excess of 130 ng/J (0.30 lb/MMBtu) heat input unless the affected facility has an annual capacity factor for natural gas of 10% (0.10) or less and is subject to a federally enforceable requirement that limits operation of the affected facility to an annual capacity factor of 10% (0.10) or less for natural gas.

(h) For purposes of paragraph (i) of this section, the NO$_x$ standards under this section apply at all times including periods of startup, shutdown, or malfunction.

(i) Except as provided under paragraph (j) of this section, compliance with the emission limits under this section is determined on a 30-day rolling average basis.

(l) On and after the date on which the initial performance test is completed or required to be completed, whichever date comes first, no owner or operator of an affected facility that commenced construction or reconstruction after July 9, 1997 shall cause to be discharged into the atmosphere from that affected facility any gases that contain NO$_x$ (expressed as NO_2) in excess of the following limits:

(1) If the affected facility combusts coal, oil, natural gas, a mixture of these fuels, or a mixture of these fuels with any other fuels: A limit of 86 ng/J (0.20 lb/MMBtu) heat input unless the facility has an annual capacity factor for coal, oil, and natural gas of 10% (0.10) or less and is subject to a federally enforceable requirement that limits operation of the facility to an annual capacity factor of 10% (0.10) or less for coal, oil, and natural gas.

Table 3-2A
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
NSPS Subpart Db - Standards of Performance for Industrial - Commercial - Institutional Steam Generating Units
Applicable Monitoring Requirements

§ 60.46b Compliance and Performance Test Methods and Procedures for Particulate Matter and Nitrogen Oxides
(a) The PM emission standards and opacity limits under 60.43b apply at all times except during periods of startup, shutdown, or malfunction. The NO_x emission standards under 60.44b apply at all times. (b) Compliance with the PM emission standards under 60.43b shall be determined through performance testing as described in paragraph (d), except as provided in paragraph (i) of this section. (c) Compliance with the NOx emission standards under 60.44b shall be determined through performance testing under paragraph (e) or (f), or under paragraph (g) and (h) of this section, as applicable.
(d) To determine compliance with the PM emission limits and opacity limits under 60.43b, the owner or operator of an affected facility shall conduct an initial performance test as required under 60.8, and shall conduct subsequent performance tests as requested by the Administrator, using the following procedures and reference methods: (1) Method 3A or 3B of appendix A-2 of this part is used for gas analysis when applying Method 5 of appendix A-3 of this part or Method 17 of appendix A-6 of this part. (2) Method 5, 5B, or 17 of appendix A of this part shall be used to measure the concentration of PM as follows: (i) Method 5 of appendix A of this part shall be used at affected facilities without wet flue gas desulfurization (FGD) systems; and (ii) Method 17 of appendix A-6 of this part may be used at facilities with or without wet scrubber systems provided the stack gas temperature does not exceed a temperature of 160 °C (320 °F). The procedures of sections 8.1 and 11.1 of Method 5B of appendix A-3 of this part may be used in Method 17 of appendix A-6 of this part only if it is used after a wet FGD system. Do not use Method 17 of appendix A-6 of this part after wet FGD systems if the effluent is saturated or laden with water droplets. (iii) Method 5B of appendix A of this part is to be used only after wet FGD systems. (3) Method 1 of appendix A of this part is used to select the sampling site and the number of traverse sampling points. The sampling time for each run is at least 120 minutes and the minimum sampling volume is 1.7 dscm (60 dscf) except that smaller sampling times or volumes may be approved by the Administrator when necessitated by process variables or other factors. (4) For Method 5 of appendix A of this part, the temperature of the sample gas in the probe and filter holder is monitored and maintained at 160 +/- 14 °C (320 +/- 25 °F). (5) For determination of PM emissions, the oxygen (O_2) or CO_2 sample is obtained simultaneously with each run of Method 5, 5B, or 17 of appendix A of this part by traversing the duct at the same sampling location. (6) For each run using Method 5, 5B, or 17 of appendix A of this part, the emission rate expressed in ng/J heat input is determined using: (i) The O_2 or CO_2 measurements and PM measurements obtained under this section; (ii) The dry basis F factor; and (iii) The dry basis emission rate calculation procedure contained in Method 19 of appendix A of this part. (7) Method 9 of appendix A of this part is used for determining the opacity of stack emissions. (e) To determine compliance with the emission limits for NO_x under 60.44b, the owner or operator of an affected facility shall conduct the performance test as required under 60.8 using the continuous system for monitoring NO_x under 60.48(b).

Table 3-2A
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
NSPS Subpart Db - Standards of Performance for Industrial - Commercial - Institutional Steam Generating Units

NSPS Subpart A - *Applicable Notification and Recordkeeping* Requirements

NSPS Subpart
40 CFR Part 60 Subpart A - General Provisions
Applicable Notification and Recordkeeping Requirements
§ 60.7 Notification and record keeping (a) Any owner or operator subject to the provisions of this part shall furnish the Administrator written notification or, if acceptable to both the Administrator and the owner or operator of a source, electronic notification, as follows: (1) A notification of the date **construction** (or reconstruction as defined under §60.15) of an affected facility is **commenced** postmarked no later than 30 days after such date. This requirement shall not apply in the case of mass-produced facilities which are purchased in completed form. (3) A notification of the actual date of initial startup of an affected facility postmarked within 15 days after such date. (6) A notification of the anticipated date for conducting the opacity observations required by §60.11(e)(1) of this part. The notification shall also include, if appropriate, a request for the Administrator to provide a visible emissions reader during a performance test. The notification shall be postmarked not less than 30 days prior to such date. (b) Any owner or operator subject to the provisions of this part shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative. (c) Each owner or operator required to install a continuous monitoring device shall submit excess emissions and monitoring systems performance report (excess emissions are defined in applicable subparts) and-or summary report form (see paragraph (d) of this section) to the Administrator semiannually, except when: more frequent reporting is specifically required by an applicable subpart; or the Administrator, on a case-by-case basis, determines that more frequent reporting is necessary to accurately assess the compliance status of the source. All reports shall be postmarked by the 30th day following the end of each six-month period. Written reports of excess emissions shall include the following information: (1) The magnitude of excess emissions computed in accordance with §60.13(h), any conversion factor(s) used, and the date and time of commencement and completion of each time period of excess emissions. The process operating time during the reporting period. (2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted. (3) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments. (4) When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be stated in the report. (f) Any owner or operator subject to the provisions of this part shall maintain a file of all measurements, including **continuous monitoring system**, **monitoring device**, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this part recorded in a permanent form suitable for inspection. The **file shall be retained for at least two years** following the date of such measurements, maintenance, reports, and records.

Applicable Definition(s):

Affected facility means, with reference to a stationary source, any apparatus to which a standard is applicable (§60.2).

Commenced means, with respect to the definition of new source in section 111(a)(2) of the Act, that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification (§60.2).

Construction means fabrication, erection, or installation of an affected facility (§60.2).

Continuous monitoring system means the total equipment, required under the emission monitoring sections in applicable subparts, used to sample and condition (if applicable), to analyze, and to provide a permanent record of emissions or process parameters (§60.2).

Monitoring device means the total equipment, required under the monitoring of operations sections in applicable subparts, used to measure and record (if applicable) process parameters (§60.2).

Table 3-2A
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
NSPS Subpart Db - Standards of Performance for Industrial - Commercial - Institutional Steam Generating Units

NSPS Subpart A - Applicable Performance Testing Requirements

NSPS Subpart
40 CFR Part 60 Subpart A - General Provisions
Applicable Performance Testing Requirements

§ 60.8 Performance Tests

(a) Except as specified in paragraphs (a)(1),(a)(2), (a)(3), and (a)(4) of this section, within 60 days after achieving the maximum production rate at which the **affected facility** will be operated, but not later than 180 days after initial **startup** of such facility, or at such other times specified by this part, and at such other times as may be required by the Administrator under section 114 of the Act, the owner or operator of such facility shall conduct performance test(s) and furnish the Administrator a written report of the results of such performance test(s).

(b) Performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in each applicable subpart unless the Administrator (1) specifies or approves, in specific cases, the use of a reference method with minor changes in methodology, (2) approves the use of an equivalent method, (3) approves the use of an alternative method the results of which he has determined to be adequate for indicating whether a specific source is in compliance, (4) waives the requirement for performance tests because the owner or operator of a source has demonstrated by other means to the Administrator's satisfaction that the **affected facility** is in compliance with the standard, or (5) approves shorter sampling times and smaller sample volumes when necessitated by process variables or other factors. Nothing in this paragraph shall be construed to abrogate the Administrator's authority to require testing under section 114 of the Act.

(c) Performance tests shall be conducted under such conditions as the Administrator shall specify to the plant operator based on representative performance of the **affected facility**. The owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of the performance tests. Operations during periods of **startup**, **shutdown**, and **malfunction** shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard.

(d) The owner or operator of an **affected facility** shall provide the Administrator at least 30 days prior notice of any performance test, except as specified under other subparts, to afford the Administrator the opportunity to have an observer present. If after 30 days notice for an initially scheduled performance test, there is a delay (due to operational problems, etc.) in conducting the scheduled performance test, the owner or operator of an **affected facility** shall notify the Administrator (or delegated State or local agency) as soon as possible of any delay in the original test date, either by providing at least 7 days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the Administrator (or delegated State or local agency) by mutual agreement.

(e) The owner or operator of an affected facility shall provide, or cause to be provided, performance testing facilities as follows:

(1) Sampling ports adequate for test methods applicable to such facility. This includes (i) constructing the air pollution control system such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and procedures and (ii) providing a stack or duct free of cyclonic flow during performance tests, as demonstrated by applicable test methods and procedures.
(2) Safe sampling platform(s).
(3) Safe access to sampling platform(s).
(4) Utilities for sampling and testing equipment.

(f) Unless otherwise specified in the applicable subpart, each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the owner or operator's control, compliance may, upon the Administrator's approval, be determined using the arithmetic mean of the results of the two other runs.

Applicable Definition(s):

Affected facility means, with reference to a stationary source, any apparatus to which a standard is applicable (§60.2).

Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions (§60.2).

Shutdown means the cessation of operation of an affected facility for any purpose (§60.2).

Startup means the setting in operation of an affected facility for any purpose (§60.2).

Table 3-2B
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
NSPS Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
Applicability and Definitions

§ 60.4200 Am I Subject to This Subpart?
(a) Applicable to manufacturers, owners, and operators of **stationary compression ignition (CI) internal combustion engines (ICE)** and other persons as specified in paragraphs (a)(1) through (4) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator. (2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are: (i) Manufactured after April 1, 2006, and are not fire pump engines, or (ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006. (4) The provisions of §60.4208 of this subpart are applicable to all owners and operators of stationary CI ICE that commence construction after July 11, 2005.
§ 60.4219 What Definitions Apply to this Subpart?
Compression ignition means relating to a type of stationary internal combustion engine that is not a spark ignition engine. **Emergency stationary internal combustion engine** means any stationary internal combustion engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc. Stationary CI ICE used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines. **Stationary internal combustion engine** means any internal combustion engine, except combustion turbines, that converts heat energy into mechanical work and is not mobile. Stationary ICE differ from mobile ICE in that a stationary internal combustion engine is not a nonroad engine as defined at 40 CFR 1068.30 (excluding paragraph (2)(ii) of that definition), and is not used to propel a motor vehicle, aircraft, or a vehicle used solely for competition. Stationary ICE include reciprocating ICE, rotary ICE, and other ICE, except combustion turbines.

Table 3-2B
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
NSPS Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
Emission Standards

§ 60.4205 What Emission Standards Must I Meet for Emergency Engines if I am an owner or operator of a stationary CI internal combustion engine?
(b) Owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards for new nonroad CI engines in §60.4202, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary CI ICE. (c) Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants.
§ 60.4202 What Emission Standards Must I Meet for Emergency Engines if I am a stationary CI internal combustion engine manufacturer?
(a) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later emergency stationary CI ICE with a maximum engine power less than or equal to 2,237 KW (3,000 HP) and a displacement of less than 10 liters per cylinder that are not fire pump engines to the emission standards specified in paragraphs (a)(1) through (2) of this section. (2) For engines with a maximum engine power greater than or equal to 37 KW (50 HP), the certification emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants beginning in model year 2007. Emission limits are as follows: - NMHC + NO_x - 3.0 g/bhp-hr - CO - 2.6 g/bhp-hr - PM - 0.15 g/bhp-hr
Table 4 - Emission Standards for Stationary Fire Pump Engines
Maximum Engine Power - 130 ≤ KW < 225; 175 ≤ HP < 300 Model Year - 2008 and Earlier - NMHC + NOx - 7.8 g/bhp-hr - CO - 2.6 g/bhp-hr - PM - 0.40 g/bhp-hr Model Year - 2009+ - NMHC + NOx - 3.0 g/bhp-hr - PM - 0.15 g/bhp-hr

Table 3-2B
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
NSPS Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Applicable Monitoring and Compliance Requirements

§ 60.4209 What are the Monitoring Requirements if I am an Owner or Operator of a Stationary CI Internal Combustion Engine?
If you are an owner or operator, you must meet the monitoring requirements of this section. In addition, you must also meet the monitoring requirements specified in §60.4211. (a) If you are an owner or operator of an emergency stationary CI internal combustion engine that does not meet the standards applicable to non-emergency engines, you must install a non-resettable hour meter prior to startup of the engine. (b) If you are an owner or operator of a stationary CI internal combustion engine equipped with a diesel particulate filter to comply with the emission standards in §60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached.
§ 60.4211 What are my Compliance Requirements if I am an Owner or Operator of a Stationary CI Internal Combustion Engine?
(a) If you are an owner or operator and must comply with the emission standards specified in this subpart, you must do all of the following, except as permitted under paragraph (g) of this section: (1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions; (2) Change only those emission-related settings that are permitted by the manufacturer; and (3) Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.
(f) Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. Emergency stationary ICE may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply non-emergency power as part of a financial arrangement with another entity. For owners or operators of emergency engines, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as permitted in this section, is prohibited.

Table 3-2B

U.S. EcoGen Polk, LLC - Polk County, Florida

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

NSPS Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Notification, Reporting and Recordkeeping Requirements

§ 60.4214 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?
(b) If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.
(c) If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached.

Table 3-3A
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Summary of Applicable National Emission Standards for Hazardous Air Pollutants (NESHAPs)

Subpart	Promulgated NESHAP Standard (40 CFR Part 61)	Applicable to U.S. EcoGen?
A	General Provisions	No
B	Radon Emissions from Underground Uranium Mines	No
C	Beryllium	No
D	Beryllium Rocket Motor Firing	No
E	Mercury	No
F	Vinyl Chloride	No
G	Reserved	No
H	Radionuclides Other Than Radon From Department of Energy Facilities	No
I	Radionuclides Emissions From Federal Facilities Other Than Nuclear Regulatory Commission Licensees and Not Covered by Subpart H	No
J	Equipment Leaks (Fugitive Emission Sources) of Benzene	No
K	Radionuclide Emissions from Elemental Phosphorus Plants	No
L	Benzene Emissions From Coke By-Product Recovery Plants	No
M	Asbestos	No
N	Inorganic Arsenic Emissions From Glass Manufacturing Plants	No
O	Inorganic Arsenic Emissions From Primary Copper Smelters	No
P	Inorganic Arsenic Emissions From Arsenic Trioxide and Metallic Arsenic Production Facilities	No
Q	Radon Emissions from Department of Energy Facilities	No
R	Radon Emissions From Phosphogypsum Stacks	No
S	Reserved	No
T	Radon Emissions From the Disposal of Uranium Mill Tailings	No
U	Reserved	No
V	Equipment Leaks (Fugitive Emission Sources)	No
W	Radon Emissions From Operating Mill Tailings	No
X	Reserved	No
Y	Benzene Emissions From Benzene Storage Vessels	No
Z	Reserved	No
AA	Reserved	No
BB	Benzene Emissions From Benzene Transfer Operations	No
CC	Reserved	No
DD	Reserved	No
EE	Reserved	No
FF	Benzene Waste Operations	No

Existing requirement applicable to the proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility located in Polk County, Florida.

Table 3-3B
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Summary of Applicable National Emission Standards for Hazardous Air Pollutants (NESHAPs)
MACT Source Categories

Subpart	Promulgated MACT Standard (40 CFR Part 63)	Applicable to U.S. EcoGen?
A	**General Provisions**	**Yes**
B	Requirements for Control Technology Determinations for Major Sources in Accordance with Clean Air Act Section 112(g) and 112(j)	No
C	List of Hazardous Air Pollutants, Petitions Process, Lesser Quantities Designations, Source Category List	No
D	Regulations Governing Compliance Extensions for Early Reductions of HAPS	No
E	Approval of State Programs and Delegation of Federal Authority	No
F	Synthetic Organic Chemical Manufacturing Industry (SOCMI)	No
G	SOCMI - Process Vents, Storage Vessels, Transfer Operations and Wastewater	No
H	Equipment Leaks	No
I	Certain Processes Subject to the Negotiated Regulation for Equipment Leaks	No
J	Polyvinyl Chloride and Copolymers Production	No
K	Reserved	No
L	Coke Oven Batteries	No
M	National Perchloroethylene Air Emissions Standards for Dry Cleaning Facilities	No
N	Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks	No
O	Ethylene Oxide Emission Standards for Sterilization Facilities	No
P	Reserved	No
Q	Industrial Process Cooling Towers	No
R	Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations	No
S	Pulp and Paper Industry	No
T	Halogenated Solvent Cleaning	No
U	Group I Polymers and Resins	No
V	Reserved	No
W	Epoxy Resin Production and Non-Vinyl Polymides Production	No
X	Secondary Lead Smelting	No
Y	Marine Tank Vessel Loading Operations	No
Z	Reserved	No
AA	Phosphoric Acid Manufacturing Plants	No
BB	Phosphate Fertilizers Production Plants	No
CC	Petroleum Refineries	No
DD	Off-Site Waste and Recovery Operations	No
EE	Magnetic Tape Manufacturing Operations	No
FF	Reserved	No
GG	Aerospace Manufacturing and Rework Facilities	No
HH	Oil and Natural Gas Production Facilitates	No
II	Shipbuilding and Ship Repair (Surface Coatings)	No
JJ	Wood Furniture Manufacturing Operations	No
KK	Printing and Publishing Industry	No
LL	Primary Aluminum Reduction Plants	No
MM	Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand Alone Semi-chemical Pulp Mills	No
OO	Tanks Level 1	No
PP	Containers	No
QQ	Surface Impoundments	No
RR	Individual Drain Systems	No
SS	Closed Vent Systems, Control Devices, Recovery Devices and Routing to a Fuel Gas System or Process	No
TT	Equipment Leaks - Control Level 1	No

Table 3-3B
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Summary of Applicable National Emission Standards for Hazardous Air Pollutants (NESHAPs)
MACT Source Categories

Subpart	Promulgated MACT Standard (40 CFR Part 63)	Applicable to U.S. EcoGen?
A	**General Provisions**	**Yes**
UU	Equipment Leaks - Control Level 2	No
VV	Oil-Water Separators and Organic-Water Separators	No
WW	Storage Vessels (Tanks) - Control Level 2	No
XX	Ethylene Manufacturing Process Units - Heat Exchange Systems and Waste Operations	No
YY	Source Categories - Generic MACT	No
ZZ - BBB	Reserved	No
CCC	Steel Pickling - HCL Process Facilities and HCL Regeneration Plants	No
DDD	Mineral Wool Production	No
EEE	Hazardous Waste Combustors	No
GGG	Pharmaceuticals Production	No
HHH	Natural Gas Transmissions and Storage Facilities	No
III	Flexible Polyurethane Foam Production	No
JJJ	Group IV Polymers and Resins	No
KKK	Reserved	No
LLL	Portland Cement Manufacturing Industry	No
MMM	Pesticide Active Ingredient Production	No
NNN	Wool Fiberglass Manufacturing	No
OOO	Manufacture of Amino/Phenolic Resins	No
PPP	Polyether Polyols Production	No
QQQ	Primary Copper Smelting	No
RRR	Secondary Aluminum Production	No
TTT	Primary Lead Smelting	No
UUU	Petroleum Refineries - Catalytic Cracking Units, Catalytic Reformer Units, Sulfur Recovery Units	No
VVV	Publically Owned Treatment Works (POTWs)	No
WWW	Reserved	No
XXX	Ferroalloys Production: Ferromanganese and Silomanganese	No
AAAA	Municipal Solid Waste Landfills	No
CCCC	Manufacturing of Nutritional Yeast	No
DDDD	Plywood and Composite Wood Products	No
EEEE	Organic Liquids Distribution (Non-Gasoline)	No
FFFF	Miscellaneous Organic Chemical Manufacturing	No
GGGG	Solvent Extraction for Vegetable Oil Production	No
HHHH	Wet Formed Fiberglass Mat Production	No
IIII	Surface Coating of Automobiles and Light Duty Trucks	No
JJJJ	Paper and Other Web Coatings	No
KKKK	Surface Coating of Metal Cans	No
MMMM	Surface Coatings of Miscellaneous Metal Parts and Products	No
NNNN	Surface Coating of Large Appliances	No
OOOO	Printing, Coating and Dyeing of Fabrics and Other Textiles	No
PPPP	Surface Coating of Plastic Parts and Products	No
QQQQ	Surface Coating of Wood Building Products	No
RRRR	Surface Coating of Metal Furniture	No
SSSS	Surface Coating of Metal Coil	No
TTTT	Leather Finishing Operations	No
UUUU	Cellulose Products Manufacturing	No
VVVV	Boat Manufacturing	No

Table 3-3B
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Summary of Applicable National Emission Standards for Hazardous Air Pollutants (NESHAPs)
MACT Source Categories

Subpart	Promulgated MACT Standard (40 CFR Part 63)	Applicable to U.S. EcoGen?
A	**General Provisions**	**Yes**
WWWW	Reinforced Plastics Composites Manufacturing	No
XXXX	Rubber Tire Manufacturing	No
YYYY	Stationary Combustion Turbines	No
ZZZZ	**Stationary Reciprocating Internal Combustion Engines**	**Yes**
AAAAA	Lime Manufacturing	No
BBBBB	Semiconductor Manufacturing	No
CCCCC	Coke Ovens: Pushing, Quenching, and Battery Stacks	No
DDDDD	Industrial, Commercial and Instructional Boilers and Process Heaters (Major Sources)	No
EEEEE	Iron and Steel Foundries	No
FFFFF	Integrated Iron and Steel Manufacturing Facilities	No
GGGGG	Site Remediation	No
HHHHH	Miscellaneous Coating Manufacturing	No
IIIII	Mercury Emissions from Mercury Cell Chlor-Alkali Plants	No
JJJJJ	Brick and Structural Clay Products Manufacturing	No
KKKKK	Clay Ceramics Manufacturing	No
LLLLL	Asphalt Processing and Asphalt Roofing Manufacturing	No
MMMMM	Flexible Polyurethane Foam Fabrication Operations	No
NNNNN	Hydrochloric Acid Production	No
OOOOO	Reserved	No
PPPPP	Engine Test Cells/Stands	No
QQQQQ	Friction Materials Manufacturing Facilities	No
RRRRR	Taconite Iron Ore Processing	No
SSSSS	Refractory Products Manufacturing	No
TTTTT	Primary Magnesium Refining	No
UUUUU*	Coal- and Oil-Fired Electric Utility Steam Generating Units	No
UUUUU - VVVVV	Reserved	No
WWWWW	Hospital Ethylenne Oxide Sterilizers	No
XXXXX	Reserved	No
YYYYY	Area Sources: Electric Arc Furnace Steelmaking Facilities	No
ZZZZZ	Iron and Steel Foundries Area Sources	No
AAAAAA	Reserved	No
BBBBBB	Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities	No
CCCCCC	Gasoline Dispensing Facilities	No
DDDDDD	Polyvinyl Chloride and Copolymers Production Area Sources	No
EEEEEE	Primary Copper Smelting Area Sources	No
FFFFFF	Secondary Copper Smelting Area Sources	No
GGGGGG	Primary Nonferrous Metals Area Sources - Zinc, Cadmium, and Beryllium	No
HHHHHH	Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources	No
IIIIII	Reserved	No
JJJJJJ	**Industrial, Commercial, and Institutional Boilers Area Sources**	**Yes**
KKKKKK	Reserved	No
LLLLLL	Acrylic and Modacrylic Fibers Production Area Sources	No
MMMMMM	Carbon Black Production Area Sources	No
NNNNNN	Chemical Manufacturing Area Sources: Chromium Compounds	No
OOOOOO	Flexible Polyurethane Foam Production and Fabrication Area Sources	No
PPPPPP	Lead Acid Battery Manufacturing Area Sources	No

Table 3-3B
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Summary of Applicable National Emission Standards for Hazardous Air Pollutants (NESHAPs)
MACT Source Categories

Subpart	Promulgated MACT Standard (40 CFR Part 63)	Applicable to U.S. EcoGen?
A	**General Provisions**	**Yes**
QQQQQQ	Wood Preserving Area Sources	No
RRRRRR	Clay Ceramics Manufacturing Area Sources	No
SSSSSS	Glass Manufacturing Area Sources	No
TTTTTT	Secondary Nonferrous Metals Processing Area Sources	No
UUUUUU	Reserved	No
VVVVVV	Chemical Manufacturing Area Sources	No
WWWWWW	Area Source Standards for Plating and Polishing Operations	No
XXXXXX	Area Source Standards for Nine Metal Fabrication and Finishing Source Categories	No
YYYYYY	Area Sources: Ferroalloys Production Facilities	No
ZZZZZZ	Area Source Standards for Aluminum, Copper, and Other Nonferrous Foundries	No
AAAAAAA	Area Sources: Asphalt Processing and Asphalt Roofing Manufacturing	No
BBBBBBB	Area Sources: Chemical Preparations Industry	No
CCCCCCC	Area Sources: Paints and Allied Products Manufacturing	No
DDDDDDD	Area Source Standards for Prepared Feeds Manufacturing	No
EEEEEEE	Gold Mine Ore Processing and Production Area Source Category	No

Notes:
*Subpart UUUUU - Coal- and Oil-Fired Electric Utility Steam Genrating Units is a proposed Subpart and has not yet been promulgated.

Existing requirement applicable to the proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility located in Polk County, Florida.

Table 3-3C
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
NESHAP MACT Subpart ZZZZ - NESHAPS for Stationary Reciprocating Internal Combustion Engines
Applicability and Definitions

§ 63.6580 - What is the purpose of Subpart ZZZZ?

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

§ 63.6585 - Am I Subject to this Subpart?

You are subject to this subpart if you own or operate a stationary RICE at a major or area source of HAP emissions.

(a) **A Stationary RICE** is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile.

(b) **A Major Source of HAP Emissions** is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 mega grams) or more per year or any combination of HAP at are ate of 25 tons (22.69 mega grams) or more per year, except that for oil and gas production facilities, a major source of HAP emissions is determined for each surface site.

(c) **An Area Source of HAP Emissions** is a source that is not a major source.

§ 63.6590 - What Parts of My Plant does this Subpart Cover?

(a) **Affected Source** is any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand.

(2) **New Stationary RICE**
(i) A stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after December 19, 2002.
(ii) A stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.
(iii) A stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary RICE after June 12, 2006.

(b) Stationary RICE Subject to Limited Requirements

(1) An **affected source** which meets either of the criteria in paragraphs (b)(1)(i) through (ii) of this section **does not have to meet the requirements of this subpart and of subpart A of this part except for the initial notification requirements of 63.6645(f)**

(i) The stationary RICE is a new or reconstructed emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions.
(ii) The stationary RICE is a new or reconstructed limited use stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions.

(c) **Stationary RICE Subject to Regulations under 40 CFR 60 - An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR 60, Subpart IIII, for compression ignition engines** or 40 CFR 60, Subpart JJJJ, for spark ignition engines. **No further requirements apply for such engines under this part.**

(1) A new or reconstructed stationary RICE located at an area source.
(2) A new or reconstructed 2SLB stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions.
(3) A new or reconstructed 4SLB stationary RICE with a site rating of less than 250 brake HP located at a major source of HAP emissions.
(4) A new or reconstructed spark ignition 4 stroke rich burn (4SRB) stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions.
(5) A new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis.
(6) A new or reconstructed emergency or limited use stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions.
(7) A new or reconstructed compression ignition (CI) stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions.

§ 63.6595 - When do I have to Comply with this Subpart?

(a)(3) If you start up your new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions after August 6, 2004, you must comply with the applicable emission limitations and operating limitations in this subpart upon startup of your affected source.

(5) If you start up your new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions after January 18, 2008, you must comply with the applicable emission limitations and operating limitations in this subpart upon startup of your affected source.

Table 3-3C

U.S. EcoGen Polk, LLC - Polk County, Florida

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

NESHAP MACT Subpart ZZZZ - NESHAPS for Stationary Reciprocating Internal Combustion Engines

Notifications, Reports and Records

63.6645 - What Notifications Must I Submit and When?
(f) If you are required to submit an Initial Notification but are otherwise not affected by the requirements of this subpart, in accordance with 63.6590(b), your notification should include the information in 63.9(b)(2)(i) through (v), and a statement that your stationary RICE has no additional requirements and explain the basis of the exclusion (for example, that it operates exclusively as an emergency stationary RICE if it has a site rating of m roe than 500 brake HP located at a major source of HAP emissions.

Table 3-3C
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
NESHAP MACT Subpart A - General Provisions
63.9 - Notification Requirements

63.9 - Notification Requirements
(b) Initial notifications. (1)(i) The requirements of this paragraph apply to the owner or operator of an affected source when such source becomes subject to a relevant standard. (ii) If an area source that otherwise would be subject to an emission standard or other requirement established under this part if it were a major source subsequently increases its emissions of hazardous air pollutants (or its potential to emit hazardous air pollutants) such that the source is a major source that is subject to the emission standard or other requirement, such source shall be subject to the notification requirements of this section. (iii) Affected sources that are required under this paragraph to submit an initial notification may use the application for approval of construction or reconstruction under §63.5(d) of this subpart, if relevant, to fulfill the initial notification requirements of this paragraph. (2) The owner or operator of an affected source that has an initial startup before the effective date of a relevant standard under this part shall notify the Administrator in writing that the source is subject to the relevant standard. The notification, which shall be submitted not later than 120 calendar days after the effective date of the relevant standard (or within 120 calendar days after the source becomes subject to the relevant standard), shall provide the following information: (i) The name and address of the owner or operator; (ii) The address (i.e., physical location) of the affected source; (iii) An identification of the relevant standard, or other requirement, that is the basis of the notification and the source's compliance date; (iv) A brief description of the nature, size, design, and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of hazardous air pollutants emitted; and (v) A statement of whether the affected source is a major source or an area source.

Table 3-3D
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
NESHAP MACT Subpart JJJJJJ - NESHAPS for Industrial, Commercial, and Institutional Boilers Area Sources
Applicability and Definitions

§ 63.11193 Am I Subject to this Subpart?
You are subject to this subpart if you own or operate an industrial, commercial, or institutional boiler as defined in 63.11237 that is located at, or is part of, an area source of HAPs
§ 63.11194 What is the Affected Source of this Subpart?
(a) Applies to each new, reconstructed, or existing affected source as defined in paragraphs (a)(1) and (2) (1) Collection of all existing industrial, commercial, and institutional boilers within a subcategory (coal, biomass, oil), located at an area source (2) Each new or reconstructed industrial, commercial, or institutional boiler within a subcategory, located at an area source (c) An affected source is new if you commenced construction or reconstruction after June 4, 2010 and you meet the applicability criteria at the time you commence construction.
§ 63.11196 What are My Compliance Dates?
(c) If you startup a new affected source after May 20, 2011, you must achieve compliance with the provisions of this subpart upon startup of your affected source.
§ 63.11237 Definitions
Biomass means any biomass-based solid fuel that is not a solid waste. This includes, but is not limited to, wood residue and wood products (e.g., trees, tree stumps, tree limbs, bark, lumber, sawdust, sander dust, chips, scraps, slabs, millings, and shavings); animal manure, including litter and other bedding materials; vegetative agricultural and silvicultural materials, such as logging residues (slash), nut and grain hulls and chaff (e.g., almond, walnut, peanut, rice, and wheat), bagasse, orchard prunings, corn stalks, coffee bean hulls and grounds. This definition of biomass is not intended to suggest that these materials are or are not solid waste. **Biomass Subcategory** includes any boiler that burns at least 15% biomass on an annual heat input basis. **Boiler** means an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam or hot water. Controlled flame combustion refers to a steady-state, or near steady-state, process wherein fuel and/or oxidizer feed rates are controlled. Waste heat boilers are excluded from this definition. **Gaseous Fuels** includes, but is not limited to, natural gas, process gas, landfill gas, coal derived gas, refinery gas, hydrogen, and biogas. **Industrial Boiler** means a boiler used in manufacturing, processing, mining, and refining or any other industry to provide steam, hot water, and/or electricity. **Opacity** means the degree to which emissions reduce the transmission of light and obscure the view of an object in the background. **Particulate Matter (PM)** means any finely divided solid or liquid material, other than uncombined water, as measured by the test methods specified under this subpart, or an alternative method.

Table 3-3D
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
NESHAP MACT Subpart JJJJJJ - NESHAPS for Industrial, Commercial, and Institutional Boilers Area Sources
Emission Limits and Work Practice Standards

§ 63.11201 What Standards Must I Meet?

(a) Comply with emission limits specified in Table 1 to this subpart

Table 1 - Emission Limits

New Biomass-Fired Boiler with Heat Input Capacity of 30 MMBtu/hr or Greater

Particulate Matter - 0.03 lbs/MMBtu of heat input

(b) Comply with each work practice standard, emission reduction measure, and management practice specified in Table 2 to this subpart. An energy assessment completed on or after January 1, 2008 that meets the requirements in Table 2 to this subpart satisfies the energy assessment portion of this requirement.

Table 2 - Work Practice Standards, Emission Reduction Measures, and Management Practices

Existing or New Coal, New Biomass, and New Oil (Units with Heat Input Capacity of 10 MMBtu/hr or Greater)

Minimize the boiler's startup and shutdown periods following the manufacturer's recommended procedures. If the manufacturer's recommended procedures are not available, you must follow recommended procedures for a unit of similar design for which manufacturer's recommended procedures are available.

Existing or New Biomass or Coal

Conduct a tune-up of the boiler biennially as specified in 63.11223.

(c) Comply with each operating limit specified in Table 3 to this subpart that applies to your boiler

Table 3 - Operating Limits for Boilers with Emission Limits

1. Fabric Filter Control - (a) Maintain opacity to less than or equal to 10% opacity (daily block average); OR (b) Install and operate a bag leak detection system according to 63.11224 and operate the fabric filter such that the bag leak detection system alarm does not sound more than 5% of the operating time during each 6-minute period.

2. Electrostatic Precipitator Control - (a) Maintain opacity to less than or equal to 10% opacity (daily block average); OR (b) Maintain the secondary power input of the electrostatic precipitator at or above the lowest 1-hour average secondary electric power measured during the most recent performance test demonstrating compliance with the particulate matter emission limitations.

3. Wet PM Scrubber Control - Maintain the pressure drop at or above the lowest 1-hour average pressure drop across the wet scrubber and the liquid flow-rate at or above the lowest 1-hour average liquid flow rate measured during the most recent performance test demonstrating compliance with the PM emission limitation.

4. Dry Sorbent or Carbon Injection Control - Maintain the sorbent or carbon injection rate at or above the lowest 2-hour average sorbent flow rate measured during the most recent performance test demonstrating compliance with the mercury emissions limitation. When your boiler operates at lower loads, multiply your sorbent or carbon injection rate by the load fraction (e.g., actual heat input divided by the heat input during performance stack test, for 50% load, multiply the injection rate operating limit by 0.5).

5. Any Other Add - On Air Pollution Control Type - This option is for boilers that operate dry control systems. Boilers must maintain opacity to less than or equal to 10% opacity (daily block average).

6. Fuel Analysis - Maintain the fuel type or fuel mixture (annual average) such that the mercury emission rates calculated according to 63.11211(b) is less than the applicable emission limits for mercury.

7. Performance Stack Testing - For boilers that demonstrate compliance with a performance stack test, maintain the operating load of each unit such that it does not exceed 110% of the average operating load recorded during the most recent performance stack test.

8. Continuous Oxygen Monitor - Maintain the oxygen level at or above the lowest 1-hour average oxygen level measured during the most recent CO performance stack test.

Table 3-3D

U.S. EcoGen Polk, LLC - Polk County, Florida

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

NESHAP MACT Subpart JJJJJJ - NESHAPS for Industrial, Commercial, and Institutional Boilers Area Sources

Compliance Requirements

63.11205 What are My General Requirements for Complying with this Subpart?
(a) At all times you must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.
63.11210 What are My Initial Compliance Requirements and by What Date Must I Conduct them?
(d) For new or reconstructed affected sources, you must demonstrate initial compliance no later than 180 calendar days after March 21, 2011 or within 180 calendar days after startup of the source, whichever is later.
63.11211 How do I Demonstrate Initial Compliance with the Emission Limits?
(a) For affected boilers that demonstrate compliance with any of the emission limits of this subpart through performance (stack) testing, your initial compliance requirements include conducting performance tests according to 63.11212 and Table 4 to this subpart, conducting a fuel analysis for each type of fuel burned in your boiler according to 63.11213 and Table 5 to this subpart, establishing operating limits according to 63.11222, Table 6 to this subpart, and conducting continuous monitoring system (CMS) performance evaluations according to 63.11224. For affected boilers that burn a single type of fuel, you are exempted from the compliance requirements of conducting a fuel analysis for each type of fuel burned in your boiler. For purposes of this subpart, boilers that use a supplemental fuel only for startup, unit shutdown, and transient flame stability purposes still quality as affected boilers that burn a single type of fuel, and the supplemental fuel is not subject to the fuel analysis requirements.
63.11214 How do I Demonstrate Initial Compliance with the Work Practice Standard, Emission Reduction Measures, and Management Practice?
(b) If you own or operate an existing or new biomass-fired boiler or an existing or new oil-fired boiler, you must conduct a performance tune-up according to 63.11223(b) and you must submit a signed statement in the Notification of Compliance Status report that indicates that you conducted a tune-up of the boiler.
63.11223 How do I Demonstrate Continuous Compliance with the Work Practice Standard and Management Practice?
(a) Each biennial tune-up must be conducted no more than 25 months after the previous tune-up. (b) You must conduct a tune-up of the boiler biennially to demonstrate continuous compliance as specified in paragraphs (b)(1) through (7) (1) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (you may delay the burner inspection until the next scheduled shutdown, but you must inspect each burner at least once every 36 months); (2) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame patter. The adjustment should be consistent with the manufacturer's specifications, if available. (3) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly. (4) Optimize total emissions of carbon monoxide. This optimization should be consistent with the manufacturer's specifications, if available. (5) Measure the concentrations in the effluent stream of carbon monoxide in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). (6) Maintain onsite and submit, if requested by the Administrator, biennial report containing the following information: (i) Concentrations of CO in the effluent stream in parts per million, by volume, and oxygen in volume percent, measured before and after the tune-up of the boiler. (ii) A description of any corrective actions taken as part of the tune-up of the boiler. (iii) The type and amount of fuel used over the 12 months prior to the biennial tune-up of the boiler. (7) If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within one week of startup.

Table 3-3D
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
NESHAP MACT Subpart JJJJJJ - NESHAPS for Industrial, Commercial, and Institutional Boilers Area Sources

Notifications, Reports and Records

63.11225 What are My Notification, Reporting, and Recordkeeping Requirements
(a) You must submit the notifications specified in paragraphs (a)(1) through (a)(5) of this section to the delegated authority. (1) Submit all of the notifications in 63.7(b); 63.8(e) and (f); 63.9(b) through (e); and 63.9(g) and (h) that apply to you by the dates specified in those sections. (2) As specified in 63.9(b)(2), you must submit the Initial Notification no later than 120 calendar days after May 20, 2011 or within 120 days after the source becomes subject to the standard. (3) If you are required to conduct a performance stack test you must submit a Notification of Intent to conduct a performance test at least 60 days before the performance stack test is scheduled to begin. (4) You must submit the Notification of Compliance Status in accordance with 63.9(h) no later than 120 days after the applicable compliance date specified in 63.11196 unless you must conduct a performance stack test. If you must conduct a performance stack test, you must submit the Notification of Compliance Status within 60 days of completing the performance stack test. In addition to the information required in 63.9(h)(2), your notification must include the following certification(s) of compliance, as applicable, and signed by a responsible official: (i) "This facility complies with the requirements in 63.11214 to conduct an initial tune-up of the boiler" (ii) This facility has had an energy assessment performed according to 63.11214(c)" (iii) For the owner or operator that installs bag leak detection systems: "This facility has prepared a bag leak detection system monitoring plan in accordance with 63.11224 and will operate each bag leak detection system according to the plan".
(b) You must prepare, by March 1 of each year, and submit to the delegated authority upon request, an annual compliance certification report for the previous calendar year. You must submit the report by March 15 if you had any instance described in paragraph (b)(3) of this section. The report must include the following: (1) Company name and address; (2) Statement by a responsible official, with the official's name, title, phone number, e-mail address, and signature, certifying the truth, accuracy and completeness of the notification and a statement of whether the source has complied with all the relevant standards and other requirements of this subpart. (3) If the source experiences any deviations from the applicable requirements during the reporting period, include a description of the deviations, the time periods during which the deviations occurred, and the corrective actions taken. (4) The total fuel use by each affected boiler subject to an emission limit, for each calendar month within the reporting period, including, but not limited to, a description of the fuel, whether the fuel has received a non-waste determination by you or EPA through a petition process to be a non-waste under 241.3(c), whether the fuel(s) were processed from discarded non-hazardous secondary materials within the meaning of 241.3, and the total fuel usage amount with units of measure.
(c) Maintain the following records: (1) Keep a copy of each notification and report that you submitted to comply with this subpart and all documentation supporting any Initial Notification or Notification of Compliance Status that you submitted. (2) Keep records to document conformance with the work practices, emission reduction measures , and management practices (i) Records must identify each boiler, the date of tune-up, the procedures followed for tune-up, and the manufacturer's specifications to which the boiler was tuned. (ii) Records documenting the fuel type(s) used monthly by each boiler, including, but not limited to, a description of the fuel, including whether the fuel has received a non-waste determination by you or EPA, and the total fuel usage amount with units of measure. (3) For sources that demonstrate compliance through fuel analysis, a copy of all calculations and supporting documentation that were done to demonstrate compliance with the mercury emission limits. (4) Records of the occurrence and duration of each malfunction of the boiler, or the associated air pollution control and monitoring equipment. (5) Records of actions taken during periods of malfunction to minimize emissions in accordance with the general duty to minimize emissions, including corrective actions to restore the malfunctioning boiler, air pollution control, or monitoring equipment to its normal or usual manner of operation.
(d) Records must be in a form suitable and readily available for expeditious review. Keep each record for 5 years following the date of each recorded action. Keep each record onsite for at least 2 years after the date of each recorded action, you may keep the records off site for the remaining 3 years.

Table 3-3D
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
NESHAP MACT Subpart A - General Provisions
63.9 - Notification Requirements

63.9 - Notification Requirements
(b) Initial notifications. (1)(i) The requirements of this paragraph apply to the owner or operator of an affected source when such source becomes subject to a relevant standard. (ii) If an area source that otherwise would be subject to an emission standard or other requirement established under this part if it were a major source subsequently increases its emissions of hazardous air pollutants (or its potential to emit hazardous air pollutants) such that the source is a major source that is subject to the emission standard or other requirement, such source shall be subject to the notification requirements of this section. (iii) Affected sources that are required under this paragraph to submit an initial notification may use the application for approval of construction or reconstruction under §63.5(d) of this subpart, if relevant, to fulfill the initial notification requirements of this paragraph. (2) The owner or operator of an affected source that has an initial startup before the effective date of a relevant standard under this part shall notify the Administrator in writing that the source is subject to the relevant standard. The notification, which shall be submitted not later than 120 calendar days after the effective date of the relevant standard (or within 120 calendar days after the source becomes subject to the relevant standard), shall provide the following information: (i) The name and address of the owner or operator; (ii) The address (i.e., physical location) of the affected source; (iii) An identification of the relevant standard, or other requirement, that is the basis of the notification and the source's compliance date; (iv) A brief description of the nature, size, design, and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of hazardous air pollutants emitted; and (v) A statement of whether the affected source is a major source or an area source.

Table 3-4
List of Applicable and Non-Applicable State Air Pollution Regulations
U.S. EcoGen Polk, LLC – Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Florida Administrative Code Current Air Rules		Reason Code*
Chapter 62-4	**Permits**	**A**
Chapter 62-204	**Air Pollution Control – General Provisions**	**A**
Chapter 62-210	**Stationary Sources – General Requirements**	**A**
Chapter 62-212	**Stationary Sources – Preconstruction Review**	**A**
Chapter 62-213	**Operation Permits For Major Sources of Air Pollution**	**B**
Chapter 62-214	**Requirements For Sources Subject To The Federal Acid Rain Program**	**A**
Chapter 62-242	Motor Vehicle Emissions Standards and Test Procedures	C
Chapter 62-243	Tampering With Motor Vehicle Air Pollution Control Equipment	C
Chapter 62-252	Gasoline Vapor Control	C
Chapter 62-256	Open Burning	C
Chapter 62-257	Asbestos Program	C
Chapter 62-281	Motor Vehicle Air Conditioning Refrigerant Recovery and Recycling	C
Chapter 62-285	Greenhouse Gas Emissions Reduction	C
Chapter 62-296	**Stationary Sources – Emission Standards**	**A**
Chapter 62-297	**Stationary Sources – Emissions Monitoring**	**A**

Applicability Reason Codes:

A – The emission sources associated with the proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility located in Polk County, Florida are subject to this regulatory requirement and require some formal action as it pertains to the proposed sources.

B – The emission sources associated with the proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility located in Polk County, Florida are subject to this regulatory requirement, which is administrative in nature or requires future action based on operation of the proposed sources.

C – This requirement does not apply to the emission sources associated with the proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility located in Polk County, Florida.

Table 4-1
Summary of Proposed Regulated Air Pollutant Emission Limits and Supporting Methods of Demonstrating Compliance
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Emission Group: Fuel Receiving, Handling, Storage and Processing (EU-001)

Regulated Air Pollutant	Proposed Emission Limit	Regulatory Driver	Method of Compliance		
			Stack Testing	Continuous Emission Monitoring	Process Design / Process Parameter Monitoring / Emission Monitoring
Emission Units: **-- Paved/Unpaved Roadways** **-- Material Handling Operations, Including Unloading, Conveying and Storing of Chipped/Log Clean Woody Biomass** **-- Electric Log Chipper**					
PM/PM_{10}	20%	FAC 62-296.320(4)(b) General Visible Emission Standards - 20%* FAC 62-296.320(4)(c) Unconfined Emissions of Particulate Matter FAC 62-296.320(2) - Objectionable Odor Prohibited	Initial and Annual VE Compliance Tests Utilizing Method 9 - Visual Determination of the Opacity from Stationary Sources	None - Method 9 Visual Observations	Compliance with the PM/PM_{10} emission limit (20% opacity) will be based on design of the equipment (covered conveyor and drop points when technically feasible excluding droppoints to storage areas and areas for visual examination and removal of reject materials). Best Management practices including periodic maintenance will be utilized to maintain equipment integrity.

Note:

*U.S. EcoGen has designed the equipment to minimize fugitive particulate matter.

Table 4-1 Continues on Next Page

Table 4-1
Summary of Proposed Regulated Air Pollutant Emission Limits and Supporting Methods of Demonstrating Compliance
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Emission Group: Power Island (EU-002)

Regulated Air Pollutant	Proposed Emission Limit	Regulatory Driver	Method of Compliance		
			Stack Testing	Continuous Emission Monitoring	Process Design / Process Parameter Monitoring / Emission Monitoring
Emission Unit: **– Natural Gas - Startup, Shutdown, and Boiler Stabilization** **– Clean Woody Biomass - Normal Operation**					
NO_x	0.3[a] lbs/MMBtu (30-day rolling average)	NSPS D_b 40 CFR 60.44b (Simultaneously combust natural gas with wood)	Initial Testing Utilizing Test Method 7E - Measurement of NO_x Emissions (Instrumental)	CEMS - Certified, operated and maintained in accordance with 40 CFR 75	Compliance with the 0.30 NO_x lbs/MMBtu limit will be confirmed by use of CEMS following NSPS D_b requirements. CEM certification requirements under the acid rain provisions (40 CFR Part 75) will be followed.
NO_x	0.1 or 0.2[a] lbs/MMBtu (30-day rolling average)	NSPS D_b 40 CFR 60.44a (Combust natural gas with either a low or high heat release rate)	Initial Testing Utilizing Test Method 7E - Measurement of NO_x Emissions (Instrumental)	CEMS - Certified, operated and maintained in accordance with 40 CFR 75	Compliance with the 0.10 or 0.20 NO_x lbs/MMBtu limit will be confirmed by use of CEMS following NSPS D_b requirements. CEM certification requirements under the acid rain provisions (40 CFR Part 75) will be followed.
NO_x	246 tons/year[a] (12-month average, rolled monthly)	Limited Minor Source Status (Incorporation of control devices)	Initial Testing Utilizing Test Method 7E - Measurement of NO_x Emissions (Instrumental)	CEMS - Certified, operated and maintained in accordance with 40 CFR 75	Compliance with the NO_x ton/year limit will be achieved through use of good combustion practices and inclusion of SCR. Compliance will be achieved by calculating the 12-month average, rolled monthly NO_x emission rate expressed in tons/year. This NO_x emission rate will be based on CEM measurement data. Meeting this limit will ensure NO_x tons/year less than 250 tons/year.
CO	246 tons/year (12-month average, rolled monthly)	Limited Minor Source Status	Initial Testing Utilizing Test Method 10 - Measurement of CO Emissions (Instrumental)	CEMS - Certified pursuant to 40 CFR 60, Appendix B, Specification 4 or 4A	Compliance with the CO ton/year limit will be achieved through good combustion practices. No state or federal emission standards or limitations. Compliance will be achieved by calculating the 12-month average, rolled monthly CO emission rate expressed in tons/year. This CO emission rate will be based on CEM measurement data and initial testing. Meeting this limit will ensure CO tons/year less than 250 tons/year.
PM/PM_{10}	152 tons/year	Limited Minor Source Status	Initial Testing Utilizing Method 5, 5B, 17 - Measurement of PM	Refer to Process Design Column	Compliance with the PM/PM_{10} limit will be achieved through good combustion practices and incorporation of a baghouse. No state or federal standards or limitations. Compliance will be achieved by calculating the 12-month average, rolled monthly PM/PM_{10} emission rate expressed in tons/year. This PM/PM_{10} emission rate will be based on CEM measurement data and initial testing. Meeting this limit will ensure PM/PM_{10} tons/year less than 250 tons/year.
PM/PM_{10}	0.03 lbs/MMBtu (filterable) - NSPS Db 0.1 lbs/MMBtu (filterable) - F.A.C. 62-296.410	NSPS D_b 60.43b(h)(1) and F.A.C. 62-296.410	Initial and Annual Testing Utilizing Test Method 5, 5B, 17 - Measurement of PM	Refer to Process Design Column	Compliance test to be performed following EPA test methods. Compliance with the 0.1 lbs/MMBtu limit found in F.A.C. 62-296.410 will be satisfied by compliance with the limit of 0.03 lbs/MMBtu (filterable).
PM/PM_{10}	20% Opacity 6-minute average except for one 6-minute period per hour of not more than 27% opacity (Refer to Process Design Column)	NSPS Db 60.43b(f) and F.A.C. 62-296.320(5)(b)[c]	Initial Testing Utilizing Test Method 9 - Visual Determination of the Opacity from Stationary Sources .	Refer to Process Design Column	F.A.C. and NSPS Db require 20% opacity. Compliance with the 20% opacity limitation will be confirmed by the use of a continuous opacity monitor (COM), following NSPS Db provisions, on the BFB boiler exhaust stack.
SO_2	227 tons/year (12-month average, rolled monthly)	Exemption from NSPS D_b 60.42b(k)(2) Limited Minor Source Status	Initial Testing Utilizing Test Method 6C - Measurement of SO_2 (Instrumental)	CEMS - Certified, operated and maintained in accordance with 40 CFR 75	Use of low sulfur fuels including wood and natural gas insure that uncontrolled SO_2 emissions are less than 0.32 lb/MMBtu. Therefore, no specific limit from NSPS Subpart D_b applies. Compliance will be demonstrated during an initial compliance test using a CEM while combusting woody biomass. Compliance with the SO_2 limit will be achieved through use of good combustion practices. The SO_2 emission rate will be based on CEM measurement data. Compliance will be achieved by calculating the 12-month average, rolled monthly SO_2 emission rate expressed in tons/year. Meeting this limit will ensure SO_2 tons/year are less than 250 tons/year.
HCl (Hydrochloric Acid - CAS # 7647-01-0)	9.9 tons per year, 12-month average, rolled monthly (CEMS-based average)	Limited Minor Source Status	Initial Testing Utilizing Test Method 26, 26A - Measurement of HCl Emissions from Stationary Sources	CEMS - Certified pursuant to 40 CFR 60, Appendix B, Performance Specification 15, EPA Method OTM 22	Compliance with the HCl limit will be achieved through utilization of a baghouse and either a spray dryer absorber (SDA) or multilevel / multipoint dry sorbent injection (DSI) and multicyclone system as needed to demonstrate minor source status. The HCl rate will be based on CEM and/or stack testing and parametric monitoring.

Notes:
a) Applies at all times including periods of startup, shutdown, or malfunction.
b) Does not apply during periods of startup, shutdown, or malfunction.
c) U.S. EcoGen has designed the equipment to minimize fugitive particulate matter.
d) Mass emission rate limit in lb/hr ensures annual emissions will be less than 250 TPY.

Table 4-1 Continues on Next Page

Table 4-1
Summary of Proposed Regulated Air Pollutant Emission Limits and Supporting Methods of Demonstrating Compliance
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Emission Group: Ash Handling, Storage and Shipment (EU-003)

Regulated Air Pollutant	Proposed Emission Limit	Regulatory Driver	Method of Compliance		
			Stack Testing	Continuous Emission Monitoring	Process Design / Process Parameter Monitoring / Emission Monitoring
Emission Unit: **-- Fly Ash Conveying System Drop Points** **-- Fly Ash Silo with Vent Filter**					
PM/PM_{10}	20%	FAC 62-296.320(4)(b) - 20% Opacity*	Initial and Annual VE Compliance Tests Utilizing Method 9 - Visual Determination of the Opacity from Stationary Sources	None - Method 9 Visual Observations	Compliance with the PM/PM_{10} emission limit (20% opacity) will be based on design of the fly ash system. Best Management practices including periodic maintenance to maintain equipment integrity. No compliance testing will be required as long as system is maintained.
PM/PM_{10}	0.01 gr/dscf	Proposed by U.S. EcoGen for Fly Ash Silo Vent Filter	Initial and Annual VE Compliance Tests	None	Compliance with the PM/PM_{10} emission limit (0.01 gr/dscf) will be based on design of the fly ash silo vent filter. Best Management practices including periodic maintenance to maintain equipment integrity.

Emission Group: Emergency Support Equipment (EU-004)

Regulated Air Pollutant	Proposed Emission Limit	Regulatory Driver	Method of Compliance		
			Stack Testing	Continuous Emission Monitoring	Process Design / Process Parameter Monitoring / Emission Monitoring
Emission Unit: **-- 670 bHp Emergency Generator**					
$NMHC + NO_x$	3.0 g/Hp-hr	NSPS Subpart IIII	Refer to Process Design Column	Refer to Process Design Column	Compliance based on tracking hours of operation and maintaining within the plant files appropriate documentation to demonstrate compliance with the emission limitations imposed by NSPS Subpart IIII. Certification of compliance (i.e., testing) with the NSPS IIII will be provided by the equipment vendor. Each engine will be limited to no more than 250 hours of operation per year and diesel fuel with a sulfur content of less than 0.0015% by weight. Hours of operation will be tracked on a monthly basis. The hours of operation in conjunction with the NSPS limitation (g/Hp-hr) and sulfur content of the fuel will be used to determine monthly regulated air pollutant emissions from operation of this unit.
CO	2.6 g/Hp-hr	NSPS Subpart IIII	Refer to Process Design Column	Refer to Process Design Column	
PM	0.15 g/Hp-hr	NSPS Subpart IIII	Refer to Process Design Column	Refer to Process Design Column	
SO_2	0.0015% Diesel Fuel Sulfur Content	NSPS Subpart IIII	Refer to Process Design Column	Refer to Process Design Column	
Emission Unit: **-- 200 bHp Emergency Fire Water Pump**					
$NMHC + NO_x$	3.0 g/Hp-hr	NSPS Subpart IIII	Refer to Process Design Column	Refer to Process Design Column	Compliance based on tracking hours of operation and maintaining within the plant files appropriate documentation to demonstrate compliance with the emission limitations imposed by NSPS Subpart IIII. Certification of compliance (i.e., testing) with the NSPS IIII will be provided by the equipment vendor. Each engine will be limited to no more than 250 hours of operation per year and diesel fuel with a sulfur content of less than 0.0015% by weight. Hours of operation will be tracked on a monthly basis. The hours of operation in conjunction with the NSPS limitation (g/Hp-hr) and sulfur content of the fuel will be used to determine monthly regulated air pollutant emissions from operation of this unit.
CO	2.6 g/Hp-hr	NSPS Subpart IIII	Refer to Process Design Column	Refer to Process Design Column	
PM	0.15 g/Hp-hr	NSPS Subpart IIII	Refer to Process Design Column	Refer to Process Design Column	
SO_2	0.0015% Diesel Fuel Sulfur Content	NSPS Subpart IIII	Refer to Process Design Column	Refer to Process Design Column	

*U.S. EcoGen has designed the equipment to minimize fugitive particulate matter.

End of Table 4-1

Table 4-2
Summary of State and Federal Emission Limitations for Proposed Clean Woody Biomass Boiler
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Regulated Air Pollutant	Combustion Fuel - Bubbling Fluidized Bed Boiler			
	Natural Gas for Startup and Boiler Bed Stabilization		Clean Woody Biomass for Normal Operation / Electric Generation	
	State Limit (lbs/MMBtu)	Federal Limit (lbs/MMBtu)	State Limit (lbs/MMBtu)	Federal Limit (lbs/MMBtu)
NO_x	N/A	0.10 lbs/MMBtu (low heat release rate) / 0.20 lbs/MMBtu (high heat release rate) - NSPS Db - 60.44b(a)(1) Applies if you combust natural gas or distillate oil with a low/high heat release rate.	N/A	0.30 lbs/MMBtu - NSPS D_b - 60.44b(d) Applies if you simultaneously combust oil with natural gas and wood, unless the annual capacity factor for oil and natural gas is limited through an enforceable permit limitation of 10% or less. NO_x standards apply at all times including periods of startup, shutdown and malfunctions (60.44b(h)).
CO	N/A	N/A	N/A	N/A
PM - Filterable	0.1 lbs/MMBtu - 62-296.410 (fossil fuels)	N/A	0.2 lbs/MMBtu - 62-296.410 (carbonaceous fuels)	0.03 lbs/MMBtu (Filterable Only) - NSPS D_b - 60.43b(h)(1) and MACT JJJJJJ - 63.11201 (Table 1) PM standards apply at all times except during periods of startup, shutdown and malfunctions.
PM - Condensible	N/A	N/A	N/A	N/A
PM - Total	N/A	N/A	N/A	N/A
PM_{10} - Filterable, Condensible and Total	N/A	N/A	N/A	N/A
Opacity	20% (except for one 6-minute period at 27% or one 2-minute period at 40% in an hour) - 62-296.406*	N/A	30% (40% is permissible for not more than 2 minutes in any one hour)- 62-296.410*	20% - 6-minute average (except for one 6-minute period per hour of not more than 27% opacity) - NSPS D_b - 60.43b(f) Applies apply at all times except during periods of startup, shutdown and malfunctions.
VOC	N/A	N/A	N/A	N/A
SO_2	N/A	0.32 lb/MMBtu - NSPS D_b - 60.42b(k)(2) - Exemption from 0.2 lb/MMBtu limit for usage of very low sulfur	N/A	0.32 lb/MMBtu - NSPS D_b - 60.42b(k)(2) - Exemption from 0.2 lb/MMBtu limit for usage of very low sulfur

Note:
* Does not apply during periods of startup, shutdown and malfunctions.

Section I. General Information

Description
Facility Description: The proposed Plant (Polk County Plant) is a nominal 63-MW clean woody biomass electrical generating facility (herein referred to as the "Plant") located in Polk County, Florida. The Plant will be capable of producing a nominal 63 MW of electrical power through the use of a highly efficient bubbling fluidized bed (BFB) boiler, which is ideal for combusting clean woody biomass materials. The Plant will incorporate into its design, state of the art control technologies and techniques for the reduction of potential emissions of air pollutants. The primary fuel for the Plant's BFB boiler will be limited to clean woody biomass, with natural gas to be utilized only for boiler startup, shutdown and boiler bed stabilization. 1. Fuel receiving, handling, storage and processing; 2. Power island, including a BFB boiler and steam turbine / generator; 3. Ash handling, storage and shipment; and 4. Emergency support equipment.
The Plant will utilize a combination of state of the art control devices/techniques to minimize potential emissions of air pollutants within each of the four specific plant process areas, as provided below: **Fuel Receiving, Handling, Storage and Processing** - All conveyor systems in the fuel receiving, handling, storage and processing system will be designed to minimize emissions of PM/PM_{10} through the use of Best Management Practices. - Best Management Practices will include covered conveyors, to the extent possible enclosed chutes for dropping fuel to and from conveyors, and maintenance of paved/unpaved roads to minimize fugitive dust generating materials on the roadway surface. **Power Island** - Emissions of PM/PM_{10} from the BFB boiler will be controlled by a fabric filter control device commonly referred to as a baghouse. - Acid gases from the BFB boiler will be controlled by a spray dryer absorber (SDA) system or multilevel / multiple injection location dry sorbent injection (DSI) system utilizing sodium bicarbonate, as needed to maintain minor source status under Section 112 of the Clean Air Act. - Nitrogen oxides (NO_x) from the BFB boiler will be controlled by a selective catalytic reduction (SCR) system. The system will employ aqueous ammonia and a catalyst. - Emissions of carbon monoxide (CO) and volatile organic compounds (VOC) from the BFB boiler will be controlled by maintaining good combustion practices. - Emissions of sulfur dioxide (SO_2) from the BFB boiler will be controlled by using low sulfur content bearing fuels (i.e., clean woody biomass and natural gas). - Emissions of particulate matter (PM/PM_{10}) from the sand silo will be controlled by a vent filter or similar device. - Emissions of ammonia from the aqueous ammonia tank will be minimized by the use of a pressurized storage tank. **Ash Handling, Storage and Shipment** - Emissions of PM/PM_{10} from the fly ash silo will be controlled by a vent filter or similar device. - Best Management Practices will be utilized during truck loading operations to minimize PM/PM_{10} emissions. **Emergency Support Equipment** - Emergency Equipment will be designed to meet strict emission limits imposed by NSPS Subpart IIII for NO_x, CO, VOC and PM/PM_{10}. - Ultra low sulfur fuel oil will be utilized to reduce potential emissions of SO_2. - Fuel oil storage tank(s) to support the emergency support equipment will be equipped with a conservation vent. - To minimize potential emissions of all regulated air pollutants, operation of each emergency unit will be limited to 250 hours per year or less.

Section I. General Information

Description
New Emission Units: EU01 - Fuel Receiving, Handling, Storage and Processing EU02 - Power Island EU03 - Ash Handling, Storage and Shipment EU04 - Emergency Support Equipment
Regulatory Classification - The Plant is not a major stationary source as defined in Rule 62-210.200, F.A.C. and is not subject to Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality. - The Plant's BFB boiler is a unit subject to the acid rain provisions of the Clean Air Act (CAA) and Chapter 62-214, F.A.C. - The Plant is a Title V major stationary source of air pollution in accordance with Chapter 62-213, F.A.C. - The Plant is subject to the applicable portions of Chapters 62-204, 62-210 and 62-296, F.A.C. which pertain to the Clean Air Interstate Rule (CAIR). The CAIR requirements have been replaced by the Cross-State Air Pollution Rule (CSAPR). - The Plant is subject to Chapter 62-204-800, F.A.C for New Source Performance Standards (NSPS) under Section 111 of the Clean Air Act. - The Plant is not a major stationary source of regulated hazardous air pollutants (HAP), and is not subject to the National Emission Standards (NESHAP) provisions under Section 112 of the Clean Air Act, except for specific regulations promulgated for non-major stationary sources ("area sources").
Regulated Air Pollutants The primary regulated air pollutants emitted from this Plant are: carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter (PM, PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), and small amounts of sulfuric acid mist (SAM), volatile organic compounds (VOC) and hazardous air pollutants (HAP). Small or negligible quantities of other pollutants will also be emitted.
Appendices Appendix A. Citation Formats and Glossary of Common Terms; Appendix B. General Conditions; Appendix C. Common Conditions; Appendix D. Common Testing Requirements; Appendix E. NSPS Subpart Db – Standards of Performance for Industrial, Commercial, Institutional Steam Generating Units; Appendix F. NSPS Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Units; Appendix G. NSPS General Conditions; and Appendix H. MACT Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Units. Appendix I. MACT Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Area Sources - Industrial, Commercial, and Institutional Boilers; and Appendix J. NESHAP General Provisions.

Table 6-2
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Summary of Permit Sections and Conditions
Section II. Administrative Requirements

Section II. Administrative Requirements

Description
Permitting Authority Bureau of Air Regulation, Division of Air Resource Management, Florida Department of Environmental Protection (Department). The Bureau of Air Regulation's mailing address is: 2600 Blair Stone Road, M.S. 5500, Tallahassee, Florida 32399-2400. All documents related to applications for permits to operate an emissions unit shall be submitted to the Title V Section of the same office.
Compliance Authority All documents related to compliance activities such as reports, tests, and notifications shall be submitted to: Air Resource Section Florida Department of Environmental Protection, Northeast District Office 7825 Baymeadows Way, Suite B200 Jacksonville, Florida 32256-7590. The telephone number of the district office is 904/807-3300.
Copies of these documents shall also be submitted to: Florida Department of Environmental Protection, Northeast District Branch Office 101 NW 75th Street, Suite 3 Gainesville, Florida 32607. The telephone number of the branch office is 352/333-2850.
Applicable Regulations, Forms and Application Procedures
New or Additional Conditions
Modifications
Source Obligations
Applications for Title V Permit
Objectionable Odors Prohibited
Open Burning Prohibited
Facility-wide Emissions Report
Construction and Expiration
Title IV Permit
Opacity Limitation
Unconfined Emissions of Particulate Matter
Excess Emissions Prohibited

Section III.A. Fuel Receiving, Handling, Storage and Processing

Description
EU01 - Fuel Receiving, Handling, Storage and Processing The fuel receiving, handling, storage and processing area is being designed to accommodate primarily woody biomass in the form of pre-processed chips and logs. The pre-processed chip storage area is being designed to accommodate approximately 10-days of BFB boiler fuel. The log storage area is being designed to handle between 10 and 20 days of BFB boiler fuel. U.S. EcoGen is proposing to utilize wood chips and logs from eucalyptus trees. As part of the Plant's design, U.S. EcoGen's affiliate U.S. EcoGen Trading, LLC will be growing and harvesting eucalyptus trees (i.e., eucalyptus tree plantation) for use as the primary fuel source for the Plant's BFB boiler. This approach will result in the Plant being considered a "closed-loop" design. This means that the BFB boiler associated with the Plant will utilize eucalyptus trees grown and harvested in close proximity to the Plant. This approach will minimize avoid cutting and processing of trees in central Florida to support this project. During initial startup of the Plant, U.S. EcoGen will rely on clean woody biomass from local waste (i.e., clean and non-contaminated) wood sources, including but not limited to forest residue, commercial tree trimming, whole tree chips and clean waste wood. These sources of woody biomass will be utilized until the eucalyptus tree plantations are capable of producing 100% of the fuel supply for the Plant. The use of other wood sources prior to use of the plantation wood is classified as a "bridge biomass fuel." The eucalyptus tree plantation is anticipated to reach maturity in approximately two (2) years after initial planting.
Applicable Standards and Regulations Refer to Section II.
Equipment and Control Technology **Equipment:** The permittee is authorized to construct Emission Unit EU01, which consists of Fuel Receiving, Handling, Storage and Processing systems containing the following equipment classified as potential sources of PM/PM_{10} emissions: - **Fuel Receiving - EU01-A and EU01-B** - Supply Trucks Inbound and Outbound - **Mobile Equipment - EU01-C and EU01-D** - Grapple Skidders for Loading/Unloading and Trucks Shuttling Logs from Storage to Chipper - **Woody Biomass Storage Areas - EU01-E and EU01-F** - Woody Biomass Storage Areas and Bulldozing on Woody Biomass Storage Areas - **Opportunity Fuel - EU01-G and EU01-H** - Opportunity Fuel Stackout Conveyor to Opportunity Fuel Pile and Opportunity Fuel Reclaimer - **Fuel Prep and Storage - EU01-I, EU01-J, EU01-K, EU01-L, EU01-M, EU01-N, EU01-O, EU01-T** - Fuel Prep Conveyor from Chipper and Truck Hopper, Magnetic Separator, Fuel Prep Tower In - Bypass Diverter Gate, Fuel Prep Tower - Screens, Fuel Prep Tower - Stackout Conveyor, Fuel Storage Drop Point, Fuel Reclaimers #1 and #2, and Fuel Prep Tower Hog - **Boiler Feed Conveyors #1 and #2 - EU01-P** - **Distribution Conveyors #1 and #2 - EU01-Q** - **Biomass Chipping - EU01-R, EU01-S** - Log Wood Chipper to Fuel Conveyor and Stationary Biomass Grinder/Chipper [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.] **Control Technology – Best Management Practices:** Best management practices shall be utilized to minimize fugitive PM/PM_{10} emissions from receiving, handling, storage and processing of clean woody biomass. Best management practices shall be utilized to reduce the potential for spontaneous combustion of stored woody biomass.

Section III.A. Fuel Receiving, Handling, Storage and Processing

Description
Performance Restrictions **Restricted Operation**: The hours of operation of EU01 are not limited (i.e., unrestricted at 8,760 hours per year). **BFB Boiler Fuels to be Received, Handled, Stored and Processed**: The fuel to be received, handled, stored and processed shall consist of clean woody biomass. Best management practices shall be followed to ensure that appropriate clean woody biomass is received, handled, stored and processed as a fuel. A best management practice plan must be prepared. [Rules 62-4.070(3), F.A.C.] **Best Management Practices (BMP)**: Plans must be retained onsite and accessible to plant personnel. [Rules 62-4.070(3), F.A.C.] - Fuel receiving, handling, storage, and processing and incorporated into a BMP fuel plan. - Reducing the potential for spontaneous combustion of stored woody biomass and incorporated into a BMP fuel storage plan. - Ensuring woody biomass to be utilized at the plant is classified as "clean woody biomass". U.S. EcoGen will be using clean woody biomass in the proposed BFB boiler. The clean wood will primarily be chipped eucalyptus trees from a reasonably close tree plantation. U.S. EcoGen will also initially utilize local waste wood sources including but not limited to forest products residue, commercial tree trimmings, whole tree chips, and clean waste wood. These sources of wood will be utilized as a "bridge fuel" until the trees in the plantation are ready for harvesting. A BMP clean woody biomass utilization plan shall be developed and maintained onsite and shall be made accessible to plant personnel. **Operating Procedures:** The emission standards established by this permit rely on "Best Management Practices" to control PM/PM_{10} emissions. Therefore, all operators and supervisors shall be properly trained to operate and maintain the equipment, including the air pollution control system associated with emission unit EU01 in accordance with the guidelines and procedures established by the manufacturer(s). The training shall include Best Management Practices as well as methods for maintaining excess emissions. [Rule 62-4.070(3), F.A.C.]
Emission Standards The only applicable emission standard established for this emission unit applies to opacity and unconfined particulate matter. **Excess Emissions** Refer to Section II. **Emissions Performance Testing** **Test Requirements:** No formal compliance testing is required for EU01. If future testing is specified by the Department, the permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.] **Monitoring Requirements:** No continuous monitoring is required for EU01. Best Management Practices shall be followed.
Methods of Compliance Best Management Practices shall be followed.
Records and Reports **Test Reports:** No formal submission of records or reports is required since compliance testing is not required. If future testing is specified by the Department, the permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix D (Common Testing Requirements) of this permit. For each test run, the report shall also indicate the operating rate. [Rule 62-297.310(8), F.A.C.] **Compliance Report:** The permittee shall submit upon request a copy of the Best Management Practices plans.

Section III.B. Power Island

Description
EU02 - Power Island **Description:** The Power Island (EU02) will consist of a bubbling fluidized bed (BFB) boiler and supporting steam generation equipment to produce a nominal 63 MWs of electrical power. This emission unit has been subdivided into three (3) emission subsets EU02-A, EU02-B and EU02-C. EU02-A and EU02-B identify the boiler fuels and associated air pollutant emissions during normal BFB boiler operation and BFB boiler startup, shutdown and bed stabilization. EU02-C is the sand storage silo with vent filter which is part of the spray dry absorber system. The Power Island will also consist of the following emission units: ammona receiving (EU02-D) and an auxiliary non-contact cooling tower (EU02-E). **BFB Boiler Fuels:** Clean woody biomass is to be used during normal operation (EU02-A), and natural gas is to be used during startup, shutdown and boiler bed stabilization (EU02-B). **Generating Capacity:** The boiler will be a BFB boiler, with an estimated maximum heat input rating of 740 MMBtu/hr. The actual heat input to the boiler will vary based on the moisture content of the clean woody biomass being combusted. The maximum heat input rating of the BFB boiler when combusting natural gas is 160 MMBtu/hr. The estimated nominal generating capacity of the boiler is approximately 63 MWs. **BFB Boiler Air Pollution Control Devices:** A selective catalytic reduction (SCR) system shall be installed to control NO_x emissions from the BFB boiler. A fabric filter (baghouse) shall be installed to control PM/PM_{10} emissions from the BFB boiler. A spray dryer absorber system (SDA) or multilevel / multiple injection location Dry Sorbent Injection (DSI) system utilizing sodium carbonate shall be installed to control acid gas emissions (regulated HAPs) from the BFB boiler. **Stack Parameters:** The BFB boiler exhaust stack is being designed to be approximately 180 feet above grade with a nominal diameter of approximately 11 feet. **Continuous Emission Monitors:** The BFB boiler exhaust stack will be equipped with continuous emissions monitoring systems (CEMS) to measure and record NOx, CO and SO_2 emissions, as well as flue gas oxygen or carbon dioxide content. A continuous opacity monitor (COM) will also be installed to measure opacity from the BFB boiler exhaust stack. An approved monitoring method will be utilized to measure hydrochloric acid (HCl) emissions from the BFB boiler exhaust stack. **Air Pollutant Emission Factors:** The applicant utilized the following Green Initiative emission factors to ensure the lowest possible emissions of regulated air pollutants from the proposed woody biomass BFB boiler: • NO_x – 0.076 lbs/MMBtu • CO – 0.076 lbs/MMBtu • PM/PM_{10} – 0.047 lbs/MMBtu • SO_2 – 0.07 lbs/MMBtu • VOC – 0.02 lbs/MMBtu
Applicable Standards and Control Technology **NSPS Requirements:** The BFB boiler and supporting equipment shall comply with all applicable requirements of 40 CFR Part 60 listed below, adopted by reference in Rule 62.204.800(7)(b), F.A.C. **Subpart A, General Provisions** • 40 CFR 60.7, Notification and Recordkeeping • 40 CFR 60.8, Performance Tests • 40 CFR 60.11 Compliance with Standards and Maintenance Requirements • 40 CFR 60.12, Circumventions • 40 CFR 60.13, Monitoring Requirements • 40 CFR 60.19, General Notification and Reporting Requirements
NSPS Subpart Db Applicability: The BFB boiler is subject to all applicable requirements of 40 CFR 60, Subpart Db which applies to Industrial, Commercial or Institutional Steam Generating Units. Specifically, the BFB boiler (EU02-A and EU02-B) shall comply with emission limits for PM, opacity and NO_x, as well as monitoring, testing, reporting and recordkeeping requirements. Since the BFB boiler will be firing only gaseous fuels and a mixture of these fuels with other fuels (woody biomass) with a potential SO_2 emission rate of 0.32 lbs/MMBtu heat input or less, the BFB boiler is exempt from the SO_2 emission limits in 40 CFR 60, Subpart Db. The applicable conditions are given in Appendix E.
F.A.C. 62-296.320 (4)(b): Refer to Section II. The Department determines that compliance with the opacity standard in NSPS Subpart Db above also assures compliance with this state rule. **F.A.C. 62-296.406 "Fossil Fuel Steam Generation with less than 250 Million BTU per hour Heat Input, New and Existing Emission Units".** The Department determines that compliance with the opacity standard in NSPS Subpart Db above also assures compliance with this state rule [62-296.401(1), F.A.C.]. Compliance with the emission standards in Condition 10 below also assures compliance with the requirements in 62.296.406(2) and (3). **F.A.C. 62-296410: "Carbonaceous Fuel Burning Equipment".** The Department determines that compliance with the opacity standard in Condition (1)(b) above also assures compliance with this state rule [62-296.410(2)(a), F.A.C.]. Compliance with the emission standards in Condition 10 below also assures compliance with the requirements in state rule 62-296.410(2)(b), F.A.C.

Section III.B. Power Island

Description
Equipment and Control Technology **Equipment:** The permittee is authorized to construct an Emission Unit EU02, which consists of a Power Island containing the following equipment: - Bubbling fluidized bed (BFB) boiler. - Miscellaneous non-air emission source equipment, including but not limited to steam generation economizer, steam turbine, air contact condenser, electric generator. - Sand silo with vent filter (EU02-C). [Application No. 0470016-001-AC; and Rules 62-4.070(3) and 62-210.200 (PTE), F.A.C.] **Control Technology:** - **SCR System:** A selective catalytic reduction (SCR) system shall be installed to control NOx emissions from the BFB boiler. - **Fabric Filter (Baghouse):** A fabric filter (baghouse) shall be installed to control PM/PM10 emissions from the BFB boiler. - **Good Combustion Practices:** Good combustion practices shall be implemented to minimize emissions of CO and VOC from the BFB boiler. - **Spray Dryer Absorber System or Dry Sorbent Injection System:** A spray dryer absorber (SDA) system or Multilevel / Multipoint Dry Sorbent Injection (DSI) and Multicyclone system shall be installed to control acid gas emissions (regulated HAPs) from the BFB boiler to maintain minor source status. **Ammonia Storage:** The storage of ammonia shall comply with all applicable requirements of the Chemical Accident Prevention provisions in 40 CFR 68. **Circumvention:** The permittee shall not circumvent the air pollution control equipment or allow the emissions of regulated air pollutants without this equipment operating properly. Ammonia and sorbent material shall be injected as necessary to ensure compliance with the permitted levels of NO_x emissions and regulated HAP emissions (acid gases) specified in this permit. [Rules 62-210.650 and Rule 62-4.070(3), F.A.C.]
Performance Restrictions **Power Island Normal Operating Capacity:** The maximum estimated heat input rating of the BFB boiler when combusting clean woody biomass is 740 MMBtu/hour (averaged over annual period). The actual heat input of this boiler will vary based on the moisture content of the clean wood and boiler operating conditions. [Rule 62-4.070(3), F.A.C.] **Power Island Startup Capacity:** The maximum heat input rating of the BFB boiler when combusting natural gas for startup, shutdown and boiler bed stabilization shall be 160 MMBtu per hour. [Rule 62-4.070(3), F.A.C.] **Restricted Operation:** The hours of operation of the BFB boiler are not limited (8,760 hours per year). [Rule 62-210.200(PTE), F.A.C.] **BFB Boiler Fuel:** The feedstock during normal BFB boiler operation will consist of clean woody biomass. U.S. EcoGen will be using clean woody biomass in the proposed BFB boiler. The clean wood will primarily be chipped eucalyptus trees from a reasonably close tree plantation. U.S. EcoGen will also initially utilize local waste wood sources including but not limited to forest products residue, commercial tree trimmings, whole tree chips, and clean waste wood. These sources of wood will be utilized as a "bridge fuel" until the trees in the plantation are ready for harvesting.
Emission Standards Emissions from the BFB boiler shall not exceed the following standards developed under the State Implementation Plan (SIP) permitting procedures. Compliance with these limits also assumes compliance with the emission limitation in 40 CFR 60, Subpart Db and state rules. The following table presents the emission standards for the emission units associated with EU02. **Emission Limit** NO_x - 0.30 lb/MMBtu (30-day rolling average) – N5P5 Db (40 CFR 60.44b) SO_2 - No short-term emission limit required since state and federal rules do not contain emission limits for emissions of SO_2. CO - No short-term emission limit required since state and federal rules do not contain emission limits for emissions of CO. PM/PM_{10} - 0.047 lbs/MMBtu (3 sample runs) Opacity - 20%, except for one 6-minute period per hour of not more than 27% (6-minute block averages) HCl - No short-term emission limit required since state and federal rules do not contain emission limits for emissions of HCl. **Maximum Emissions (tons/year)** NO_x - 246 SO_2 - 227 CO - 246 PM/PM_{10} - Potential emissions of PM/PM_{10} are sufficiently low to ensure compliance with the 250 TPY threshold. Emission limit will maintain PM/PM_{10} emissions below the threshold. Opacity - None HCl - 9.9

Section III.B. Power Island

Description
Excess Emissions **Operating Procedures:** The emission standards established by this permit rely on "good combustion practices" to reduce emissions. Therefore, all operators and supervisors shall be properly trained to operate and maintain the BFB boiler and pollution control systems in accordance with the guidelines and procedures established by each manufacturer. The training shall include good combustion practices as well as methods of minimizing excess emissions. [Rule 62-4.070(3), F.A.C.] **Definitions Related to Excess Emissions:** Rule 62-210.200(Definitions), F.A.C. defines the following terms. - **Startup** is defined as the commencement of operation of any emissions unit which has shut down or ceased operation for a period of time sufficient to cause temperature, pressure, chemical or pollution control device imbalances, which result in excess emissions. [Rule 62-210.200(245), F.A.C.] - **Shutdown** is the cessation of the operation of an emissions unit for any purpose. [Rule 62-210.200(230), F.A.C.] - **Malfunction** is defined as any unavoidable mechanical and/or electrical failure of air pollution control equipment or process equipment or of a process resulting in operation in an abnormal or unusual manner. [Rule 62-210.200(159), F.A.C.] **Excess Emissions Prohibited:** Excess emissions caused entirely or in part by poor maintenance, poor operation or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. All such preventable emissions shall be included in any compliance determinations based on CEMS data. [Rule 62-210.700(4), F.A.C.] **Excess Emissions Calculations:** The following conditions apply only to the SIP-based emissions standards specified above in this subsection. Rule 62-210.700, F.A.C. (Excess Emissions) cannot vary or supersede any federal NSPS, NESHAP, or Acid Rain provision. As provided by the authority in Rule 62-210.700(5), F.A.C., the following conditions supersede the provisions in Rule 62-210.700(1), F.A.C. - **BFB Boiler Startup:** For startup of the BFB boiler, excess emissions shall not exceed twelve (12) hours in any 24-hour time period. Startup is defined above. - **BFB Boiler Shutdown:** For shutdown of the BFB boiler, excess emissions shall not exceed six (6) hours in any 24-hour time period. Shutdown is defined above. - **BFB Boiler Malfunction:** For malfunction of the BFB boiler, excess emissions shall not exceed two (2) hours in any 24-hour time period. Malfunction is defined above.
Emission Performance Testing **Initial Compliance Tests:** The BFB boiler shall be tested to demonstrate initial compliance with the emission standards of NO_x, CO, PM/PM_{10}, Opacity, SO_2, and HCl. The initial tests shall be conducted within 60 days after achieving maximum operating capacity, but not later than 180 days after the BFB boiler commences operation. Commences operation is defined as the date on which electricity generated from the plant is first sold. - **NO_x Emissions:** Compliance with the emission limits imposed above for the BFB boiler shall be demonstrated by conducting the performance test as required under 40 CFR 60.46b(c) and 60.46b(e) and using the continuous emission monitoring system as required below. [40 CFR 60, Subpart Db and Rule 62-4.070(3), F.A.C.] - **CO Emissions:** Compliance with the emission limits imposed above for the BFB boiler shall be demonstrated by using the continuous emission monitoring system as required below. [Rule 62-4.070(3), F.A.C.] - **PM/PM_{10}:** Compliance with the emission limits imposed above for the BFB boiler shall be demonstrated using the test methods established in 40 CFR Appendix A. - **SO_2 Emissions:** Compliance with the emission limit imposed above for the BFB boiler shall be demonstrated by using the continuous emissions monitoring system as required below. The continuous emissions monitor shall follow the requirements in 40 CFR Part 75. [40 CFR 75, and Rule 62-4.070(3), F.A.C.] - **HCl Emissions:** Compliance with the emission limit imposed above for the BFB boiler shall be demonstrated by a compliance method as outlined below. [Rule 62-4.070(3), F.A.C.] - **Test Requirements:** The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]
Continuous Emissions Monitors **NO_x CEMS:** In accordance with 40 CFR 60.46b(e), the permittee shall install, calibrate, operate and maintain a CEMS to continuously monitor and record NO_x emissions from the BFB boiler. [Rule 62-4.070(3), F.A.C.; and Subpart Db in 40 CFR 60] **CO CEMS:** The permittee shall install, calibrate, operate and maintain a CEMS to continuously monitor and record CO emissions from the BFB boiler. [Rule 62-4.070(3), F.A.C] **SO_2 CEMS:** In accordance with 40 CFR 75, the permittee shall install, calibrate, operate and maintain a CEMS to continuously monitor and record SO_2 emissions from the BFB boiler. [Rule 62-4.070(3), F.A.C] **Opacity COMS:** In accordance with 40 CFR 60.48b(a) the permittee shall install, calibrate, operate and maintain a continuous opacity monitor (COM) to continuously monitor and record opacity from the BFB boiler. [Rule 62-4.070(3), F.A.C and Subpart Db in 40 CFR 60] **Hydrochloric Acid (HCl):** The permittee shall employ a monitoring method approved by the Department to monitor and record the HCl emissions from the BFB boiler. [Rule 62-4.070(3), F.A.C.]

Section III.B. Power Island

Description
Continuous Monitoring Requirements: The permittee shall install, calibrate, maintain and operate CEMS and a diluent monitor to measure and record the emissions of CO, SO_2 and NO_x from the BFB boiler in a manner sufficient to demonstrate continuous compliance with the CEMS emission standards of this section. Each monitoring system shall be installed, calibrated and properly functioning within 60 calendar days of achieving permitted capacity as defined in Rule 62-297.310(2), F.A.C., but no later than 180 calendar days after initial startup and prior to the initial performance tests. Within one working day of discovering emissions in excess of a CO, SO_2 or NO_x standard (and subject to the specified averaging period), the permittee shall notify the Compliance Authority. - **CO Monitor:** The CO monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4 or 4A. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F, and the Data Assessment Report of Section 7 shall be made each calendar quarter, and reported semiannually to the Compliance Authority. The RATA tests required for the CO monitor shall be performed using EPA Method 10 in Appendix A of 40 CFR 60 and shall be based on a continuous sampling train. The CO monitor span values shall be set appropriately, considering the allowable methods of operation and corresponding emission standards. - **NO_x Monitor:** The NO_x monitor shall be certified, operated, and maintained in accordance with the requirements of 40 CFR Part 75. Recordkeeping and reporting shall be conducted pursuant to Subpart Db in 40 CFR 60 and Subparts F and G in 40 CFR 75. - **SO_2 Monitor:** The SO_2 monitor shall be certified, operated, and maintained in accordance with the requirements of 40 CFR 75. Record keeping and reporting shall be conducted pursuant to Subparts F and G in 40 CFR 75 - **Diluent Monitor**: The oxygen (O_2) or carbon dioxide (CO_2) content of the flue gas shall be monitored at the location where CO and NO_x are monitored Each monitor shall comply with the performance and quality assurance requirements of 40 CFR 7S. - **HCl Monitor:** Refer to Methods of Compliance
CEMS Data Requirements **Data Collection:** Emissions shall be monitored and recorded at all times including startup, operation, shutdown, and malfunction except for continuous monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments. The CEMS shall be designed and operated to sample, analyze, and record data evenly spaced over an hour. If the CEMS measures concentration on a dry basis, the CEM system shall include provisions to determine the moisture content of the exhaust gas and an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). Final results of the CEMS shall be expressed as pounds per hour or in units consistent with the permitted emission limits. The CEMS shall be used to demonstrate compliance with the CEMS emission standards for CO, NO_x and SO_2 as specified in this permit. For purposes of determining compliance with the CEMS emissions standards of this permit, missing data shall be substituted using a site specific data to generate a reasonable estimate of the 1-hour block average. - **Valid Hour:** Hourly average values shall begin at the top of each hour. Each hourly average value shall be computed using at least one data point in each fifteen-minute quadrant of an hour, where the unit combusted fuel during that quadrant of an hour. Notwithstanding this requirement, an hourly value shall be computed from at least two data points separated by a minimum of 15 minutes (where the unit operates for more than one quadrant of an hour). If less than two such data points are available, the hourly average value is not valid. The permittee shall use all valid measurements or data points collected during an hour to calculate the hourly average values. - **30-Unit Operating Day Rolling Averages:** Compliance shall be determined after each operating day by calculating the arithmetic average of all the valid hourly averages from that operating day and the prior 29 operating days. For purposes of determining compliance with the 30-unit operating day rolling CEMS standards, the missing data substitution methodology of 40 CFR Part 75, subpart D, shall not be utilized. Instead, the 30-unit operating day rolling average shall be determined using the remaining hourly data in the 30-day rolling period. {Permitting Note: There may be more than one 30-unit operating day compliance demonstration required for NOx emissions.} - **Data Exclusion:** Each CEMS shall monitor and record emissions during all operations including episodes of startup, shutdown, malfunction, and fuel switches. Some of the CEMS emissions data recorded during these episodes may be excluded from the corresponding CEMS compliance demonstration subject to the provisions of Condition 24 of this section. All periods of data excluded shall be consecutive for each such episode and only data obtained during the described episodes (startup, shutdown, malfunction, fuel switches) may be used for the appropriate exclusion periods. The permittee shall minimize the duration of data excluded for such episodes to the extent practicable. Data recorded during such episodes shall not be excluded if the episode was caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure, which may reasonably be prevented. Best operational practices shall be used to minimize hourly emissions that occur during such episodes. Emissions of any quantity or duration that occur entirely or in part from poor maintenance, poor operation, or any other equipment or process failure, which may reasonably be prevented, shall be prohibited. **Availability:** Monitor availability for the CEMS shall be 95% or greater in any calendar quarter. The quarterly excess emissions report shall be used to demonstrate monitor availability. In the event 95% availability is not achieved, the permittee shall provide the Department with a report identifying the problems in achieving 95% availability and a plan of corrective actions that will be taken to achieve 9S% availability. The permittee shall implement the reported corrective actions within the next calendar quarter. Failure to take corrective actions or continued failure to achieve the minimum monitor availability shall be violations of this permit, except as otherwise authorized by the Department's Compliance Authority. {Rule 62-297.520, F.A.C.; 40 CFR 60.7(a)(S) and 40 CFR 60.13; 40 CFR Part 51, Appendix P; 40 CFR 60, Appendix B - Performance Specifications; 40 CFR 60, Appendix F - Quality Assurance Procedures; and Rules 62-4.070(3), F.A.C.}
Methods of Compliance See Methods of Compliance Table

Section III.B. Power Island

Description
Records and Reports **Emissions Performance Test Reports:** A report indicating the results of any required emissions performance test shall be submitted to the Compliance Authority no later than 45 days after completion of the last test run. The test report shall provide sufficient detail on the tested emission unit and the procedures used to allow the Department to determine if the test was properly conducted and if the test results were properly computed. At a minimum, the test report shall provide the applicable information listed in Rule 62-297.310(8)(c), F.A.C. [Rule 62-297.310(8), F.A.C.]. **Excess Emissions Reporting** - Malfunction Notification - SIP Quarterly Permit Limits Excess Emissions Report - NSPS Semi-Annual Excess Emissions Reports {Note: If there are no periods of excess emissions as defined in NSPS Subpart Db, a statement to that effect may be submitted with the SIP Quarterly Report to suffice for the NSPS Semi-Annual Report.} [Rules 62-4.130, 62-204.800, 62-210.700(6), F.A.C.; 40 CFR 60.7, and 60.4420] **Annual Operating Report:** The permittee shall submit an annual report that summarizes the actual operating hours and emissions from this facility. The permittee shall also keep records sufficient to determine the annual throughput of fuel for use in the Annual Operating Report. Annual operating reports shall be submitted to the Compliance Authority by April 1st of each year. [Rule 62-210.370(2), F.A.C.]

Table 6-4A
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Summary of Permit Sections and Conditions
Summary of Woody Biomass Fuel Descriptions

Summary of Woody Biomass Fuel Descriptions
Bridge Fuel (fuel sources to be utilized until the trees in the eucalyptus tree plantation are ready for harvesting): • Clean woody biomass from local waste wood sources, including but not limited to: o Forest products residue; o Commercial tree trimmings; o Whole tree chips; and o Clean waste wood. **Primary Fuel Source:** • Chipped eucalyptus trees from a reasonably close eucalyptus tree plantation.

Table 6-48
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Summary of Permit Sections and Conditions
Methods of Compliance - Power Island

Emissions Group - Power Island

Emission Unit:
-- Woody Biomass - Normal Operation (EU02-A)
-- Natural Gas - Startup, Shutdown, and Boiler Stabilization (EU02-B)
-- Sand Silo (EU02-C)

Regulated Air Pollutant	Method of Compliance
Woody Biomass - Normal Operation (EU02-A) and Natural Gas - Startup, Shutdown, and Boiler Stabilization (EU02-B)	
NO_x Limit (lbs/MMBtu)	Compliance with the 0.30 NO_x lbs/MMBtu 30 day rolling average limit shall be demonstrated by use of CEMS following NSPS Db requirements
NO_x Limit (tons/year)	Compliance with the NO_x annual ton/year limit shall be achieved through use of good combustion practices and inclusion of SCR system. Compliance shall be achieved by calculating the 12-month rolling total NO_x emission rate expressed in tons/year. This NO_x emission rate shall be based on CEM measurement data.
CO Limit (tons/year)	Compliance with the CO annual ton/year limit shall be achieved through good combustion practices. Compliance shall be achieved by calculating the 12-month rolling total CO emission rate expressed in tons/year. This CO emission rate shall be based on CEM measurement data.
PM/PM_{10} Limit (lbs/MMBtu)	The PM/PM_{10} limit of 0.047 lbs/MMBtu shall include the filterable and condensable fractions of particulate. Compliance with this emissions limit shall be demonstrated by conducting an initial compliance test using the test methods in 40 CFR Part 60 Appendix A. Initial compliance test shall also be used to comply with NSPS Subpart Db limit of 0.03 lbs/MMBtu (filterable PM fraction only) and F.A.C. 62-296.410 PM limit of 0.2 lbs/MMBtu (filterable fraction only).
Opacity Limit	Compliance with the 20% opacity limitation pursuant to 40 CFR 60.43b(f) shall be confirmed by the use of a continuous opacity monitor (COM) following NSPS Db provisions.
PM/PM_{10} Limit (tons/year)	Compliance with the PM/PM_{10} annual ton/year limit shall be achieved by operating the fabric filter baghouse at all times solid fuel is being combusted in the BFB boiler and demonstrating compliance with the PM/PM_{10} limit of 0.047 lbs/MMBtu. (Filterable and condensable fraction of PM_{10}).
SO_2 Limit (tons/year)	Compliance with the SO_2 annual ton/year limit shall be achieved through good combustion practices. Compliance shall be achieved by calculating the 12-month rolling total SO_2 emission rate expressed in tons/year. This SO_2 emission rate shall be based on CEM measurement data.
HCl (Hydrochloric Acid - CAS # 7647-01-0)	Compliance with the HCl annual ton/year limit shall be achieved through utilization of a baghouse and spray dryer absorber system or multilevel / multipoint dry sorbent injection and multicyclone system on the BFB boiler as needed to demonstrate minor source status. The HCl rate shall be based on utilizing CEM and/or stack testing and parametric monitoring as outlined below: • Individual HCL Emissions: Emission of HCl shall be less than 9.9 tons during any consecutive 12-month rolling total from the boiler. • In accordance with good operating practices and the manufacturer's recommendations, the fabric filter system shall be in operation of the BFB boiler at all times including startup and shutdown periods. The spray dryer absorber system shall be in operation in accordance with the manufacturer's recommended operating practices, as needed to maintain the minor source HCL emission rate of less than 10 tons during any consecutive 12-month rolling total. • As determined by Continuous Emission Monitoring (CEM), or an alternative compliance method approved by the Department, HCL emissions from the BFB boiler shall not exceed 9.9 tons during any consecutive rolling 12-month total, including periods of startup, shutdown and malfunction. Performance Specification shall be submitted to the Department for approval, based on CEMS manufacturer's specifications within ninety (90) days of issuance of this construction permit. • Performance Specification must be provided to the Department following the format contained in 40 CFR 60, Appendix B. • The Department shall evaluate and either 1)approve the performance specification or 2) identify adjustments to the performance specification within thirty (30) days of receipt by the Department. • If the performance specification is approved to demonstrate compliance with this standard, a CEM shall be installed to continuously monitor and record emissions of HCL from the BFB boiler in accordance with performance specifications approved by the Department. • If the Permittee is unable to find an instrument vendor that will guarantee the performance specifications approved by the Department or is unable to provide an instrument that will meet the performance specification, an alternative compliance approach shall be proposed to the Department. The Department will have an additional thirty (30) days to evaluate and notify the Permittee on their decision.
Sand Silo (EU02-C)	
PM/PM_{10} Limit	The sand silo shall be equipped with a vent filter or similar device. The vent filter or similar device will be designed to achieve a PM/PM_{10} emission rate of 0.01 grains per dry standard cubic feet (gr/dscf).

Section III.C. Ash Handling, Storage and Shipment

Description
EU03 - Ash Handling, Storage and Shipment The Ash Handling, Storage and Shipment process area (EU03) shall be designed to collect fly ash from the baghouse hoppers. Fly ash will be transferred via enclosed conveyors to a fly ash storage silo which shall be equipped with a vent filter or similar device. The vent filter or similar will be designed to achieve a PM/PM_{10} emission rate of 0.01 grains per dry standard cubic foot (g/dscf). Fly ash from the storage silo will be sent to a truck loading operation for removal off-site. The conveyor system will be enclosed and the chute used to dispense fly ash into the truck will be designed to minimize PM emissions.
Applicable Standards and Regulations Refer to Section II.
Equipment and Control Technology **Equipment:** The permittee is authorized to construct an Ash Handling, Storage and Shipment process area (EU03) consisting of the following equipment: **- Fly Ash Shipment - EU03-A** - Ash Haul Out - Trucks Inbound and Outbound; **- Fly Ash Handling - EU03-B, EU03-C, and EU03-D** - Fly Ash Baghouse Hoppers, Fly Ash Convection Pass Hoppers and Fly Ash Transfer Conveyors; and **- Fly Ash Storage - EU03-E and EU03-F** - Fly Ash Silo to Fly Ash Conveyor and Fly Ash Silo. [Application No. 0470016-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.] **Control Technology – Best Management Practices:** Best management practices shall be utilized to minimize fugitive PM/PM_{10} emissions from handling, storage and shipment of fly ash. - **The fly ash silo (EU03-F)** shall be equipped with a vent filter or alternative control technology approved by the Department.
Performance Restrictions **Restricted Operation:** The hours of operation of the Ash Handling, Storage and Shipment area are not limited (8,760 hours per year). [Rule 62-4.070(3), F.A.C.]
Emission Standards The only applicable emission standard established for this emission unit applies to opacity and unconfined particulate matter. **Excess Emissions** Refer to Section II. **Emissions Performance Testing** **Test Requirements:** No formal compliance testing is required for EU03. If future testing is specified by the Department, the permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.] **Monitoring Requirements:** No continuous monitoring is required for EU03. Best Management Practices shall be followed.
Methods of Compliance Best Management Practices shall be followed.
Records and Reports **Test Reports:** No formal submission of records or reports is required since compliance testing is not required. If future testing is specified by the Department, the permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix D (Common Testing Requirements) of this permit. For each test run, the report shall also indicate the operating rate. [Rule 62-297.310(8), F.A.C.]

Section III.D. Emergency Support Equipment

Description
EU04 - Emergency Support Equipment • EU04-A – 670 bhp Emergency Generator and Supporting Ultra Low Sulfur Diesel Fuel Storage Tank; and • EU04-B – 200 bhp Emergency Fire Water Pump and Supporting Ultra Low Sulfur Diesel Fuel Storage Tank.
Applicable Standards and Regulations **NSPS Subpart IIII Applicability:** The emergency support equipment includes compression ignition internal combustion engines (CI ICE) and shall comply with applicable provisions of 40 CFR 60, Subpart IIII. [40 CFR 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines]. **NESHAP Subpart ZZZZ Applicability:** The emergency support equipment include reciprocating internal combustion engines (RICE) and shall comply with applicable "area source" provisions of 40 CFR 63, Subpart ZZZZ. Pursuant to 40 CFR 63.6590(c) the engines must meet the requirements of ZZZZ by meeting the requirements of 40 CFR Part 60, Subpart IIII.
Equipment **Equipment:** The permittee is authorized to construct Emergency Support Equipment (EU04), including: - **670 bhp Emergency Generator (EU04-A)** and supporting ultra low sulfur diesel storage tank; and - **200 bhp Emergency Fire Water Pump (EU04-B)** and supporting ultra low sulfur diesel storage tank. [Rule 62-210.200 (PTE), F.A.C.] **Controls:** Pursuant to 60.4211(a) owner and operator shall operate and maintain the stationary CI internal combustion engine according to the manufacturer's written instructions or procedures developed by the owner or operator that are recommended by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer [62-4.070(3), F.A.C.]
Performance Restrictions ***Restricted Operation:*** - The total operating time for each engine is limited to no more than 250 hours per year of operation. - Pursuant to 60.4211(e) each engine may be operated for the purpose of maintenance checks and readiness testing for a total of 100 hours per year. - Pursuant to 40 CFR 60.4207(b) the engines shall combust ultra low sulfur diesel fuel. - Pursuant to 60.4211(a) owner and operator shall operate and maintain the stationary CI internal combustion engine according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer - Pursuant to 60.4211(c) the owner or operator shall purchase an engine certified to the emissions standards 60.4205(b), as applicable, for the model year and maximum engine power. - The engine must be installed and configured according to manufacturers specifications. [62-4.070(3), F.A.C.]
Emission Standards **Emission Standards:** Each emergency device shall comply with the following emission limits and demonstrate compliance in accordance with the procedures given in 40 CFR 60, Subpart IIII. Refer to Table 6-6A. **Excess Emissions** Refer to Section II. **Emissions Performance Testing** **Test Requirements:** Compliance testing for EU04 shall follow the requirements in 40 CFR 60, Subpart IIII. If future testing is specified by the Department, the permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.] **Monitoring Requirements:** Continuous monitoring for EU04 shall follow the requirements in 40 CFR Subpart IIII.
Methods of Compliance Refer to Table 6-6A. [62-4.070(3), F.A.C.]
Notification, Recordkeeping and Reporting Requirements The permittee shall maintain records of the amount of fuel used in the emergency equipment and shall comply with the notification, recordkeeping and reporting requirements pursuant to 40 CFR 60.4214 and 40 CFR 60.7. These records shall be submitted to the Compliance Authority on an annual basis or upon request.

Table 6-6A
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Summary of Permit Sections and Conditions
Emission Limits - Emergency Equipment

Emission Source	Emission Limit
NO_x Emissions	
Emergency Generator (670 bhp)	USEPA Tier 3 – 3.0 g/hp-h NMHC+NO_x
Emergency Fire Pump (200 bhp)	NSPS Subpart IIII, Table 4 – 3.0 g/hp-h NMHC+NO_x
SO_2 Emissions	
Emergency Generator (670 bhp)	As of 10/1/2010, sulfur content of fuel limited to 0.0015% by weight (15 ppm)
Emergency Fire Pump (200 bhp)	
CO Emissions	
Emergency Generator (670 bhp)	USEPA Tier 3 – 2.6 g/hp-h
Emergency Fire Pump (200 bhp)	NSPS Subpart IIII, Table 4 – 2.6 g/hp-h
VOC Emissions	
Emergency Generator (670 bhp)	USEPA Tier 3 – 3.0 g/hp-h NMHC+NO_x
Emergency Fire Pump (200 bhp)	NSPS Subpart IIII, Table 4 – 3.0 g/hp-h NMHC+NO_x
PM/PM_{10} Emissions	
Emergency Generator (670 bhp)	USEPA Tier 3 – 0.15 g/hp-h
Emergency Fire Pump (200 bhp)	NSPS Subpart IIII, Table 4 – 0.15 g/hp-h

Table 6-6B
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility
Summary of Permit Sections and Conditions
Methods of Compliance - Emergency Equipment

Emissions Group - Emergency Support Equipment (EU04)

Emission Unit	Regulated Air Pollutant	Engineering Estimates / Process Parameter Monitoring
670 bhp Emergency Generator (EU04-A)	NO_x	Compliance shall be based on tracking hours of operation and maintaining within the plant files appropriate documentation to demonstrate compliance with the emission limitations imposed by NSPS Subpart IIII. Certification of compliance (i.e., testing) with the NSPS IIII will be provided by the equipment vendor. Each engine will be limited to no more than 250 hours per year of diesel fuel with a sulfur content of less than 0.0015% by weight. Hours of operation shall be tracked on a monthly basis. The hours of operation in conjunction with the NSPS limitation (g/bhp-hr) and sulfur content of the fuel shall be used to determine monthly regulated air pollutant emissions from operation of this unit.
	CO	
	PM	
	SO_2	
	VOC	
	HAPs	
200 bhp Emergency Fire Water Pump (EU04-B)	NO_x	
	CO	
	PM	
	SO_2	
	VOC	
	HAPs	

Table 6-7
Best Management Practices (BMP) Plan
U.S. EcoGen Polk LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Preliminary Best Management Practices (BMP) Plan for Minimization of Fugitive Dust, Pile Management and Fire Prevention for the Fuel (Chipped/Log Woody Biomass) Handling System

The permittee shall comply with this BMP plan and any update hereto.
[Rule 62-4.070, F.A.C. Reasonable Assurance and Rule 62-296.320(4)(c), F.A.C.]

Permitting Note: The preliminary BMP plan will be updated by U.S. EcoGen as the engineering of the Fuel Receiving, Handling, Storage and Processing emission unit (EU-001) is finalized. The final BMP plan must be submitted to the Compliance Authority no later than 180 days before the U.S. EcoGen facility becomes operational.

Practice	Description
Best Management Practice - Minimization of Fugitive Dust	1. Conveyor systems and associated drop points shall be enclosed or partially enclosed. 2. Drop points to chipped woody biomass storage area shall be designed to minimize the overall exposed (or exposed to atmosphere) drop height. 3. Periodic equipment maintenance shall be performed to maintain conveyor systems and associated drop point integrity. Appropriate plant records shall be maintained on equipment maintenance performed. 4. Fly ash storage silo shall be equipped with vent filter or equivalent device. 5. Daily observations of the conveyor systems and associated drop point integrity to identify any equipment abnormalities. 6. Plant personnel shall be trained on identification of warning signs for potential equipment malfunction. 7. Signs shall be posted identifying potential warning signs of equipment malfunction. 8. Procedures shall be established for defining excessive fugitive dust from woody biomass truck unloading operations. Plant personnel shall visually observe truck unloading operations and if excessive fugitive dust is detected appropriate fugitive dust minimization techniques shall be implemented. Plant personnel shall be trained on procedures for defining and minimizing excessive dust from the truck unloading operations. 9. All major roadways at the plant shall be paved. Unpaved roadways should be maintained to minimize dust potential. 10. Mud, dirt or similar debris shall be removed promptly from the paved roads. 11. Plant personnel shall be trained on what constitutes excessive dust on paved roads and shall maintain the unpaved roadways.
Storage Pile Management	1. Woody biomass storage areas (chipped/logs) shall be managed to avoid excessive wind erosion. 2. A woody biomass fugitive dust management plan shall be developed and maintained onsite. Plan shall identify warning signs for conditions that could result in excessive dust formation. Plant personnel shall be trained on what warning signs to look for. 3. Mechanical moving of woody biomass (chipped/logs) by front end loaders and other supporting equipment shall be minimized on high wind event days. 4. Objectionable odor is prohibited with first in, first out biomass utilization implemented to minimize odors. 5. Daily visual observations of woody biomass storage areas (chipped/logs) shall be performed and if conditions are right for fugitive dust formation, procedures from the fugitive dust plan shall be implemented.

Table 6-7
Best Management Practices (BMP) Plan
U.S. EcoGen Polk LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Preliminary Best Management Practices (BMP) Plan for Minimization of Fugitive Dust, Pile Management and Fire Prevention for the Fuel (Chipped/Log Woody Biomass) Handling System

The permittee shall comply with this BMP plan and any update hereto.
[Rule 62-4.070, F.A.C. Reasonable Assurance and Rule 62-296.320(4)(c), F.A.C.]

Permitting Note: The preliminary BMP plan will be updated by U.S. EcoGen as the engineering of the Fuel Receiving, Handling, Storage and Processing emission unit (EU-001) is finalized. The final BMP plan must be submitted to the Compliance Authority no later than 180 days before the U.S. EcoGen facility becomes operational.

Practice	Description
Best Management Practice - Fire Prevention / Spontaneous Combustion Minimization	1. Contact local fire marshal to develop fire management plan. Plan shall be maintained on site. 2. Fire management plan to include: a) requirement to train onsite personnel to handle incipient fires and training on the identification of potential fire hazards; and b) install and maintain equipment for plant personnel to handle incipient fires. The local fire department shall be invited to participate in onsite training. 3. Daily observations of the woody biomass storage areas (chipped/logs) shall be performed by plant personnel to identify potential fire hazards. Plant personnel shall be trained on identification of potential fire hazards. 4. Signs shall be posted at the plant, which identify potential fire hazards. 5. Incoming unprocessed materials shall be stored in areas with a clearance between each storage area (includes chipped and log storage areas). 6. The stacker reclaimer being used shall maximize the removal of older material in order to minimize the stacking of newer material on top of the older material. 7. Compaction of chipped woody biomass materials in the storage area shall be minimized.
Best Management Practice - Quality Assurance of Clean Woody Biomass	1. The feedstock for the bubbling fluidized bed (BFB) boiler will consist of clean woody biomass (i.e., eucalyptus trees) that will be processed in designated fuel preparation area (or areas) where it will be sorted, screened, and sized as necessary, placed in the storage areas or sent directly to the BFB boiler. 2. The permittee will contract for woody biomass that specifically meets the definition of woody biomass as identified in the permit. The woody biomass will consist of clean untreated wood or untreated wood products including clean untreated lumber, tree stumps (whole or chipped), tree limbs (whole or chipped) and slash. 3. The woody biomass feedstock will be delivered to the Polk County Plant in vehicles designed to prevent release. 4. For each shipment of woody biomass, the permittee shall record the date, quantity and a description of the material received. 5. 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. 6. The permittee shall maintain records of rejected shipments and disposition thereof. Such records shall be made available to the Department upon request.

Table 7-1 (SI Units)
Parameters of AERMOD Point Sources for the Project
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Source ID	Description	PM_{10}[(a)] (g/s)	$PM_{2.5}$[(a)] (g/s)	Hourly NO_x[(b)] (g/s)	Annual NO_x[(b)] (g/s)	Hourly SO_2[(b)] (g/s)	CO (g/s)	Height (m)	Temperature[(c)] (K)	Velocity (m/s)	Diameter (m)
BLR100H	Woody Biomass Boiler Stack 100% Load High Moisture Content Fuel	4.38	4.38	27.97	7.09	10.07	22.38	54.86	419	16.38	3.35
BLR100L	Woody Biomass Boiler Stack 100% Load Low Moisture Content Fuel	3.86	3.86	24.65	6.24	8.87	19.72	54.86	419	13.20	3.35
BLR75H	Woody Biomass Boiler Stack 75% Load High Moisture Content Fuel	3.29	3.29	20.98	5.31	7.55	16.78	54.86	416	12.28	3.35
BLR75L	Woody Biomass Boiler Stack 75% Load Low Moisture Content Fuel	2.90	2.90	18.49	4.68	6.66	14.79	54.86	416	9.90	3.35
BLRST_A	Boiler Startup A - Cold Furnace	0.38	0.38	1.01	--	--	5.04	54.86	411	1.13	3.35
BLRST_B	Boiler Startup B - Warm Furnace	0.63	0.63	3.02	--	--	5.04	54.86	411	2.26	3.35
BLRST_C	Boiler Startup C - Fuel Transitional Period	1.51	1.51	11.72	--	1.26	23.44	54.86	411	5.44	3.35
COOLTWR1	Auxiliary Cooling Tower Cell #1	0.032	0.032	--	--	--	--	6.10	-1	11.66	2.90
COOLTWR2	Auxiliary Cooling Tower Cell #2	0.032	0.032	--	--	--	--	6.10	-1	11.66	2.90
SANDSILO	Sand Silo loading (bin vent filter)	0.022	0.022	--	--	--	--	24.38	-1	12.94	0.30
ASHSTORE	Ash Silo loading (bin vent filter)	0.022	0.022	--	--	--	--	24.38	-1	12.94	0.30
EMCYGEN	670-bhp Emergency Generator	0.0023	0.0023	0.02	0.02	0.00003	0.48	4.27	699	72.34	0.10
FIREPUMP	200-bhp Emergency Fire Pump	0.0007	0.0007	0.005	0.005	0.000009	0.14	4.27	748	66.34	0.10

Notes:

a) Emergency equipment (generator and fire pump) includes correction factor of 2/24 to account for the maximum daily operating time of 2 hours for testing purposes.

b) Emergency equipment (generator and fire pump) includes correction factor of (annual operating hours)/8760 to account for the maximum operating time for testing.

c) Assumed 1 °F drop in temperature from 100% load for every 5% drop in load on the boiler

Table 7-1 (US Customary Units)
Parameters of AERMOD Point Sources for the Project
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Source ID	Description	PM_{10}[(a)] (lb/hr)	$PM_{2.5}$[(a)] (lb/hr)	Hourly NO_x[(b)] (lb/hr)	Annual NO_x[(b)] (tpy)	Hourly SO_2[(b)] (lb/hr)	CO (lb/hr)	Height (ft)	Temperature[(c)] (°F)	Velocity (ft/min)	Diameter (ft)
BLR100H	Woody Biomass Boiler Stack 100% Load High Moisture Content Fuel	34.78	34.78	222.00	246.33	79.92	177.60	180	294	3,224	11.00
BLR100L	Woody Biomass Boiler Stack 100% Load Low Moisture Content Fuel	30.65	30.65	195.64	217.08	70.43	156.51	180	294	2,598	11.00
BLR75H	Woody Biomass Boiler Stack 75% Load High Moisture Content Fuel	26.09	26.09	166.50	184.75	59.94	133.20	180	289	2,418	11.00
BLR75L	Woody Biomass Boiler Stack 75% Load Low Moisture Content Fuel	22.99	22.99	146.73	162.81	52.82	117.38	180	289	1,949	11.00
BLRST_A	Boiler Startup A - Cold Furnace	3.00	3.00	8.00	--	--	40.00	180	279	223	11.00
BLRST_B	Boiler Startup B - Warm Furnace	5.00	5.00	24.00	--	--	40.00	180	279	445	11.00
BLRST_C	Boiler Startup C - Fuel Transitional Period	12.00	12.00	93.00	--	10.00	186.00	180	279	1,071	11.00
COOLTWR1	Auxiliary Cooling Tower Cell #1	0.25	0.25	--	--	--	--	20	Ambient	2,295	9.53
COOLTWR2	Auxiliary Cooling Tower Cell #2	0.25	0.25	--	--	--	--	20	Ambient	2,295	9.53
SANDSILO	Sand Silo loading (bin vent filter)	0.17	0.17	--	--	--	--	80	Ambient	2,546	1.00
ASHSTORE	Ash Silo loading (bin vent filter)	0.17	0.17	--	--	--	--	80	Ambient	2,546	1.00
EMCYGEN	670-bhp Emergency Generator	0.02	0.02	0.13	0.55	0.00	3.84	14	798	14,241	0.33
FIREPUMP	200-bhp Emergency Fire Pump	0.01	0.01	0.04	0.17	0.00	1.15	14	886	13,060	0.33

Notes:

a) Emergency equipment (generator and fire pump) includes correction factor of 2/24 to account for the maximum daily operating time of 2 hours for testing purposes.

b) Emergency equipment (generator and fire pump) includes correction factor of (annual operating hours)/8760 to account for the maximum operating time for testing.

c) Assumed 1 °F drop in temperature from 100% load for every 5% drop in load on the boiler

Table 7-2 (SI Units)
Parameters of AERMOD Volume Sources Representing the On-Site Paved Roads for the Project
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

		Volume Source[(a)] Emission Rate (g/s)		Transportation activities associated with each volume are indicated by an "X".									
Source ID	Description	PM_{10}	$PM_{2.5}$	Fuel Receiving (Chips) - Full Truck (in)	Fuel Receiving (Chips) - Empty Truck (out)	Fuel Receiving (Logs) - Full Truck (in)	Fuel Receiving (Logs) - Empty Truck (out)	Ash Haul Out - Empty Truck (in)	Ash Haul Out - Full Truck (out)	Ammonia Receiving - Full Truck (in)	Ammonia Receiving - Empty Truck (out)	Dry Sorbent Receiving - Full Truck (in)(d)	Dry Sorbent Receiving - Empty Truck (out)(d)
ROAD_001	Road - Plant Access	2.1E-03	3.0E-04	X	X	X	X	X	X	X	X	X	X
ROAD_002	Road - Plant Access	2.1E-03	3.0E-04	X	X	X	X	X	X	X	X	X	X
ROAD_003	Road - Plant Access	2.1E-03	3.0E-04	X	X	X	X	X	X	X	X	X	X
ROAD_004	Road - Plant Access	2.1E-03	3.0E-04	X	X	X	X	X	X	X	X	X	X
ROAD_005	Road - Plant Access	2.1E-03	3.0E-04	X	X	X	X	X	X	X	X	X	X
ROAD_006	Road - Plant Access	2.1E-03	3.0E-04	X	X	X	X	X	X	X	X	X	X
ROAD_007	Road - Plant Access	2.1E-03	3.0E-04	X	X	X	X	X	X	X	X	X	X
ROAD_008	Road - Plant Access	2.1E-03	3.0E-04	X	X	X	X	X	X	X	X	X	X
ROAD_009	Road - Plant Access	2.1E-03	3.0E-04	X	X	X	X	X	X	X	X	X	X
ROAD_010	Road - Plant Access	2.1E-03	3.0E-04	X	X	X	X	X	X	X	X	X	X
ROAD_011	Road - Plant Access	2.1E-03	3.0E-04	X	X	X	X	X	X	X	X	X	X
ROAD_012	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_013	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_014	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_015	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_016	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_017	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_018	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_019	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_020	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_021	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_022	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_023	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_024	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_025	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_026	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_027	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_028	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_029	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_030	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_031	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_032	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_033	Road - Fuel Receiving	2.0E-03	3.0E-04	X	X	X	X						
ROAD_034	Road - Truck Dumping Loop	1.2E-03	1.7E-04	X	X								
ROAD_035	Road - Truck Dumping Loop	1.2E-03	1.7E-04	X	X								
ROAD_036	Road - Truck Dumping Loop	1.2E-03	1.7E-04	X	X								
ROAD_037	Road - Truck Dumping Loop	1.2E-03	1.7E-04	X	X								
ROAD_038	Road - Truck Dumping Loop	1.2E-03	1.7E-04	X	X								
ROAD_039	Road - Truck Dumping Loop	1.2E-03	1.7E-04	X	X								
ROAD_040	Road - Truck Dumping Loop	1.2E-03	1.7E-04	X	X								
ROAD_041	Road - Truck Dumping Loop	1.2E-03	1.7E-04	X	X								
ROAD_042	Road - Truck Dumping Loop	1.2E-03	1.7E-04	X	X								
ROAD_043	Road - Truck Dumping Loop	1.2E-03	1.7E-04	X	X								
ROAD_044	Road - Truck Dumping Loop	1.2E-03	1.7E-04	X	X								
ROAD_045	Road - Truck Dumping Loop	1.2E-03	1.7E-04	X	X								
ROAD_046	Road - Truck Dumping Loop	1.2E-03	1.7E-04	X	X								
ROAD_047	Road - Truck Dumping Loop	1.2E-03	1.7E-04	X	X								
ROAD_048	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_049	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_050	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_051	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_052	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_053	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_054	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						

Table 7-2 (SI Units)
Parameters of AERMOD Volume Sources Representing the On-Site Paved Roads for the Project
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

		Volume Source[a] Emission Rate (g/s)		Transportation activities associated with each volume are indicated by an "X".									
Source ID	Description	PM_{10}	$PM_{2.5}$	Fuel Receiving (Chips) - Full Truck (in)	Fuel Receiving (Chips) - Empty Truck (out)	Fuel Receiving (Logs) - Full Truck (in)	Fuel Receiving (Logs) - Empty Truck (out)	Ash Haul Out - Empty Truck (in)	Ash Haul Out - Full Truck (out)	Ammonia Receiving - Full Truck (in)	Ammonia Receiving - Empty Truck (out)	Dry Sorbent Receiving - Full Truck (in)(d)	Dry Sorbent Receiving - Empty Truck (out)(d)
ROAD_055	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_056	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_057	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_058	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_059	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_060	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_061	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_062	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_063	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_064	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_065	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_066	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_067	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_068	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_069	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_070	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_071	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_072	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_073	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_074	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_075	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_076	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_077	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_078	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_079	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_080	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_081	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_082	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_083	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_084	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_085	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_086	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_087	Road - Log Yard Loop	8.5E-04	1.2E-04			X	X						
ROAD_088	Road - Boiler Support Loop	3.4E-05	4.9E-06					X	X	X	X	X	X
ROAD_089	Road - Boiler Support Loop	3.4E-05	4.9E-06					X	X	X	X	X	X
ROAD_090	Road - Boiler Support Loop	3.4E-05	4.9E-06					X	X	X	X	X	X
ROAD_091	Road - Boiler Support Loop	3.4E-05	4.9E-06					X	X	X	X	X	X
ROAD_092	Road - Boiler Support Loop	3.4E-05	4.9E-06					X	X	X	X	X	X
ROAD_093	Road - Boiler Support Loop	3.4E-05	4.9E-06					X	X	X	X	X	X
ROAD_094	Road - Boiler Support Loop	3.4E-05	4.9E-06					X	X	X	X	X	X
ROAD_095	Road - Boiler Support Loop	3.4E-05	4.9E-06					X	X	X	X	X	X
ROAD_096	Road - Boiler Support Loop	3.4E-05	4.9E-06					X	X	X	X	X	X
ROAD_097	Road - Boiler Support Loop	3.4E-05	4.9E-06					X	X	X	X	X	X
ROAD_098	Road - Boiler Support Loop	3.4E-05	4.9E-06					X	X	X	X	X	X
ROAD_099	Road - Boiler Support Loop	1.7E-05	2.5E-06						X		X		X
ROAD_100	Road - Boiler Support Loop	1.7E-05	2.5E-06						X		X		X
ROAD_101	Road - Boiler Support Loop	1.7E-05	2.5E-06						X		X		X
ROAD_102	Road - Boiler Support Loop	1.7E-05	2.5E-06						X		X		X
ROAD_103	Road - Boiler Support Loop	1.7E-05	2.5E-06						X		X		X
ROAD_104	Road - Boiler Support Loop	1.7E-05	2.5E-06						X		X		X
ROAD_105	Road - Boiler Support Loop	1.7E-05	2.5E-06						X		X		X
ROAD_106	Road - Boiler Support Loop	1.7E-05	2.5E-06						X		X		X
ROAD_107	Road - Boiler Support Loop	1.7E-05	2.5E-06						X		X		X
ROAD_108	Road - Boiler Support Loop	1.7E-05	2.5E-06						X		X		X
ROAD_109	Road - Boiler Support Loop	1.7E-05	2.5E-06						X		X		X
ROAD_110	Road - Boiler Support Loop	1.7E-05	2.5E-06						X		X		X
ROAD_111	Road - Boiler Support Loop	1.7E-05	2.5E-06						X		X		X

Table 7-2 (SI Units)
Parameters of AERMOD Volume Sources Representing the On-Site Paved Roads for the Project
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

		Volume Source[a] Emission Rate (g/s)		Transportation activities associated with each volume are indicated by an "X".									
Source ID	Description	PM_{10}	$PM_{2.5}$	Fuel Receiving (Chips) - Full Truck (in)	Fuel Receiving (Chips) - Empty Truck (out)	Fuel Receiving (Logs) - Full Truck (in)	Fuel Receiving (Logs) - Empty Truck (out)	Ash Haul Out - Empty Truck (in)	Ash Haul Out - Full Truck (out)	Ammonia Receiving - Full Truck (in)	Ammonia Receiving - Empty Truck (out)	Dry Sorbent Receiving - Full Truck (in)(d)	Dry Sorbent Receiving - Empty Truck (out)(d)
ROAD_112	Road - Boiler Support Loop	1.8E-05	2.7E-06						X	X			X
ROAD_113	Road - Boiler Support Loop	1.8E-05	2.7E-06						X	X			X
ROAD_114	Road - Boiler Support Loop	1.8E-05	2.7E-06						X	X			X
ROAD_115	Road - Boiler Support Loop	1.6E-05	2.4E-06						X	X		X	
ROAD_116	Road - Boiler Support Loop	1.6E-05	2.4E-06						X	X		X	
ROAD_117	Road - Boiler Support Loop	1.7E-05	2.4E-06					X		X		X	
ROAD_118	Road - Boiler Support Loop	1.7E-05	2.4E-06					X		X		X	
Paved Road Calculation Factors													
Number of volumes associated with each activity				47	47	73	73	24	40	29	35	26	38
Total Rate (g/s): PM emissions by activity[b]				1.7E-01	1.3E-01	2.2E-01	1.1E-01	5.5E-04	8.2E-04	1.1E-03	1.1E-03	7.2E-04	1.4E-03
Total Rate (g/s): PM_{10} emissions by activity[b]				3.2E-02	2.4E-02	4.1E-02	2.1E-02	1.1E-04	1.6E-04	2.1E-04	2.1E-04	1.4E-04	2.8E-04
Total Rate (g/s): $PM_{2.5}$ emissions by activity[b]				4.7E-03	3.5E-03	6.0E-03	3.0E-03	1.5E-05	2.3E-05	3.0E-05	3.0E-05	2.0E-05	4.0E-05
Unit Rate (g/s): PM emissions per volume by activity[b]				3.6E-03	2.7E-03	3.0E-03	1.5E-03	2.3E-05	2.1E-05	3.7E-05	3.1E-05	2.8E-05	3.8E-05
Unit Rate (g/s): PM_{10} emissions per volume by activity[b]				6.8E-04	5.1E-04	5.7E-04	2.8E-04	4.4E-06	3.9E-06	7.1E-06	5.9E-06	5.3E-06	7.3E-06
Unit Rate (g/s): $PM_{2.5}$ emissions per volume by activity[b]				9.9E-05	7.4E-05	8.2E-05	4.1E-05	6.3E-07	5.7E-07	1.0E-06	8.6E-07	7.7E-07	1.1E-06

Volume Source Parameters		Parameter Notes[c]
Release Height (m) =	4.00	Release height is half of volume height
Initial Lateral Dimension (m) =	6.05	Volume width divided by 2.15
Initial Vertical Dimension (m) =	3.72	Volume height divided by 2.16
Truck Height (m) =	4.00	
Volume Height (m) =	8.00	Twice the height of truck to account for turbulence
Volume Width (m) =	13.00	Six meters wider than a two-lane road to account for turbulence

Notes:

a) The total emission rate for each volume was determined by summing the unit rates of each activity associated with each volume. For example, the emission rate of a volume associated with incoming and outgoing fuel delivery traffic is equal to the sum of the unit rates for the incoming fuel delivery activity and outgoing fuel delivery activity.

b) Unit rate emissions (per volume by activity) were determined by dividing the total emissions associated with each activity by the number of volumes associated with each activity

c) The truck traffic parameters were determined following the commonly accepted guidelines for modeling haul road traffic emissions in AERMOD as adjacent volume sources. These guidelines can be found in several state agency guidance documents including those of North Carolina and New Mexico.

Table 7-2 (US Customary Units)
Parameters of AERMOD Volume Sources Representing the On-Site Paved Roads for the Project
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

		Volume Source[a] Emission Rate (lb/hr)		Transportation activities associated with each volume are indicated by an "X".									
Source ID	Description	PM_{10}	$PM_{2.5}$	Fuel Receiving (Chips) - Full Truck (in)	Fuel Receiving (Chips) - Empty Truck (out)	Fuel Receiving (Logs) - Full Truck (in)	Fuel Receiving (Logs) - Empty Truck (out)	Ash Haul Out - Empty Truck (in)	Ash Haul Out - Full Truck (out)	Ammonia Receiving - Full Truck (in)	Ammonia Receiving - Empty Truck (out)	Dry Sorbent Receiving - Full Truck (in)(d)	Dry Sorbent Receiving - Empty Truck (out)(d)
ROAD_001	Road - Plant Access	1.7E-02	2.4E-03	X	X	X	X	X	X	X	X	X	X
ROAD_002	Road - Plant Access	1.7E-02	2.4E-03	X	X	X	X	X	X	X	X	X	X
ROAD_003	Road - Plant Access	1.7E-02	2.4E-03	X	X	X	X	X	X	X	X	X	X
ROAD_004	Road - Plant Access	1.7E-02	2.4E-03	X	X	X	X	X	X	X	X	X	X
ROAD_005	Road - Plant Access	1.7E-02	2.4E-03	X	X	X	X	X	X	X	X	X	X
ROAD_006	Road - Plant Access	1.7E-02	2.4E-03	X	X	X	X	X	X	X	X	X	X
ROAD_007	Road - Plant Access	1.7E-02	2.4E-03	X	X	X	X	X	X	X	X	X	X
ROAD_008	Road - Plant Access	1.7E-02	2.4E-03	X	X	X	X	X	X	X	X	X	X
ROAD_009	Road - Plant Access	1.7E-02	2.4E-03	X	X	X	X	X	X	X	X	X	X
ROAD_010	Road - Plant Access	1.7E-02	2.4E-03	X	X	X	X	X	X	X	X	X	X
ROAD_011	Road - Plant Access	1.7E-02	2.4E-03	X	X	X	X	X	X	X	X	X	X
ROAD_012	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_013	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_014	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_015	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_016	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_017	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_018	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_019	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_020	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_021	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_022	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_023	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_024	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_025	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_026	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_027	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_028	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_029	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_030	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_031	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_032	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_033	Road - Fuel Receiving	1.6E-02	2.4E-03	X	X	X	X						
ROAD_034	Road - Truck Dumping Loop	9.5E-03	1.4E-03	X	X								
ROAD_035	Road - Truck Dumping Loop	9.5E-03	1.4E-03	X	X								
ROAD_036	Road - Truck Dumping Loop	9.5E-03	1.4E-03	X	X								
ROAD_037	Road - Truck Dumping Loop	9.5E-03	1.4E-03	X	X								
ROAD_038	Road - Truck Dumping Loop	9.5E-03	1.4E-03	X	X								
ROAD_039	Road - Truck Dumping Loop	9.5E-03	1.4E-03	X	X								
ROAD_040	Road - Truck Dumping Loop	9.5E-03	1.4E-03	X	X								
ROAD_041	Road - Truck Dumping Loop	9.5E-03	1.4E-03	X	X								
ROAD_042	Road - Truck Dumping Loop	9.5E-03	1.4E-03	X	X								
ROAD_043	Road - Truck Dumping Loop	9.5E-03	1.4E-03	X	X								
ROAD_044	Road - Truck Dumping Loop	9.5E-03	1.4E-03	X	X								
ROAD_045	Road - Truck Dumping Loop	9.5E-03	1.4E-03	X	X								
ROAD_046	Road - Truck Dumping Loop	9.5E-03	1.4E-03	X	X								
ROAD_047	Road - Truck Dumping Loop	9.5E-03	1.4E-03	X	X								
ROAD_048	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_049	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_050	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_051	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_052	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_053	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_054	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						

Table 7-2 (US Customary Units)
Parameters of AERMOD Volume Sources Representing the On-Site Paved Roads for the Project
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

		Volume Source[(a)] Emission Rate (lb/hr)		Transportation activities associated with each volume are indicated by an "X".									
Source ID	Description	PM_{10}	$PM_{2.5}$	Fuel Receiving (Chips) - Full Truck (in)	Fuel Receiving (Chips) - Empty Truck (out)	Fuel Receiving (Logs) - Full Truck (in)	Fuel Receiving (Logs) - Empty Truck (out)	Ash Haul Out - Empty Truck (in)	Ash Haul Out - Full Truck (out)	Ammonia Receiving - Full Truck (in)	Ammonia Receiving - Empty Truck (out)	Dry Sorbent Receiving - Full Truck (in)(d)	Dry Sorbent Receiving - Empty Truck (out)(d)
ROAD_055	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_056	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_057	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_058	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_059	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_060	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_061	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_062	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_063	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_064	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_065	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_066	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_067	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_068	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_069	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_070	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_071	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_072	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_073	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_074	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_075	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_076	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_077	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_078	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_079	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_080	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_081	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_082	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_083	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_084	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_085	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_086	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_087	Road - Log Yard Loop	6.8E-03	9.8E-04			X	X						
ROAD_088	Road - Boiler Support Loop	2.7E-04	3.9E-05					X	X	X	X	X	X
ROAD_089	Road - Boiler Support Loop	2.7E-04	3.9E-05					X	X	X	X	X	X
ROAD_090	Road - Boiler Support Loop	2.7E-04	3.9E-05					X	X	X	X	X	X
ROAD_091	Road - Boiler Support Loop	2.7E-04	3.9E-05					X	X	X	X	X	X
ROAD_092	Road - Boiler Support Loop	2.7E-04	3.9E-05					X	X	X	X	X	X
ROAD_093	Road - Boiler Support Loop	2.7E-04	3.9E-05					X	X	X	X	X	X
ROAD_094	Road - Boiler Support Loop	2.7E-04	3.9E-05					X	X	X	X	X	X
ROAD_095	Road - Boiler Support Loop	2.7E-04	3.9E-05					X	X	X	X	X	X
ROAD_096	Road - Boiler Support Loop	2.7E-04	3.9E-05					X	X	X	X	X	X
ROAD_097	Road - Boiler Support Loop	2.7E-04	3.9E-05					X	X	X	X	X	X
ROAD_098	Road - Boiler Support Loop	2.7E-04	3.9E-05					X	X	X	X	X	X
ROAD_099	Road - Boiler Support Loop	1.4E-04	2.0E-05						X		X		X
ROAD_100	Road - Boiler Support Loop	1.4E-04	2.0E-05						X		X		X
ROAD_101	Road - Boiler Support Loop	1.4E-04	2.0E-05						X		X		X
ROAD_102	Road - Boiler Support Loop	1.4E-04	2.0E-05						X		X		X
ROAD_103	Road - Boiler Support Loop	1.4E-04	2.0E-05						X		X		X
ROAD_104	Road - Boiler Support Loop	1.4E-04	2.0E-05						X		X		X
ROAD_105	Road - Boiler Support Loop	1.4E-04	2.0E-05						X		X		X
ROAD_106	Road - Boiler Support Loop	1.4E-04	2.0E-05						X		X		X
ROAD_107	Road - Boiler Support Loop	1.4E-04	2.0E-05						X		X		X
ROAD_108	Road - Boiler Support Loop	1.4E-04	2.0E-05						X		X		X
ROAD_109	Road - Boiler Support Loop	1.4E-04	2.0E-05						X		X		X
ROAD_110	Road - Boiler Support Loop	1.4E-04	2.0E-05						X		X		X
ROAD_111	Road - Boiler Support Loop	1.4E-04	2.0E-05						X		X		X

Table 7-2 (US Customary Units)
Parameters of AERMOD Volume Sources Representing the On-Site Paved Roads for the Project
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

		Volume Source[a] Emission Rate (lb/hr)		Transportation activities associated with each volume are indicated by an "X".									
Source ID	Description	PM_{10}	$PM_{2.5}$	Fuel Receiving (Chips) - Full Truck (in)	Fuel Receiving (Chips) - Empty Truck (out)	Fuel Receiving (Logs) - Full Truck (in)	Fuel Receiving (Logs) - Empty Truck (out)	Ash Haul Out - Empty Truck (in)	Ash Haul Out - Full Truck (out)	Ammonia Receiving - Full Truck (in)	Ammonia Receiving - Empty Truck (out)	Dry Sorbent Receiving - Full Truck (in)(d)	Dry Sorbent Receiving - Empty Truck (out)(d)
ROAD_112	Road - Boiler Support Loop	1.5E-04	2.1E-05						X	X			X
ROAD_113	Road - Boiler Support Loop	1.5E-04	2.1E-05						X	X			X
ROAD_114	Road - Boiler Support Loop	1.5E-04	2.1E-05						X	X			X
ROAD_115	Road - Boiler Support Loop	1.3E-04	1.9E-05						X	X		X	
ROAD_116	Road - Boiler Support Loop	1.3E-04	1.9E-05						X	X		X	
ROAD_117	Road - Boiler Support Loop	1.3E-04	1.9E-05					X		X		X	
ROAD_118	Road - Boiler Support Loop	1.3E-04	1.9E-05					X		X		X	
Paved Road Calculation Factors													
Number of volumes associated with each activity				47	47	73	73	24	40	29	35	26	38
Total Rate (tpy): PM emissions by activity[b]				5.85	4.39	7.54	3.77	0.02	0.03	0.04	0.04	0.03	0.05
Total Rate (tpy): PM_{10} emissions by activity[b]				1.12	0.84	1.44	0.72	0.004	0.005	0.007	0.007	0.005	0.01
Total Rate (tpy): $PM_{2.5}$ emissions by activity[b]				0.16	0.12	0.21	0.10	0.0005	0.0008	0.001	0.001	0.0007	0.001
Unit Rate (lb/hr): PM emissions per volume by activity[b]				2.8E-02	2.1E-02	2.4E-02	1.2E-02	1.8E-04	1.6E-04	3.0E-04	2.5E-04	2.2E-04	3.0E-04
Unit Rate (lb/hr): PM_{10} emissions per volume by activity[b]				5.4E-03	4.1E-03	4.5E-03	2.3E-03	3.5E-05	3.1E-05	5.7E-05	4.7E-05	4.2E-05	5.8E-05
Unit Rate (lb/hr): $PM_{2.5}$ emissions per volume by activity[b]				7.9E-04	5.9E-04	6.5E-04	3.3E-04	5.0E-06	4.5E-06	8.2E-06	6.8E-06	6.1E-06	8.4E-06

Volume Source Parameters		Parameter Notes[c]
Release Height (ft) =	13.12	Release height is half of volume height
Initial Lateral Dimension (ft) =	19.84	Volume width divided by 2.15
Initial Vertical Dimension (ft) =	12.21	Volume height divided by 2.16
Truck Height (ft) =	13.12	
Volume Height (ft) =	26.25	Twice the height of truck to account for turbulence
Volume Width (ft) =	42.65	Six meters wider than a two-lane road to account for turbulence

Notes:

a) The total emission rate for each volume was determined by summing the unit rates of each activity associated with each volume. For example, the emission rate of a volume associated with incoming and outgoing fuel delivery traffic is equal to the sum of the unit rates for the incoming fuel delivery activity and outgoing fuel delivery activity.

b) Unit rate emissions (per volume by activity) were determined by dividing the total emissions associated with each activity by the number of volumes associated with each activity

c) The truck traffic parameters were determined following the commonly accepted guidelines for modeling haul road traffic emissions in AERMOD as adjacent volume sources. These guidelines can be found in several state agency guidance documents including those of North Carolina and New Mexico.

Table 7-3 (SI Units)
Parameters of AERMOD Volume Sources Representing Fugitive Particulate Emission Sources at the Project
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Volume ID	Description	PM_{10} (g/s/vol)	$PM_{2.5}$ (g/s/vol)	Number of Volumes (i)	Release Height (m)	σ_y Init. Lat. Dim. (m)	σ_z Init. Vert. Dim. (m)	Volume Height (m)	Volume Width (m)	Volume Location
TRUCKDMP	Truck Fuel Receiving Dumpers	1.22E-03	1.85E-04	1	2.00	1.12	1.86	4.00	4.80	Surface
OPFDP1	Opportunity Fuel Stackout Conveyor to Opportunity Fuel Pile	2.37E-03	3.59E-04	1	3.05	0.71	1.42	3.05	3.05	Surface
RECLMOPF	Opportunity Fuel Reclaimer	1.15E-03	1.74E-04	1	3.05	0.71	1.42	3.05	3.05	Surface
FPCONV	Fuel Prep Conveyor From Chipper & Truck Hopper	2.37E-03	3.59E-04	1	3.05	0.71	1.42	3.05	3.05	Surface
MAGSEP	Magnetic Separator	2.37E-03	3.59E-04	1	3.05	0.71	0.71	3.05	3.05	Elevated - No Building
FPTIN	Fuel Prep Tower In - Bypass Diverter Gate	2.37E-03	3.59E-04	1	3.05	0.71	0.71	3.05	3.05	Elevated - No Building
FPTSCRN	Fuel Prep Tower - Screens	2.37E-03	3.59E-04	1	3.05	0.71	0.71	3.05	3.05	Elevated - No Building
FPTSOC	Fuel Prep Tower - Stackout Conveyor	2.37E-03	3.59E-04	1	3.05	0.71	0.71	3.05	3.05	Elevated - No Building
FSTORDP1	Fuel Storage Drop Point	2.37E-03	3.59E-04	1	9.14	4.25	4.25	9.14	18.29	Surface
RECLAIM1	Fuel Reclaimer 1	6.89E-04	1.04E-04	1	3.05	0.71	1.42	3.05	3.05	Surface
RECLAIM2	Fuel Reclaimer 2	6.89E-04	1.04E-04	1	3.05	0.71	1.42	3.05	3.05	Surface
BFCONV1	Boiler Feed Conveyor 1	6.89E-04	1.04E-04	1	3.05	0.71	0.71	3.05	3.05	Elevated - No Building
BFCONV2	Boiler Feed Conveyor 2	6.89E-04	1.04E-04	1	3.05	0.71	0.71	3.05	3.05	Elevated - No Building
DSTCONV1	Distribution Conveyor 1	6.89E-04	1.04E-04	1	45.00	0.71	1.42	3.05	3.05	On-Adjacent to Building
DSTCONV2	Distribution Conveyor 2	6.89E-04	1.04E-04	1	45.00	0.71	1.42	3.05	3.05	On-Adjacent to Building
SCHIPFUG	Stationary Wood Chipper Fugitive Dust	9.45E-03	4.73E-03	1	3.05	0.71	1.42	3.05	3.05	Surface
FPTHOG	Fuel Prep Tower - Hog	3.15E-03	1.58E-03	1	3.05	0.71	1.42	3.05	3.05	Surface
BDOZ	Bulldozing on Woody Biomass Storage Areas	1.46E-03	2.05E-04	1	4.06	69.77	1.42	3.05	300.00	On-Adjacent to Building
LOGSTRii	Log Storage Mobile Equipment	2.17E-04	3.61E-05	85	4.00	12.09	3.72	4.00	8.00	Roadway - Alternating

Notes:
Log Storage Mobile Equipment emissions were modeled as unpaved haul roads represented by alternating volume sources.

Volume Source Parameter Calculation:
Initial lateral dimension (σ_y)

(1) Volume Width / 4.3 (Elevated - No Building)
(2) Volume Width / 2.15 (Surface, Roadway, or On-Adjacent to Building)
(3) Center-to-center distance / 2.15 (line source (Roads) - separated volumes)

Initial vertical dimension (σ_z)

(1) Volume Height / 2.15 (surface-based source other than roads represented as alternating volumes)
(2) Building Height / 2.15 (elevated source on or adjacent to building)
(3) Volume Height / 4.3 (elevated source not on or adjacent to building)
(4) Volume Height / 1.075 (roads represented as alternating volumes)

Table 7-3 (US Customary Units)
Parameters of AERMOD Volume Sources Representing Fugitive Particulate Emission Sources at the Project
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Volume ID	Description	PM_{10} (lb/hr/vol)	$PM_{2.5}$ (lb/hr/vol)	Number of Volumes (i)	Release Height (ft)	σ_y Init. Lat. Dim. (ft)	σ_z Init. Vert. Dim. (ft)	Volume Height (ft)	Volume Width (ft)	Volume Location
TRUCKDMP	Truck Fuel Receiving Dumpers	9.72E-03	1.47E-03	1	6.56	3.66	6.10	13.12	15.75	Surface
OPFDP1	Opportunity Fuel Stackout Conveyor to Opportunity Fuel Pile	1.88E-02	2.85E-03	1	10.01	2.33	4.65	10.01	10.01	Surface
RECLMOPF	Opportunity Fuel Reclaimer	9.11E-03	1.38E-03	1	10.01	2.33	4.65	10.01	10.01	Surface
FPCONV	Fuel Prep Conveyor From Chipper & Truck Hopper	1.88E-02	2.85E-03	1	10.01	2.33	4.65	10.01	10.01	Surface
MAGSEP	Magnetic Separator	1.88E-02	2.85E-03	1	10.01	2.33	2.33	10.01	10.01	Elevated - No Building
FPTIN	Fuel Prep Tower In - Bypass Diverter Gate	1.88E-02	2.85E-03	1	10.01	2.33	2.33	10.01	10.01	Elevated - No Building
FPTSCRN	Fuel Prep Tower - Screens	1.88E-02	2.85E-03	1	10.01	2.33	2.33	10.01	10.01	Elevated - No Building
FPTSOC	Fuel Prep Tower - Stackout Conveyor	1.88E-02	2.85E-03	1	10.01	2.33	2.33	10.01	10.01	Elevated - No Building
FSTORDP1	Fuel Storage Drop Point	1.88E-02	2.85E-03	1	29.99	13.95	13.95	29.99	60.00	Surface
RECLAIM1	Fuel Reclaimer 1	5.47E-03	8.28E-04	1	10.01	2.33	4.65	10.01	10.01	Surface
RECLAIM2	Fuel Reclaimer 2	5.47E-03	8.28E-04	1	10.01	2.33	4.65	10.01	10.01	Surface
BFCONV1	Boiler Feed Conveyor 1	5.47E-03	8.28E-04	1	10.01	2.33	2.33	10.01	10.01	Elevated - No Building
BFCONV2	Boiler Feed Conveyor 2	5.47E-03	8.28E-04	1	10.01	2.33	2.33	10.01	10.01	Elevated - No Building
DSTCONV1	Distribution Conveyor 1	5.47E-03	8.28E-04	1	147.64	2.33	4.65	10.01	10.01	On-Adjacent to Building
DSTCONV2	Distribution Conveyor 2	5.47E-03	8.28E-04	1	147.64	2.33	4.65	10.01	10.01	On-Adjacent to Building
SCHIPFUG	Stationary Wood Chipper Fugitive Dust	7.50E-02	3.75E-02	1	10.01	2.33	4.65	10.01	10.01	Surface
FPTHOG	Fuel Prep Tower - Hog	2.50E-02	1.25E-02	1	10.01	2.33	4.65	10.01	10.01	Surface
BDOZ	Bulldozing on Woody Biomass Storage Areas	1.16E-02	1.63E-03	1	13.33	228.90	4.65	10.01	984.25	On-Adjacent to Building
LOGSTRii	Log Storage Mobile Equipment	1.72E-03	2.86E-04	85	13.12	39.68	12.21	13.12	26.25	Roadway - Alternating

Notes:
Log Storage Mobile Equipment emissions were modeled as unpaved haul roads represented by alternating volume sources.

Volume Source Parameter Calculation:
Initial lateral dimension (σ_y)

(1) Volume Width / 4.3 (Elevated - No Building)
(2) Volume Width / 2.15 (Surface, Roadway, or On-Adjacent to Building)
(3) Center-to-center distance / 2.15 (line source (Roads) - separated volumes)

Initial vertical dimension (σ_z)

(1) Volume Height / 2.15 (surface-based source other than roads represented as alternating volumes)
(2) Building Height / 2.15 (elevated source on or adjacent to building)
(3) Volume Height / 4.3 (elevated source not on or adjacent to building)
(4) Volume Height / 1.075 (roads represented as alternating volumes)

Table 7-4 (SI Units)
Parameters of AERMOD Area Sources Representing Fugitive Particulate Emission Sources at the Project
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Area Source ID	Area Source Description	PM_{10} ($g/s/m^2$)	$PM_{2.5}$ ($g/s/m^2$)	Release Height (m)	X Length (m)	Y Length (m)	Angle (degrees)	Init. Vert. Dim. (m)	Area (m^2)
WINDERS1	Wind Erosion - Fuel Storage	2.41E-04	3.61E-05	5.08	105	86.5	0	10.2	9,083

Notes:

(a) Wind erosion emissions were modeled with variable emission rate as a function of wind speed. The emission rate due to wind erosion on the storage pile was zero unless the wind speed exceeded 10.8 m/s in accordance with the threshold friction velocity calculation used in the emission estimates. At wind speeds >10.8 m/s the emission rate was that shown in the table above.

(b) The emission rate for the storage piles equaled the maximum emission rate predicted for the erosion events identified in the emission estimates.

Table 7-4 (US Customary Units)
Parameters of AERMOD Area Sources Representing Fugitive Particulate Emission Sources at the Project
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Area Source ID	Area Source Description	PM_{10} (lb/hr/ft^2)	$PM_{2.5}$ (lb/hr/ft^2)	Release Height (ft)	X Length (ft)	Y Length (ft)	Angle (degrees)	Init. Vert. Dim. (ft)	Area (ft^2)
WINDERS1	Wind Erosion - Fuel Storage	1.78E-04	2.66E-05	16.67	344.49	283.79	0	33.33	97,763

Notes:

(a) Wind erosion emissions were modeled with variable emission rate as a function of wind speed. The emission rate due to wind erosion on the storage pile was zero unless the wind speed exceeded 24.2 mph in accordance with the threshold friction velocity calculation used in the emission estimates. At wind speeds >24.2 mph the emission rate was that shown in the table above.

(b) The emission rate for the storage piles equaled the maximum emission rate predicted for the erosion events identified in the emission estimates.

Table 7-5
Summary of Applicable NAAQS and the Statistical Forms of Modeled Concentrations for Compliance Demonstration
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Regulated Air Pollutant	Averaging Period	NAAQS (ug/m^3)	Statistical Form of Modeled Concentration (At Each Receptor) Used for Compliance Demonstration
PM_{10}	24-hour	150	Sixth highest over 5 years (the NAAQS is not to be exceeded more than once per year on average)
$PM_{2.5}$	24-hour	35	Average of the eighth highest (98'th percentile) from each year
	Annual	15	Average of the highest from each year
NO_2	1-hour	188	Average of the eighth highest (98'th percentile) maximum daily 1-hour concentration from each year
	Annual	100	Highest of the 5 years
SO_2	1-hour	196	Average of the fourth highest (99'th percentile) maximum daily 1-hour concentration from each year
	3-hour	1,300	Highest of the second high from each of the 5 years
	24-hour	365	Highest of the second high from each of the 5 years
	Annual	80	Highest of the 5 years
CO	1-hour	40,000	Highest of the second high from each of the 5 years
	8-hour	10,000	Highest of the second high from each of the 5 years

Table 7-6
Summary of Background Concentrations for the NAAQS Compliance Demonstration
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Pollutant	Averaging Period	Background Concentration (ug/m^3)	Statistical Form of Concentration	Monitor Location and ID Number
PM_{10}	24-hour	47	Highest of the second high from each of the 3 years	Mulberry, FL – 2486 Anderson Road (105-0010)
$PM_{2.5}$	24-hour	22.3	Average of the second high from each of the 3 years	Lakeland, FL – 1015 Sikes Boulevard (105-6006)
	Annual	9.1	Average of the 3 years	
NO_2	1-hour	16.8	Average of the second high from each of the 3 years	Sarasota, FL – 4570 17'th Place (115-1006)
	Annual	2.3	Highest of the 3 years	
SO_2	1-hour	34	Average of the second high from each of the 3 years	Dover, FL – 1167 N. Dover Road (057-3002)
	3-hour	39	Highest of the second high from each of the 3 years	
	24-hour	8	Highest of the second high from each of the 3 years	
	Annual	3	Highest of the 3 years	
CO	1-hour	1,145	Highest of the second high from each of the 3 years	Dover, FL – 1167 N. Dover Road (057-3002)
	8-hour	1,145	Highest of the second high from each of the 3 years	

Table 7-7

Summary of Air Quality Impact Analysis Results

U.S. EcoGen Polk, LLC - Polk County, Florida

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Regulated Pollutant	Averaging Period	Model Predicted Concentration (ug/m^3)	Statistical form of Model Predicted Concentration (Over Five Modeled Years of Meteorological Data)	Background Concentration (ug/m^3)	Maximum Predicted Cumulative Impact (ug/m^3)	NAAQS (ug/m^3)
PM_{10} [(a)]	24-hour	89	6'th highest over five years	47	136	150
$PM_{2.5}$ [(a)]	24-hour	5.6	Average of the 8'th highest concentrations from each of five years	22.3	27.9	35
	Annual	1.8	Average of the annual concentration from each of five years	9.1	10.9	15
NO_2	1-hour	31.0	Average of the 8'th highest maximum daily 1-hr average concentration from each of the five years	16.8	47.8	188
	Annual	0.6	Maximum of the annual concentration from each of the five years	2.3	2.9	100
SO_2	1-hour	12	Average of the 4'th highest maximum daily 1-hr average concentration from each of the five years	34	46	196
	3-hour	12	Maximum second-high concentration from each of the five years	39	51	1,300
	24-hour	4	Maximum second-high concentration from each of the five years	8	12	365
	Annual	0.5	Maximum of the annual concentration from each of the five years	3	3.5	80
CO	1-hour	426	Maximum second-high concentration from each of the five years	1,145	1,571	40,000
	8-hour	199	Maximum second-high concentration from each of the five years	1,145	1,344	10,000

Notes:

a) Maximum predicted PM_{10} and $PM_{2.5}$ concentrations represent extremely localized impacts due to fugitive emission sources. The predicted concentrations of PM_{10} and $PM_{2.5}$ are much lower than the maxima across the full modeling domain as indicated in Figure 7-4, Figure 7-5, and Figure 7-6.

Table 7-8
FLAG PSD Class I Area AQRV Compliance Screening
U.S. EcoGen Polk, LLC - Polk County, Florida
Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Summary of Worst Case Potential to Emit Regulated Air Pollutants and Federal Land Managers' Air Quality Related Values Work Group (FLAG) Class I Area Impact Screening[(a)]

Estimated Potential to Emit (PTE) Criteria Air Pollutants (lb/hr)						
Source Operation	**Reference**	**PM_{10}**	**NO_x**	**SO_2**	**H_2SO_4**	**TOTAL**
Woody Biomass Fluidized Bed Boiler	bles 2-3, 2-3A, 2-3B & 2	35	56	59	1	151
Cooling Tower	Table 2-13	0.50	--	--	--	0.50
Woody Biomass Handling and Processing	Table 2-9	0.27	--	--	--	0.27
Fly Ash Handling, Storage & Shipping	Tables 2-9 and 2-9A	0.174	--	--	--	0.174
Boiler Support Material Handling	Table 2-9A	0.17	--	--	--	0.17
Emergency Generator & Storage Tank	Table 2-11 and 2-11A	0.22	4.4	0.01	0.0005	4.7
Emergency Fire Pump & Storage Tank	Table 2-11A and 2-12	0.07	1.32	0.002	0.0002	1.4
Fugitive Sources						
In-plant Paved Roads	Table 2-6	0.9	--	--	--	0.9
In-plant Gravel Roads	Table 2-7A	0.2	--	--	--	0.2
Stationary Biomass Grinder/Chipper Emissions	Table 2-10	0.1	--	--	--	0.1
Woody Biomass Pile Processing	Table 2-7B	0.01	--	--	--	0.01
Woody Biomass Pile Wind Erosion	Table 2-8	0.082	--	--	--	0.082
PROJECT TOTAL, Q (lb/hr)		36	62	59	1	158
PROJECT TOTAL, Q (tons per year)		158	272	259	4	**694**

FLAG Screening[(a)] Results

PSD Class I Area	**Distance from Project, D (km)**	**Q/D (tpy/km)**	**Q/D Screening Value <10?**
Chassohowitzka Fish & Wildlife Refuge	120	5.8	ok, Q/D<10
Everglades National Park	210	3.3	ok, Q/D<10

Notes:
a) FLAG screening criteria considers a source locating greater than 50 km from a Class I area to have negligible impacts with respect to Class I AQRVs if its total SO_2, NO_x, PM_{10}, and H_2SO_4 annual emissions (in tons per year, based on 24-hour maximum allowable emissions), divided by the distance (in km) from the Class I area (Q/D) is 10 or less.

Appendix A

Application for Air Permit – Long Form

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

RECEIVED
APR 16 2012
DIVISION OF AIR RESOURCE MANAGEMENT

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit:

- For any required purpose at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air operation permit;
- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment new source review, or maximum achievable control technology (MACT);
- To assume a restriction on the potential emissions of one or more pollutants to escape a requirement such as PSD review, nonattainment new source review, MACT, or Title V; or
- To establish, revise, or renew a plant wide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial, revised, or renewal Title V air operation permit.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: **U.S. EcoGen Polk, LLC**	
2. Site Name: **63-MW U.S. EcoGen Polk Biomass Generating Facility, Polk County, Florida**	
3. Facility Identification Number: **To be Determined by FDEP**	
4. Facility Location... Street Address or Other Locator: **Rt. 17** City: **Fort Meade** County: **Polk** Zip Code: **33841**	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☐ Yes ☒ No

Application Contact

1. Application Contact Name: **Mr. William F. Quinn, P.E., President**
2. Application Contact Mailing Address... Organization/Firm: **U.S. EcoGen Polk, LLC** Street Address: **1000 N. U.S. HWY 1, #807** City: **Jupiter** State: **Florida** Zip Code: **33477**
3. Application Contact Telephone Numbers... Telephone: **(561) 744-7300** Fax: **(561) 744-7300**
4. Application Contact E-mail Address: **bill.quinn@usecogen.com**

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 4-16-12	3. PSD Number (if applicable):
2. Project Number(s): 1050444 - 001 - AC	4. Siting Number (if applicable):

Purpose of Application

This application for air permit is being submitted to obtain: (Check one)

Air Construction Permit

[X] Air construction permit.

[ ] Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).

[ ] Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

[ ] Initial Title V air operation permit.

[ ] Title V air operation permit revision.

[ ] Title V air operation permit renewal.

[ ] Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

[ ] Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

[ ] Air construction permit and Title V permit revision, incorporating the proposed project.

[ ] Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

[ ] I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

U.S. EcoGen Polk, LLC (U.S. EcoGen) is proposing the construction of a 63-megawatt (MW) U.S. EcoGen Polk Biomass Generating Facility (herein referred to as the "Plant") located in the city of Fort Meade, in Polk County, Florida. The Plant is being constructed in support of Florida's Renewable Energy Targets.

The Plant being proposed by U.S. EcoGen will be capable of producing a nominal 63 MW of electrical power through the use of a highly efficient bubbling fluidized bed (BFB) boiler, which is ideal for combusting woody biomass materials. The Plant will incorporate into its design proven and highly efficient control technologies and techniques for the reduction of potential emissions of air pollutants. The primary fuel for the proposed BFB boiler will be limited to clean woody biomass, with natural gas to be utilized only for boiler startup, shutdown and boiler bed stabilization.

The attached Air Construction Permit Application Document (Application Document) provides detailed information regarding the Plant. The Plant is classified as a minor stationary source of regulated air pollutants.

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
EU-001	Fuel Receiving, Handling, Storage and Processing	AC1D	$2,000
EU-002	Power Island (Bubbling Fluidized Bed Boiler and Steam Turbine / Generator)	AC1B	$5,000
EU-003	Fly Ash Handling, Storage and Shipment	AC1F	$250
EU-004	Emergency Support Equipment	AC1E	$250

Application Processing Fee

Check one: [X] Attached - Amount: $ 7,500.00 ☐ Not Applicable

Owner/Authorized Representative Statement

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

1. Owner/Authorized Representative Name :
   William F. Quinn, P.E., President
2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **U.S. EcoGen Polk, LLC**
   Street Address: **1000 N. U.S. HWY 1, #807**
   City: **Jupiter** State: **Florida** Zip Code: **33477**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(561) 744-7300** Fax: (561) 744 - 7300
4. Owner/Authorized Representative E-mail Address: **bill.quinn@usecogen.com**
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.

   William F. Quinn — Signature

   APRIL 10, 2012 — Date

Application Responsible Official Certification

Complete if applying for an initial, revised, or renewal Title V air operation permit or concurrent processing of an air construction permit and revised or renewal Title V air operation permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:
   Not Applicable to This Permit Request

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):

   ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.

   ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

   ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.

   ☐ The designated representative at an Acid Rain source or CAIR source.

3. Application Responsible Official Mailing Address...
   Organization/Firm:
   Street Address:
   City: State: Zip Code:

4. Application Responsible Official Telephone Numbers...
   Telephone: ( ) - ext. Fax: ( ) -

5. Application Responsible Official E-mail Address:

6. Application Responsible Official Certification:

   I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

   Signature Date

Professional Engineer Certification

1. Professional Engineer Name: **David Cibik**
   Registration Number: **55467**
2. Professional Engineer Mailing Address...
   Organization/Firm: **ARCADIS U.S., Inc.**
   Street Address: **14025 Riveredge Drive, Suite 600**
   City: **Tampa** State: **Florida** Zip Code: **33637**
3. Professional Engineer Telephone Numbers...
   Telephone: (**813**) **353 - 5713** Fax: (**813**) **903 - 9115**
4. Professional Engineer E-mail Address: **David.Cibik@arcadis-us.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 (seal): 4/11/12 Date

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone **17** East (km) **418.721** North (km) **3,073.665**		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) **27°47'08"** Longitude (DD/MM/SS) **81°49'29"**	
3. Governmental Facility Code: **0**	4. Facility Status Code: **C**	5. Facility Major Group SIC Code: **49**	6. Facility SIC(s): **4911**
7. Facility Comment : **The proposed nominal 63-MW U.S. EcoGen Polk Biomass Generating Facility will be located in Polk County, Florida, in the city of Fort Meade. The Plant is being constructed in support of Florida's Renewable Energy targets.**			

Facility Contact

1. Facility Contact Name: **William F. Quinn, P.E., President**
2. Facility Contact Mailing Address... Organization/Firm: **U.S. EcoGen Polk, LLC** Street Address: **1000 N. U.S. HWY 1, #807** City: **Jupiter** State: **Florida** Zip Code: **33477**
3. Facility Contact Telephone Numbers: Telephone: **(561) 744-7300** Fax: **(561) 744-7300**
4. Facility Contact E-mail Address: **bill.quinn@usecogen.com**

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name: **William F. Quinn, P.E., President**
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: **U.S. EcoGen Polk, LLC** Street Address: **1000 N. U.S. HWY 1, #807** City: **Jupiter** State: **Florida** Zip Code: **33477**
3. Facility Primary Responsible Official Telephone Numbers... Telephone: **(561) 744-7300** Fax: **(561) 744-7300**
4. Facility Primary Responsible Official E-mail Address: **bill.quinn@usecogen.com**

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☐ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☒ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☐ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☒ Synthetic Minor Source of HAPs	
8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☒ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	

12. Facility Regulatory Classifications Comment:

The 63-MW U.S. EcoGen Polk Biomass Generating Facility will have the potential to emit regulated air pollutants that are below the major source thresholds established under Title I and Title III of the Clean Air Act. The Plant will be a Major Stationary Source under the Title V provisions of the Clean Air Act. The Plant's bubbling fluidized bed (BFB) boiler will be subject to NSPS Subpart Db, while the Emergency Equipment will be subject to NSPS Subpart IIII. Since the Plant will be an area source of HAP emissions, the BFB boiler triggers the area source MACT Subpart JJJJJJ, while the Emergency Support Equipment (i.e., Emergency Generator and Fire Pump) trigger applicability of MACT Subpart ZZZZ.

Federally enforceable emission limitations on plant air pollutant emission units, along with restrictions on the hours of operation for the emergency generator and emergency fire pump allow the Plant to achieve minor source levels of all regulated air pollutants.

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
PM	A	N
PM_{10}	A	N
NO_x	A	N
SO_2	A	N
CO	A	N
HCl	SM	N

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility-Wide Cap [Y or N]? (all units)	3. Emissions Unit ID's Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap
PM/PM_{10}	**N**	**N/A**	**N/A**	**N/A**	**N/A**
NO_x	**N**	**N/A**	**N/A**	**N/A**	**N/A**
SO_2	**N**	**N/A**	**N/A**	**N/A**	**N/A**
CO	**N**	**N/A**	**N/A**	**N/A**	**N/A**
Individual HAP	**N**	**N/A**	**N/A**	**N/A**	**N/A**
Total HAP	**N**	**N/A**	**N/A**	**N/A**	**N/A**

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
[X] Attached, Document ID: See Application Document [ ] Previously Submitted, Date:__

2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
[X] Attached, Document ID: See Application Document [ ] Previously Submitted, Date:__

3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
[X] Attached, Document ID: See Application Document [ ] Previously Submitted, Date:__

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location:
[X] Attached, Document ID: See Application Document [ ] Not Applicable (existing permitted facility)

2. Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL):
[X] Attached, Document ID: See Application Document

3. Rule Applicability Analysis:
[X] Attached, Document ID: See Application Document

4. List of Exempt Emissions Units:
[X] Attached, Document ID: See Application Document [ ] Not Applicable (no exempt units at facility)

5. Fugitive Emissions Identification:
[X] Attached, Document ID: See Application Document [ ] Not Applicable

6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.):
[ ] Attached, Document ID:_____ [X] Not Applicable

7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.):
[ ] Attached, Document ID:_____ [X] Not Applicable

8. Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.):
[ ] Attached, Document ID:_____ [X] Not Applicable

9. Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.):
[ ] Attached, Document ID:_____ [X] Not Applicable

10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.):
[ ] Attached, Document ID:_____ [X] Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units:
   ☐ Attached, Document ID:_____ ☒ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications – NOT APPLICABLE

1. List of Insignificant Activities: (Required for initial/renewal applications only)
   ☐ Attached, Document ID:_____ ☐ Not Applicable (revision application)

2. Identification of Applicable Requirements: (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought)
   ☐ Attached, Document ID:_____
   ☐ Not Applicable (revision application with no change in applicable requirements)

3. Compliance Report and Plan: (Required for all initial/revision/renewal applications)
   ☐ Attached, Document ID:_____
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.

4. List of Equipment/Activities Regulated under Title VI: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____
   ☐ Equipment/Activities Onsite but Not Required to be Individually Listed
   ☐ Not Applicable

5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____ ☐ Not Applicable

6. Requested Changes to Current Title V Air Operation Permit:
   ☐ Attached, Document ID:_____ ☐ Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Facilities Subject to Acid Rain, CAIR, or Hg Budget Program

1. Acid Rain Program Forms:

   Acid Rain Part Application (DEP Form No. 62-210.900(1)(a)):

   ☐ Attached, Document ID: **To be Filed under Separate Cover**
   ☐ Previously Submitted, Date:_____
   ☐ Not Applicable (not an Acid Rain source)

   Phase II NO_X Averaging Plan (DEP Form No. 62-210.900(1)(a)1.):

   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable

   New Unit Exemption (DEP Form No. 62-210.900(1)(a)2.):

   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable

2. CAIR Part (DEP Form No. 62-210.900(1)(b)):

   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable (not a CAIR source)

Additional Requirements Comment

The proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility will be subject to the Acid Rain Regulations and CAIR Regulations (replaced by EPA with the Cross-State Air Pollution Rule – CSAPR). The Plant is not subject to the Mercury Budget requirements. Acid Rain and Cross-State Air Pollution Rule (CSAPR) regulations contain specific requirements which will be met by U.S. EcoGen. However, these requirements are not required to be met as part of the air construction permitting process. U.S. EcoGen will work with the FDEP to determine the specific requirements of the CSAPR and their applicability to the Plant's BFB boiler.

Application for Air Permit – Long Form

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Emission Unit EU-001
Fuel Receiving, Handling, Storage and Processing

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION
Section [1]

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☒ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Fuel Receiving, Handling, Storage and Processing

3. Emissions Unit Identification Number: **EU-001**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
C	**Summer/Fall 2012**	**2014**	**49**

8. Federal Program Applicability: (Check all that apply)
Does not apply to this emission unit.

☐ Acid Rain Unit

☐ CAIR Unit

9. Package Unit: **To be established during final engineering.**
Manufacturer: **To be established during final engineering.**
Model Number: **To be established during final engineering.**

10. Generator Nameplate Rating: MW **Not applicable.**

11. Emissions Unit Comment:

This emission unit includes fuel receiving, handling, storage and processing operations. Refer to Section 2 of the Application Document, which describes this emission unit, including individual pieces of equipment and those pieces of equipment with the potential to emit regulated air pollutants. The fuel handled will be biomass in the form of "clean wood."

EMISSIONS UNIT INFORMATION
Section [1]

Emissions Unit Control Equipment/Method: Control 1 of 2

1. Control Equipment/Method Description: **Best Management Practices for Material Handling and Biomass Storage Areas**
2. Control Device or Method Code: **099**

Emissions Unit Control Equipment/Method: Control 2 of 2

1. Control Equipment/Method Description: **Covered Conveyors & Drop Points (Excludes Drop Point to Woody Biomass Storage Areas and portions that will be open for material inspection/removal)**
2. Control Device or Method Code: **054**

Emissions Unit Control Equipment/Method: Control ___ of ___

1. Control Equipment/Method Description:
2. Control Device or Method Code:

Emissions Unit Control Equipment/Method: Control ___ of ___

1. Control Equipment/Method Description:
2. Control Device or Method Code:

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **310 tons per hour**	
2. Maximum Production Rate: **Not Applicable**	
3. Maximum Heat Input Rate: million Btu/hr **Not Applicable**	
4. Maximum Incineration Rate: pounds/hr **Not Applicable** tons/day **Not Applicable**	
5. Requested Maximum Operating Schedule:	
24 hours/day	**7** days/week
52 weeks/year	**8,760** hours/year

6. Operating Capacity/Schedule Comment:

Equipment is designed to operate continuously. However, physical limitations of the Biomass Boiler and demand for electrical power will define the required operating parameters for this Emission Unit.

EMISSIONS UNIT INFORMATION
Section [1]

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Fuel Handling Areas**	2. Emission Point Type Code: **4**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **This unit is composed of fugitive sources and is not associated with any specific emission point.**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **Not Applicable (N/A)**		
5. Discharge Type Code: **F**	6. Stack Height: Feet **N/A**	7. Exit Diameter: feet **N/A**
8. Exit Temperature: °F **N/A**	9. Actual Volumetric Flow Rate: acfm **N/A**	10. Water Vapor: % **N/A**
11. Maximum Dry Standard Flow Rate: dscfm **N/A**	12. Nonstack Emission Point Height: feet **N/A**	
13. Emission Point UTM Coordinates... Zone: **See Application Document** East (km): North (km):	14. Emission Point Latitude/Longitude... **See Application Document** Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **Emission unit is composed of sources from the receiving, handling, storage, and processing of woody biomass fuel. Sources include (a) drop points from unloading of wood from trucks, (b) drop points associated with conveyor system transfer points, (c) fugitive dust from equipment operating on outdoor wood pile and wind erosion of outdoor wood pile, (d) portable wood chipper and (e) fugitive dust from vehicle traffic on paved and unpaved roads.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 17

1. Segment Description (Process/Fuel Type): **Truck Fuel Receiving Dumpers**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **160**	5. Maximum Annual Rate: **1,401,600**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions from unloading of woody biomass fuel from trucks into one of the unloading pits.**		

Segment Description and Rate: Segment 2 of 17

1. Segment Description (Process/Fuel Type): **Opportunity Fuel Stackout Conveyor to Opportunity Fuel Pile**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **310**	5. Maximum Annual Rate: **2,715,600**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions from unloading of woody biomass fuel from stackout conveyor onto Opportunity Fuel Pile.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment **3** of **17**

1. Segment Description (Process/Fuel Type): **Opportunity Fuel Reclaimer**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **150**	5. Maximum Annual Rate: **1,314,000**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to the transfer of woody biomass fuel from the Opportunity Fuel Pile to the Opportunity Fuel Reclaimer.**		

Segment Description and Rate: Segment **4** of **17**

1. Segment Description (Process/Fuel Type): **Fuel Prep Conveyor From Chipper & Truck Hopper**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **310**	5. Maximum Annual Rate: **2,715,600**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to the transfer of woody biomass fuel from the chipper and truck hopper to the Fuel Prep Conveyor.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment **5** of **17**

1. Segment Description (Process/Fuel Type): **Magnetic Separator**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **310**	5. Maximum Annual Rate: **2,715,600**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to the transfer of woody biomass fuel through the magnetic separator.**		

Segment Description and Rate: Segment **6** of **17**

1. Segment Description (Process/Fuel Type): **Fuel Prep Tower In – Bypass Diverter Gate**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **310**	5. Maximum Annual Rate: **2,715,600**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to transfer of woody biomass fuel from the Fuel Prep Conveyor to the Fuel Prep Tower via the Bypass Diverter Gate.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment **7** of **17**

1. Segment Description (Process/Fuel Type): **Fuel Prep Tower – Screens**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **310**	5. Maximum Annual Rate: **2,715,600**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to transfer of woody biomass fuel during the fuel screening process.**		

Segment Description and Rate: Segment **8** of **17**

1. Segment Description (Process/Fuel Type): **Fuel Prep Tower – Stackout Conveyor**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **310**	5. Maximum Annual Rate: **2,715,600**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to transfer of biomass fuel from the Fuel Prep Tower to the Fuel Stackout Conveyor.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment **9** of **17**

1. Segment Description (Process/Fuel Type): **Fuel Storage Drop Point**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **310**	5. Maximum Annual Rate: **2,715,600**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to transfer of biomass fuel from the Fuel Stackout Conveyor to the Fuel Storage area.**		

Segment Description and Rate: Segment **10** of **17**

1. Segment Description (Process/Fuel Type): **Fuel Reclaimer 1**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **90**	5. Maximum Annual Rate: **788,400**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to transfer of biomass fuel from the Fuel Storage area to Boiler Feed Conveyor 1.**		

EMISSIONS UNIT INFORMATION
Section [1]

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment **11** of **17**

1. Segment Description (Process/Fuel Type): **Fuel Reclaimer 2**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **90**	5. Maximum Annual Rate: **788,400**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to transfer of biomass fuel from the Fuel Storage area to Boiler Feed Conveyor 2.**		

Segment Description and Rate: Segment **12** of **17**

1. Segment Description (Process/Fuel Type): **Boiler Feed Conveyor 1**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **90**	5. Maximum Annual Rate: **788,400**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to transfer of biomass fuel from Boiler Feed Conveyor 1 to Distributing Conveyor 1.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment **13** of **17**

1. Segment Description (Process/Fuel Type): **Boiler Feed Conveyor 2**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **90**	5. Maximum Annual Rate: **788,400**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to transfer of biomass fuel from Boiler Feed Conveyor 2 to Distributing Conveyor 2.**		

Segment Description and Rate: Segment **14** of **17**

1. Segment Description (Process/Fuel Type): **Distributing Conveyor 1**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **90**	5. Maximum Annual Rate: **788,400**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to transfer to biomass fuel from Distributing Conveyor 1 to Boiler Metering Bin 1.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment **15** of **17**

1. Segment Description (Process/Fuel Type): **Distributing Conveyor 2**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **90**	5. Maximum Annual Rate: **788,400**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to transfer of biomass fuel from Distributing Conveyor 2 to Boiler Metering Bin 2.**		

Segment Description and Rate: Segment **16** of **17**

1. Segment Description (Process/Fuel Type): **Truck Traffic on Paved Roads Vehicle Miles Traveled (VMT)**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **Each (VMT)**	
4. Maximum Hourly Rate: **N/A**	5. Maximum Annual Rate: **63,158**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to truck traffic on the in-plant paved roads. The vast majority of the truck traffic is due to delivery of woody biomass fuel. However, small amounts of traffic due to other material receiving and ash shipment are included.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment **17** of **17**

1. Segment Description (Process/Fuel Type): **Log Wood Chipper to Fuel Pile/Conveyor**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **200**	5. Maximum Annual Rate: **96,000**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions due to transfer of biomass fuel from the log wood chipper to fuel storage pile/conveyor. Point source emissions from combustion of ULSD in the diesel engine.**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	**054**	**099**	**NS**
PM10	**054**	**099**	**NS**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **Particulate Matter Total - PM**	2. Total Percent Efficiency of Control: **0%**
3. Potential Emissions: **37.4 tons per year (tpy)**	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **Varies. See Tables 2-6, 2-7, 2-8, 2-9 & 2-10 of Application Document for detailed calculations.** Reference: **AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: From: **N/A** To: **N/A**
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **N/A** ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **The majority of the estimated potential emissions (21.7 tpy of the total 37.4 tpy) are from paved road traffic, which is classified as a fugitive emission source. The remaining will occur from wind erosion, unpaved road traffic, pile processing (i.e. moving material with a bulldozer) and biomass chipper which are also fugitive sources. The estimated potential emissions from these sources are 13.96 tpy. The remaining 1.71 tpy is from handling and processing of woody biomass.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **Particulate Matter - PM10**	2. Total Percent Efficiency of Control: **0%**
3. Potential Emissions: **6.9 tons per year (tpy)**	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **Varies. See Tables 2-6, 2-7, 2-8, 2-9 & 2-10 of Application Document for detailed calculations.** Reference: **AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: From: **N/A** To: **N/A**
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **N/A** ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Application Document.**	

11. Potential, Fugitive, and Actual Emissions Comment:

Potential emissions of 6.9 tpy can be categorized as follows: 0.81 tpy for handling and processing, 4.2 tpy from in-plant paved roads, 1.1 from in-plant gravel roads, 0.05 tpy from pile processing, 0.4 tpy from pile wind erosion and 0.44 tpy from the stationary biomass chipper.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **Particulate Matter - PM2.5**	2. Total Percent Efficiency of Control: **0%**
3. Potential Emissions: **1.1 tons per year (tpy)**	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **Varies. See Tables 2-6, 2-7, 2-8, 2-9 & 2-10 of Application Document for detailed calculations.** Reference: **AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: From: **N/A** To: **N/A**
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **N/A** ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **Potential emissions of 1.1 tpy can be categorized as follows: 0.12 tpy for handling and processing, 0.6 tpy from in-plant paved roads, 0.1 from in-plant gravel roads, 0.01 tpy from pile processing, 0.1 tpy from pile wind erosion and 0.22 tpy from the stationary biomass chipper.**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **Not Applicable**	2. Future Effective Date of Allowable Emissions: **Not Applicable**
3. Allowable Emissions and Units: **Not Applicable**	4. Equivalent Allowable Emissions: **N/A** lb/hour **N/A** tons/year
5. Method of Compliance: **Refer to Sections 4 and 6 of this air permit application.**	
6. Allowable Emissions Comment (Description of Operating Method): **See Application Document. The only emission limit or standard that applies to this emission source is opacity.**	

Allowable Emissions Allowable Emissions __ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION
Section [1]

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation **1** of **1**

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: **20 % from the outlets of the drop points, transfer points, vent screens and dust collectors associated with this emission unit**	
4. Method of Compliance: **See Table 4-1 of the Application Document.**	
5. Visible Emissions Comment: **See Application Document. Allowable emissions based on F.A.C. Chapter 62-296.320(4)(b) General Visible Emission Standards - 20%; (c) Unconfined Emissions of Particulate Matter. Excess emissions due to startup, shutdown, or malfunction are permitted per the conditions of F.A.C. Chapter 62-210.700. U.S. EcoGen has designed the equipment to minimize fugitive particulate matter.**	

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

EMISSIONS UNIT INFORMATION
Section [1]

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **1** of **1**

1. Parameter Code: **Not Applicable**	2. Pollutant(s): **Not Applicable**
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Best Management Practices will be utilized.**	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

EMISSIONS UNIT INFORMATION
Section [1]

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Application Document** [ ] Previously Submitted, Date __

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Application Document** [ ] Previously Submitted, Date __

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Application Document** [ ] Previously Submitted, Date __

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable (construction application)

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable

6. Compliance Demonstration Reports/Records:

☐ Attached, Document ID: _____

Test Date(s)/Pollutant(s) Tested: _____

_____

☐ Previously Submitted, Date: _____

Test Date(s)/Pollutant(s) Tested: _____

_____

☐ To be Submitted, Date (if known): _____

Test Date(s)/Pollutant(s) Tested: _____

_____

☒ Not Applicable

Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:

☐ Attached, Document ID: _____ ☒ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): ☐ Attached, Document ID: _____ ☒ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications – Not Applicable

1. Identification of Applicable Requirements: ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring: ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☐ Not Applicable

Additional Requirements Comment

See Application Document.

Application for Air Permit – Long Form

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Emission Unit EU-002
Power Island (Fluidized Bed Boiler and Steam Turbine / Generator)

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION
Section [2]

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Power Island (Bubbling Fluidized Bed Boiler and Steam Turbine / Generator)

3. Emissions Unit Identification Number: **EU-002**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
C	**Summer/Fall 2012**	**2014**	**49**

8. Federal Program Applicability: (Check all that apply)

[X] Acid Rain Unit

[X] CAIR Unit

9. Package Unit: **To be established during final engineering.**
Manufacturer: **To be established during final engineering.**
Model Number: **To be established during final engineering.**

10. Generator Nameplate Rating: MW **Nominal 63-MW**

11. Emissions Unit Comment:

The bubbling fluidized bed (BFB) boiler capacity will be equipped with a burner rated at 160 MMBtu/hr for natural gas for startup, shutdown, and bed stabilization and approximately 740 MMBtu/hr (24-hour average) for maximum operation on woody biomass fuel. The anticipated maximum design heat input of the boiler while combusting woody biomass at 50% moisture will be 740 MMBtu/hr. U.S. EcoGen is requesting that the maximum heat input be established at 740 MMBtu/hr (annual average) for the BFB boiler. This rate is reflected in the draft permit conditions provided in Section 6 of this application.

EMISSIONS UNIT INFORMATION
Section [2]

Emissions Unit Control Equipment/Method: Control 1 of 4

1. Control Equipment/Method Description: **Spray Dryer Absorber (SDA) or Multilevel / Multipoint Dry Sorbent Injection (DSI) with Multicyclone System**
2. Control Device or Method Code: **202 or 206**

Emissions Unit Control Equipment/Method: Control 2 of 4

1. Control Equipment/Method Description: **Fabric Filter (Baghouse)**
2. Control Device or Method Code: **127**

Emissions Unit Control Equipment/Method: Control 3 of 4

1. Control Equipment/Method Description: **Selective Catalytic Reduction (SCR) for Bubbling Fluidized Bed Boiler**
2. Control Device or Method Code: **139 (SCR)**

Emissions Unit Control Equipment/Method: Control 4 of 4

1. Control Equipment/Method Description: **Good Combustion Practice**
2. Control Device or Method Code: **148**

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **Not Applicable**	
2. Maximum Production Rate: **Not Applicable**	
3. Maximum Heat Input Rate: **740** million Btu/hr **(approximate) (annual average)**	
4. Maximum Incineration Rate: pounds/hr **Not Applicable** tons/day **Not Applicable**	
5. Requested Maximum Operating Schedule:	
24 hours/day	**7** days/week
52 weeks/year	**8,760** hours/year

6. Operating Capacity/Schedule Comment:

a) Natural gas combustion to be used for startup, shutdown and bed stabilization only at a rated heat input of 160 MMBtu/hr.
b) Woody biomass combustion to be used for normal operation at maximum heat input rate of approximately 740 MMBtu/hr. U.S. EcoGen is requesting that the maximum heat input be established at 740 MMBtu/hr (annual average) for the BFB boiler. This rate is reflected in the draft permit conditions provided in Section 6 of this application.

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **Exhausts through the Boiler Exhaust Stack.**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **Not shared with any other emission unit.**		
5. Discharge Type Code: **V**	6. Stack Height: **180** feet	7. Exit Diameter: **11.0** feet
8. Exit Temperature: **295** °F	9. Actual Volumetric Flow Rate: **TBD**	10. Water Vapor: **TBD** %
11. Maximum Dry Standard Flow Rate: dscfm **To Be Determined**	12. Nonstack Emission Point Height: feet **Not Applicable**	
13. Emission Point UTM Coordinates... Zone: **See Application Document** East (km): North (km):	14. Emission Point Latitude/Longitude... **See Application Document** Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **The boiler will be a bubbling fluidized bed (BFB) boiler. The selection of the specific boiler design will define the specific stack information. The information provided is deemed representative of the type of boiler to be selected.**		

EMISSIONS UNIT INFORMATION
Section [2]

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **1** of **2**

1. Segment Description (Process/Fuel Type): **Natural Gas for Startup, Shutdown and Boiler Bed Stabilization**		
2. Source Classification Code (SCC): **10100601**	3. SCC Units: **million cubic feet burned**	
4. Maximum Hourly Rate: **0.160**	5. Maximum Annual Rate: **1,401.6**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **1,000**
10. Segment Comment: **Natural gas burner will be rated at 160 MMBtu/hr using natural gas as a boiler startup, shutdown and bed stabilization fuel.**		

Segment Description and Rate: Segment **2** of **2**

1. Segment Description (Process/Fuel Type): **Woody Biomass Normal Operation**		
2. Source Classification Code (SCC): **10100912**	3. SCC Units: **tons burned**	
4. Maximum Hourly Rate: **107**	5. Maximum Annual Rate: **770,000**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **0.08% by weight**	8. Maximum % Ash: **2% by weight**	9. Million Btu per SCC Unit: **8.5**
10. Segment Comment: **Woody biomass boiler capacity will be approximately 740 MMBtu/hr (annual average) for normal operating conditions. Design woody biomass higher heating value is approximately 4,238 Btu/lb wet at 51% moisture. This heating value can fluctuate depending on fuel storage.**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM_f (Filterable)	**127**		**EL**
PM (Total)	**127**		**EL**
PM_{10}	**127**		**EL**
NO_2	**139 (SCR)**		**EL**
SO_2	**206**		**EL**
CO	**148**		**EL**
HCl	**206**		**EL**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **Particulate Matter Total - PM**	2. Total Percent Efficiency of Control: **> 99%**
3. Potential Emissions: **See Application Document**	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **See Application Document.** Reference:	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: From: **N/A** To: **N/A**
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **N/A** ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Section 2 of Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **See Application Document.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **Particulate Matter - PM10**	2. Total Percent Efficiency of Control: **> 99%**
3. Potential Emissions: **See Application Document**	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **See Application Document** Reference:	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: From: **N/A** To: **N/A**
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **N/A** ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Section 2 of Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **See Application Document.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **NO_x**	2. Total Percent Efficiency of Control: **> 70%**
3. Potential Emissions: **See Application Document**	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **See Application Document** Reference:	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: From: **N/A** To: **N/A**
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **N/A** ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Section 2 of Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **See Application Document.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **SO_2**	2. Total Percent Efficiency of Control: **Uncontrolled. Limited by selection of fuel with appropriately low sulfur content.**
3. Potential Emissions: **See Application Document**	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **See Application Document** Reference:	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: From: **N/A** To: **N/A**
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **N/A** ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Section 2 of Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **See Application Document.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control: **Unspecified. Controlled by good combustion practices.**
3. Potential Emissions: **See Application Document**	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **See Application Document** Reference:	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: From: **N/A** To: **N/A**
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **N/A** ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Section 2 of Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **See Application Document. The proposed bubbling fluidized bed (BFB) boiler design provides highly efficient and complete combustion which minimizes CO emissions.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **Hydrochloric Acid (HCl)**	2. Total Percent Efficiency of Control: **Unspecified. In-duct Sorbent Injection.**
3. Potential Emissions: **See Application Document**	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **See Application Document** Reference:	7. Emissions Method Code: **5**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: From: **N/A** To: **N/A**
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **N/A** ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Section 2 of Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **See Application Document. The proposed bubbling fluidized bed (BFB) boiler design provides highly efficient and complete combustion. HCl emissions are dependent on chlorine content of fuel. Inclusion of a spray dryer absorber (SDA) or multilevel dry sorbent injection (DSI) and multicyclone system and the baghouse will be utilized as needed to control HCl emissions to minor source levels (i.e., < 10 tons/year).**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 7

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions: **Not Applicable**
3. Allowable Emissions and Units: **246 tons/year NO_x (12-month average, rolled monthly)**	4. Equivalent Allowable Emissions: **246** tons/year
5. Method of Compliance: **See Application Document.**	
6. Allowable Emissions Comment (Description of Operating Method): **See Application Document. Refer to Sections 4 for proposed emission limits and supporting methods of demonstrating compliance.**	

Allowable Emissions Allowable Emissions 2 of 7

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions: **Not Applicable**
3. Allowable Emissions and Units: **246 tons/year CO (12-month average, rolled monthly)**	4. Equivalent Allowable Emissions: **246** tons/year
5. Method of Compliance: **See Application Document.**	
6. Allowable Emissions Comment (Description of Operating Method): **See Application Document. Refer to Sections 4 for proposed emission limits and supporting methods of demonstrating compliance.**	

Allowable Emissions Allowable Emissions 3 of 7

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions: **Not Applicable**
3. Allowable Emissions and Units: **227 tons/year SO_2 (12-month average, rolled monthly)**	4. Equivalent Allowable Emissions: **227** tons/year
5. Method of Compliance: **See Application Document.**	
6. Allowable Emissions Comment (Description of Operating Method): **See Application Document. Refer to Sections 4 for proposed emission limits and supporting methods of demonstrating compliance.**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 4 of 7

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions: **Not Applicable**
3. Allowable Emissions and Units: **152 tons/year PM/PM_{10} (Filterable and Condensable)**	4. Equivalent Allowable Emissions: **35** lb/hour **152** tons/year
5. Method of Compliance: **See Application Document.**	
6. Allowable Emissions Comment (Description of Operating Method): **See Application Document. Refer to Sections 4 for proposed emission limits and supporting methods of demonstrating compliance.**	

Allowable Emissions Allowable Emissions 5 of 7

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **Not Applicable**
3. Allowable Emissions and Units: **0.03 lb/MMBtu PM/PM_{10} (Filterable)**	4. Equivalent Allowable Emissions: **N/A** tons/year
5. Method of Compliance: **See Application Document.**	
6. Allowable Emissions Comment (Description of Operating Method): **See Application Document. Refer to Section 4 for proposed emission limits and supporting methods of demonstrating compliance.**	

Allowable Emissions Allowable Emissions 6 of 7

1. Basis for Allowable Emissions Code: **ESCMACT**	2. Future Effective Date of Allowable Emissions: **Not Applicable**
3. Allowable Emissions and Units: **9.9 tons/year HCl (12-month average, rolled monthly)**	4. Equivalent Allowable Emissions: **9.9** tons/year
5. Method of Compliance: **See Application Document.**	
6. Allowable Emissions Comment (Description of Operating Method): **See Application Document. Annual emission limit of 9.9 tons/year of HCl is requested for the proposed BFB boiler.**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 7 of 7

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **Not Applicable**
3. Allowable Emissions and Units: **0.1 or 0.2 lb/MMBtu NO_x (30-day rolling average)**	4. Equivalent Allowable Emissions: **N/A** tons/year
5. Method of Compliance: **See Application Document.**	
6. Allowable Emissions Comment (Description of Operating Method): **See Application Document. 0.1 lb/MMBtu (low heat release rate) or 0.2 lb/MMBtu (high heat release rate) NO_x is based on NSPS Subpart Db, 30-day rolling average.**	

EMISSIONS UNIT INFORMATION
Section [2]

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation **1** of **1**

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: **27** % Maximum Period of Excess Opacity Allowed: **6** min/hour	
4. Method of Compliance: **Continuous Opacity Monitor (COM)**	
5. Visible Emissions Comment: **See Application Document. Excess emissions due to startup, shutdown, or malfunction are permitted per the conditions of F.A.C. Chapter 62-210.700 and NSPS.**	

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **1** of **5**

1. Parameter Code: **VE**	2. Pollutant(s): **Opacity**
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information... Manufacturer: **To be established during final engineering.** Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date: **To be determined.**
7. Continuous Monitor Comment: **See Application Document.**	

Continuous Monitoring System: Continuous Monitor **2** of **5**

1. Parameter Code: **EM**	2. Pollutant(s): **NO_x**
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information... Manufacturer: **To be established during final engineering.** Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date: **To be determined.**
7. Continuous Monitor Comment: **CEM required pursuant to the Acid Rain Program (ARP).**	

EMISSIONS UNIT INFORMATION
Section [2]

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **3** of **5**

1. Parameter Code: **EM**	2. Pollutant(s): **CO**
3. CMS Requirement:	☐ Rule ☒ Other
4. Monitor Information... Manufacturer: **To be established during final engineering.** Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date: **To be determined.**
7. Continuous Monitor Comment: **See Application Document.**	

Continuous Monitoring System: Continuous Monitor **4** of **5**

3. Parameter Code: **EM**	4. Pollutant(s): **SO_2**
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: **To be established during final engineering.** Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date: **To be determined.**
7. Continuous Monitor Comment: **CEM required pursuant to the Acid Rain Program (ARP).**	

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **5** of **5**

1. Parameter Code: **EM**	2. Pollutant(s): **HCl**
3. CMS Requirement: **To Be Determined**	☐ Rule ☒ Other
4. Monitor Information... Manufacturer: **To be established during final engineering.** Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date: **To be determined.**
7. Continuous Monitor Comment: **CEM required to demonstrate minor source status under Title III of the Clean Air Act.**	

EMISSIONS UNIT INFORMATION
Section [2]

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Application Document**
   [ ] Previously Submitted, Date _____

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Application Document**
   [ ] Previously Submitted, Date _____

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Application Document**
   [ ] Previously Submitted, Date _____

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable (construction application)

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable

6. Compliance Demonstration Reports/Records:

☐ Attached, Document ID: _____

Test Date(s)/Pollutant(s) Tested: _____

_____

☐ Previously Submitted, Date: _____

Test Date(s)/Pollutant(s) Tested: _____

_____

☐ To be Submitted, Date (if known):_____

Test Date(s)/Pollutant(s) Tested: _____

_____

☒ Not Applicable

Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:

☐ Attached, Document ID: _____ ☒ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): ☐ Attached, Document ID: _____ [X] Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): ☐ Attached, Document ID: **See Application Document** [X] Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ [X] Not Applicable

Additional Requirements for Title V Air Operation Permit Applications – Not Applicable

1. Identification of Applicable Requirements: ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring: ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☐ Not Applicable

Additional Requirements Comment

See Application Document.

Application for Air Permit – Long Form

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Emission Unit EU-003
Fly Ash Handling, Storage and Shipment

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION
Section [3]

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Fly Ash Storage, Handling and Shipment

3. Emissions Unit Identification Number: **EU-003**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
C	**Summer/Fall 2012**	**2014**	**49**

8. Federal Program Applicability: (Check all that apply) **Not Applicable**

☐ Acid Rain Unit

☐ CAIR Unit

9. Package Unit: **To be established during final engineering.**
Manufacturer: **To be established during final engineering.**
Model Number: **To be established during final engineering.**

10. Generator Nameplate Rating: MW **Not Applicable**

11. Emissions Unit Comment:
This emission unit includes ash (fly ash and bottom ash) storage, and shipment operations. Refer to Section 2 of the Application Document which describes this emission unit, including individual pieces of equipment and those pieces of equipment with the potential to emit regulated air pollutants.

EMISSIONS UNIT INFORMATION
Section [3]

Emissions Unit Control Equipment/Method: Control 1 of 3

1. Control Equipment/Method Description: **Best Management Practices**
2. Control Device or Method Code: **099**

Emissions Unit Control Equipment/Method: Control 2 of 3

1. Control Equipment/Method Description: **Enclosed Conveyor System**
2. Control Device or Method Code: **054**

Emissions Unit Control Equipment/Method: Control 3 of 3

1. Control Equipment/Method Description: **Baghouse on Fly Ash Storage Silo**
2. Control Device or Method Code: **018**

Emissions Unit Control Equipment/Method: Control ___ of ___

1. Control Equipment/Method Description:
2. Control Device or Method Code:

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **15,330 tons/year**	
2. Maximum Production Rate: **Not Applicable**	
3. Maximum Heat Input Rate: million Btu/hr **Not Applicable**	
4. Maximum Incineration Rate: pounds/hr **Not Applicable** tons/day **Not Applicable**	
5. Requested Maximum Operating Schedule:	
24 hours/day	**7** days/week
52 weeks/year	**8,760** hours/year

6. Operating Capacity/Schedule Comment:

Equipment is designed to operate continuously. However, physical limitations of the BFB Boiler and demand for electrical power will define the required operating parameters for this Emission Unit.

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Ash Handling Area**	2. Emission Point Type Code: **4**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **A majority of this unit is composed of fugitive sources and is not associated with any specific emission point. A vent filter will be installed on the fly ash silo, which is a point source.**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **Not Applicable (N/A)**		
5. Discharge Type Code: **F**	6. Stack Height: Feet **N/A**	7. Exit Diameter: feet **N/A**
8. Exit Temperature: °F **N/A**	9. Actual Volumetric Flow Rate: acfm **N/A**	10. Water Vapor: % **N/A**
11. Maximum Dry Standard Flow Rate: dscfm **N/A**	12. Nonstack Emission Point Height: feet **N/A**	
13. Emission Point UTM Coordinates... Zone: **See Application Document** East (km): North (km):	14. Emission Point Latitude/Longitude... **See Application Document** Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **Emission unit is composed of fugitive sources from the storage and shipment of fly ash. The fly ash silo will be equipped with a vent filter, which is considered a point source. The estimated truck traffic for ash shipment is much less than that for wood receiving and has been included in the truck traffic emissions for Emission Unit EU-001 – Fuel Receiving, Handling, Storage, and Processing.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **1** of **4**

1. Segment Description (Process/Fuel Type): **Bottom Ash Handling & Shipment (Bed Hoppers; Bed Hopper Ash Collection Conveyor; and Bed Hopper Ash Transfer Conveyor Drop to Bucket Elevator)**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **1.0 tons/hour**	5. Maximum Annual Rate: **8,760 tons/year**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions from drop points: (1) from bed hoppers, (2) from bed hopper ash collection conveyor, and (3) from bed hopper ash transfer conveyor drop to bucket elevator.**		

Segment Description and Rate: Segment **2** of **4**

1. Segment Description (Process/Fuel Type): **Fly Ash Handling (Baghouse Hoppers; Convection Pass Hoppers (Gen Bank and Economizer); Collecting Conveyors; and Fly Ash Transfer Conveyors)**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **0.75 tons/hour (Max.)**	5. Maximum Annual Rate: **6,570 tons/year**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Covered system. Fugitive PM/PM_{10} emissions would be negligible.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment **3** of **4**

1. Segment Description (Process/Fuel Type): **Fly Ash Storage (Fly Ash Transfer Conveyor)**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **0.75 tons/hour (Max.)**	5. Maximum Annual Rate: **6,570 tons/year**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions from drop point from ash transfer conveyor to ash silo.**		

Segment Description and Rate: Segment **4** of **4**

1. Segment Description (Process/Fuel Type): **Ash Shipment (Fly Ash Silo to Ash Conditioner Drop Point)**		
2. Source Classification Code (SCC): **39999999**	3. SCC Units: **tons transferred or handled**	
4. Maximum Hourly Rate: **5.5 tons/hour**	5. Maximum Annual Rate: **48,180 tons/year**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Fugitive PM/PM_{10} emissions from drop point from the ash conditioner chutes to covered trucks.**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	054	099	NS
PM10	054	099	NS

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **Particulate Matter Total - PM**	2. Total Percent Efficiency of Control: **0%**
3. Potential Emissions: **0.006** lb/hour **0.03** tons/year	4. Synthetically Limited? ☐ Yes [X] No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **Varies. See Table 2-9 of Application Document for detailed calculations.** Reference: **AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: From: **N/A** To: **N/A**
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **N/A** ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **See Application Document. Potential emissions reflect both bottom and fly ash emission sources.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **Particulate Matter - PM10**	2. Total Percent Efficiency of Control: **0%**
3. Potential Emissions: **0.003** lb/hour **0.01** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **Varies. See Table 2-9 of Application Document for detailed calculations.** Reference: **AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: From: **N/A** To: **N/A**
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **N/A** ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **See Application Document. Potential emissions reflect both bottom and fly ash emission sources.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **Particulate Matter - PM2.5**	2. Total Percent Efficiency of Control: **0%**
3. Potential Emissions: **0.0004** lb/hour **0.002** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **Varies. See Table 2-9 of Application Document for detailed calculations.** Reference: **AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: From: **N/A** To: **N/A**
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **N/A** ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **See Application Document. Potential emissions reflect both bottom and fly ash emission sources.**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **Not Applicable**	2. Future Effective Date of Allowable Emissions: **Not Applicable**
3. Allowable Emissions and Units: **Not Applicable**	4. Equivalent Allowable Emissions: **N/A** lb/hour **N/A** tons/year
5. Method of Compliance: **Not Applicable.**	
6. Allowable Emissions Comment (Description of Operating Method): **No emission standards or limits apply to the ash handling system, except for opacity.**	

Allowable Emissions Allowable Emissions __ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation **1** of **1**

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: **20 % from the bottom and fly ash conveyors, transfer points, drop points, hoppers, chutes, dust collectors and fly ash silo baghouse**	
4. Method of Compliance: **See Table 4-1 of the Application Document.**	
5. Visible Emissions Comment: **See Application Document. Allowable emissions based on F.A.C. Chapter 62-296.320(4)(b) – General Visible Emission Standards - 20%; (c) Unconfined Emissions of Particulate Matter. Excess emissions due to startup, shutdown, or malfunction are permitted per the conditions of F.A.C. Chapter 62-210.700. U.S. EcoGen has designed the equipment to minimize fugitive particulate matter.**	

Visible Emissions Limitation: Visible Emissions Limitation __ of ___

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor _ of __

1. Parameter Code: **Not Applicable**	2. Pollutant(s): **Not Applicable**
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Not Applicable**	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

EMISSIONS UNIT INFORMATION
Section [3]

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Application Document** [ ] Previously Submitted, Date __

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Application Document** [ ] Previously Submitted, Date __

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Application Document** [ ] Previously Submitted, Date __

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable (construction application)

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable

6. Compliance Demonstration Reports/Records:

☐ Attached, Document ID: _____

Test Date(s)/Pollutant(s) Tested: _____

_____

☐ Previously Submitted, Date: _____

Test Date(s)/Pollutant(s) Tested: _____

_____

☐ To be Submitted, Date (if known):_____

Test Date(s)/Pollutant(s) Tested: _____

_____

☒ Not Applicable

Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:

☐ Attached, Document ID: _____ ☒ Not Applicable

EMISSIONS UNIT INFORMATION
Section [3]

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): ☐ Attached, Document ID: _____ [X] Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): ☐ Attached, Document ID: _____ [X] Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ [X] Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: **Not Applicable** ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring: ☐ Attached, Document ID: _____ [X] Not Applicable
3. Alternative Methods of Operation: ☐ Attached, Document ID: _____ [X] Not Applicable
4. Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ [X] Not Applicable

Additional Requirements Comment

See Application Document.

Application for Air Permit – Long Form

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Emission Unit EU-004
Emergency Support Equipment

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION
Section [4]

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Emergency Support Equipment

3. Emissions Unit Identification Number: **EU-004**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
C	**Summer/Fall 2012**	**2014**	**49**

8. Federal Program Applicability: (Check all that apply) **Not Applicable**

☐ Acid Rain Unit

☐ CAIR Unit

9. Package Unit: **To be established during final engineering.**
Manufacturer: **To be established during final engineering.**
Model Number: **To be established during final engineering.**

10. Generator Nameplate Rating: MW **Not Applicable**

11. Emissions Unit Comment:

Emergency support equipment includes an emergency generator and emergency fire water pump. Both will be fueled with ultra low sulfur diesel fuel and have limited hours of operation for testing purposes.

EMISSIONS UNIT INFORMATION
Section [4]

Emissions Unit Control Equipment/Method: Control ___ of __

1. Control Equipment/Method Description: **Not Applicable**
2. Control Device or Method Code:

Emissions Unit Control Equipment/Method: Control ___ of __

1. Control Equipment/Method Description:
2. Control Device or Method Code:

Emissions Unit Control Equipment/Method: Control ___ of __

1. Control Equipment/Method Description:
2. Control Device or Method Code:

Emissions Unit Control Equipment/Method: Control ___ of __

1. Control Equipment/Method Description:
2. Control Device or Method Code:

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **Not Applicable**
2. Maximum Production Rate: **Not Applicable**
3. Maximum Heat Input Rate: **Not Applicable (see each segment)** million Btu/hr
4. Maximum Incineration Rate: pounds/hr **Not Applicable** tons/day **Not Applicable**
5. Requested Maximum Operating Schedule: hours/day days/week weeks/year **250*** hours/year
6. Operating Capacity/Schedule Comment: ***The emergency generator and fire water pump will be limited to 250 hours/year of operation each, except for emergency operation.**

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Emergency Equipment**	2. Emission Point Type Code: **3**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **See Field 15 (Emission Point Comment) and Application Document.**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **Not Applicable**		
5. Discharge Type Code: **To Be Determined (TBD)**	6. Stack Height: **TBD** feet	7. Exit Diameter: **TBD** feet
8. Exit Temperature: **TBD** °F	9. Actual Volumetric Flow Rate: **TBD** acfm	10. Water Vapor: **TBD** %
11. Maximum Dry Standard Flow Rate: dscfm **To Be Determined**	12. Nonstack Emission Point Height: feet **Not Applicable**	
13. Emission Point UTM Coordinates... Zone: **See Application Document** East (km): North (km):	14. Emission Point Latitude/Longitude... **See Application Document** Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **Each piece of emergency equipment will have its own stack. The characteristics of the stack will be determined during final engineering by the equipment vendor(s).**		

EMISSIONS UNIT INFORMATION
Section [4]

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **1** of **2**

1. Segment Description (Process/Fuel Type): **Emergency Generator**		
2. Source Classification Code (SCC): **20400403**	3. SCC Units: **1000 gallons**	
4. Maximum Hourly Rate: **0.04**	5. Maximum Annual Rate: **10.3**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.0015%**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **138**
10. Segment Comment: **Ultra Low Sulfur Diesel Fuel**		

Segment Description and Rate: Segment **2** of **2**

1. Segment Description (Process/Fuel Type): **Fire Water Pump**		
2. Source Classification Code (SCC): **20400403**	3. SCC Units: **1000 gallons**	
4. Maximum Hourly Rate: **0.01**	5. Maximum Annual Rate: **3.1**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.0015%**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **138**
10. Segment Comment: **Ultra Low Sulfur Diesel Fuel**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	N/A	N/A	EL
PM_{10}	N/A	N/A	NS
CO	N/A	N/A	EL
NO_x	N/A	N/A	EL
SO_2	N/A	N/A	EL
VOC	N/A	N/A	EL

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **Particulate Matter Total - PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.29** lb/hour **0.04** tons/year	4. Synthetically Limited? [X] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **See Application Document.** Reference: **NSPS Subpart IIII**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: **Not Required** From: To:
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **Not Required** [ ] 5 years [ ] 10 years
10. Calculation of Emissions: **See Section 2 of Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **Potential emissions from the emergency equipment are limited by restricting the annual operation time of the equipment for testing purposes.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **Particulate Matter - PM10**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.29** lb/hour **0.04** tons/year	4. Synthetically Limited? [X] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **Varies by segment. See Application Document.** Reference: **Engineering Estimate (Assumed Equal to PM)**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: **Not Required** From: To:
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **Not Required** [ ] 5 years [ ] 10 years
10. Calculation of Emissions: **See Section 2 of Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **Potential emissions from the emergency equipment are limited by restricting the annual operation time of the equipment for testing purposes.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **5.0** lb/hour **0.6** tons/year	4. Synthetically Limited? [X] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **Varies by segment. See Application Document.** Reference: **NSPS Subpart IIII**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: **Not Required** From: To:
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **Not Required** [ ] 5 years [ ] 10 years
10. Calculation of Emissions: **See Section 2 of Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **Potential emissions from the emergency equipment are limited by restricting the annual operation time of the equipment for testing purposes.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **NO_x**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **5.8** lb/hour **0.7** tons/year	4. Synthetically Limited? [X] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **Varies by segment. See Application Document.** Reference: **NSPS Subpart IIII**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: **Not Required** From: To:
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **Not Required** [ ] 5 years [ ] 10 years
10. Calculation of Emissions: **See Section 2 of Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **Potential emissions from the emergency equipment are limited by restricting the annual operation time of the equipment for testing purposes.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **SO_2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.01** lb/hour **0.001** tons/year	4. Synthetically Limited? [X] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **Varies by segment. See Application Document.** Reference: **NSPS IIII**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: **Not Required** From: To:
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **Not Required** [ ] 5 years [ ] 10 years
10. Calculation of Emissions: **See Section 2 of Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **Potential emissions from the emergency equipment are limited by restricting the annual operation time of the equipment for testing purposes and by utilizing diesel fuel with a sulfur content of less than 0.0015% by weight.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **5.8** lb/hour **0.7** tons/year	4. Synthetically Limited? [X] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **See Application Document** Reference: **NSPS Subpart IIII**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: **Not Required** From: To:
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **Not Required** [ ] 5 years [ ] 10 years
10. Calculation of Emissions: **See Section 2 of Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **Potential emissions from the emergency equipment are limited by restricting the annual operation time of the equipment for testing purposes.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **HAPS**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.015** lb/hour **0.002** tons/year	4. Synthetically Limited? [X] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable**	
6. Emission Factor: **See Application Document** Reference: **AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year **Not Required**	8.b. Baseline 24-month Period: **Not Required** From: To:
9.a. Projected Actual Emissions (if required): tons/year **Not Required**	9.b. Projected Monitoring Period: **Not Required** [ ] 5 years [ ] 10 years
10. Calculation of Emissions: **See Section 2 of Application Document.**	
11. Potential, Fugitive, and Actual Emissions Comment: **Potential emissions from the emergency equipment are limited by restricting the annual operation time of the equipment for testing purposes.**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **Not Applicable**
3. Allowable Emissions and Units: **Varies by segment. See Application Document.**	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **Varies by segment. See Application Document.**	
6. Allowable Emissions Comment (Description of Operating Method): **Each emergency diesel engine is regulated under NSPS Subpart IIII for emissions of NO_x, PM, VOC (or non-methane hydrocarbon (NMHC)), and CO. SO_2 emissions are effectively restricted by requiring ultra low sulfur diesel fuel. See Application Document.**	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION
Section [4]

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation **1** of **1**

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **See Application Document.**	
5. Visible Emissions Comment: **See Application Document. Allowable emissions based on F.A.C. Chapter 62-296.320(4)(b) – General Visible Emission Standards - 20%. Excess emissions due to startup, shutdown, or malfunction are permitted per the conditions of F.A.C. Chapter 62-210.700.**	

Visible Emissions Limitation: Visible Emissions Limitation __ of ___

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor __ of __

1. Parameter Code: **N/A**	2. Pollutant(s): **N/A**
3. CMS Requirement: **N/A**	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: **N/A** Model Number:	Serial Number:
5. Installation Date: **N/A**	6. Performance Specification Test Date: **N/A**
7. Continuous Monitor Comment: **N/A**	

Continuous Monitoring System: Continuous Monitor __ of __

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

EMISSIONS UNIT INFORMATION
Section [4]

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Application Document**
   [ ] Previously Submitted, Date _____

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Application Document**
   [ ] Previously Submitted, Date _____

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Application Document**
   [ ] Previously Submitted, Date _____

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable (construction application)

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable

6. Compliance Demonstration Reports/Records:

☐ Attached, Document ID: _____

Test Date(s)/Pollutant(s) Tested: _____

_____

☐ Previously Submitted, Date: _____

Test Date(s)/Pollutant(s) Tested: _____

_____

☐ To be Submitted, Date (if known): _____

Test Date(s)/Pollutant(s) Tested: _____

_____

☒ Not Applicable

Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:

☐ Attached, Document ID: _____ ☒ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)):	☐ Attached, Document ID: _____ ☒ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.):	☐ Attached, Document ID: _____ ☒ Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only)	☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: **Not Applicable**	☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring:	☐ Attached, Document ID: _____ ☒ Not Applicable
3. Alternative Methods of Operation:	☐ Attached, Document ID: _____ ☒ Not Applicable
4. Alternative Modes of Operation (Emissions Trading):	☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements Comment

See Application Document.

Appendix B

Air Dispersion Modeling Protocol and FDEP Acceptance

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

Imagine the result

ARCADIS

Infrastructure · Water · Environment · Buildings

U.S.ECOGEN

Air Dispersion Modeling Protocol in Support of Proposed New 62-MW (nominal) Woody Biomass Power Plant in Polk County, Florida

March 13, 2012

ARCADIS

Air Dispersion Modeling Protocol in Support of Proposed New 62-MW (nominal) Woody Biomass Power Plant in Polk County, Florida

Application for Air Permit to Construct a New Non-Major Source

Steven A. Frey
Associate Vice President – Air Quality

Darryl Carstensen
Engineer 2 (Other)

Prepared For:
US EcoGen Polk, LLC
1000 N. US Highway 1, Unit 807
Jupiter, Florida 33477

Prepared By:
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ARCADIS Ref:
28918001.0000

Date:
March 13, 2012

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Tables

Figures

Introduction to Project

US EcoGen Polk, LLC (US EcoGen) is proposing to construct a new 62-MW (nominal) woody biomass power plant (the Project) in Polk County, Florida (Figure 1). An application for an air permit to construct the Project under the Florida Department of Environmental Protection (FDEP) minor source permitting program will be submitted to the under separate cover. The allowable emission rates of regulated criteria air pollutants for the Project will be below the major source emission threshold (less than 250 tons per year), so the project will be a minor source which is not subject to review under the Prevention of Significant Deterioration (PSD) program. US EcoGen will perform a voluntary air quality impact analysis to demonstrate that the Project will not cause or contribute to an exceedance of any National Ambient Air

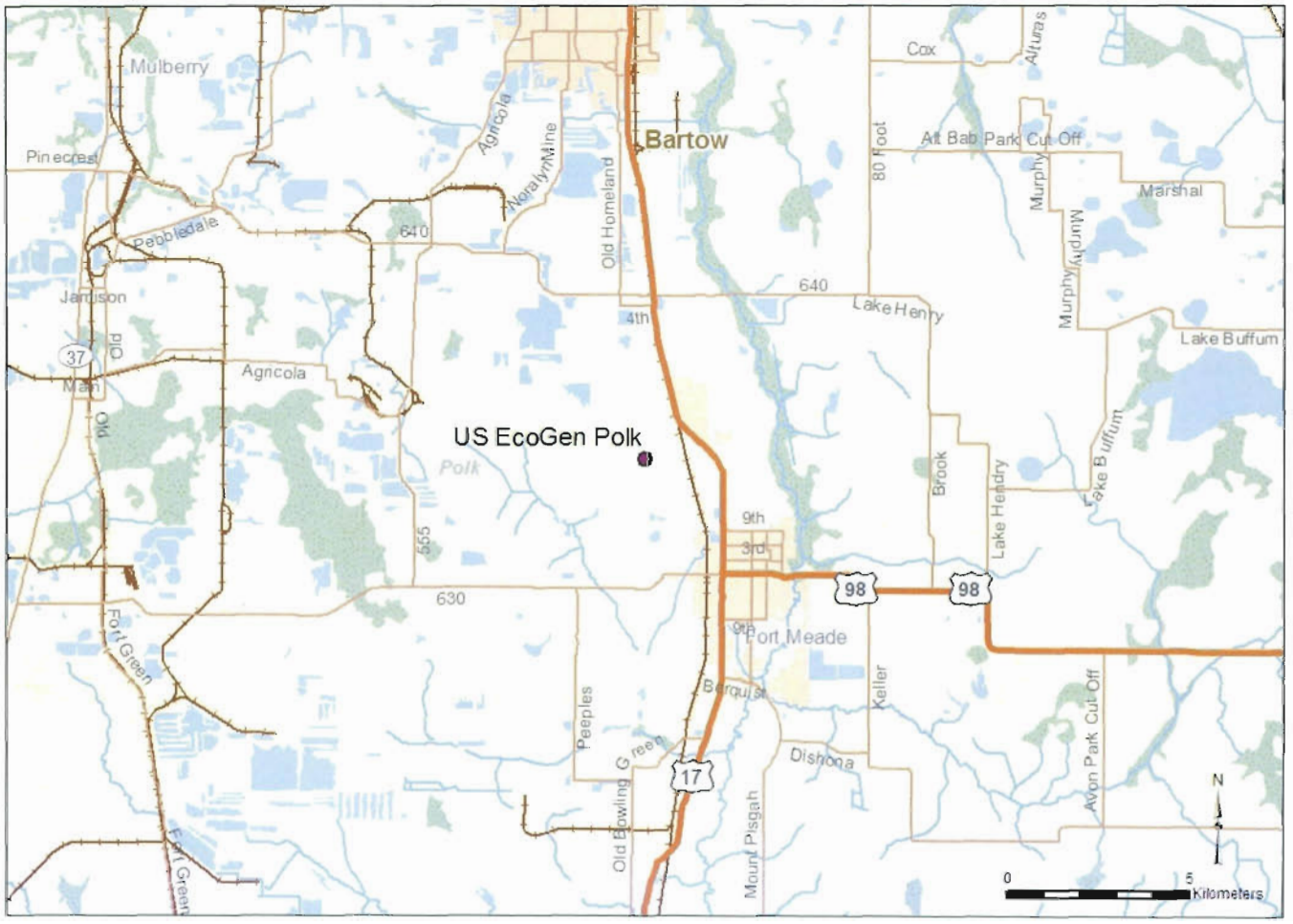

Figure 1. US EcoGen Polk project site location

Quality Standard (NAAQS). This protocol is being submitted to FDEP to obtain confirmation that the methodology to be used in performing the voluntary ambient air quality impact analysis is consistent with the recommended practices of the FDEP.

The Project is proposed to be constructed in an area which is in compliance with all National Ambient Air Quality Standards (NAAQS), referred to as an attainment area. As stated above, the project will be classified as a minor stationary source of regulated air pollutants based on its potential to emit. Under the FDEP's minor source air permitting program an ambient air quality impact evaluation is not required in the air permitting process. However, U.S. EconGen will perform a voluntary air quality impact analysis for emissions of the following criteria air pollutants associated with the minor source project:

- Carbon monoxide (CO);
- Particulate matter less than 10 microns in aerodynamic diameter (PM_{10});
- Particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$).
- Oxides of nitrogen (NO_x); and
- Sulfur dioxide (SO_2).

ARCADIS, on behalf of US EcoGen, is requesting that the FDEP review this protocol and provide written confirmation that the proposed methodology for the voluntary ambient air quality impact evaluation is acceptable to FDEP. An air dispersion modeling report will be prepared documenting the procedures used to perform the air dispersion modeling and the results of the modeling. The report may be submitted either under same or separate cover from the application for a minor source air permit to construct the Project

Applicable Air Quality Regulations

Florida has adopted the US EPA's NAAQS by reference. No state specific ambient air quality standards exist currently.

Ambient Air Quality Standards

Air dispersion modeling will be performed per this protocol to demonstrate that the Project will not cause or contribute to a violation of NAAQS by comparing predicted concentrations due to regulated air pollutant emissions from the Project with the appropriate NAAQS.

Selected Air Dispersion Model for the Project

The most recent version of the U.S. EPA regulatory model AERMOD (Version 12060), developed by The American Meteorological Society/Environmental

Protection Agency Regulatory Model Improvement Committee (AERMIC) will be utilized for this project. Regulatory default options available in the model will be used for the compliance demonstrations.

BREEZE AERMOD will be used to prepare the input for and process the output from AERMOD. BREEZE AERMOD provides a graphical interface with geographic information system (GIS) capabilities to enhance the AERMOD model and aid the user with setting up the AERMOD input file and organizing and evaluating AERMOD output files. The U.S. EPA's approved regulatory AERMOD code which is used to predict ambient concentrations is unaltered by BREEZE AERMOD.

The AERMOD model family consists of several supporting pre-processor models. The following list summarizes the versions of AERMOD family software that will be used for this air dispersion modeling analysis:

- AERMOD 12060;
- Building Profile Input Program for PRIME (BPIPPRM 04274); and
- AERMAP 11103.

Model Input and Support Data

Several data elements are required as input into to support the dispersion model AERMOD, including:

- Representative hourly meteorological data;
- Potential points of predicted impacts, referred to as receptor points; and
- Terrain elevations for each individual receptor point.

Each of these data elements are discussed in the subsequent sections of this protocol.

Meteorological Data Selection and Pre-processing

FDEP provided an AERMOD-ready meteorological (met) data set consisting of five years of met data to the applicant by email. The met data set based on Orlando, Florida National Weather Service (NWS) surface data and Tampa Bay, Florida NWS upper air data from years 2006 – 2010 is assumed to be representative of the Project in Polk County, due to the proximity of the surface station to the Project site and qualitative assessment of the similarity in surrounding land use. This met data was processed using AERMET 11059 (the latest version).

Coordinate System and Receptor Network

The AERMOD model objects will be located using the Universal Transverse Mercator (UTM) Zone 17 coordinate system and the North American Datum of 1983 (NAD83),

with standard units of meters. The receptor grid will be designed to identify the maximum points of air quality impact due to the Project and consist of receptors extending at least 20 kilometers from the Project site. The ambient air boundary is defined by features which preclude public access from the Project site. Receptors will be closely spaced (50 meters) along the Project site's ambient air boundary to identify the influence of aerodynamic building downwash. The following receptor spacing will be used for the receptor grid:

- 50-meter spacing along the ambient air boundary of the Project site;
- 100-meter spacing from the Project fence line to one kilometer out from the Project site;
- 200-meter spacing from one kilometers to two kilometers from the Project site;
- 500-meter spacing from two kilometers to five kilometers from the Project site; and
- 1,000-meter spacing from five kilometers to twenty kilometers from the Project site.

Terrain Data Selection and Pre-processing

Terrain data will be assigned to the receptor networks using the latest version of AERMAP (11103) and national elevation data (NED) files at 1-arc second resolution obtained from the United States Geological Survey (USGS) seamless data warehouse server. The elevation of buildings and sources on the site will be based upon the planned finished grading of the site.

Project Emission Inventory

The emission inventory of the Project based on the allowable emission rates requested in the permit application. The inventory will be described in detail and provided with detailed backup calculations in the air permit application.

Consistent with the guidance in the memo "Additional Clarification Regarding the Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" (March 1, 2011 U.S. EPA Office of Air Quality Planning and Standards), the emissions of emergency and limited use equipment may be eliminated from the emission inventory. This guidance requires that compliance demonstrations "address emission scenarios that can logically be assumed to be relatively continuous or which occur frequently enough to contribute significantly" to the statistical form for the NAAQS of concern.

For purposes of this Project, potential impacts from emergency generators and fire pumps will not be included in the air quality impact evaluation for all criteria air pollutants being evaluated in the air quality impact evaluation because the intended

use of this emergency equipment will be limited, which may include 1 to 2 hours of actual use per month for testing purposes. The memorandum identified above for NO_2 is also being applied to other criteria air pollutants being evaluated from emergency equipment associated with this project.

Demonstration of Compliance with the NAAQS

An air quality impact analysis including impacts due to emissions of existing non-Project sources will be performed to demonstrate that the Project will not cause or contribute to a violation of the NAAQS. The analysis will include a background concentration based on representative ambient monitoring data to account for the impacts of non-Project sources. Table 1 provides a summary of the applicable NAAQS. The statistical form of the modeled concentration is based on a 5-year National Weather Service met data set.

Table 1. Summary of Applicable NAAQS

Pollutant	Averaging Period	NAAQS (ug/m^3)	Statistical Form of Modeled Concentration (At Each Receptor)
PM_{10}	24-hour	150	Sixth highest over 5 years (the NAAQS is not to be exceeded more than once per year on average)
	Annual	--	--
$PM_{2.5}$	24-hour	35	Average of the eighth highest (98'th percentile) from each year
	Annual	15	Average of the highest from each year
NO_2	1-hour	188	Average of the eighth highest (98'th percentile) maximum daily 1-hour concentration from each year
	Annual	100	Highest of the 5 years
SO_2	1-hour	196	Average of the fourth highest (99'th percentile) maximum daily 1-hour concentration from each year
	3-hour	1,300	Highest of the second high from each of the 5 years
	24-hour	365	Highest of the second high from each of the 5 years
	Annual	80	Highest of the 5 years
CO	1-hour	40,000	Highest of the second high from each of the 5 years
	8-hour	10,000	Highest of the second high from each of the 5 years

Background Concentration Included in the NAAQS Compliance Demonstration

The NAAQS compliance demonstration for each pollutant will include a background concentration for each pollutant to account for the impact of non-Project sources to ambient air concentrations. The background concentrations were based on the ambient monitoring data summarized in the FDEP's "Air Monitoring Report 2010" (http://www.dep.state.fl.us/air/publication/technical/amr.htm), the most recent report available at this time.

The background concentration from Table 2 and modeled concentration due to emissions from the Project will be summed and compared with the NAAQS in the Tier 1 screening method. The background concentration and the modeled concentration may occur at a different time from one another, but they are still summed for comparison with the NAAQS in this Tier 1 NAAQS analysis.

It may be necessary to use a more refined Tier 2 NAAQS analysis in which the background concentration and the modeled concentration are paired in time within AERMOD to demonstrate compliance with NAAQS having short-term (less than annual) averaging periods. The current version of AERMOD incorporates a new utility which allows hourly background concentration to be included directly in AERMOD. Monitor data for a Tier 2 NAAQS analysis will be obtained from the EPA's Air Quality System (AQS) Technology Transfer Network (TTN) website (http://www.epa.gov/ttn/airs/airsaqs/detaildata/downloadaqsdata.htm).

If 24-hour average concentrations are provided by AQS rather than hourly concentrations for PM_{10} or $PM_{2.5}$, the following procedure will be used to fill the data for use in AERMOD:

- The concentration for each hour of the day will be set to the daily average concentration for that day.
- Days with missing concentrations will be filled by assuming that the most recent measurement was constant until a new measurement was made. For example, if 24-hour concentration measurements were made on January 2 and January 5. The hourly concentration for each hour of January 2, 3 and 4 will be assumed to equal the 24-hour average concentration measured on January 2.

This method of data filling ensures that the 98th percentile value of 24-hour average background concentration is equal to the 98th percentile 24-hour average concentration at the monitor.

Table 2. Summary of Background Concentrations for the NAAQS Compliance Demonstration

Pollutant	Averaging Period	Background Concentration (ug/m^3)	Statistical Form of Concentration	Monitor Location and ID Number
PM_{10}	24-hour	47	Highest of the second high from each of the 3 years	Mulberry, FL – 2486 Anderson Road (105-0010)
	Annual	--	--	--
$PM_{2.5}$	24-hour	22.3	Average of the second high from each of the 3 years	Lakeland, FL – 1015 Sikes Boulevard (105-6006)
	Annual	9.1	Average of the 3 years	
NO_2	1-hour	16.8	Average of the second high from each of the 3 years	Sarasota, FL – 4570 17'th Place (115-1006)
	Annual	2.3	Highest of the 3 years	
SO_2	1-hour	34	Average of the second high from each of the 3 years	Dover, FL – 1167 N. Dover Road (057-3002)
	3-hour	39	Highest of the second high from each of the 3 years	
	24-hour	8	Highest of the second high from each of the 3 years	
	Annual	3	Highest of the 3 years	
CO	1-hour	1145	Highest of the second high from each of the 3 years	Dover, FL – 1167 N. Dover Road (057-3002)
	8-hour	1145	Highest of the second high from each of the 3 years	

Pollutant Specific Considerations

NO_x and NO_2 Tiered Screening Analysis

The applicant proposes to use a Tier 2 screening analysis for demonstrating compliance with the NO_2 NAAQS in which the ambient ratio of NO_2 to NO_x is 0.80 for the 1-hour averaging period and 0.75 for the annual averaging period. The assumptions of Tier 2 should be accepted without further justification per the recommendations of the EPA Office of Air Quality Planning and Standards memo "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" issued March 1, 2011. The Tier 2 approach will be implemented by modeling NO_x emission rates and scaling the predicted 1-hour concentrations by a factor of 0.80 and the predicted annual concentrations by a factor of 0.75.

If the applicant is unable to demonstrate compliance with the NO_2 NAAQS using the Tier 2 screening analysis, the applicant may request the use of a Tier 3 screening analysis based on the Ozone Limiting Method (OLM) or Plume Volume Molar Ratio Method (PVMRM) for the compliance demonstration. An additional modeling protocol which details the implementation of the Tier 3 screening analysis will be submitted to FDEP if such an analysis is to be performed.

PM_{10} and $PM_{2.5}$ Filterable and Condensable Portions

The emission inventories of PM_{10} and $PM_{2.5}$ from the Project will include both the filterable and condensable portions of PM_{10} and $PM_{2.5}$ emissions.

PM_{10} and $PM_{2.5}$ Precursors

The emission inventories of PM_{10} and $PM_{2.5}$ from the Project will include only direct emissions of PM_{10} and $PM_{2.5}$. Formation of PM_{10} and $PM_{2.5}$ in the atmosphere due to emissions of precursor chemicals will not be considered (except to the extent which precursor emissions form particulate matter quantified as condensable particulate matter, which is included in the emission inventory as direct emissions of PM_{10} and $PM_{2.5}$). This approach is consistent with current EPA policy since no formal guidance or methodology exists for addressing precursors.

PSD Class I Screening Analysis

The Project is located approximately 120 kilometers from Chassohowitzka Fish & Wildlife Refuge and 210 kilometers from the Everglades National Park which are PSD Class I areas (Figure 2) managed by the Fish & Wildlife Service and National Park Service, respectively. Impacts to these areas will be analyzed using the following initial screening criteria recommended in "Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report – Revised (2010)" (Natural Resource Report NPS/NRPC/NRR-2010/232):

1. Define the Project emissions "Q" as the sum of annual potential emissions (assuming 8,760 operating hours) of SO_2, NO_x, PM_{10}, and H_2SO_4 in tpy.
2. Define the distance "D" as the distance between the project site and the nearest edge of the PSD Class I Area (Mammoth Cave) in kilometers.
3. The Project is considered to have negligible impacts with respect to Class I Air Quality Related Values (AQRVs), including PSD Class I Increments and visibility impairment, if the ratio of Q/D is less than 10. No further analysis, such as dispersion modeling, is required in this case.

Because the Project will not be subject to PSD review, the Federal Land Manager (FLM) will not be notified of the results of this screening analysis. The results of the analysis will be included in the air quality impact analysis report.

Figure 2. PSD Class I Areas within 300 kilometers of US EcoGen Polk

Frey, Steve

From: Lovin, Melody [Melody.Lovin@dep.state.fl.us]
Sent: Wednesday, March 21, 2012 9:14 AM
To: Carstensen, Darryl
Cc: Frey, Steve
Subject: RE: US EcoGen Polk dispersion modeling protocol

Hi Darryl,

I have reviewed the voluntary US EcoGen modeling protocol and have determined that the methodology is acceptable for the proposed minor source. Let me know if you have any questions as you continue your analysis.

Thanks,
Melody

Please take a few minutes to share your comments on the service you received from the department by clicking on this link DEP Customer Survey.
From: Carstensen, Darryl [mailto:Darryl.Carstensen@arcadis-us.com]
Sent: Tuesday, March 13, 2012 6:00 PM
To: Lovin, Melody
Cc: Frey, Steve
Subject: US EcoGen Polk dispersion modeling protocol

Hi Melody,

I heard you were at the meeting in Tallahassee regarding the kickoff of the US EcoGen Polk project. Our protocol for the voluntary air quality impact analysis is attached with this email. Please call or email me if you have any questions. I look forward to working with you on the project.

Thank you,

Darryl

Darryl Carstensen | darryl.carstensen@arcadis-us.com

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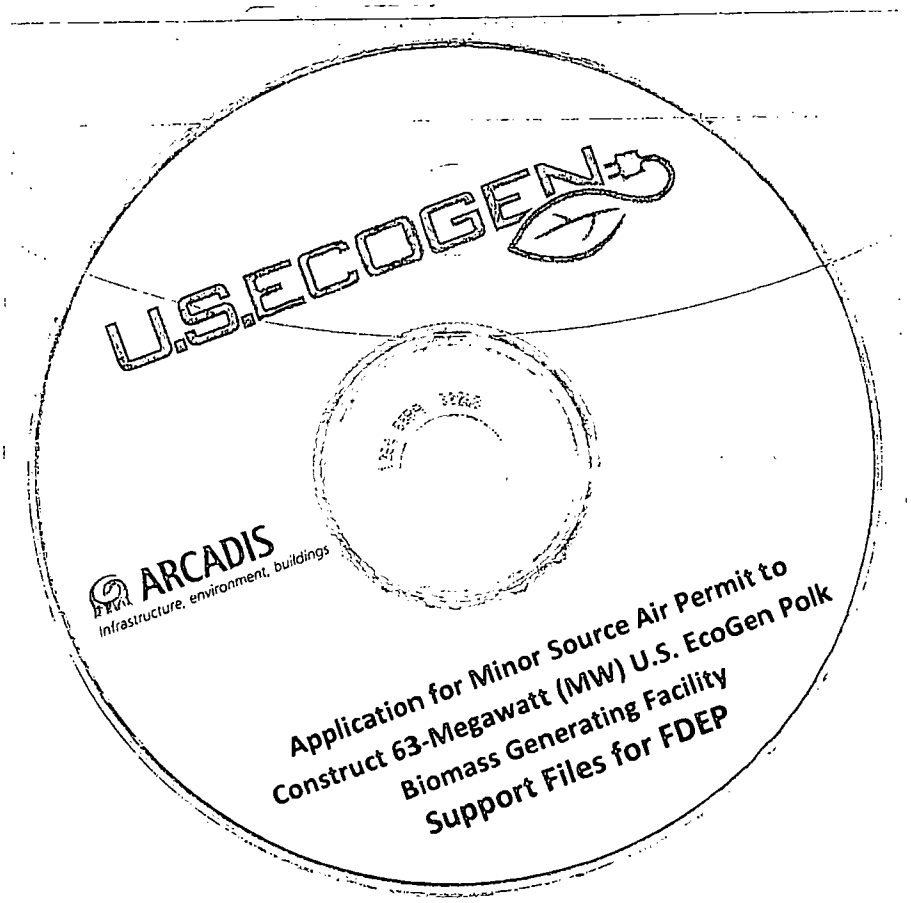
Appendix C

Compact Discs Containing:

1) Application Document in PDF; and
2) Air Dispersion Modeling Files

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility


U.S.ECOGEN
ARCADIS
Infrastructure, environment, buildings
Application for Minor Source Air Permit to
Construct 63-Megawatt (MW) U.S. EcoGen Polk
Biomass Generating Facility
Support Files for FDEP

Appendix D

Application Fee

Proposed 63-MW U.S. EcoGen Polk Biomass Generating Facility

1149

U.S. ECOGEN, LLC
13433 BISSEL LANE
POTOMAC, MD 20854

7-216-520

DATE APRIL 16, 2012

PAY TO THE ORDER OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION $. 7,500.00

SEVEN THOUSAND FIFE HUNDRED AND 00/100 ——— DOLLARS

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FOR APPLICATION FOR MINOR SOURCE AIR PERMIT

[redacted]