ADAGE
An AREVA/Duke Energy advanced biopower company



January 27, 2010

Florida Department of Environmental Protection
Bureau of Air Regulation, Division of Air Resource Management
2600 Blair Stone Road, M.S. 5500
Tallahassee, FL 32399-2400

Attention: Ms. Trina Vielhauer, Chief of the Bureau of Air Regulation

**Re: Application of ADAGE Gadsden LLC for Air Permit to Construct A Proposed Nominal 55.5-Megawatt (MW) Net Woody Biomass Electric Power Plant**
**To be located in Gadsden County, Florida (the "Application")**

ADAGE Gadsden LLC (ADAGE), a joint venture between affiliates of AREVA SA (AREVA) and Duke Energy Corporation (Duke Energy), is proposing the construction of a nominal 55.5-Megawatt (MW) net woody biomass electric power plant (the Plant) in Northern Florida. The Plant will be located in Gadsden County at the intersection of State Highway 12/Greensboro Highway and Highway 90/Main Street, south of the town of Gretna. The Plant is being constructed in support of Florida's targeted Renewable Energy Portfolio to provide twenty percent (20%) of its electrical power production from renewable energy sources by the year 2020.

AREVA and Duke Energy are two highly respected companies with the common goal to take the bio-power industry to remarkable new heights through the sale of green electricity to utilities and municipalities. ADAGE, a limited liability company formed in the State of Delaware, will be the owner of the Plant. ADAGE and its affiliates are important members of the renewable energy community that will meet tomorrow's energy challenges. Bio-power is a critical element of our national plan to create clean energy and to make us less dependent on imported fuels.

The Plant being proposed by ADAGE will be capable of producing a nominal 55.5 MW net 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, propane, or ultra low sulfur distillate fuel to be utilized only for boiler startup, shutdown and boiler bed stabilization.

Enclosed with this cover letter is an application containing an official request from ADAGE to construct the proposed biomass power plant in Gadsden County. Included in the Application is documentation that the proposed plant will be in compliance with local, state and federal air pollutant regulations. The Plant being proposed by ADAGE 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 implemented by the Environmental Protection Agency (EPA).

As requested by the Bureau, four (4) copies of this application are enclosed. These applications have been hand-delivered to the Bureau.

Included in this application are the results of an air quality impact evaluation that demonstrates the proposed plant's air pollutant emissions will meet state air quality standards, thus not adversely impacting human health and welfare. Please refer to Section 6 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 which was performed to demonstrate that the proposed plant will not have an adverse impact on human health and welfare. 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 proposed plant.

If you should have any questions regarding our request for permission to construct the proposed biomass power plant, please contact Mr. Bruno Morabito, Director of Technical Services, of ADAGE at (585) 239-7606 at your earliest convenience. As part of this application process we would like to recommend that a meeting either in person or 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 construction permit for the proposed Plant.

Very truly yours,
ADAGE Gadsden LLC

F. Reed Wills
President

Cc:

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

Bureau of Air Regulation - Northwest District Office: Mr. Rick Bradburn

ADAGE Gadsden LLC: Mr. Bruno Morabito, Director of Technical Services

Malcolm Pirnie, Inc.: Mr. Steven Frey

# Department of Environmental Protection

## Division of Air Resource Management

## APPLICATION FOR AIR PERMIT - LONG FORM

### 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 plantwide 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: **ADAGE Gadsden LLC (ADAGE)** | |
| 2. Site Name: **Gadsden County, Florida Nominal 55.5 MW Net Woody Biomass Power Plant** | |
| 3. Facility Identification Number: **To be Determined by FDEP** | |
| 4. Facility Location...<br>Street Address or Other Locator: **Intersection of State Highway 12/Greensboro Highway and Highway 90/Main Street**<br>City: **Gadsden County** County: **Gadsden** Zip Code: **32332** | |
| 5. Relocatable Facility?<br>☐ Yes ☒ No | 6. Existing Title V Permitted Facility?<br>☐ Yes ☒ No |

**Application Contact**

| |
|---|
| 1. Application Contact Name: **Mr. Bruno Morabito, Technical Services Director** |
| 2. Application Contact Mailing Address...<br>Organization/Firm: **ADAGE Gadsden LLC**<br>Street Address: **225 Wilmington West Chester Pike, Suite 302**<br>City: **Chadds Ford** State: **Pennsylvania** Zip Code: **19317** |
| 3. Application Contact Telephone Numbers...<br>Telephone: **(585) 239-7606** ext. Fax: **(513) 419-5774** |
| 4. Application Contact E-mail Address: **Bruno.Morabito@duke-energy.com** |

**Application Processing Information (DEP Use)**

| | |
|---|---|
| 1. Date of Receipt of Application: 1/28/10 | 3. PSD Number (if applicable): |
| 2. Project Number(s): 6390046 . 001-AC | 4. Siting Number (if applicable): |

# Department of Environmental Protection

## Division of Air Resource Management

## APPLICATION FOR AIR PERMIT - LONG FORM

**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**

**This application is for an air construction permit. ADAGE Gadsden LLC, a Delaware limited liability company (herein referred to as ADAGE), a joint venture between affiliates of AREVA SA and Duke Energy Corporation, is proposing the construction of a nominal 55.5-Megawatt (MW) Net Woody Biomass Power Plant in Northern Florida. ADAGE will be the owner of this power plant. The plant will be located in Gadsden County at the intersection of State Highway 12/Greensboro Highway and Highway 90/Main Street, south of the town of Gretna. The power plant is being constructed in support of Florida's targeted Renewable Energy Portfolio to provide 20 percent (20%) of its electrical power development from renewable energy sources by the year 2020. The attached Air Construction Permit Application Document (Application Document) provides detailed information regarding the proposed project. The proposed project 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 |
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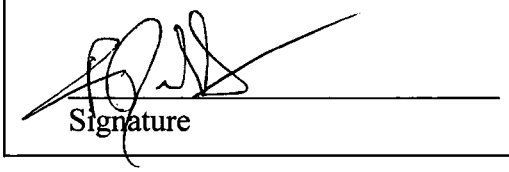
**Application Processing Fee**

**Check one:** [X] Attached - Amount: $ 7,500 ☐ Not Applicable

**Owner/Authorized Representative Statement**

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

| | |
|---|---|
| 1. | Owner/Authorized Representative Name :<br>**F. Reed Wills – President** |
| 2. | Owner/Authorized Representative Mailing Address...<br>Organization/Firm: **ADAGE**<br>Street Address: **225 Wilmington West Chester Pike, Suite 302**<br>City: **Chadds Ford** State: **PA** Zip Code: **19317** |
| 3. | Owner/Authorized Representative Telephone Numbers...<br>Telephone: **(610) 358-3404** Fax: **(610) 358-3403** |
| 4. | Owner/Authorized Representative E-mail Address: **Reed.Wills@duke-energy.com** |
| 5. | Owner/Authorized Representative Statement:<br>*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.*<br>  <br>Signature<br>1/27/2010<br>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, CAIR source, or Hg Budget 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: **Malcolm Pirnie, Inc.**
   Street Address: **1300 East 8th Avenue, Suite F100**
   City: **Tampa** State: **Florida** Zip Code: **33605**
3. Professional Engineer Telephone Numbers...
   Telephone: ( **813**) **248 - 6900** ext. Fax: ( **813** ) **248 - 8085**
4. Professional Engineer E-mail Address: **DCibik@pirnie.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 ☐, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.*

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

_____ _____

Signature Date

(seal)

* Attach any exception to certification statement.


# Project:
# Application for Air Permit to Construct a Nominal 55.5-Megawatt (MW) Net Woody Biomass Power Plant

## Location:
## Intersection of State Highway 12/Greensboro Highway and Highway 90/Main Street Gadsden County, Florida

## January 27, 2010

Application Submitted By:

**ADAGE Gadsden LLC**

225 Wilmington West Chester Pike, Suite 302
Chadds Ford, PA 19317
Phone: (585) 239-7606
Contact: Mr. Bruno Morabito, Technical Services Director
Email: Bruno.Morabito@duke-energy.com

Application Prepared By:

**Malcolm Pirnie, Inc.**

1300 East 8th Avenue, Suite F100
Tampa, FL 33605
Phone: (847) 517-4062
Contact: Mr. Steven Frey, Senior Associate
Email: sfrey@pirnie.com

MALCOLM PIRNIE

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# 1. Introduction

ADAGE Gadsden LLC (ADAGE), a joint venture between affiliates of AREVA SA (AREVA) and Duke Energy Corporation (Duke Energy), is proposing the construction of a nominal 55.5-Megawatt (MW) net woody biomass electric power plant (the Plant) in Northwest Florida. The plant will be located in Gadsden County at the intersection of State Highway 12/Greensboro Highway and Highway 90/Main Street. The power plant is being constructed in support of Florida's targeted Renewable Energy Portfolio to provide twenty percent (20%) of its electrical power production from renewable energy sources by the year 2020.

AREVA and Duke Energy are two highly respected companies with the common goal to take the bio-power industry to remarkable new heights through the sale of green electricity to utilities and municipalities. ADAGE, a limited liability company, formed in the State of Delaware, will be the owner of the Plant. ADAGE and its affiliates are important members of the renewable energy community that will meet tomorrow's energy challenges. Bio-power is a critical element of our national plan to create clean energy and to make us less dependent on imported fuels.

The Plant being proposed by ADAGE will be capable of producing a nominal 55.5 MW net of electrical power through the use of a highly efficient bubbling fluidized bed (BFB) boiler, which is ideal for combusting woody biomass materials. The electrical output of the plant will be a gross nominal 62 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, propane, or ultra low sulfur distillate fuel to be utilized only for boiler startup, shutdown and boiler bed stabilization.

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

- Fuel (i.e., woody biomass) receiving, handling, storage and processing;
- 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.

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 nominal 55.5-MW net woody biomass power plant will be located at the intersection of State Highway 12/Greensboro Highway and Highway 90/Main Street. Figure 1-1 identifies the location of the proposed plant.

ADAGE has entered into an agreement with local land owners to purchase approximately 72 acres of property. The footprint of the proposed plant will occupy approximately 50 acres near the southern, central portion of the site. The plant footprint is identified in Figure 1-1.

This site was selected based on existing infrastructures and its proximity to a transmission line. Some of these crucial site features are listed below:

- Existing electrical transmission lines running along the northern portion of the property;
- Close proximity to major roadways to allow fuel supply trucks easy access into and out of the proposed plant; and
- Existing infrastructure for water and sewage in nearby proximity to the site.

## 1.2. Regulatory Drivers – Permission to Construct the Plant

As discussed above, the proposed nominal 55.5-MW net woody biomass power 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 proposed 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


**Figure 1-1 Proposed Site Location – Gadsden County, Florida**

ADAGE Gadsden LLC – Gadsden County, Florida
Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

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regulations as they pertain to the air pollutant sources at the proposed 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 5**.
- 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 5**.

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

## 1.3. Requirements for Application Submission

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 5 of this application request for construction permit, for the completed FDEP construction forms**;

- All applications and supporting documents shall be filed in quadruplicate with the FDEP. **ADAGE 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 5 of this request for the required certification**;

- Emission units that are not subject to Prevention of Significant Deterioration (PSD) or Nonattainment Area review but 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 tons per year (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 has specific exemption from the requirement to obtain an air construction permit. EU03 meets the exemption under (3)(b) "Generic and Temporary Exemptions" and the emergency equipment under EU04 meet the exemption under (3)(a)(36). ADAGE is providing information related to these exemption 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 has been included with this application for a sum of $7,500.

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

It is ADAGE'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.

ADAGE will work with the FDEP to develop a construction permit in a timely manner. A pre-application conference call was held with the FDEP during December 2009 to discuss the proposed project and the applicable state and federal air pollution requirements.

## 1.5. Request for Construction Permit Issuance

ADAGE 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 ADAGE'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.*"

ADAGE 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. ADAGE, however, is allowed to perform land clearing and other site preparation activities.

A separate application will be submitted by ADAGE for a Title V operating permit after commencement of operation of the nominal 55.5-MW net woody biomass power 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. Bruno Morabito***
***Phone Number: (585) 239-7606***
***Email: Bruno.Morabito@duke-energy.com***

It is anticipated that ADAGE will initiate construction of the project in the summer of 2010 and begin operation during 2012. ADAGE 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 proposed nominal 55.5-MW net woody biomass power plant.

## 1.6. Exempt From Permitting Requirements

The proposed nominal 55.5-MW net woody biomass 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 proposed plant meet the exemption provisions and do not have the potential to cause pollution:

- Workshop;
- Electrical Building;
- Raw Water Tank;
- Demin Tank;
- Administration Building;
- Pump Room;
- Turbine Building;
- Aux Transformers;
- Air Cooled Heat Exchanger;
- Air Cooled Condenser;
- Electric Building with Air Compressor; and
- Log Storage Area.

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

- Emergency Fire Water Pump (EU-004) – exempt per (3)(a)(36); and
- Ash Handling System (EU-003) – exempt per (3)(b).

## 1.7. Florida's Renewable Energy Portfolio

On June 25, 2008, Governor Charlie Crist signed into law House Bill 7135, which requires the Public Service Commission to develop a Renewable Portfolio Standard (RPS) by February 1, 2009. The Draft Renewable Portfolio Standard was submitted to

the President of the Senate and the Speaker of the House of Representatives on January 30, 2009. Each electricity provider, except municipal utilities and rural cooperatives, must supply an as-yet unspecified amount of renewable energy to its customers. The Draft Renewable Portfolio Standard states that utilities should produce at least 20 percent of their electricity from renewable resources. Requiring electric utilities to obtain 20 percent of their power from renewable resources is the standard supported by Gov. Charlie Crist and recommended by the Florida Public Service Commission. The power plant being proposed by ADAGE is being constructed to provide electric power to the local utilities to meet the targeted Renewable Energy Portfolio standards 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 ADAGE will have a gross nominal 62 MW capacity, which is below the 75 MW referenced above, thus 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, state, and local air pollution control regulations that may be applicable to the proposed project;
- **Section 4: Method of Compliance** – This section discusses the various compliance methods used to show compliance with the applicable state and federal rules;

- **Section 5: Florida Application Forms** – This section includes the appropriate FDEP application forms required for a construction permit;
- **Section 6: Voluntary Air Quality Impact Evaluation** – ADAGE has performed an air quality impact evaluation that demonstrates the air pollutant emissions from the proposed plant will not adversely impact human health and welfare. This evaluation was performed by ADAGE voluntarily and is not a requirement that must be met under the FDEP's minor source permitting program. The methodology used to perform the evaluation including the results obtained from the evaluation are presented in Section 6 of this application;
- **Section 7: Florida Department of Environmental Protection Requirements** – This section discusses the Department requirements pertaining to the issuance or denial of a permit;
- **Section 8: Proposed Permit Language** - The purpose of this section is to provide FDEP with additional information pertinent to specific permit language; and
- **Section 9: Summary** – This section provides a brief summary of the Gadsden County, Florida nominal 55.5-MW net Woody Biomass Plant being proposed by ADAGE.

# 2. Description of Proposed Plant

ADAGE is proposing the construction of a nominal 55.5-MW net woody biomass power plant in Gadsden County, Florida. The proposed power plant will consist of four (4) specific process areas. These process areas include:

- Fuel (i.e., 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.

To provide a visual representation of the proposed woody biomass plant, several figures are contained in this application. The figures provided are as follows:

- Figure 2-1 provides a three-dimensional isometric view of a representative power island design;
- Figure 2-2 provides a three-dimensional view of a representative fuel receiving, handling, storage and processing operation design;
- Figure 2-3 provides a preliminary site plan that depicts the location and configuration of the operations associated with the proposed plant.

In addition, ADAGE is providing pictures of representative wood handling operations, ash handling systems, BFB boiler and emergency equipment. These pictures are for information purposes only and may not necessarily show the specific type of equipment or configuration to be utilized by ADAGE at the Gadsden County site.

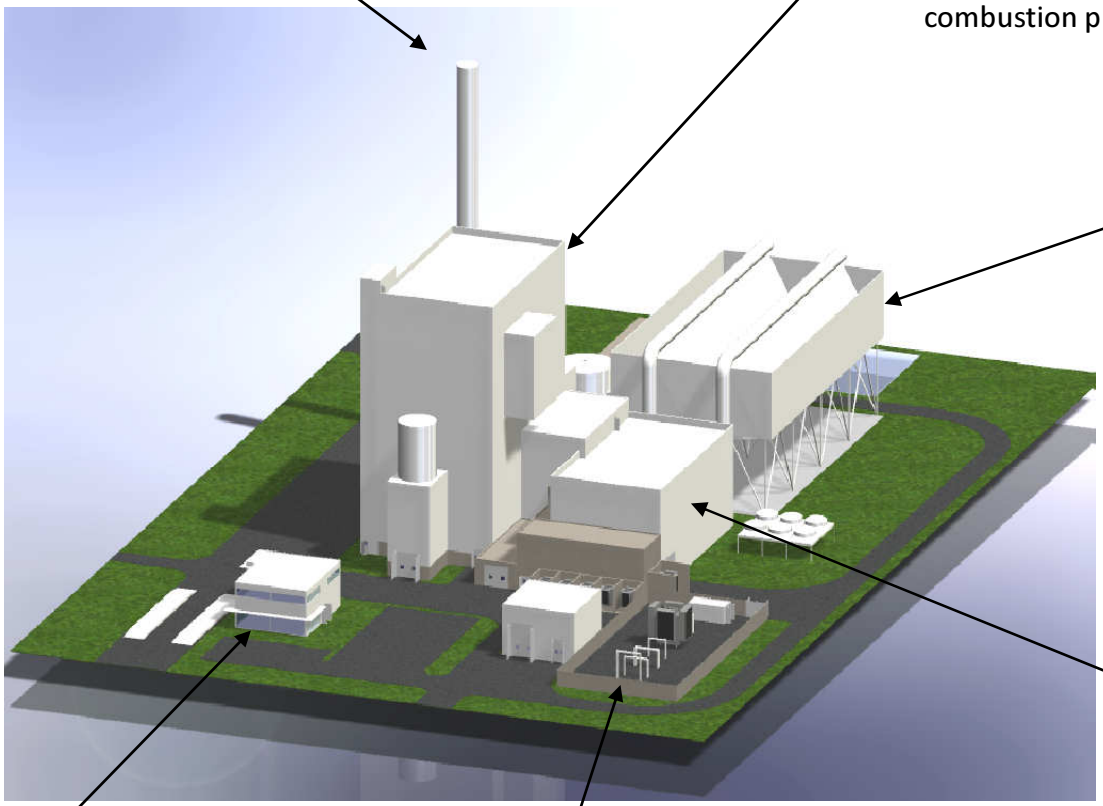
Figure 2-4 provides representative photographs of a) woody biomass fuel receiving, storage and conveying, b) fly ash handling and c) emergency generator/fire pump. Figure 2-5 provides a diagram of a representative BFB boiler.

***The information contained in this application as it pertains to equipment type and location within the plant site is for information purposes only and is subject to change. The location and type of equipment presented is intended to reflect the greatest likelihood for generation of potential emissions of regulated air pollutants.***

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

BFB boiler Exhaust Stack

Boiler island – combustion occurs here using a Bubbling Fluidized Bed (BFB) boiler and environmental controls for the flue gases. High-pressure, high-temperature steam is produced as a result of the combustion process.



Air-cooled condensing unit – the "spent steam" from the turbine is cooled and condensed before it gets looped back into the boiler (closed cycle). The air-cooled condensing unit conserves water and is the most sustainable solution, especially for communities that are experiencing water shortages.

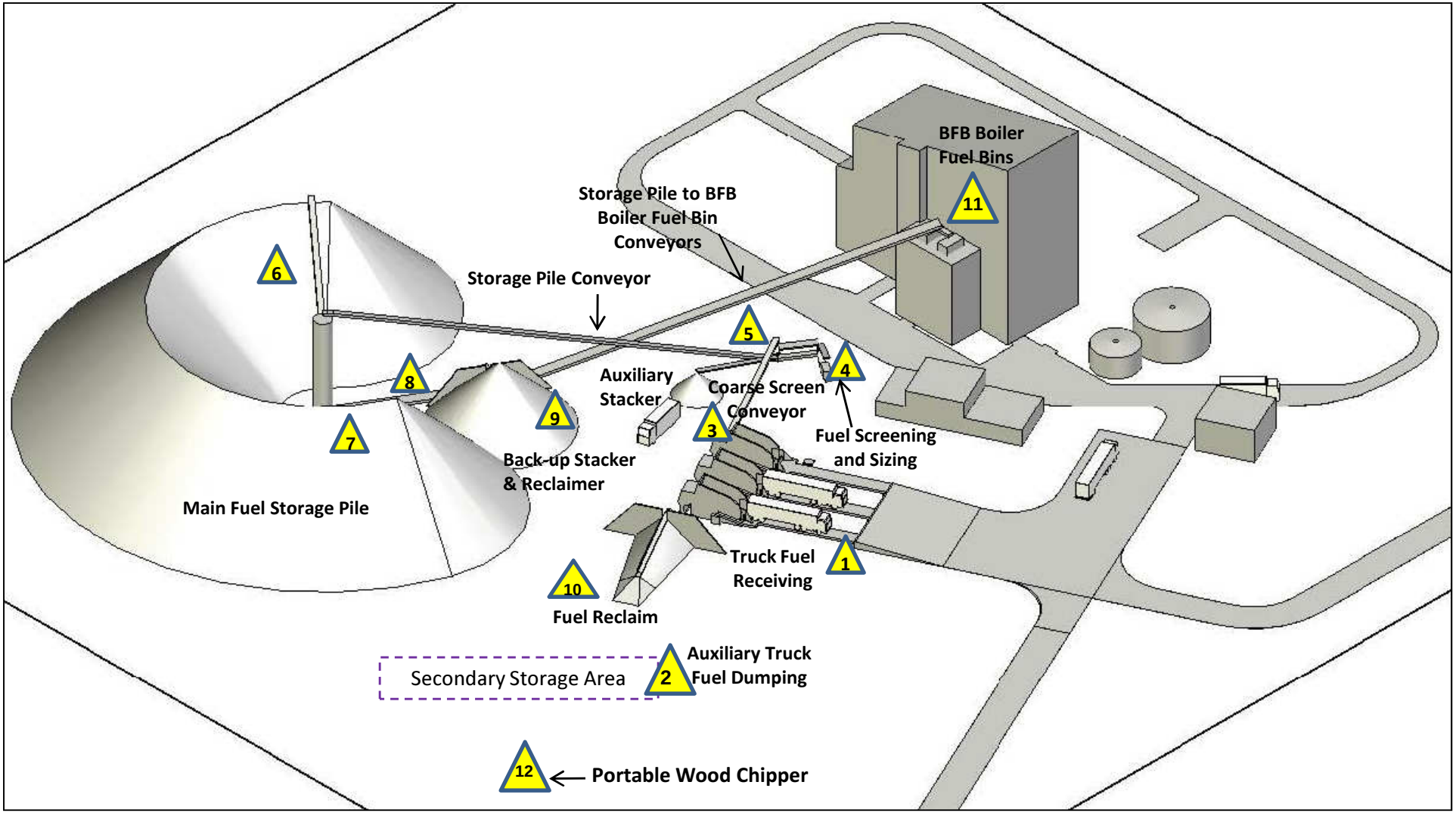
Turbine island – the steam is converted into power, through a high-efficiency steam turbine

Administrative building

Transmission yard – the power is converted to the right voltage, so that it can be provided to the grid over transmission lines

"For Information Purposes Only to Visually Depict the Proposed Plant"

**Figure 2-1 Isometric View of Reference Design Woody Biomass Power Plant**




"For Information Purposes Only to Visually Depict the Proposed Plant"

= Location of drop point

Note: All conveyors will be covered except for areas required to support visual inspection of fuel materials. Number of conveyor systems subject to change.

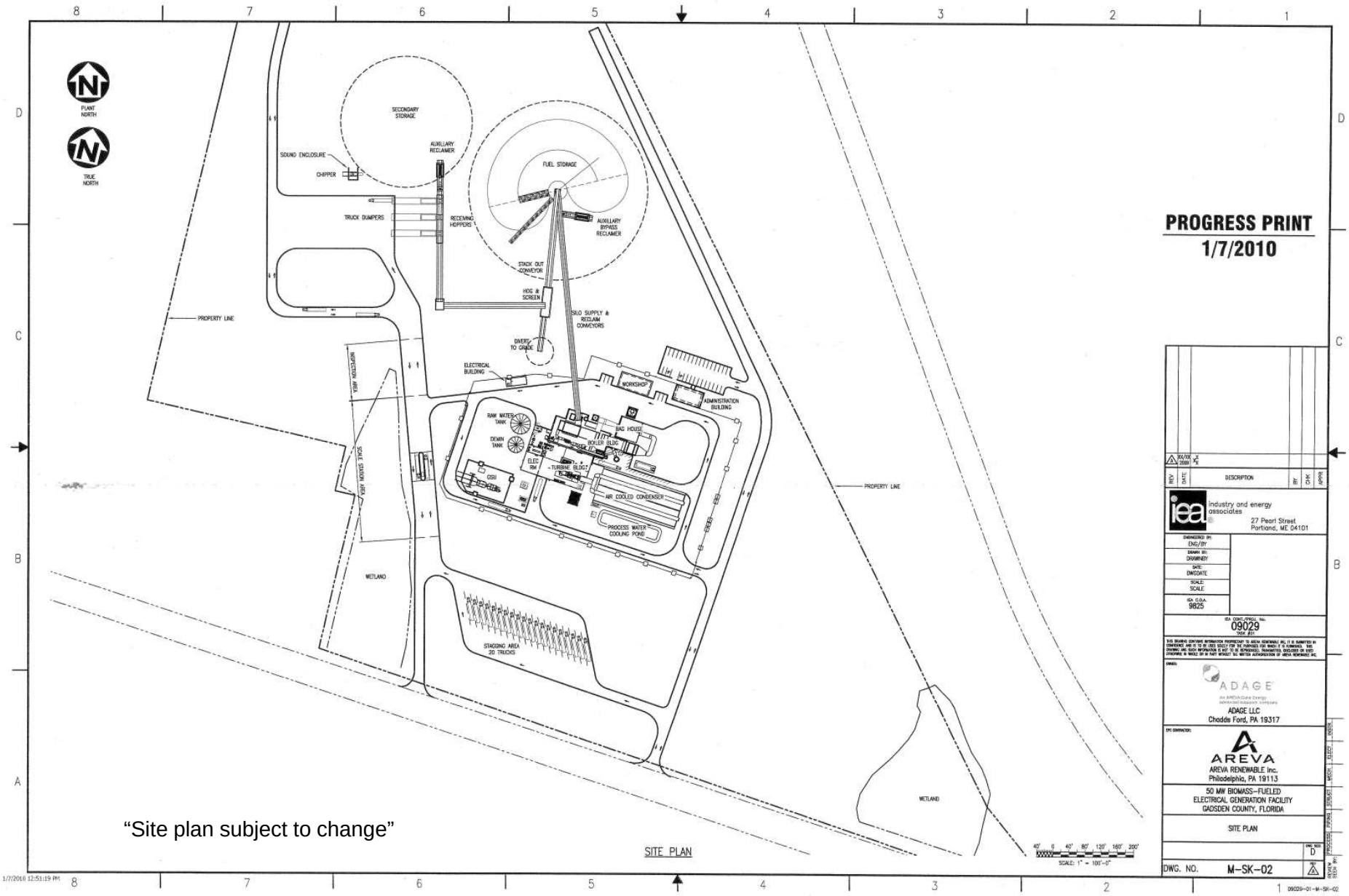
**Figure 2-2. Preliminary Visual Representation of Fuel Handling Operations**

ADAGE Gadsden LLC – Gadsden County, Florida
Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

-- January 2010

MALCOLM PIRNIE

ADAGE An AREVA/Duke Energy advanced biopower company




"Site plan subject to change"

Note: Placement and number of conveyor systems subject to change.

**Figure 2-3 Preliminary Plant Layout**

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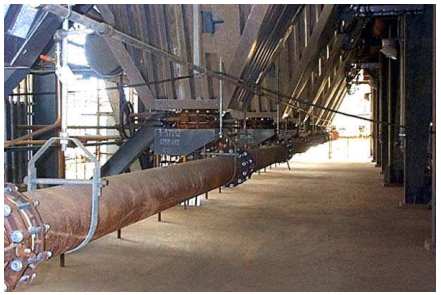
FUEL RECEIVING

FUEL CONVEYING

PILE STORAGE

PILE MAINTENANCE

PORTABLE WOOD CHIPPER



FLY ASH HANDLING


EMERGENCY FIRE WATER PUMP


EMERGENCY GENERATOR

Note: Photographs are representative and for information purposes only to visually depict proposed plant operations.

**Figure 2-4 Photographs of Fuel Handling Operations, Fly Ash Handling and Emergency Equipment**

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Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

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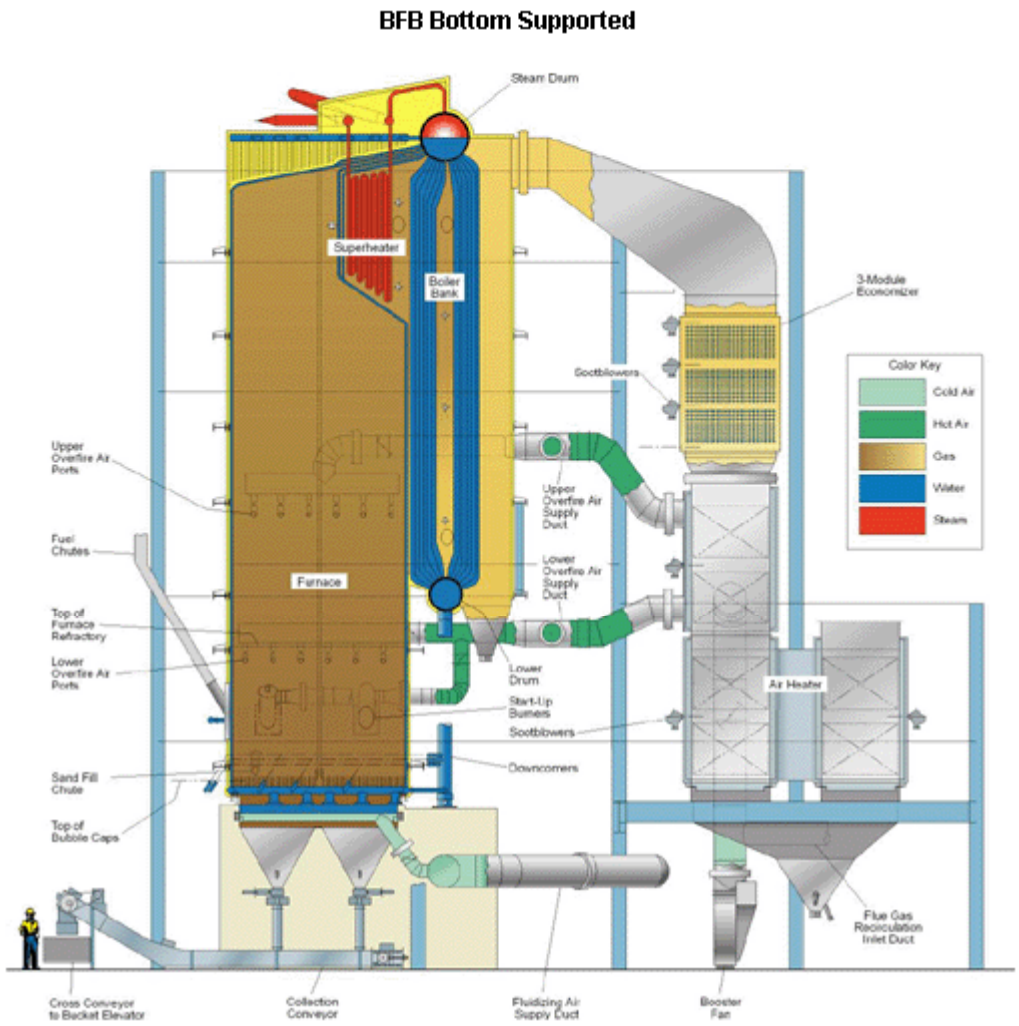


**Figure 2-5 Diagram of Representative Bubbling Fluidized Bed Boiler**

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.

ADAGE has conducted a voluntary air quality impact evaluation that demonstrates regulated air pollutant emissions from the proposed BFB biomass boiler will result in predicted ambient air concentrations that are well below the state and national Ambient Air Quality Standards established by the FDEP and EPA to protect human health and welfare. These standards were developed to ensure that the public, including the elderly, children and other sensitive population areas are protected from over exposure to air pollutants. Refer to Section 6 of this application for this evaluation.

A generic process flow summary of the clean woody biomass electrical generation process is provided in Figure 2-6. Process flow schematic diagrams depicting the equipment associated with each of the four (4) specific process areas are provided in Figures 2-7, 2-8, 2-9, and 2-10.

This section contains a discussion of the process equipment, a description of the control technologies and methods to be used, the methods used to estimate the potential emissions of regulated air pollutants, and tables summarizing the estimates of these regulated air pollutant emission rates. Table 2 identifies the initial list of equipment for each process area. Whether or not each piece of equipment has the potential to emit a regulated air pollutant is also indicated on this list. Summaries of project related estimated PTE of regulated New Source Review (NSR) air pollutants and hazardous air pollutants (HAPs) are provided in Table 2-1 and Table 2-10, 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 statutes.

To support the emission estimation process methodologies involving engineering estimates, vendor suggested emission rates and prior experience were utilized to conservatively estimate PTE regulated air pollutants from the proposed biomass power plant. As part of the emission estimation process, ADAGE 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 biomass boiler. Potential HAP emission rates were obtained from USEPA'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

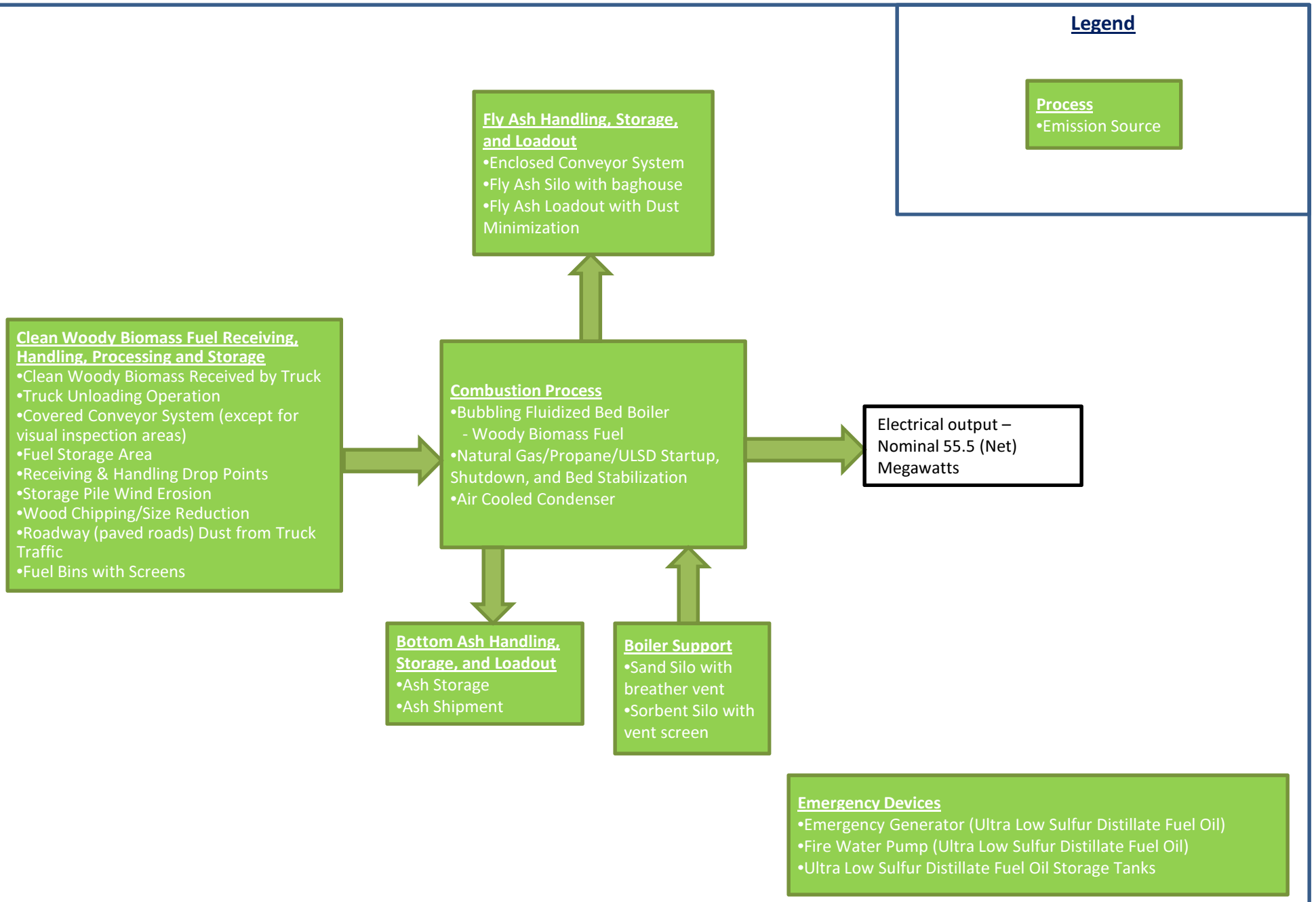


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**Figure 2-6. Generic Process Flow Summary**

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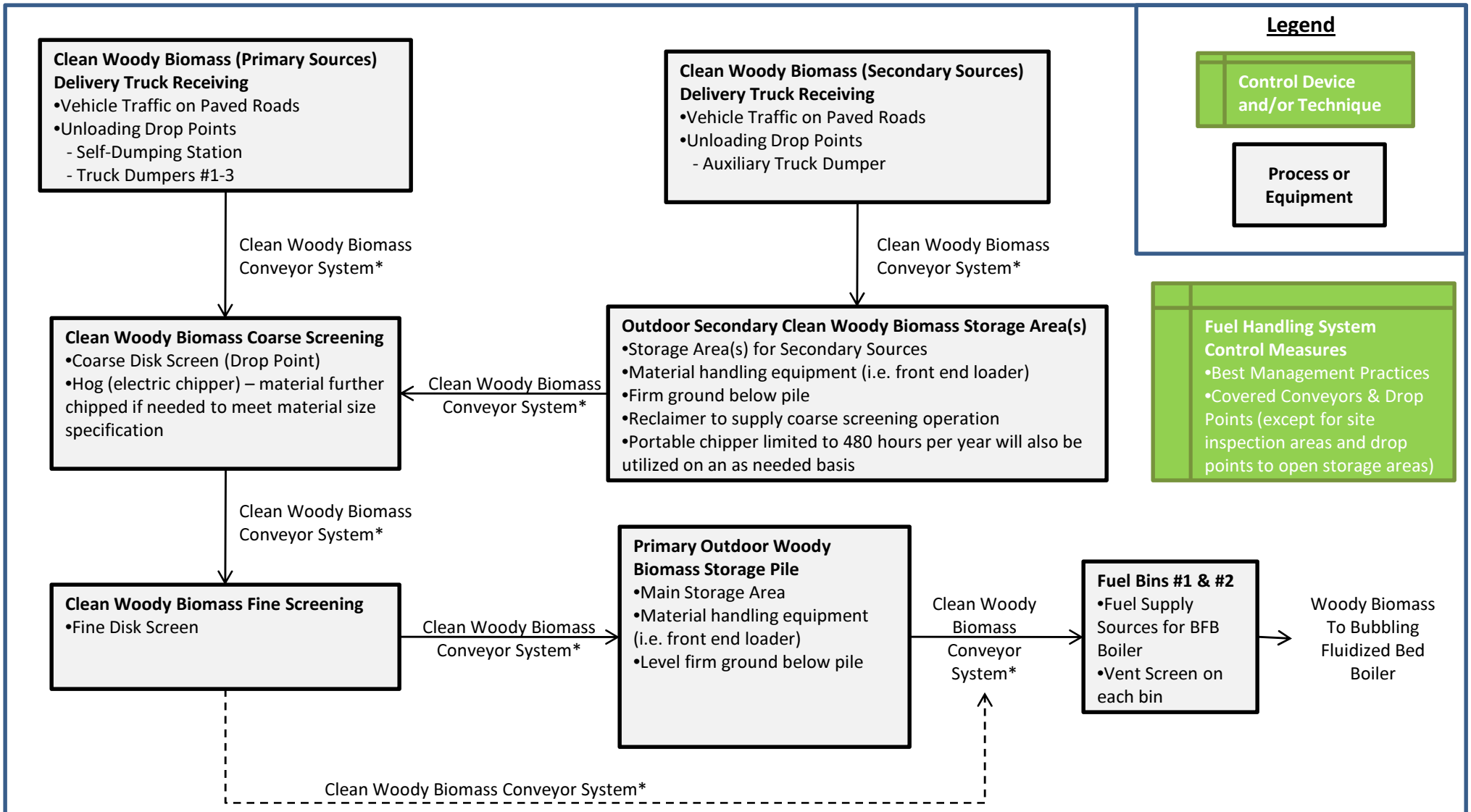
Proposed Nominal 55.5-MW Net Woody Biomass Power Plant -- January 2010




Note: *Conveyor systems will be covered and associated conveyor drop points to other conveyors or storage piles will be designed to minimize potential emissions of fugitive particulate matter. Clean woody biomass will typically be moist, thus minimizing its potential for the generation of fugitive particulate matter. Because the woody biomass will be moist (35% to 55%), the covers on the conveyor and the partially enclosed drop points will be sufficient to minimize fugitive particulate matter. No individual baghouses will be required.

**Figure 2-7. Fuel Handling, Processing, and Storage Process Flow Schematic Diagram**

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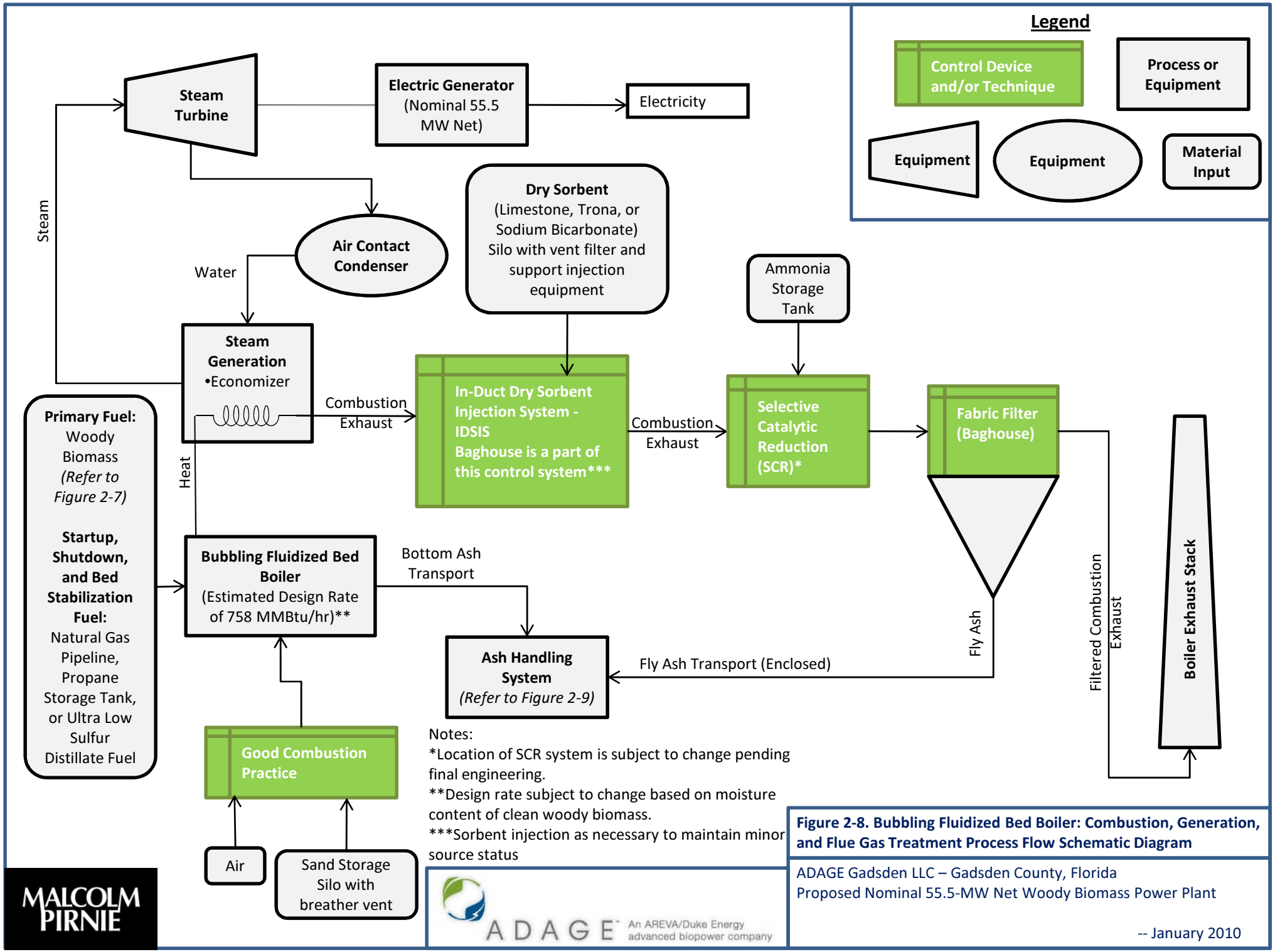


**Figure 2-8. Bubbling Fluidized Bed Boiler: Combustion, Generation, and Flue Gas Treatment Process Flow Schematic Diagram**

ADAGE Gadsden LLC – Gadsden County, Florida
Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

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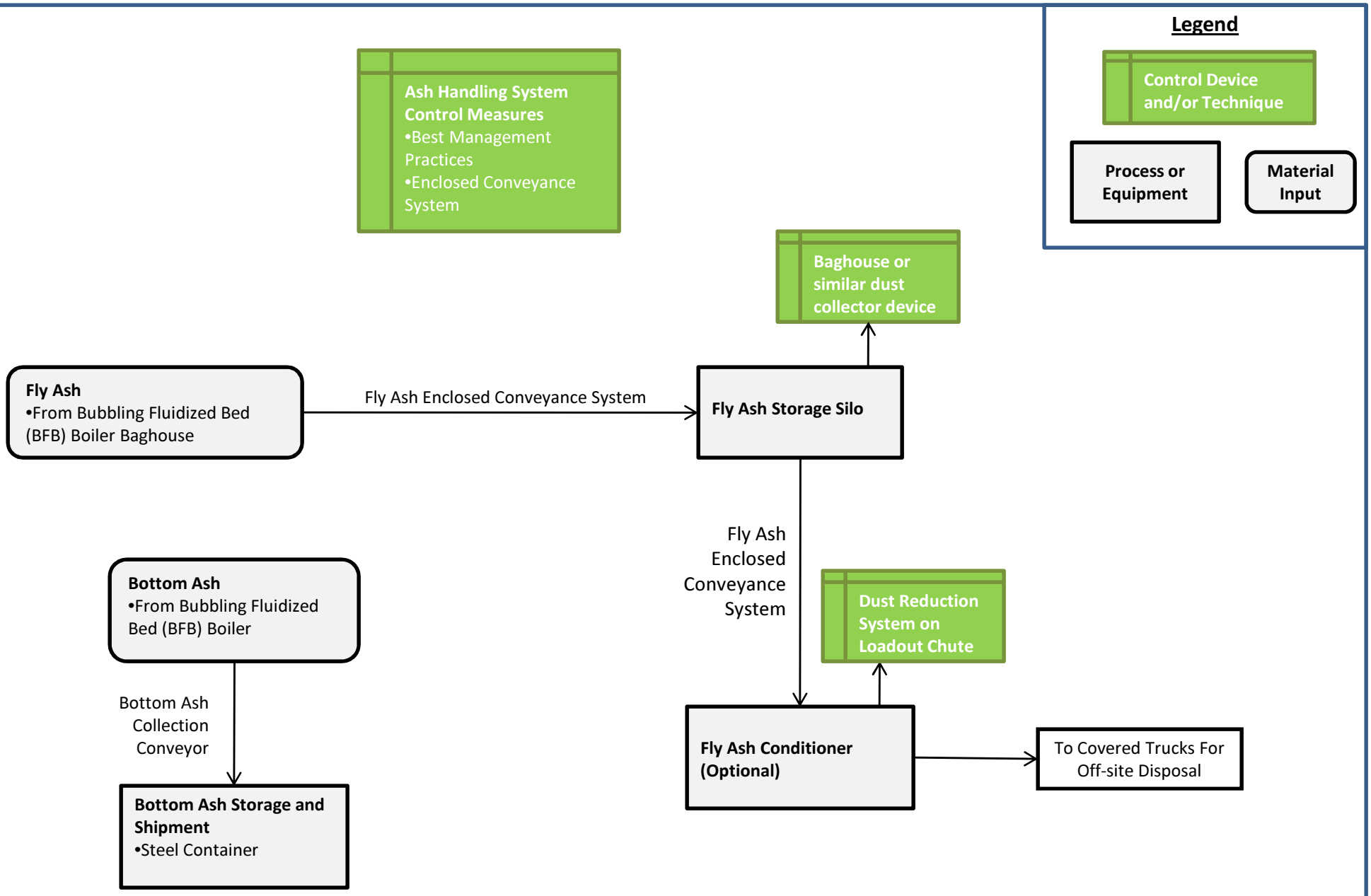


**Figure 2-9. Ash Handling, Storage, and Shipment Process Flow Schematic Diagram**

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Proposed Nominal 55.5-MW Net Woody Biomass Power Plant
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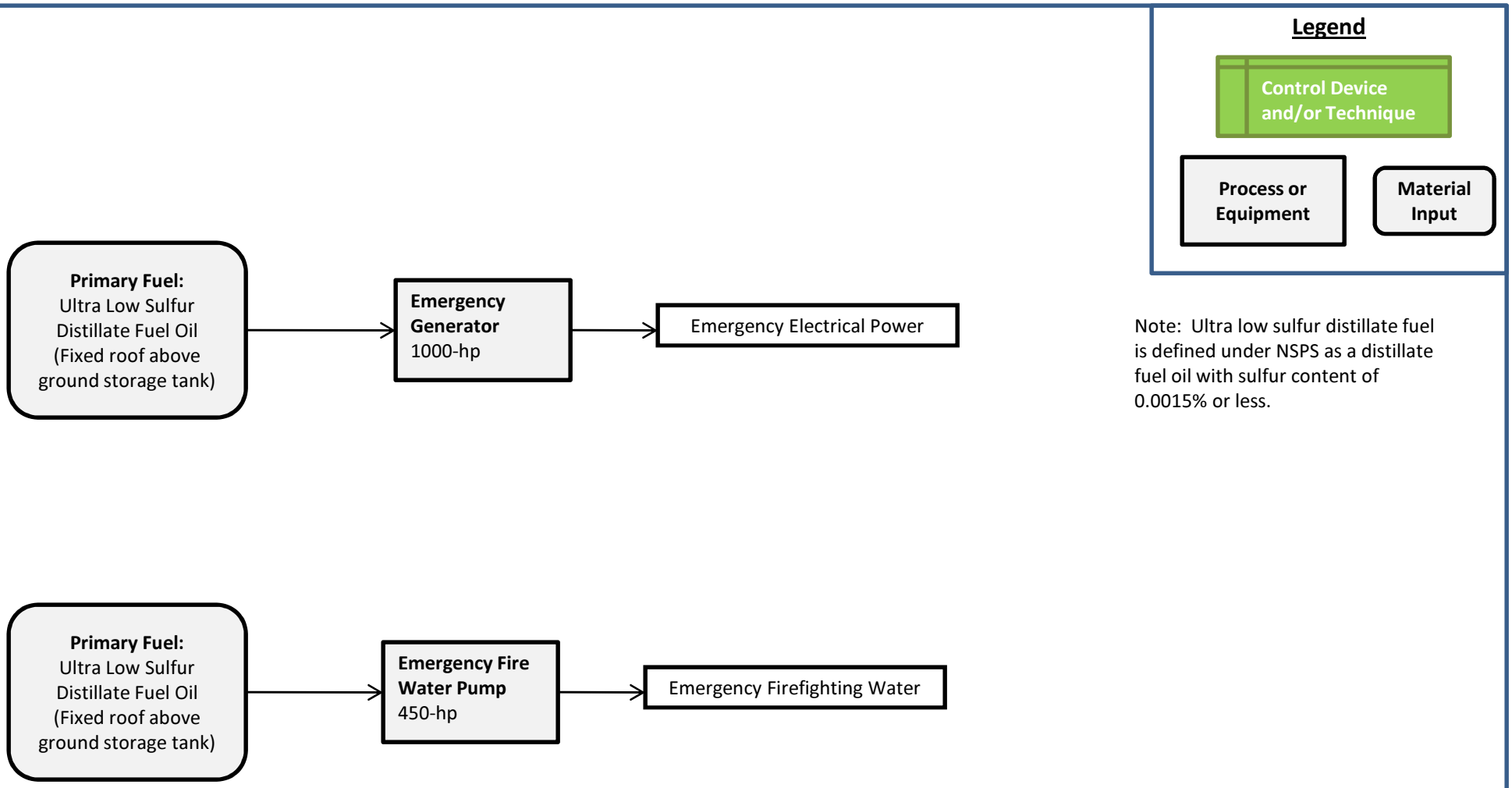



**Figure 2-10. Emergency Equipment Process Flow Schematic Diagram**

equipment were based on a) USEPA established emission factors and methodologies; b) vendor estimates; and c) state/federal emission standards.

A process flow summary of the emission sources, control devices, and potential regulated pollutant emissions for the proposed woody biomass power plant is provided in Figure 2-11.

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 ($PM_{2.5}$).

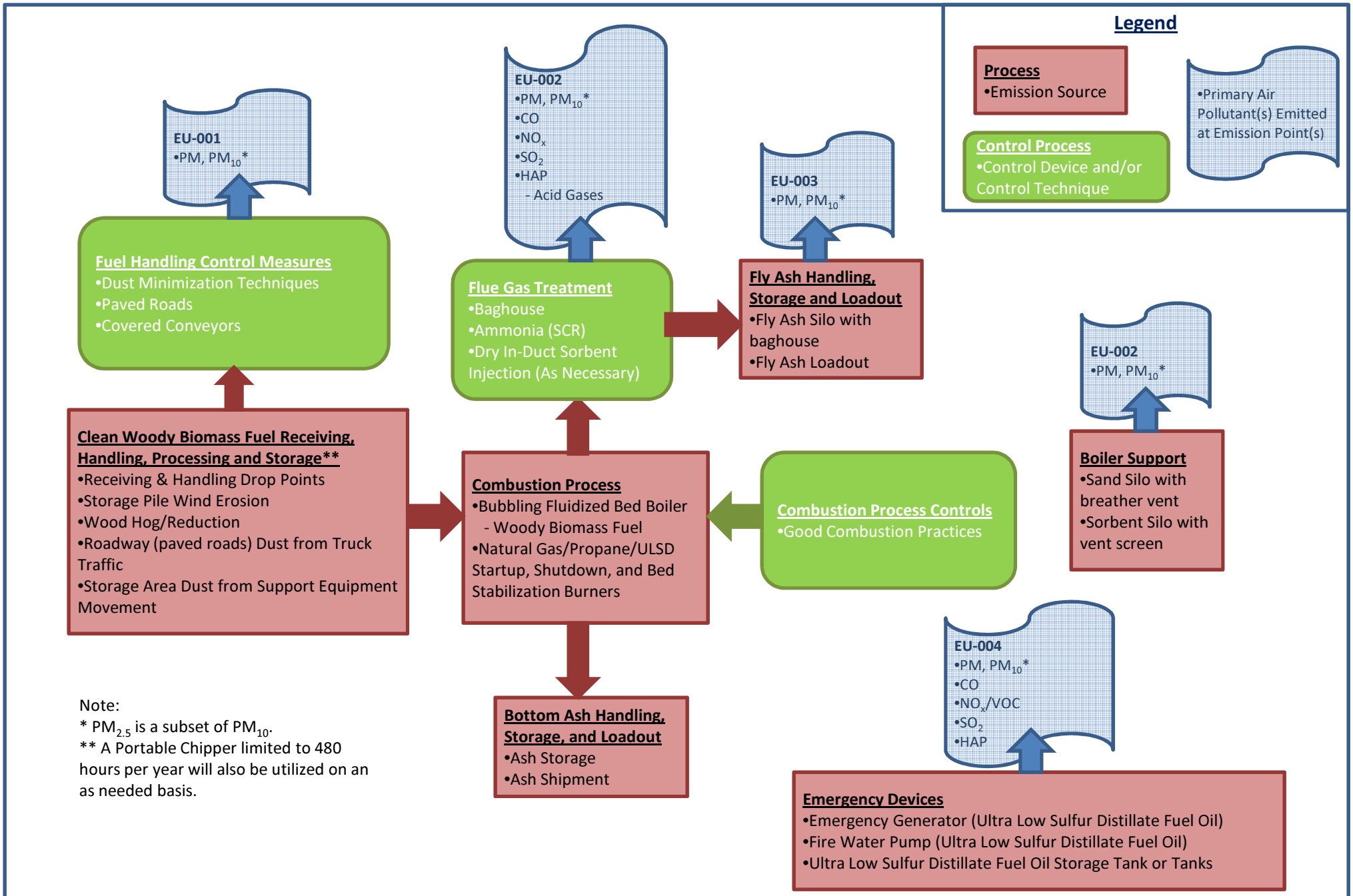
Under the Clean Air Act, EPA initially protected human health and welfare with the development of National Ambient Air Quality Standards (NAAQS), as well as emission standards and limits for PM. The PM standard was replaced with the $PM_{10}$ NAAQS in 1987. Ten years later (1997), EPA revised the PM NAAQS, by setting separate NAAQS for fine particles ($PM_{2.5}$).

EPA also revised the NAAQS for $PM_{10}$ and $PM_{2.5}$ in 2006. During 2006, EPA tightened the 24-hour $PM_{2.5}$ standard by reducing the level from 65 micrograms per cubic meter ($\mu g/m^3$) to 35 $\mu g/m^3$, and retained the annual $PM_{2.5}$ standard of 15 $\mu g/m^3$. The agency retained the existing 24-hour $PM_{10}$ standard of 150 $\mu g/m^3$, and revoked the annual $PM_{10}$ standard. The EPA is in the process of developing specific guidance on how to perform an air quality impact evaluation for emissions of $PM_{2.5}$ from regulated major stationary sources.

As discussed throughout this application, the proposed power plant will be a minor new source of regulated air pollutants. Thus, the proposed plant will not trigger EPA's $PM_{2.5}$ New Source Review requirements since potential emissions will be below the major source threshold levels of 250 tons/year.

The F.A.C. contains provisions for the protection of human health and welfare. Ambient air quality standards currently apply for $PM_{10}$ under 62-204.240. Standards for PM no longer apply and the F.A.C. also does not contain any emission standards or limits for $PM_{2.5}$.

The proposed biomass power plant's emission sources will comply with all PM and $PM_{10}$ requirements contained in the F.A.C. The plant will also be in compliance with the Ambient Air Quality Standards (AAQS) for $PM_{10}$ (state/federal).




Note:
* $PM_{2.5}$ is a subset of $PM_{10}$.
** A Portable Chipper limited to 480 hours per year will also be utilized on an as needed basis.

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**Figure 2-11. Air Emission Source Process Flow Summary**

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Proposed Nominal 55.5-MW Net Woody Biomass Power Plant -- January 2010

## 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. A simple process flow diagram is provided in Figure 2-7. 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 the potential to emit of a regulated air pollutant. Thus, the application is conservative in that the actual configuration will result in a lower potential to emit than what has been conservatively assumed in the application.

As shown in Figures 2-2 and 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. Storm damage woody biomass may be delivered to the site in open trucks. Figure 2-4 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 areas. ADAGE is also considering secondary storage for wood received from storm damage. Wood received from this source may be chipped and will be placed and moved around on the pile by mechanical means (i.e., front end loaders). The initial estimate of the handling capacities of these open bulk storage areas (primary and secondary) has been estimated to be approximately 9,000,000 cubic feet in total.

Covered conveyor systems will also be utilized to transfer materials to and from the storage areas and to the boiler building for combustion in the bubbling fluidized bed 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 screens to manage wood chips 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 Gadsden site.

Also associated with this process area will be a metal magnet detection system, enclosed hog and partially enclosed screen, partially enclosed secondary screen and optional re-chipper, reclaim feeders, retention pond, and electrical building with air compressors. A portable chipper will also be utilized for 480 hours per year to chip oversized wood. The chipper will be rated at 1200 HP and will combust ultra low sulfur diesel fuel (ULSD). Refer to Table 2 for an initial list of equipment, including material transfer rates. Figure 2-4 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.

Operational procedures to minimize spontaneous combustion from storage of the woody biomass materials are being incorporated into the final design of the power 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 to identify potential fire hazards;
3. Incoming unprocessed materials will be stored in areas with a clearance between each storage area;
4. Mixing of materials will be performed at the site. However, the stacker reclaimer will maximize the removal of old material in order to minimize the stacking of newer material on top of older 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 materials during pile build-up will be minimized; and
7. 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 2.7.**

### 2.1.1. Proposed Air Pollution Control Technology/Techniques

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 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 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 woody biomass onto the outdoor storage areas will be designed to minimize excessive dust. ADAGE will be implementing best management practices, which represent the best available control technology for minimizing PM emissions from the fuel receiving, handling, storage and processing operations. Inherent to those best management practices will be the fuel itself. The 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 2-13 provides a preliminary best management practices (BMP) plan for minimization of fugitive dust, pile management and fire prevention. This preliminary BMP plan will be updated by ADAGE as the engineering of the biomass receiving, handling, storage and processing emission unit (EU-001) is finalized.

### 2.1.2. Estimate of Regulated Air Pollutant Emissions

Due to the nature of this operation, potential particulate matter (PM) emissions may occur from a) unloading of fuel from the trucks; b) transferring material from one conveyor to another; c) dropping material from the conveyor system to the main storage pile or other support piles; d) moving the woody biomass by front end loaders to reclaim areas; and e) fugitive dust from vehicle traffic on the plant roads. It is important to note that the conveyors and conveyor transfer drop points associated with this process area will be covered or designed to the extent physically possible to minimize fugitive dust formation. Pile drop points cannot be enclosed; however, because of the moisture content of the wood, fugitive dust should be minimal. Emission estimates have been performed for the individual transfer points since they present the greatest potential to emit PM. No credit has been incorporated into the PM emission estimates for the enclosure of individual transfer points.

ADAGE 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 2-13 includes the following practices:

- Conveyor systems will be 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 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;
- 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.

Potential fugitive dust emission rates were estimated using the recommended methods developed by EPA (i.e., AP-42). Emission source types for this process included material handling (i.e., conveyor transfer points or material drop points), paved road (truck traffic on these paved roads), equipment (i.e., front end loaders) utilized to maintain the storage areas, and wind erosion from the proposed storage areas. Details of the calculations and the resulting emission estimates can be found in Tables 2-4 through Table 2-7.

## 2.2. Power Island Process Area

ADAGE will be utilizing a bubbling fluidized bed (BFB) boiler. This type of boiler has been proven to be very efficient at combusting woody biomass. ADAGE proposes to fuel the new boiler with only clean woody biomass under normal operation. Natural gas,

propane or ULSD fuel will be used for startup, shutdown and bed stabilization of the boiler only. Refer to Section 2.6 for a discussion on the types of fuels to be combusted in the proposed boiler. As discussed in this section, the boiler will be capable of accommodating the following: 1) natural gas, propane, or ULSD 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, propane or ULSD fuel as a secondary fuel for power generation. The boiler heat input capacity for natural gas/propane/ULSD fuel will be rated at 240 million British thermal units per hour (MMBtu/hr). The anticipated maximum design heat input of the boiler while combusting woody biomass at 55% moisture will be 758 MMBtu/hr (24-hour average). The moisture content of the fuel will affect the heat input of the boiler. Lower moisture content results in lower heat input (i.e., 35% moisture correlates to approximately 670 MMBtu/hr). With the highest moisture fuel, short term heat inputs of up to 834 MMBtu/hr may be achieved. ADAGE is requesting that the maximum heat input be established at 834 MMBtu/hr (4-hour average) for the BFB boiler. A shorter term average is being proposed (4-hour versus 24-hour), since these ideal conditions are not anticipated to fluctuate over an extended period of time. This rate is reflected in the draft permit conditions provided in Section 8 of this application.

BFB boilers are capable of more efficiently combusting woody biomass than conventional types of boilers. A fluid-like mixture of solid fuel (such as sand) 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 Figure 2-5.

Combustion of woody biomass (normal operation) and natural gas, propane, or ULSD fuel (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 proposed plant. A discussion of the control technology and methods to be used and the related air pollutant emission rate estimates follows.

A simplified process flow diagram indicating the main equipment, control technologies, and material flows for systems based on a bubbling fluidized bed boiler can be found in Figure 2-8. As depicted in this figure, natural gas will be provided via pipeline, woody biomass will be provided by wood suppliers via incoming trucks and stored on-site and if propane or ULSD fuel is to be utilized, it will be stored onsite in a properly sized aboveground storage tank. A 50,000 gallon above ground storage tank for storing ULSD fuel oil is being proposed for installation at this plant site. Also as part of the Power Island process area, ADAGE will be installing sand and sorbent material silos with either breather vents or vent filters to store materials required to support the proposed woody

biomass boilers. Potential emissions of PM have been determined to be minimal. The silos anticipated to be installed are as follows:

- Sand storage silo with breather vent to support boiler operation; and
- Sorbent storage silo with vent filter to support as needed dry in-duct sorbent injection.

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

### 2.2.1. Estimate of Regulated Air Pollutant Emissions

The estimated PTE of regulated criteria air pollutant emission rates are calculated in Table 2-2 for the BFB boiler. The emission factors used to estimate these potential emissions are summarized in Table 2-3. Table 2-3A provides a summary of emission factors based on wood sampling for $SO_2$, HCl and HF. This data was used to determine specific fuel dependent air pollution emission rates. The operating scenarios defined for the boiler are based on the maximum number of hours annually which the boiler could operate in startup, shutdown and bed stabilization modes burning natural gas, propane or ULSD fuel and normal mode burning clean woody biomass. To allow for boiler testing during the first year of operation, the potential hours of operation on natural gas/propane/ULSD fuel for startup, shutdown and bed stabilization was 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., 758 MMBtu/hr at 55% moisture, 24-hour average) and maximum operating hours per year (i.e., 8,760 hrs/yr). For purposes of this application, the emission profile for propane was assumed to be identical to that of natural gas. It should also be noted that maximum short and long term emission estimates were based on the maximum design heat input of 758 MMBtu/hr at 55% moisture.

Potential emissions of regulated HAPs, as defined under Section 112 (b) of the Clean Air Act, due to combustion in the boiler were also estimated. As indicated in Tables 2-11A and 2-11B, potential HAP emissions from combustion of natural gas and ULSD fuel were based on AP-42 emission factors. For purposes of this application, combustion of propane was assumed to result in the same emission profile as natural gas. Estimated emission rates were based on the maximum design heat input (i.e., 240 MMBtu/hr) and maximum operating hours per year (i.e., 8,760) while combusting natural gas or ULSD fuel.

The calculated potential HAP emission rates due to woody biomass combustion are presented in Table 2-12. Potential HAP emissions from clean woody biomass

combustion were based on a combination of 1) the vacated 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.

### 2.2.2. Proposed Air Pollution Control Technologies/Techniques

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.

#### 2.2.2.1. 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.

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.

#### 2.2.2.2. Dry In-Duct Sorbent Injection: Sulfur Dioxide and Acid Gas Control

The BFB boiler vendor has informed ADAGE that the efficient combustion nature of the BFB when combusting wood, and inclusion of a baghouse downstream of the BFB boilers 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, ADAGE will be installing a dry in-duct sorbent injection system (IDSIS), which may, if necessary be used to meet the HCl limit. The IDSIS will utilize limestone, trona or sodium bicarbonate as the injection sorbent material. The dry sorbent is typically injected as a powder into the flue between the furnace of the boiler and baghouse. The dry sorbent reacts with the targeted air pollutants (i.e., HCl) and removes them from the flue gas before such pollutants are subsequently being filtered from the flue gas by the baghouse. The system is designed to reduce acid

gases such as hydrogen chloride (HCl) and is also effective at reducing sulfur dioxide and sulfuric acid mist. HCl is formed from the presence of chlorine in the wood.

As part of the initial design of the IDSIS, the sorbent may require further refinement (i.e., milling) prior to introduction into the combustion system. Sorbent from the storage silo will be conveyed to an enclosed milling device that will refine the sorbent material prior to injection into the system. Any PM emission that may be generated will be contained within the in-duct sorbent injection system.

#### 2.2.2.3. 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.

#### 2.2.2.4. 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 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.

### 2.2.3. Power Island: Air Cooled Condenser

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.

## 2.3. Ash Handling, Storage and Shipment Process Area

The combustion of biomass in the proposed 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 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 small baghouse for minimizing any PM from the storage silo. The PM outlet concentration of the baghouse 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 storage silo baghouse) 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 proposed plant.

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

### 2.3.1. Estimate of Regulated Air Pollutant Emissions

A process flow diagram of the ash handling, storage, and shipment system is provided in Figure 2-9. This process area will involve the transfer of baghouse fly ash from the baghouse to the fly ash 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 silos and truck loading operation since they reflect the only operations that have a potential to emit PM.

### 2.3.2. Proposed Air Pollution Control Technology/Techniques

The fly ash silo will be equipped with a baghouse for minimizing any fly ash dust that may result from loading fly ash into the silo. The baghouse 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.

Potential fugitive PM emission rates were estimated using the recommended methods of EPA's AP-42 emission estimation guidance document. Emission source types for this process include material handling. Details of the calculations and the resulting emission estimates can be found in Table 2-7.

## 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 2-10.

To support this emergency equipment as well as startup/shutdown conditions for the BFB boiler an aboveground storage tank is being proposed with a capacity of 50,000 gallons. This tank will be designed to store ultra low sulfur distillate fuel oil.

The emergency fire water pump is considered exempt under F.A.C. Section 62-210.300(3)(a)(36). The fuel usage of this general purpose internal combustion engine will not exceed 32,000 gallons of diesel fuel. Emission estimates have been provided in this application to confirm minor source status of the proposed plant.

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

### 2.4.1. Estimate of Regulated Air Pollutants

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 2-8 and Table 2-9, respectively. ***The proposed 50,000 gallon distillate fuel oil storage tank will generate negligible emissions of VOC.*** The low volatility of the distillate oil minimizes the tank's potential for generating VOC emissions. Because of the negligible level of VOC emissions anticipated from the storage of very low volatility

fuel oil, a detained emission calculation utilizing EPA's Tank program was not performed. Based on the size of the tank and the low volatility of the ULSD (<0.5 psia), the tank is not subject to EPA's NSPS provisions for above ground storage tanks (i.e., Kb).

### 2.4.2. Proposed Air Pollution Control Technology/Techniques

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 tank will only be designed to store low volatility distillate fuel oil and will be equipped with a conservation vent.

## 2.5. Air Pollutant Emission Source Release Characteristics

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 specific type of release is identified in the table below for each emission group.

| Emission Group Description | Emission Group ID # | Source Release Characteristic |
|---|---|---|
| Fuel Receiving, Handling, Storage and Processing | EU-001 | 1) Conveyor drop points and storage silos are considered point sources.<br>2) Wind erosion off the storage area is considered fugitive.<br>3) Utilization of equipment to move storage area material is considered fugitive.<br>4) Portable Wood Chipper. Fuel combustion component is considered a point source. Cutting of the wood into a chip and conveyor drop point are considered fugitive. |
| Power Island | EU-002 | 1) Point Source. One stack for the biomass boiler. Stack discharge height of approximately 170 feet. Stack discharge diameter of approximately 12 feet.<br>2) Sorbent storage silo with vent filter is considered a point source.<br>3) Sand silo with breather vent is considered a point source. |
| Ash Handling, Storage and Shipment | EU-003 | Storage silo with baghouse and truck loading operations are considered point sources. |
| Emergency Support Equipment | EU-004 | Point source. One stack for each emergency piece of equipment. Stack height/diameter to be established by engine manufacturer. |

## 2.6. Boiler Fuels

The proposed biomass boiler will be designed to accommodate natural gas/propane/ULSD fuels which are defined as fossil fuels and woody biomass which is defined as a renewable energy fuel. Specifics associated with the fuels to be combusted in the biomass boiler are noted below.

### 2.6.1. Natural Gas/Propane/Ultra Low Sulfur Distillate Fuel Combustion

The boiler will be designed to accommodate natural gas/propane/ULSD fuel for boiler startup, shutdown and boiler bed stabilization only. The burners that will only combust natural gas/propane/ULSD fuel within this boiler are being designed to have a maximum heat input of 240 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.

### 2.6.2. Woody Biomass

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

#### 2.6.2.1. Description of Woody Biomass to be Utilized

ADAGE will be using clean woody biomass in the proposed bubbling fluidized bed boiler. The clean wood will be untreated wood or untreated wood products including clean untreated lumber, tree stumps (whole or chipped), and tree limbs (whole or chipped) and slash. This also includes, but is not limited to, wood, wood residue, bark, or any derivative fuel or residue thereof, in any form, including but not limited to sawdust, sander dust, wood chips, scraps, slabs, millings, shavings, and processed pallets made from wood or other forest residues.

Further clarification of the clean wood to be utilized is expanded upon below:

1. Pre-commercial tree thinning
    - This includes Tops, Limbs and Whole Tree soft or hardwoods that result from harvest and/or thinning.

2. Primary saw mill waste
    - This is untreated waste which does not include secondary residues, such as plywood, medium density fiberboard (mdf), oriented strand board (osb) or particle board scraps.

3. Slash
    - This is defined as branches and other residue left on a forest floor after the cutting of timber.

4. Understory
    - This is forest understory that is typically burned to help reduce forest fires. It includes the smaller trees, saplings, and other woody species that grow beneath the forest's canopy.

5. Land Clearing and Storm Debris
    - This is defined as clean wood such as tree parts and/or branches that have been cut down for land development or line clearing purposes or that have been gathered after storms. It includes butts, sticks, pole ends and tree surgeon material.

6. Source Separated Construction Wood Waste
    - This is defined as any clean construction wood waste that was a primary mill product and has not been treated in any way such as pallets, dimensional lumber (2x4s etc.), clean wood trim, clean milled lumber; and
    - This excludes anything that has been painted or glued (such as laminated beams, finger jointed trim, sheet goods, particle board, medium density fiberboard (mdf), etc).

## 2.7. Proposed Emission Monitoring and Compliance Methods

Emission monitoring and compliance requirements are imposed by state and federal air statute, 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 8 for a detailed description of the emission limits and compliance methods being proposed by ADAGE for the biomass power plant.

| Emission Monitoring and/or Compliance Methods to be Performed to Demonstrate Compliance | |
|---|---|
| Emission Group ID# EU-001: Fuel Receiving, Handling, Storage and Processing | Best management practices (BMP) to be implemented, including 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. |

| Emission Monitoring and/or Compliance Methods to be Performed to Demonstrate Compliance | |
|---|---|
| Emission Group ID# EU-002: Power Island | • Continuous emission monitor (CEM) for measuring $NO_x$ emissions from the biomass boiler to comply with NSPS $D_b$, acid rain provision, and for tracking $NO_x$ lb/hr (12-month, rolled monthly) emissions from the biomass boiler.<br>• CEM for measuring CO emissions from the biomass boiler for tracking CO lb/hr (12-month, rolled monthly) emissions from the biomass boiler.<br>• Continuous opacity monitor (COM) for measuring opacity from the biomass boiler to show compliance with NSPS $D_b$ and opacity limitations of 20%. ADAGE has designed the equipment to minimize emissions of particulate matter, thus is proposing a more restrictive opacity limit of 10 percent to reflect this environmentally efficient design.<br>• CEM for measuring $SO_2$ emissions from the biomass boiler to comply with acid rain provisions and for $SO_2$ emissions from the biomass boiler.<br>• A diluent ($O_2$ or $CO_2$) monitor will also be installed.<br>• Good combustion practices and incorporation of a baghouse to be implemented for controlling $PM/PM_{10}$ emissions from the biomass boiler. Initial compliance stack test to be used to ensure $PM/PM_{10}$ emissions meet state/federal emission limits.<br>• Good combustion practices to be implemented for VOC emissions from the biomass boiler.<br>• A dry in-duct sorbent injection system (IDSIS) will be used, as needed to comply with a ton/year limit for hydrochloric acid from the BFB boiler. CEM to be used to confirm tons/year rate.<br>• Good combustion practices will be followed during startup, shutdown and malfunctions.<br>• 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.<br>• Initial stack tests for emissions of $NH_3$, CO, $NO_x$, PM $SO_2$, THC and opacity from the BFB boiler. Yearly tests for emissions of $NH_3$, PM and opacity during operation of the plant.<br>• Continuous monitoring and recording devices for measuring steam temperature (°F), steam pressure (psig) and steam production rate (lbs/hr).<br>• A device to continuously measure and record the pressure drop across each compartment of the main baghouse.<br>• Operation of a bag leak detection system on the main baghouse.<br>• Install, calibrate, operate and maintain a flow meter to measure and record the ammonia injection rate for the SCR system. |

| Emission Monitoring and/or Compliance Methods to be Performed to Demonstrate Compliance | |
|---|---|
| Emission Group ID# EU-003: Ash Handling, Storage and Shipment | 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. |
| Emission Group ID# EU-004: Emergency Support Equipment | Best management practices to be implemented. Limited hours of operation and compliance with applicable requirements within NSPS Subpart IIII and MACT Subpart ZZZZ |

**Table 2**
**Listing of Equipment Associated With the Proposed Biomass Power Plant**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Operations | Equipment Description (For Information Purposes Only - Reflects Worst Case Equipment Configuration for Identification of Air Emission Sources) | Potential to Emit a Regulated Air Pollutant | Regulated Air Pollutant | Material/Equipment Maximum Capacities (Hourly) | Material/Equipment Maximum Capacities (Annual) | Emission Source Group | Emission Source Group Identification Number |
|---|---|---|---|---|---|---|---|
| Fuel Receiving, Handling, Storage and Processing (EU-001)* | Scale House | No | N/A | -- | -- | Fuel Receiving | EU-001 |
| | Truck Scales (9 - 12 trucks/hr) | No | N/A | -- | -- | | |
| | Truck Fuel Receiving - Dumpers #1 - 3 (Drop Point #1) | Yes | $PM/PM_{10}$ | 500 | 4,380,000 | | |
| | Truck Dumpers Hydraulic Unit #1 - #3 | No | N/A | | | | |
| | Truck Dumpers Unloading Pits #1 - #3 | No | N/A | | | | |
| | Self-Dumper Unloading Pit | No | N/A | -- | -- | | |
| | Auxiliary Truck Fuel Dumper #4 (Drop Point #2) | Yes | $PM/PM_{10}$ | 250 | 2,190,000 | | |
| | Vehicle Traffic on Paved Roads | Yes | $PM/PM_{10}$ | -- | -- | | |
| | Coarse Screen Supply Conveyor (500 tons/hr throughput) | No | N/A | 500 | 4,380,000 | Fuel Handling | EU-001 |
| | Fuel Receiving Dumpers to Coarse Screen Conveyor (Drop Point #3) | Yes | $PM/PM_{10}$ | | | | |
| | Coarse Screen Supply Conveyor to Storage Pile (500 tons/hr throughput) | No | N/A | 500 | 4,380,000 | | |
| | Coarse Screen Supply Conveyor to Storage Pile (Drop Points #5 and #6) | Yes | $PM/PM_{10}$ | | | | |
| | Self-Cleaning Magnet & Metal Detector | No | N/A | -- | -- | | |
| | Fuel Screening and Sizing | No | N/A | -- | -- | | |
| | Fuel Screening and Sizing (Drop Point #4) | Yes | $PM/PM_{10}$ | -- | -- | | |
| | Fine Screen Supply Conveyor (500 tons/hr throughput) | No | N/A | 500 | 4,380,000 | | |
| | Fine Screen Supply Conveyor (Drop Point #8) | Yes | $PM/PM_{10}$ | | | | |
| | Portable Wood Chipper (Drop Point #12) | Yes | PM/PM10 | 200 | 96,000 | | |
| | Fuel Reclaim #1 and #2 (Drop Points #9 and #10) | Yes | $PM/PM_{10}$ | 500 (each) | 4,380,000 | | |
| | Outdoor Storage Conveyor (Drop Point #7) | Yes | $PM/PM_{10}$ | 500 | 4,380,000 | Fuel Storage | EU-001 |
| | Outdoor Storage Area (9,000,000 $ft^3$) | Yes | $PM/PM_{10}$ | | | | |
| | Fuel Bin Supply Conveyor (500 tons/hr throughput) | No | N/A | 500 | 4,380,000 | Fuel Processing | EU-001 |
| | Fuel Bin Supply Conveyor (Drop Point #11) | Yes | $PM/PM_{10}$ | 500 | 4,380,000 | | |
| Power Island (EU-002) | Natural Gas, Propane and ULSD - Startup and Boiler Bed Stabilization | Yes | $SO_2$, CO, $NO_x$, $PM/PM_{10}$, VOC, HAPs | 240 MMBtu/hr | -- | Startup, Shutdown and Boiler Bed Stabilization | EU-002 |
| | Woody Biomass - Normal Operation | Yes | $SO_2$, CO, $NO_x$, $PM/PM_{10}$, VOC, HAPs | 758 MMBtu/hr based on 55% moisture (24-hour average) | -- | Woody Biomass Normal Operation | EU-002 |
| | Boiler Stack - Baghouse & Dry Sorbent In-duct Injection | Yes | $SO_2$, CO, $NO_x$, $PM/PM_{10}$, VOC, HAPs | -- | -- | Boiler Emission Point | EU-002 |
| | Sand and Sorbent Storage Silos - Sorbent Silo will be equipped with a bin vent filter rated at 0.01 grains/dscf | Yes*** | $PM/PM_{10}$ | 80 | 700,800 | Boiler Emission Point | EU-002 |
| | Ammonia Storage Tank (Vents) | Yes | N/A | N/A | N/A | Boiler Emission Point | EU-002 |

**Table 2**
**Listing of Equipment Associated With the Proposed Biomass Power Plant**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Operations | Equipment Description (For Information Purposes Only - Reflects Worst Case Equipment Configuration for Identification of Air Emission Sources) | Potential to Emit a Regulated Air Pollutant | Regulated Air Pollutant | Material/Equipment Maximum Capacities (Hourly) | Material/Equipment Maximum Capacities (Annual) | Emission Source Group | Emission Source Group Identification Number |
|---|---|---|---|---|---|---|---|
| Ash Handling, Storage and Shipment (EU-003)** | Baghouse Ash Collecting Conveyors | No | N/A | 7.0 | 61,320 | Fly Ash Handling | N/A |
| | Baghouse Ash Collecting Conveyors Drop Point - Enclosed | No | $PM/PM_{10}$ | -- | -- | | |
| | Baghouse Hoppers | No | N/A | 7.0 | 61,320 | | |
| | Baghouse Hoppers Drop Point - Enclosed | No | $PM/PM_{10}$ | -- | -- | | |
| | Baghouse Ash Transfer Conveyor | No | N/A | 7.0 | 61,320 | | |
| | Baghouse Ash Transfer Conveyor Drop Points - Enclosed | No | $PM/PM_{10}$ | -- | -- | | |
| | Fly Ash Transfer Conveyor | No | N/A | 7.0 | 61,320 | Fly Ash Storage | EU-003 |
| | Fly Ash Transfer Conveyor Drop Point - Enclosed | No | $PM/PM_{10}$ | -- | -- | | |
| | Fly Ash Elevating Conveyor | No | N/A | 7.0 | 61,320 | | |
| | Fly Ash Elevating Conveyor Drop Point into Silo with Baghouse rated at 0.01 grains/dscf | Yes | $PM/PM_{10}$ | -- | -- | | |
| | Fly Ash Silo to Fly Ash Conditioner Drop Point - Enclosed | No | $PM/PM_{10}$ | 84 | 61,320 | Fly Ash Shipment | EU-003 |
| | Fly Ash Conditioner | No | N/A | -- | -- | | |
| | Fly Ash Conditioner Drop Chute and Interconnecting Chutes - Enclosed | No | $PM/PM_{10}$ | 84 | 61,320 | | |
| | Fly Ash Conditioner Retractable Discharge Chute | Yes | $PM/PM_{10}$ | -- | -- | | |
| | Bed Hoppers | No | N/A | 1 | 8,760 | Bottom Ash Handling & Shipment | EU-003 |
| | Bed Hoppers Drop Points | Yes | $PM/PM_{10}$ | -- | -- | | |
| | Bed Hoppers Ash Collecting Conveyor | No | N/A | 1 | 8,760 | | |
| | Bed Hoppers Ash Collection Conveyor Drop Point | Yes | $PM/PM_{10}$ | -- | -- | | |
| | Bed Hopper Ash Transfer Conveyor | No | N/A | 1 | 8,760 | | |
| | Bed Hopper Ash Transfer Conveyor Drop Point | Yes | $PM/PM_{10}$ | -- | -- | | |
| Emergency Support Equipment (EU-004) | Emergency Generator (and associated stack) | Yes | $SO_2$, CO, $No_x$, $PM/PM_{10}$, VOC, HAPs | 1000 bhp | -- | Emergency Generator | EU-004 |
| | Emergency Fire Water Pump (and associated stack) | Yes | $SO_2$, CO, $No_x$, $PM/PM_{10}$, VOC, HAPs | 450 bhp | -- | Emergency Fire Water Pump | EU-004 |
| Miscellaneous Support Operations | Workshop | No | N/A | -- | -- | N/A | N/A |
| | Electrical Building | No | N/A | -- | -- | N/A | N/A |
| | Raw Water Tank with Vent | No | N/A | -- | -- | N/A | N/A |
| | Demin Tank with Vent | No | N/A | -- | -- | N/A | N/A |
| | Switchyard | No | N/A | -- | -- | N/A | N/A |
| | Administration Building | No | N/A | -- | -- | N/A | N/A |
| | Pump Room | No | N/A | -- | -- | N/A | N/A |
| | Turbine Building | No | N/A | -- | -- | N/A | N/A |
| | Turbine Building HVAC and Vents | No | N/A | -- | -- | N/A | N/A |
| | Boiler Building | No | N/A | -- | -- | N/A | N/A |
| | Boiler Building HVAC and Vents | No | N/A | -- | -- | N/A | N/A |
| | Aux Transformer | No | N/A | -- | -- | N/A | N/A |
| | Air Cooled Heat Exchanger | No | N/A | -- | -- | N/A | N/A |
| | Air Cooled Heat Exchanger - SJAE Vent | No | N/A | -- | -- | N/A | N/A |
| | Electic Building with Air Condenser | No | N/A | -- | -- | N/A | N/A |
| | Log Storage Area | No | N/A | -- | -- | N/A | N/A |

Notes:
* Conveyors and drop points are enclosed or partially enclosed
** Conveyors and drop points are totally enclosed
*** Emissions from the storage silos are a result of loading materials into the silos (i.e. drop point)

**Table 2-1**
**Summary of Worst Case Potential to Emit Regulated New Source Review (NSR) Air Pollutants and NSR Regulatory Applicability**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| **Estimated Potential to Emit (PTE) Criteria Air Pollutants (tons per year)** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Source Operation** | **Reference** | **PM** | **$PM_{10}$** | **$PM_{2.5}$** | **$NO_x$** | **$SO_2$** | **$H_2SO_4$** | **CO** | **VOC** | **Fluorides** |
| Woody Biomass Fluidized Bed Boiler | Tables 2-2 & 2-3 | 96 | 96 | 96 | 232 | 149 | 26 | 246 | 56 | 40 |
| Woody Biomass Handling and Processing | Table 2-7 | 7.71 | 3.65 | 0.55 | -- | -- | -- | -- | -- | -- |
| Fly Ash Handling | Table 2-7 | 0.04 | 0.02 | 0.003 | -- | -- | -- | -- | -- | -- |
| Boiler Support Material Handling | Table 2-7 | 0.03 | 0.01 | 0.002 | -- | -- | -- | -- | -- | -- |
| Wood Chipper Combustion Emissions | Table 2-7B | 0.20 | 0.20 | 0.20 | 6.91 | 0.003 | 2.24E-04 | 1.58 | 0.20 | |
| Emergency Generator & Storage Tank | Table 2-8 | 0.04 | 0.04 | 0.04 | 1.3 | 0.002 | 0.0001 | 0.7 | 1.3 | -- |
| Emergency Fire Pump & Storage Tank | Table 2-9 | 0.02 | 0.02 | 0.02 | 0.4 | 0.12 | 0.01 | 0.3 | 0.4 | -- |
| Project Total PTE Excluding Fugitive Sources[(a)] | | 104 | 100 | 97 | 241 | 150 | 26 | 248 | 58 | 40 |
| Major Source Threshold Rates[(b)] (tons per year) | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Project Classified as Major Source Under PSD? | | no | no | no | no | no | no | no | no | no |
| **Fugitive Source Operation** | **Reference** | **PM** | **$PM_{10}$** | **$PM_{2.5}$** | **$NO_x$** | **$SO_2$** | **$H_2SO_4$** | **CO** | **VOC** | **Fluorides** |
| In-plant Paved Roads | Table 2-4 | 22.3 | 4.3 | 0.7 | -- | -- | -- | -- | -- | -- |
| Wood Chipper Emissions | Table 2-7A | 1.0 | 0.10 | 0.10 | | | | | | |
| Woody Biomass Pile Processing | Table 2-5 | 1 | 0.08 | 0.01 | -- | -- | -- | -- | -- | -- |
| Woody Biomass Pile Wind Erosion | Table 2-6 | 2.2 | 1.1 | 0.2 | -- | -- | -- | -- | -- | -- |
| Total Fugitive Source PTE | | 27 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Project Total PTE Including Fugitive Sources | | 131 | 106 | 98 | 241 | 150 | 26 | 248 | 58 | 40 |

**Notes:**

a) Fugitive emission sources are excluded from the estimated project total emissions for purpose of determining major source status per F.A.C. 62-210.200(195)(c).

b) Proposed woody biomass boiler will be capable of natural gas , propane and ULSD (classified as fossil fuels) combustion for startup, shutdown, and bed stabilization purposes and woody biomass (classified as a renewable energy fuel) for normal operations. The heat input of the natural gas and/or propane 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.

**Table 2-2**
**Estimated Potential to Emit Regulated NSR Air Pollutants from the Proposed Woody Biomass Fluidized Bed Boiler**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Operating Scenario | | Startup, Shutdown, and Bed Stabilization[a] | | Startup, Shutdown, and Bed Stabilization[a] | | Normal Operating Mode[b] | | Worst-Case | |
|---|---|---|---|---|---|---|---|---|---|
| | | Natural Gas/Propane | | Ultra Low Sulfur Fuel Oil Combustion | | Clean Woody Biomass Combustion Fuel | | | |
| **Applicable Time Period** | | **Maximum Hourly** | **Maximum Annual** | **Maximum Hourly** | **Maximum Annual** | **Maximum Hourly** | **Maximum Annual** | **Maximum Hourly (lb/hr)** | **Maximum Annual (tpy)** |
| Heat Input, H (MMBtu/hr) | | 240 | 240 | 240 | 240 | 758 | 758 | -- | -- |
| Annual Operating Hours, T (hours/year) | | -- | 8760 | -- | 8760 | -- | 8760 | -- | -- |
| **$PM_f$ (Filterable)** | Emission Factor (lb/MMBtu) | 0.0056 | 0.0056 | 0.01 | 0.01 | 0.01 | 0.01 | -- | -- |
| | Emission Rate (lb/hr "hourly" & tpy "annual") | 1.34 | 5.87 | 3.43 | 15.02 | 8 | 33 | **8** | **33** |
| **$PM_c$ (Condensable)** | Emission Factor (lb/MMBtu) | 0.0019 | 0.0019 | 0.01 | 0.01 | 0.019 | 0.019 | | -- |
| | Emission Rate (lb/hr "hourly" & tpy "annual") | 0.45 | 1.96 | 2.23 | 9.76 | 14 | 63 | **14** | **63** |
| **PM (Total)** | Emission Factor (lb/MMBtu) | 0.0075 | 0.0075 | 0.02 | 0.02 | 0.029 | 0.029 | -- | -- |
| | Emission Rate (lb/hr "hourly" & tpy "annual") | 1.79 | 7.83 | 5.66 | 24.78 | 22 | 96 | **22** | **96** |
| **$PM_{10}$** | Emission Factor (lb/MMBtu) | 0.0075 | 0.0075 | 0.02 | 0.02 | 0.029 | 0.029 | -- | -- |
| | Emission Rate (lb/hr "hourly" & tpy "annual") | 1.79 | 7.83 | 5.66 | 24.78 | 22 | 96 | **22** | **96** |
| **$PM_{2.5}$** | Emission Factor (lb/MMBtu) | 0.0075 | 0.0075 | 0.02 | 0.02 | 0.029 | 0.029 | -- | -- |
| | Emission Rate (lb/hr "hourly" & tpy "annual") | 1.8 | 7.8 | 5.7 | 24.8 | 22 | 96 | **22** | **96** |
| **$NO_x$[e]** | Emission Factor (lb/MMBtu) | 0.3 | 0.2 | 0.200 | 0.200 | 0.3 | 0.07 | -- | -- |
| | Emission Rate (lb/hr "hourly" & tpy "annual") | 72 | 210 | 48 | 210 | 227 | 232 | **227** | **232** |
| **$SO_2$[e]** | Emission Factor (lb/MMBtu) | 0.0006 | 0.0006 | 0.0017 | 0.0017 | 0.19 | 0.045 | -- | -- |
| | Control Efficiency[c] | 0% | 0% | 0% | 0% | 0% | 0% | -- | -- |
| | Emission Rate (lb/hr "hourly" & tpy "annual") | 0.1 | 0.6 | 0.4 | 1.8 | 144 | 149 | **144** | **149** |
| **$H_2SO_4$ (Aerosols and Mist)** | Emission Factor (lb/MMBtu) | 0.00004 | 0.00004 | 7.70E-07 | 5.50E-09 | 0.012 | 0.0077 | -- | -- |
| | Control Efficiency[c] | 0% | 0% | 0% | 0% | 0% | 0% | -- | -- |
| | Emission Rate (lb/hr "hourly" & tpy "annual") | 0.009 | 0.040 | 1.85E-04 | 5.78E-06 | 9 | 26 | **9** | **26** |
| **CO[e]** | Emission Factor (lb/MMBtu) | 0.082 | 0.082 | 0.04 | 0.04 | 0.6 | 0.074 | -- | -- |
| | Emission Rate (lb/hr "hourly" & tpy "annual") | 20 | 87 | 9 | 38 | 455 | 246 | **455** | **246** |
| **VOC** | Emission Factor (lb/MMBtu) | 0.0054 | 0.0054 | 0.002 | 0.002 | 0.017 | 0.017 | -- | -- |
| | Emission Rate (lb/hr "hourly" & tpy "annual") | 1.3 | 5.7 | 0.6 | 2.6 | 13 | 56 | **13** | **56** |
| **Fluorides** | Emission Factor (lb/MMBtu) | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.012 | 0.012 | -- | -- |
| | Control Efficiency[d] | 0% | 0% | 0% | 0% | 0% | 0% | -- | -- |
| | Emission Rate (lb/hr "hourly" & tpy "annual") | 0.0 | 0.0 | 0.0 | 0.0 | 9 | 40 | **9** | **40** |

**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 for Normal Operating Scenario,
8 lb/hr = 758 mmBtu/hr x 0.01 lb/mmBtu

Annual PM Emission Rate for Normal Operating Scenario,
33 ton/year = 758 mmBtu/hr x 0.01 lb/mmBtu x 8760 hours/year / (2000 lb/ton)

**Notes:**
(a) Startup fuel is natural gas. Emission Factors based on AP-42 or NSPS (refer to Table 2-3).
(b) Normal operating fuel is woody biomass. Emission factors based on AP-42, NSPS, or fuel sample testing (refer to Table 2-3).
(c) Upwards of 50% to 80% reduction of $SO_2$, $SO_3$, and $H_2SO_4$ can reasonably be expected with dry in-duct sorbent injection (DSI). However, it was assumed no DSI occurs for calculation of worst-case estimated PTE $SO_2$ and $H_2SO_4$ rates.
(d) Reduction of hydrogen fluoride (HF) can reasonably be expected with dry sorbent injection (DSI). Most of the fluoride emissions are expected to occur in the form of HF emissions. However, it was assumed no DSI occurs for calculation of worst-case estimated PTE fluoride rates.
(e) Maximum annual emission factor provided for informational purposes only. Continuous emission monitoring system (CEMS) will be used to demonstrate compliance with the federally enforceable annual emission limit. Short-term emission estimates are provided for informational purposes only.

**Table 2-3**
**Emission Factors and References Used for Estimating Criteria Air Pollutant Emissions from the Proposed Woody Biomass Boiler**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Operating Scenario | | Startup, Shutdown and Bed Stabilization: Natural Gas/Propane Combustion | | Startup, Shutdown and Bed Stabilization: Ultra Low Sulfur Fuel Oil Combustion | | Normal: Woody Biomass Combustion | |
|---|---|---|---|---|---|---|---|
| **Pollutant** | **Applicable Time Period** | **Emission Factor (lb/MMBtu)** | **Reference** | **Emission Factor (lb/mmBtu)** | **Reference** | **Emission Factor (lb/MMBtu)** | **Reference** |
| **$PM_f$ (Filterable)** | Annual | 0.0056 | AP-42 Table 1.4-2 | 0.014 | AP-42 Table 1.3-1 | 0.01 | Engineering Estimate(a) |
| | Hourly | 0.0056 | AP-42 Table 1.4-2 | 0.014 | AP-42 Table 1.3-1 | 0.01 | Engineering Estimate(a) |
| **$PM_c$ (Condensable)** | Annual | 0.0019 | AP-42 Table 1.4-2 | 0.009 | AP-42 Table 1.3-2 | 0.019 | Engineering Estimate[(a)] |
| | Hourly | 0.0019 | AP-42 Table 1.4-2 | 0.009 | AP-42 Table 1.3-2 | 0.019 | Engineering Estimate[(a)] |
| **PM (Total)** | Annual | 0.0075 | Sum of $PM_f$ and $PM_c$ | 0.02 | Sum of $PM_f$ and $PM_c$ | 0.029 | Sum of $PM_f$ and $PM_c$ |
| | Hourly | 0.0075 | Sum of $PM_f$ and $PM_c$ | 0.02 | Sum of $PM_f$ and $PM_c$ | 0.029 | Sum of $PM_f$ and $PM_c$ |
| **$PM_{10}$** | Annual | 0.0075 | AP-42 Table 1.4-2 | 0.02 | AP-42 Table 1.3-1, 1.3-2 | 0.029 | Assume $PM_{10}$ = PM |
| | Hourly | 0.0075 | AP-42 Table 1.4-2 | 0.02 | AP-42 Table 1.3-1, 1.3-2 | 0.029 | Assume $PM_{10}$ = PM |
| **$PM_{2.5}$** | Annual | 0.0075 | AP-42 Table 1.4-2 | 0.02 | AP-42 Table 1.3-1, 1.3-2 | 0.029 | Assume $PM_{2.5}$ = PM |
| | Hourly | 0.0075 | AP-42 Table 1.4-2 | 0.02 | AP-42 Table 1.3-1, 1.3-2 | 0.029 | Assume $PM_{2.5}$ = PM |
| **$NO_x$** | Annual | 0.2 | Engineering Estimate[(c)] | 0.20 | NSPS Subpart Db[(b)] | 0.07 | Engineering Estimate[(c)] |
| | Hourly | 0.3 | NSPS Subpart Db[(b)] | 0.20 | NSPS Subpart Db[(b)] | 0.3 | NSPS Subpart Db[(b)] |
| **$SO_2$** | Annual | 0.0006 | AP-42 Table 1.4-2 | 0.0017 | AP-42 Table 1.3-1[(k)] | 0.045 | Engineering Estimate[(c)] |
| | Hourly | 0.0006 | AP-42 Table 1.4-2 | 0.0017 | AP-42 Table 1.3-1[(k)] | 0.19 | Engineering Estimate[(d)] |
| **$H_2SO_4$ (Aerosols and Mist)** | Annual | 0.00004 | Engineering Estimate[(e,f)] | 5.50E-09 | Engineering Estimate[(e)] | 0.008 | Engineering Estimate[(e,f)] |
| | Hourly | 0.00004 | Engineering Estimate[(e,f)] | 7.70E-07 | Engineering Estimate[(e,f)] | 0.012 | Engineering Estimate[(d,e,f)] |
| **CO** | Annual | 0.082 | AP-42 Table 1.4-1 | 0.04 | AP-42 Table 1.3-1 | 0.074 | Vendor Estimate[(c,g)] |
| | Hourly | 0.082 | AP-42 Table 1.4-1 | 0.04 | AP-42 Table 1.3-1 | 0.6 | AP-42 Table 1.6-2 |
| **VOC** | Annual | 0.0054 | AP-42 Table 1.4-2 | 0.002 | AP-42 Table 1.3-3 | 0.017 | Engineering Estimate |
| | Hourly | 0.0054 | AP-42 Table 1.4-2 | 0.002 | AP-42 Table 1.3-3 | 0.017 | Engineering Estimate |
| **Fluorides** | Annual | 0 | Engineering Estimate[(h)] | 0 | Engineering Estimate[(h)] | 0.012 | Engineering Estimate[(i)] |
| | Hourly | 0 | Engineering Estimate[(h)] | 0 | Engineering Estimate[(h)] | 0.012 | Engineering Estimate[(i)] |

**Notes:**

(a) NSPS limit of 0.03 lbs/MMBtu for PM (filterable only)
(b) NSPS Subpart Db limit is 0.3 lb/MMBtu for $NO_x$ when co-firing natural gas and woody biomass.
(c) Estimated annual average emission factor required to maintain minor source status. Continuous emission monitoring system (CEMS) will be used to demonstrate compliance.
(d) Based on upper limit of 95% confidence interval from testing of fuel woods representative of proposed fuel supply as indicated in Table 2-3A.
(e) Assumed that 5% of the uncontrolled sulfur dioxide is further oxidized to sulfur trioxide and combined with water to form sulfuric acid
(f) Factors are based on "Maximum Hourly" $SO_2$ emission factor as noted above.
(g) Vendor estimated CO emission rate with good combustion practice control measures is 0.08 lbs/MMBtu. A long-term CO emission rate of 0.074 lbs/MMBtu will be met to maintain minor source status.
(h) It was assumed that natural gas combustion results in no emission of fluorides
(i) Based on the upper limit of 95% confidence interval for fluorine content of a sample of representative wood fuels as indicated in Table 2-3A. Assumed 100% of the fluorine in the fuel is emitted as hydrogen fluoride (HF).

**Table 2-3A**
**Summary of Emission Factors Based on Wood Sampling for $SO_2$, HCl and HF**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| | Average | | Standard Deviation | | Average + 1.96 | |
|---|---|---|---|---|---|---|
| **Fuel Blend Weighted Statistics** | **As Received** | **Dry** | **As Received** | **Dry** | **As Received** | **Dry** |
| Higher Heating Value (Btu/lb) | 5202 | 8292 | 802 | 736 | -- | -- |
| Sulfur Dioxide ($SO_2$) (lb/MMBtu) | 0.076 | 0.077 | 0.058 | 0.049 | **0.190** | 0.173 |
| Hydrogen Chloride (HCl) (lb/MMBtu) | 0.012 | 0.012 | 0.006 | 0.004 | **0.024** | 0.019 |
| Hydrogen Fluoride (HF) (lb/MMBtu) | 0.005 | 0.005 | 0.004 | 0.004 | **0.012** | 0.0134 |

**Table 2-4**
**Estimated PM/$PM_{10}$ /$PM_{2.5}$ Emission Rates Due to Vehicle Traffic on Paved Roads (In Plant Only)**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

**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 | 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 - Full Truck (in) | 40 | 125 | 45,625 | 0.37 | 17,014 | 1.68 | 0.33 | 0.05 | 14.3 | 2.8 | 0.4 |
| Fuel Receiving -Empty Truck (out) | 20 | 125 | 45,625 | 0.39 | 17,581 | 0.59 | 0.12 | 0.02 | 5.2 | 1.0 | 0.2 |
| Ash Haul Out - Empty Truck (in) | 20 | 10 | 3,650 | 0.23 | 839 | 0.59 | 0.12 | 0.02 | 0.2 | 0.0 | 0.0 |
| Ash Haul Out - Full Truck (out) | 40 | 10 | 3,650 | 0.26 | 964 | 1.68 | 0.33 | 0.05 | 0.8 | 0.2 | 0.0 |
| Ammonia Receiving - Full Truck (in) | 40 | 10 | 3,650 | 0.23 | 839 | 1.68 | 0.33 | 0.05 | 0.7 | 0.1 | 0.0 |
| Ammonia Receiving -Empty Truck (out) | 20 | 10 | 3,650 | 0.26 | 964 | 0.59 | 0.12 | 0.02 | 0.3 | 0.1 | 0.0 |
| Dry Sorbent Receiving - Full Truck (in) | 40 | 10 | 3,650 | 0.23 | 839 | 1.68 | 0.33 | 0.05 | 0.7 | 0.1 | 0.0 |
| Dry Sorbent Receiving -Empty Truck (out) | 20 | 10 | 3,650 | 0.26 | 964 | 0.59 | 0.12 | 0.02 | 0.3 | 0.1 | 0.0 |
| TOTAL | | | | | 39,041 | -- | -- | -- | 22.3 | 4.3 | 0.7 |

**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 emission.

**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 13.2.1 - Paved Roads

E = k*(sL/2)^0.65 * ((W/3)^1.5-C) * (1 - P/(4N))

Where:

| | | |
|---|---|---|
| E= Particulate Matter Emission Factor | varies | lb/VMT |
| kPM = Particle Size Number | 0.082 | unitless |
| kPM-10 = Particle Size Number | 0.016 | unitless |
| kPM-2.5 = Particle Size Number | 0.0024 | unitless |
| sL - Road Surface Silt Loading | 0.6 | $g/m^2$ (Table 13.2.1-3 baseline for ADT <500) |
| W = Average Vehicle Weight (tons) | | |
| C = Exhaust Emission Factor (lb/VMT) | 0.0005 | |
| P = Number of "wet" days during an averaging period | 115 | (AP-42 Figure 13.2.1-2) |
| 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,

17014 miles = 125 trips/day x 365 days/year x 0.37 miles/trip

Fuel Receiving (Full Truck) PM Emission Factor,

1.68 lb/VMT = 0.082 x (0.6/2)^0.65 x ((40/3)^1.5 - 0.0005) x (1 - 115/(4 x 365))

Fuel Receiving (Full Truck) Estimated PTE PM,

14.3 tons/year = 17014 miles/year x 1.68 lb/VMT / (2000 lb/ton)

**Table 2-5**
**Estimated $PM/PM_{10}/PM_{2.5}$ Emission Rates Due to Woody Biomass Pile Processing - Outdoor Storage Areas**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| 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 | 0.16 | 10.25 | 10 | 8760 | 0.03 | 0.002 | 0.0003 | 0.3 | 0.02 | 0.003 | 1 | 0.08 | 0.01 |

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

**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 * 0.16^1.2 ) / ( 10.25^1.3 ) = 0.002 lb-PM10/hr/dozer
PM10: Short-term PTE = 0.002 lb-PM10/hr/dozer * 10 dozers = 0.3 lb/hr
PM10: Long-term PTE = 0.3 lb/hr * 8760 hours / (2000 lb/ton)

**Table 2-6**
**Estimated PM/$PM_{10}$/$PM_{2.5}$ Emission Rates Due to Wind Erosion on Outdoor Woody Biomass Storage Area(s)**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| | |
|---|---|
| **Frequency of Disturbance (days/year)** | 365 |
| **Total Pile Surface Area, A ($m^2$)** | 11,382 |
| **Threshold Friction Velocity[(a)], $u_t$* (m/s)** | 0.76 |
| **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 | $PM_{10}$ | $PM_{2.5}$ |
| 2 | 16.1 | 10 | 16.09 | 0.85 | 2.82 | 0.04 | 0.02 | 0.00 |
| 57 | 20.1 | 10 | 20.12 | 1.07 | 13.09 | 0.16 | 0.08 | 0.01 |
| 64 | 17.0 | 10 | 17.0 | 0.90 | 4.65 | 0.06 | 0.03 | 0.00 |
| 67 | 19.2 | 10 | 19.2 | 1.02 | 10.35 | 0.13 | 0.06 | 0.01 |
| 68 | 17.0 | 10 | 16.99 | 0.90 | 4.65 | 0.06 | 0.03 | 0.00 |
| 75 | 16.1 | 10 | 16.09 | 0.85 | 2.82 | 0.04 | 0.02 | 0.00 |
| 78 | 14.8 | 10 | 14.75 | 0.78 | 0.57 | 0.01 | 0.00 | 0.00 |
| 79 | 18.3 | 10 | 18.3 | 0.97 | 7.88 | 0.10 | 0.05 | 0.01 |
| 84 | 16.5 | 10 | 16.54 | 0.88 | 3.71 | 0.05 | 0.02 | 0.00 |
| 105 | 14.8 | 10 | 14.75 | 0.78 | 0.57 | 0.01 | 0.00 | 0.00 |
| 132 | 17.9 | 10 | 17.9 | 0.95 | 6.74 | 0.08 | 0.04 | 0.01 |
| 162 | 19.2 | 10 | 19.22 | 1.02 | 10.35 | 0.13 | 0.06 | 0.01 |
| 174 | 14.8 | 10 | 14.75 | 0.78 | 0.57 | 0.01 | 0.00 | 0.00 |
| 181 | 20.1 | 10 | 20.12 | 1.07 | 13.09 | 0.16 | 0.08 | 0.01 |
| 182 | 16.5 | 10 | 16.54 | 0.88 | 3.71 | 0.05 | 0.02 | 0.00 |
| 212 | 16.5 | 10 | 16.54 | 0.88 | 3.71 | 0.05 | 0.02 | 0.00 |
| 226 | 16.1 | 10 | 16.09 | 0.85 | 2.82 | 0.04 | 0.02 | 0.00 |
| 235 | 20.6 | 10 | 20.56 | 1.09 | 14.56 | 0.18 | 0.09 | 0.01 |
| 236 | 19.7 | 10 | 19.67 | 1.04 | 11.69 | 0.15 | 0.07 | 0.01 |
| 239 | 16.5 | 10 | 16.54 | 0.88 | 3.71 | 0.05 | 0.02 | 0.00 |
| 243 | 16.1 | 10 | 16.09 | 0.85 | 2.82 | 0.04 | 0.02 | 0.00 |
| 244 | 17.0 | 10 | 16.99 | 0.90 | 4.65 | 0.06 | 0.03 | 0.00 |
| 254 | 17.9 | 10 | 17.88 | 0.95 | 6.74 | 0.08 | 0.04 | 0.01 |
| 346 | 22.8 | 10 | 22.8 | 1.21 | 22.87 | 0.29 | 0.14 | 0.02 |
| 356 | 20.6 | 10 | 20.56 | 1.09 | 14.56 | 0.18 | 0.09 | 0.01 |

**Total Annual Erosion Potential**

| Emission Scenario | Fugitive Emission Rate (tons/year) | | |
|---|---|---|---|
| | PM | $PM_{10}$ | $PM_{2.5}$ |
| Total Uncontrolled, R | 2.2 | 1.1 | 0.16 |
| **Total Controlled, $R_c$** | **2.2** | **1.1** | **0.16** |

**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 fastest 3-second wind speed as summarized in National Climatic Data Center (NCDC) Quality Controlled Local Climatological Data (QCLCD) for Tallahassee Municipal Airport (TLH) for the year 2008

**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))

$u^+_{10,64}$ = 17 m/s = 17(ln(10/0.005)/ln(10/0.005))

$u^*_i = 0.0053\ u^+_{10,i}$

$u^*_{64}$ = 0.9 m/s = 0.0053 * 17

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

$P_i$ = 4.65 g/m2 = 58 (0.9 - 0.76)^2 + 25 (0.9 - 0.76)

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

$R_i$ = 0.06 tons = 1 * 4.65 g/m2 * 11382 m2 / (453.59 g/lb) / (2000 lb/ton)

$R_i = k\ P_i\ A$

R = sum of all $R_i$

$R = \Sigma^i R_i$

$R_c$ = 2.2 tons/year = 2.2 tons/year x ( 1 - 0%)

$R_c = R\ (1 - C)$

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

**Storage Pile Surface Area Calculation:**

| Primary Pile | | Secondary Pile | |
|---|---|---|---|
| Height, H (ft) = | 40 | Diameter, D (ft) = | 300 |
| Height, H (m) = | 12.19 | Diameter, D (m) = | 91.44 |
| Base, B (ft) = | 140 | Height, H (ft) = | 40 |
| Base, B (m) = | 42.67 | Height, H (m) = | 12.19 |
| Side Slope, m = | 0.57 | Surface area, A ($m^2$) = | 6,796 |
| Crescent Radius, R (ft) = | 90 | | |
| Crescent Radius, R (m) = | 27.43 | | |

**Table 2-7**
**Estimated PM/$PM_{10}$/$PM_{2.5}$ Emission Rates Due to Material Handling Operations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Emission Source Operation | Material Aggregate Throughput, T | | Material Aggregate Maximum (tons/year) | Safety Factor | Effective Material Aggregate Handled, $T_{eff}$ | | Mean Wind Speed, U (mph) | 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) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Maximum (ton/hr) | Max. 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 | $PM_{10}$ | $PM_{2.5}$ |
| Fuel Handling (Clean Woody Biomass) | | | | | | | | | | | | | | | | | | | | | | | | |
| Truck Fuel Receiving - Dumpers #1-3 (Drop Point #1) | 500 | 462 | 4,380,000 | 2 | 1,000 | 8,094,240 | 4.0 [a] | 10.3 [b] | 0.0002 | 0.00009 | 0.00001 | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 | 0% | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 |
| Auxiliary Truck Fuel Dumper #4 (Drop Point #2) | 250 | 231 | 2,190,000 | 2 | 500 | 4,047,120 | 4.0 [a] | 10.3 [b] | 0.0002 | 0.00009 | 0.00001 | 0.09 | 0.04 | 0.01 | 0.37 | 0.17 | 0.03 | 0% | 0.09 | 0.04 | 0.01 | 0.37 | 0.17 | 0.03 |
| Fuel Receiving Dumpers to Coarse Screen Conveyor (Drop Point #3) | 500 | 462 | 4,380,000 | 2 | 1,000 | 8,094,240 | 4.0 [a] | 10.3 [b] | 0.0002 | 0.00009 | 0.00001 | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 | 0% | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 |
| Fuel Screening and Sizing (Drop Point #4) | 500 | 462 | 4,380,000 | 2 | 1,000 | 8,094,240 | 4.0 [a] | 10.3 [b] | 0.0002 | 0.00009 | 0.00001 | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 | 0% | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 |
| Coarse Screen Conveyor to Storage Pile Conveyor (Drop Point #5) | 500 | 462 | 4,380,000 | 2 | 1,000 | 8,094,240 | 4.0 [a] | 10.3 [b] | 0.0002 | 0.00009 | 0.00001 | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 | 0% | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 |
| Storage Pile Conveyor to Storage Pile (Drop Point #6) | 500 | 462 | 4,380,000 | 2 | 1,000 | 8,094,240 | 4.0 [a] | 10.3 [b] | 0.0002 | 0.00009 | 0.00001 | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 | 0% | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 |
| Storage Pile Pickup Conveyor (Drop Point #7) | 500 | 462 | 4,380,000 | 2 | 1,000 | 8,094,240 | 4.0 [a] | 10.3 [b] | 0.0002 | 0.00009 | 0.00001 | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 | 0% | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 |
| Storage Pile Conveyor to Fine Screening (Drop Point #8) | 500 | 462 | 4,380,000 | 2 | 1,000 | 8,094,240 | 4.0 [a] | 10.3 [b] | 0.0002 | 0.00009 | 0.00001 | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 | 0% | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 |
| Fuel Reclaim #1 (Drop Point #9) | 500 | 462 | 4,380,000 | 2 | 1,000 | 8,094,240 | 4.0 [a] | 10.3 [b] | 0.0002 | 0.00009 | 0.00001 | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 | 0% | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 |
| Fuel Reclaim #2 (Drop Point #10) | 500 | 462 | 4,380,000 | 2 | 1,000 | 8,094,240 | 4.0 [a] | 10.3 [b] | 0.0002 | 0.00009 | 0.00001 | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 | 0% | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 |
| Storage Pile Conveyor to BFB Boiler Feed Bins (Drop Point #11) | 500 | 462 | 4,380,000 | 2 | 1,000 | 8,094,240 | 4.0 [a] | 10.3 [b] | 0.0002 | 0.00009 | 0.00001 | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 | 0% | 0.18 | 0.09 | 0.01 | 0.73 | 0.35 | 0.05 |
| Portable Wood Chipper (Drop Point #12) | 200 | 200 | 96,000 | 2 | 400 | 192,000 | 4.0 [a] | 10.3 [b] | 0.0002 | 0.00009 | 0.00001 | 0.07 | 0.03 | 0.01 | 0.02 | 0.01 | 0.00 | 0% | 0.07 | 0.03 | 0.01 | 0.02 | 0.01 | 0.00 |
| SUBTOTAL: Fuel Handling (Clean Woody Biomass) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.97 | 0.93 | 0.14 | 7.71 | 3.65 | 0.55 | 0% | 1.97 | 0.93 | 0.14 | 7.71 | 3.65 | 0.55 |
| Bottom Ash Handling & Shipment | | | | | | | | | | | | | | | | | | | | | | | | |
| Bed Hoppers | 1 | 1 | 8,760 | 1 | 1 | 8,760 | 4.0 | 5 [c] | 4.9E-04 | 2.3E-04 | 3.5E-05 | 4.9E-04 | 2.3E-04 | 3.5E-05 | 2.2E-03 | 1.0E-03 | 1.6E-04 | 0% | 4.9E-04 | 2.3E-04 | 3.5E-05 | 2.2E-03 | 1.0E-03 | 1.6E-04 |
| Bed Hopper Ash Collection Conveyor | 1 | 1 | 8,760 | 1 | 1 | 8,760 | 4.0 | 5 [c] | 4.9E-04 | 2.3E-04 | 3.5E-05 | 4.9E-04 | 2.3E-04 | 3.5E-05 | 2.2E-03 | 1.0E-03 | 1.6E-04 | 0% | 4.9E-04 | 2.3E-04 | 3.5E-05 | 2.2E-03 | 1.0E-03 | 1.6E-04 |
| Bed Hopper Ash Transfer Conveyor Drop to Bucket Elevator | 1 | 1 | 8,760 | 1 | 1 | 8,760 | 4.0 | 5 [c] | 4.9E-04 | 2.3E-04 | 3.5E-05 | 4.9E-04 | 2.3E-04 | 3.5E-05 | 2.2E-03 | 1.0E-03 | 1.6E-04 | 0% | 4.9E-04 | 2.3E-04 | 3.5E-05 | 2.2E-03 | 1.0E-03 | 1.6E-04 |
| Fly Ash Handling [f] | | | | | | | | | | | | | | | | | | | | | | | | |
| Baghouse Hoppers | 7 | 7 | 61,320 | 1 | 7 | 61,320 | 4.0 | 5 [c] | e | e | e | e | e | e | e | e | e | e | e | e | e | e | e | e |
| Convection Pass Hoppers (Gen Bank and Econmizer) | 7 | 7 | 61,320 | 1 | 7 | 61,320 | 4.0 | 5 [c] | e | e | e | e | e | e | e | e | e | e | e | e | e | e | e | e |
| Collecting Conveyors | 7 | 7 | 61,320 | 1 | 7 | 61,320 | 4.0 | 5 [c] | e | e | e | e | e | e | e | e | e | e | e | e | e | e | e | e |
| Fly Ash Transfer Conveyors | 7 | 7 | 61,320 | 1 | 7 | 61,320 | 4.0 | 5 [c] | e | e | e | e | e | e | e | e | e | e | e | e | e | e | e | e |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| Fly Ash Transfer Conveyor | 7 | 7 | 61,320 | 1 | 7 | 61,320 | 4.0 | 5 [c] | e | e | e | e | e | e | e | e | e | e | e | e | e | e | e | e |
| Fly Ash Elevating Conveyor | 7 | 7 | 61,320 | 1 | 7 | 61,320 | 4.0 | 5 [c] | 4.9E-04 | 2.3E-04 | 3.5E-05 | 3.5E-03 | 1.6E-03 | 2.5E-04 | 1.5E-02 | 7.2E-03 | 1.1E-03 | 0% | 3.5E-03 | 1.6E-03 | 2.5E-04 | 1.5E-02 | 7.2E-03 | 1.1E-03 |
| Fly Ash Shipment | | | | | | | | | | | | | | | | | | | | | | | | |
| Fly Ash Silo to Fly Ash Conditioner Drop | 84 | 84 | 61,320 | 1 | 84 | 61,320 | 4.0 | 5 [c] | e | e | e | e | e | e | e | e | e | e | e | e | e | e | e | e |
| Fly Ash Silo, Fly Ash Conditioner Chute | 84 | 84 | 61,320 | 1 | 84 | 61,320 | 4.0 | 5 [c] | 4.9E-04 | 2.3E-04 | 3.5E-05 | 4.2E-02 | 2.0E-02 | 3.0E-03 | 1.5E-02 | 7.2E-03 | 1.1E-03 | 0% | 4.2E-02 | 2.0E-02 | 3.0E-03 | 1.5E-02 | 7.2E-03 | 1.1E-03 |
| SUBTOTAL: Bottom and Fly Ash Handling | 8 | 6.5 | 70,080 | -- | -- | -- | -- | -- | -- | -- | -- | 0.05 | 0.02 | 0.003 | 0.04 | 0.02 | 0.003 | 0% | 0.05 | 0.022 | 0.003 | 0.04 | 0.02 | 0.003 |
| Boiler Support Materials Handling | | | | | | | | | | | | | | | | | | | | | | | | |
| Boiler Sand Storage Silo | 80 | 80 | | 3 | 80 | 61,320 | 4.0 | 5 [c] | 4.9E-04 | 2.3E-04 | 3.5E-05 | 4.0E-02 | 1.9E-02 | 2.8E-03 | 1.5E-02 | 7.2E-03 | 1.1E-03 | 0% | 4.0E-02 | 1.9E-02 | 2.8E-03 | 1.5E-02 | 7.2E-03 | 1.1E-03 |
| Sorbent Material Storage Silo | 80 | 80 | | 3 | 80 | 61,320 | 4.0 | 5 [c] | 4.9E-04 | 2.3E-04 | 3.5E-05 | 4.0E-02 | 1.9E-02 | 2.8E-03 | 1.5E-02 | 7.2E-03 | 1.1E-03 | 0% | 4.0E-02 | 1.9E-02 | 2.8E-03 | 1.5E-02 | 7.2E-03 | 1.1E-03 |
| SUBTOTAL: Boiler Support | -- | -- | | -- | -- | -- | -- | -- | -- | -- | -- | 0.08 | 0.04 | 0.006 | 0.03 | 0.01 | 0.002 | 0% | 0.08 | 0.037 | 0.006 | 0.03 | 0.01 | 0.00 |

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

Average Daily Wind Speed (mph): 4.0

**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

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:**

$T_{eff}$ = 8094240 tons/year = 462 tons/year * 2 drop points

EF = 0.0002 lb-emitted/ton-throughput = 0.74 * 0.0032 * (4/5)^1.3 / (10.3/2)^1.4

$Q_u$ = 0.73 ton/year = 8094240 ton/year * 0.0002 lb-emitted/ton-throughput / (2000 lb/ton)

$Q_c$ = 0.73 tons/year = 0.73 tons/year x ( 1 - 0%)

**Notes:**

a) Wind speed data obtained from daily average wind speed as summarized in National Climatic Data Center (NCDC) Quality Controlled Local Climatological Data (QCLCD) for Tallahassee Municipal Airport (TLH) for the year 2008

b) Moisture content is minimum moisture content in "as received" wood fuel samples representative of fuels to be utilized at the proposed facility

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 exptected to be substantially less than this

e) Enclosed system - potential to emit particulate matter is considered negligible.

f) Max. average fly ash throughput based on approximately 7% wood ash content and maximum boiler feed rate of 100 tons/hour.

Table 2-7A
Potential to Emit Regulated New Source Review (NSR) Air Pollutants and Hazardous Air Pollutants
ADAGE Gadsden LLC Gadsden County, Florida
Proposed Nominal 55.5-MW Net Woody Biomass Power Plant
1200 HP Wood Chipper Fugitive Emissions

**1200-HP Wood Chipper**

| Maximum Wood Throughput (tons/hr)[e] | 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 | $PM_{10}$ | $PM_{2.5}$ |
| 200 | 0.02 | 0.002 | 0.002 | 4 | 0.4 | 0.4 | 0.96 | 0.096 | 0.096 | 0.504 | 0.0504 | 0.0504 |

**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 10% 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 indicates that $PM_{10}$ generated during milling and sawing is at most 10% of PM.

c) Assumed that $PM_{2.5}$ emissions are equal to $PM_{10}$ emissions.

d) Maxium hours of operations per year= 480

e) Maximum wood throughput=

| | | | |
|---|---|---|---|
| equipment capacity= | 600 | yd3/hour | |
| density of new wood chips= | 648 | lb/yd3 | (Based on representative wood sampling data) |
| Maximum Throughput= | 388800 | lb/hr | |
| | 194.4 | ton/hour | |

**Table 2-7B**
**Potential to Emit Regulated New Source Review (NSR) Criteria and Hazardous Air Pollutants**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**
**1200 HP Wood Chipper Combustion Emissions**

**1200-HP Wood Chipper**

| Regulated Air Pollutant | Emission Factor | | Emission Rate | | Basis of Emission Estimate |
|---|---|---|---|---|---|
| | | | Maximum Hourly | Annual | |
| | lb/hp-hr | g/hp-hr | lb/hr | ton/year | |
| $SO_2$[(a)] | 1.21E-05 | 0.0055 | 0.01 | 0.003 | AP-42, Table 3.4-1 |
| $H_2SO_4$[(b)] | 7.77E-07 | 0.0004 | 9.33E-04 | 2.24E-04 | Engineering Estimate |
| $NO_2$ | 0.024 | 10.9 | 28.80 | 6.91 | AP-42, Table 3.4-1 |
| PM | 0.0007 | 0.3 | 0.84 | 0.20 | AP-42, Table 3.4-1 |
| CO | 0.0055 | 2.5 | 6.60 | 1.58 | AP-42, Table 3.4-1 |
| VOC[(e)] | 0.0007 | 0.3 | 0.85 | 0.20 | AP-42, Table 3.4-1 |
| Speciated Hazardous Air Pollutants | | | | | |
| Regulated Air Pollutant | Emission Factor[(d,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 | 7.90E-03 | 1.90E-03 | AP-42, Table 3.4-3 |
| Toluene | 2.81E-04 | 2.38E-06 | 2.86E-03 | 6.86E-04 | AP-42, Table 3.4-3 |
| Xylene | 1.93E-04 | 1.64E-06 | 1.96E-03 | 4.71E-04 | AP-42, Table 3.4-3 |
| Formaldehyde | 7.89E-05 | 6.69E-07 | 8.03E-04 | 1.93E-04 | AP-42, Table 3.4-3 |
| Acetaldehyde | 2.52E-05 | 2.14E-07 | 2.56E-04 | 6.15E-05 | AP-42, Table 3.4-3 |
| Acrolein | 7.88E-06 | 6.68E-08 | 8.02E-05 | 1.92E-05 | AP-42, Table 3.4-3 |
| Naphthalene | 1.30E-04 | 1.10E-06 | 1.32E-03 | 3.17E-04 | AP-42, Table 3.4-4 |
| PAH (POM)[(e)] | 2.12E-04 | 1.80E-06 | 2.16E-03 | 5.18E-04 | AP-42, Table 3.4-4 |
| HAP Total | | | 8.12E-03 | 1.95E-03 | Sum of Speciated HAPs[(f)] |

Power (hp) = 1200
Hours of operation (hr/year) = 480

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) Fuel sulfur content assumed to be 0.0015%.

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

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

d) $EF_{ch}$ = chemical emission factor; $EF_m$ = mechanical emission factor

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

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

**Table 2-8**
**Potential to Emit Regulated New Source Review (NSR) Air Pollutants and Hazardous Air Pollutants**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

**1000-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 | 0.002 | AP-42, Table 3.4-1 |
| $H_2SO_4$[(b)] | 0.0000008 | 0.0004 | 0.001 | 0.0001 | Engineering Estimate |
| $NO_2$[(c)] | 0.011 | 4.8 | 10.58 | 1.3 | NSPS Subpart IIII |
| PM[(d)] | 0.0003 | 0.15 | 0.33 | 0.04 | NSPS Subpart IIII |
| CO | 0.0057 | 2.6 | 5.73 | 0.7 | NSPS Subpart IIII |
| VOC[(e)] | 0.011 | 4.8 | 10.58 | 1.3 | 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 | 6.58E-03 | 8.23E-04 | AP-42, Table 3.4-3 |
| Toluene | 2.81E-04 | 2.38E-06 | 2.38E-03 | 2.98E-04 | AP-42, Table 3.4-3 |
| Xylene | 1.93E-04 | 1.64E-06 | 1.64E-03 | 2.05E-04 | AP-42, Table 3.4-3 |
| Formaldehyde | 7.89E-05 | 6.69E-07 | 6.69E-04 | 8.36E-05 | AP-42, Table 3.4-3 |
| Acetaldehyde | 2.52E-05 | 2.14E-07 | 2.14E-04 | 2.67E-05 | AP-42, Table 3.4-3 |
| Acrolein | 7.88E-06 | 6.68E-08 | 6.68E-05 | 8.35E-06 | AP-42, Table 3.4-3 |
| Naphthalene | 1.30E-04 | 1.10E-06 | 1.10E-03 | 1.38E-04 | AP-42, Table 3.4-4 |
| PAH (POM)[(h)] | 2.12E-04 | 1.80E-06 | 1.80E-03 | 2.25E-04 | AP-42, Table 3.4-4 |
| HAP Total | | | 1.33E-02 | 1.67E-03 | Sum of Speciated HAPs[(i)] |

Engine Power (bhp) = 1000
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%

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 2-9**
**Potential to Emit Regulated New Source Review (NSR) Air Pollutants and Hazardous Air Pollutants**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

**450-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)] | 0.00205 | 0.93 | 0.92 | 0.12 | AP-42, Table 3.3-1 |
| $H_2SO_4$[(b)] | 0.00013 | 0.060 | 0.06 | 0.01 | Engineering Estimate |
| $NO_2$[(c)] | 0.007 | 3 | 2.98 | 0.4 | NSPS Subpart IIII |
| PM[(d)] | 0.0003 | 0.15 | 0.15 | 0.02 | NSPS Subpart IIII |
| CO | 0.0057 | 2.6 | 2.58 | 0.3 | NSPS Subpart IIII |
| VOC[(e)] | 0.007 | 3 | 2.98 | 0.37 | 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 | 3.56E-03 | 4.45E-04 | AP-42, Table 3.3-2 |
| Toluene | 4.09E-04 | 3.47E-06 | 1.56E-03 | 1.95E-04 | AP-42, Table 3.3-2 |
| Xylene | 2.85E-04 | 2.42E-06 | 1.09E-03 | 1.36E-04 | AP-42, Table 3.3-2 |
| 1,3-Butadiene | 3.91E-05 | 3.32E-07 | 1.49E-04 | 1.87E-05 | AP-42, Table 3.3-2 |
| Formaldehyde | 1.18E-03 | 1.00E-05 | 4.50E-03 | 5.63E-04 | AP-42, Table 3.3-2 |
| Acetaldehyde | 7.67E-04 | 6.50E-06 | 2.93E-03 | 3.66E-04 | AP-42, Table 3.3-2 |
| Acrolein | 9.25E-05 | 7.84E-07 | 3.53E-04 | 4.41E-05 | AP-42, Table 3.3-2 |
| Naphthalene | 8.48E-05 | 7.19E-07 | 3.24E-04 | 4.04E-05 | AP-42, Table 3.3-2 |
| PAH (POM)[(h)] | 1.68E-04 | 1.42E-06 | 6.41E-04 | 8.01E-05 | AP-42, Table 3.3-2 |
| HAP Total | | | 1.12E-02 | 1.40E-03 | Sum of Speciated HAPs[(i)] |

Power (bhp) = 450
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) AP-42 Table 3.3-1 emission factor for $SO_2$ does not adjust for specific fuel sulfur content

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 2-10**
**Facility Wide Summary of Potential to Emit (PTE) Regulated Hazardous Air Pollutants (HAPs)**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Compound[a] | ID/CAS Number | Woody Biomass Boiler Worst Case PTE (tpy) | | | | Emergency Generator PTE (tpy) | Emergency Fire Pump PTE (tpy) | Facility Total PTE (tpy) | Major Source of HAP?[b] |
|---|---|---|---|---|---|---|---|---|---|
| | | Wood | Natural Gas or Propane | Ultra Low Sulfur Diesel Fuel | Worst Case | | | | |
| Acetaldehyde | 75-07-0 | 1.6E-01 | | | 1.6E-01 | 2.67E-05 | 3.66E-04 | 1.57E-01 | no |
| Acetophenone | 98-86-2 | 1.06E-05 | | | 1.06E-05 | | | 1.06E-05 | no |
| Acrolein | 107-02-8 | 3.25E-02 | | | 3.25E-02 | 8.35E-06 | 4.41E-05 | 3.25E-02 | no |
| Benzene | 71-43-2 | 3.70E-02 | 2.16E-03 | 1.61E-03 | 3.70E-02 | 8.23E-04 | 4.45E-04 | 3.82E-02 | no |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | 2.32E-01 | | | 2.32E-01 | | | 2.32E-01 | no |
| Bromomethane | 74-83-9 | 7.90E-03 | | | 7.90E-03 | | | 7.90E-03 | no |
| Carbon tetrachloride | 56-23-5 | 1.40E-02 | | | 1.40E-02 | | | 1.40E-02 | no |
| Chlorine | 7782-50-5 | 0.9 | | | 0.9 | | | 0.9 | no |
| Chlorobenzene | 108-90-7 | 2.50E-02 | | | 2.50E-02 | | | 2.50E-02 | no |
| Chloroform | 67-66-3 | 1.70E-02 | | | 1.70E-02 | | | 1.70E-02 | no |
| Chloromethane | 74-87-3 | 7.67E-02 | | | 7.67E-02 | | | 7.67E-02 | no |
| Dibutylphthalate | 84-74-2 | 2.25E-01 | | | 2.25E-01 | | | 2.25E-01 | no |
| 1,4-Dichlorobenzene | 106-46-7 | 1.69E-01 | 1.24E-03 | | 1.69E-01 | | | 1.69E-01 | no |
| 2,4-Dinitrophenol | 51-28-5 | 1.21E-01 | | | 1.21E-01 | | | 1.21E-01 | no |
| Ethylbenzene | 100-41-4 | 1.90E-03 | | 4.78E-04 | 1.90E-03 | | | 1.90E-03 | no |
| Formaldehyde | 50-00-0 | 5.87E-01 | 7.73E-02 | 2.48E-01 | 5.87E-01 | 8.36E-05 | 5.63E-04 | 5.87E-01 | no |
| Hexachlorobenzene | 118-74-1 | 7.17E-04 | | | 7.17E-04 | | | 7.17E-04 | no |
| Hexane | 110-54-3 | | 1.9 | | 1.9 | | | 1.9 | no |
| Methyl chloroform | 71-55-6 | 1.90E-02 | | | 1.90E-02 | | | 1.90E-02 | no |
| Methylene chloride | 75-09-2 | 5.58E-03 | | | 5.58E-03 | | | 5.58E-03 | no |
| 4-Nitrophenol | 100-02-7 | 1.16E-01 | | | 1.16E-01 | | | 1.16E-01 | no |
| Pentachlorophenol | 87-86-5 | 7.17E-04 | | | 7.17E-04 | | | 7.17E-04 | no |
| Phenol | 108-95-2 | 1.39E-01 | | | 1.39E-01 | | | 1.39E-01 | no |
| Propionaldehyde | 123-38-6 | 2.03E-01 | | | 2.03E-01 | | | 2.03E-01 | no |
| Styrene | 100-42-5 | 1.86E-03 | | | 1.86E-03 | | | 1.86E-03 | no |
| Tetrachloroethene | 127-18-4 | 1.80E-02 | | | 1.80E-02 | | | 1.80E-02 | no |
| Toluene | 108-88-3 | 1.53E-02 | 3.50E-03 | 4.66E-02 | 1.53E-02 | 2.98E-04 | 1.95E-04 | 1.58E-02 | no |
| 1,1,1-Trichloroethane | 71-55-6 | 1.90E-02 | | | 1.90E-02 | | | 1.90E-02 | no |
| Trichloroethene | 79-01-6 | 1.88E-02 | | | 1.88E-02 | | | 1.88E-02 | no |
| 2,4,6-Trichlorophenol | 25167-82-2 | 7.18E-04 | | | 7.18E-04 | | | 7.18E-04 | no |
| Vinyl Chloride | 75-01-4 | 1.04E-02 | | | 1.04E-02 | | | 1.04E-02 | no |
| Xylenes (mixed) | 1330-20-7 | 1.35E-02 | | | 1.35E-02 | 2.05E-04 | 1.36E-04 | 1.38E-02 | no |
| o-Xylene | 95-47-6 | 1.15E-02 | | 8.18E-04 | 1.15E-02 | | | 1.15E-02 | no |
| **Hydrogen chloride** | **7647-01-0** | **9.7** | | | **9.7** | | | **9.7** | **no** |
| Hydrogen fluoride | 7664-39-3 | 4.9 | | | 4.9 | | | 4.9 | no |
| Polycyclic Organic Matter (POM)[c] | POM | 2.2E-02 | 7.2E-04 | 8.9E-03 | 2.2E-02 | 2.25E-04 | 8.01E-05 | 2.3E-02 | no |
| 1,3-Butadiene | 106-99-0 | | | | | | 1.87E-05 | 1.87E-05 | no |
| Naphthalene | 91-20-3 | 1.36E-02 | 6.29E-04 | | 1.36E-02 | 1.38E-04 | 4.04E-05 | 1.38E-02 | no |
| Dioxins and Furans (D/F)[d] | DF | 9.5E-05 | | | 9.5E-05 | | | 9.5E-05 | -- |
| 2,3,7,8-Tetrachlorodibenzo-p-dioxin | 1746-01-6 | 1.65E-08 | | | 1.65E-08 | | | 1.65E-08 | no |
| Regulated Trace Elements | TRACE | 1.2 | 5.7E-03 | 5.2E-02 | 1.2 | | | 1.2 | no |
| Antimony | 7440-36-0 | 5.73E-03 | | 0.00E+00 | 5.73E-03 | | | 5.73E-03 | no |
| Arsenic | 7440-38-2 | 1.60E-02 | 2.06E-04 | 4.20E-03 | 1.60E-02 | | | 1.60E-02 | no |
| Beryllium | 7440-41-7 | 8.48E-05 | 1.24E-05 | 3.15E-03 | 8.48E-05 | | | 8.48E-05 | no |
| Cadmium | 7440-43-9 | 3.11E-03 | 1.13E-03 | 3.15E-03 | 3.11E-03 | | | 3.11E-03 | no |
| Chromium, total | 7440-47-3 | 3.09E-02 | 1.44E-03 | 3.15E-03 | 3.09E-02 | | | 3.09E-02 | no |
| Cobalt | 7740-48-4 | 2.49E-03 | 8.66E-05 | 0.00E+00 | 2.49E-03 | | | 2.49E-03 | no |
| Lead | 7439-92-1 | 1.66E-01 | | 9.46E-03 | 1.66E-01 | | | 1.66E-01 | no |
| Manganese | 7439-96-5 | 0.8 | 3.92E-04 | 6.31E-03 | 0.8 | | | 0.8 | no |
| Mercury | 7439-97-6 | 6.19E-04 | 2.68E-04 | 3.15E-03 | 6.19E-04 | | | 6.19E-04 | no |
| Nickel | 7440-02-0 | 4.82E-02 | 2.16E-03 | 3.15E-03 | 4.82E-02 | | | 4.82E-02 | no |
| Phosphorus | 7723-14-0 | 6.41E-02 | | 0.00E+00 | 6.41E-02 | | | 6.41E-02 | no |
| Selenium | 7782-49-2 | 8.48E-03 | 2.47E-05 | 1.58E-02 | 8.48E-03 | | | 8.48E-03 | no |
| **HAP Total** | | | | | **20.8** | **1.67E-03** | **1.40E-03** | **20.8** | no |

**Notes:**

a) 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)

b) 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.

c) POM subtotal includes Dioxins and Furans (D/F)

d) D/F is not a regulated group of HAP but is shown for reference

e) Refer to Tables 2-7B, 2-8, 2-9, 2-11A, 2-11B, 2-12, and 2-13 for backup calculations.

**Color Code:**

ID Number Represents Group of Compounds

Subtotal of Multiple Compounds

**Table 2-11A**
**Potential to Emit Regulated Hazardous Air Pollutants (HAPs) Due to Combustion of Natural Gas or Propane**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Regulated Hazardous Air Pollutant[a] (HAP) | ID/CAS Number | Emission Factor | | Reference | Estimated Uncontrolled Emissions | | Individual HAP[e] (X=yes) | POM[f-1] (X=yes) |
|---|---|---|---|---|---|---|---|---|
| | | (lb/mmscf) | (lb/mmBtu)[b] | | (lbs/hr)[c] | (tons/year)[d] | | |
| Benzene | 71-43-2 | 2.10E-03 | 2.06E-06 | A | 4.94E-04 | 2.16E-03 | X | |
| Dichlorobenzene | 106-46-7 | 1.20E-03 | 1.18E-06 | A | 2.82E-04 | 1.24E-03 | X | |
| Formaldehyde | 50-00-0 | 7.50E-02 | 7.35E-05 | A | 1.76E-02 | 7.73E-02 | X | |
| Hexane | 110-54-3 | 1.8 | 1.76E-03 | A | 4.24E-01 | 1.9 | X | |
| Toluene | 108-88-3 | 3.40E-03 | 3.33E-06 | A | 8.00E-04 | 3.50E-03 | X | |
| Polycyclic Organic Matter (POM)[e,f] | POM | | | | 1.64E-04 | 7.20E-04 | X | |
| Acenaphthene | 83-32-9 | 1.80E-06 | 1.76E-09 | A | 4.24E-07 | 1.86E-06 | | X |
| Acenaphthylene | 208-96-8 | 1.80E-06 | 1.76E-09 | A | 4.24E-07 | 1.86E-06 | | X |
| Anthracene | 120-12-7 | 2.40E-06 | 2.35E-09 | A | 5.65E-07 | 2.47E-06 | | X |
| Benzo(a)anthracene | 56-55-3 | 1.80E-06 | 1.76E-09 | A | 4.24E-07 | 1.86E-06 | | X |
| Benzo(b)fluoranthene | 205-99-2 | 1.80E-06 | 1.76E-09 | A | 4.24E-07 | 1.86E-06 | | X |
| Benzo(k)fluoranthene | 207-08-9 | 1.80E-06 | 1.76E-09 | A | 4.24E-07 | 1.86E-06 | | X |
| Benzo(g,h,i)perylene | 191-24-2 | 1.20E-06 | 1.18E-09 | A | 2.82E-07 | 1.24E-06 | | X |
| Benzo(a)pyrene | 50-32-8 | 1.20E-06 | 1.18E-09 | A | 2.82E-07 | 1.24E-06 | | X |
| Chrysene | 218-01-9 | 1.80E-06 | 1.76E-09 | A | 4.24E-07 | 1.86E-06 | | X |
| Dibenzo(a,h)anthracene | 53-70-3 | 1.20E-06 | 1.18E-09 | A | 2.82E-07 | 1.24E-06 | | X |
| 7,12-Dimethylbenz(a)anthracene | 57-97-6 | 1.60E-05 | 1.57E-08 | A | 3.76E-06 | 1.65E-05 | | X |
| Fluoranthene | 206-44-0 | 3.00E-06 | 2.94E-09 | A | 7.06E-07 | 3.09E-06 | | X |
| Fluorene | 86-73-7 | 2.80E-06 | 2.75E-09 | A | 6.59E-07 | 2.89E-06 | | X |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 1.80E-06 | 1.76E-09 | A | 4.24E-07 | 1.86E-06 | | X |
| 3-Methylchloranthrene | 56-49-5 | 1.80E-06 | 1.76E-09 | A | 4.24E-07 | 1.86E-06 | | X |
| 2-Methylnaphthalene | 91-57-6 | 2.40E-05 | 2.35E-08 | A | 5.65E-06 | 2.47E-05 | | X |
| Naphthalene | 91-20-3 | 6.10E-04 | 5.98E-07 | A | 1.44E-04 | 6.29E-04 | X | X |
| Phenanthrene | 85-01-8 | 1.70E-05 | 1.67E-08 | A | 4.00E-06 | 1.75E-05 | | X |
| Pyrene | 129-00-0 | 5.00E-06 | 4.90E-09 | A | 1.18E-06 | 5.15E-06 | | X |
| Regulated Trace Elements | TRACE | | | | 1.31E-03 | 5.73E-03 | | |
| Arsenic | 7440-38-2 | 2.00E-04 | 1.96E-07 | B | 4.71E-05 | 2.06E-04 | X | |
| Beryllium | 7440-41-7 | 1.20E-05 | 1.18E-08 | B | 2.82E-06 | 1.24E-05 | X | |
| Cadmium | 7440-43-9 | 1.10E-03 | 1.08E-06 | B | 2.59E-04 | 1.13E-03 | X | |
| Chromium | 7440-47-3 | 1.40E-03 | 1.37E-06 | B | 3.29E-04 | 1.44E-03 | X | |
| Cobalt | 7740-48-4 | 8.40E-05 | 8.24E-08 | B | 1.98E-05 | 8.66E-05 | X | |
| Manganese | 7439-96-5 | 3.80E-04 | 3.73E-07 | B | 8.94E-05 | 3.92E-04 | X | |
| Mercury | 7439-97-6 | 2.60E-04 | 2.55E-07 | B | 6.12E-05 | 2.68E-04 | X | |
| Nickel | 7440-02-0 | 2.10E-03 | 2.06E-06 | B | 4.94E-04 | 2.16E-03 | X | |
| Selenium | 7782-49-2 | 2.40E-05 | 2.35E-08 | B | 5.65E-06 | 2.47E-05 | X | |
| **HAP Total** | | -- | -- | -- | **0.44** | **1.95** | | |

| Equipment | | Operation Time (hr/yr) | Heat Input Rate | | |
|---|---|---|---|---|---|
| | | | Maximum (mmBtu/hr) | Average (mmBtu/hr) | Annual (mmBtu/yr) |
| Boiler Startup & Stabilization Burner[g] | | 8760 | 240 | 240 | 2,102,400 |
| **Total** | | **--** | **240** | **240** | **2,102,400** |

**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$^{o}$C
f) Subtotal includes estimated emissions from compounds which are not individually regulated HAPs.
g) Worst case theoretical emission estimate for natural gas HAP emissions. Actual emissions of HAP will be significantly less.

**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 2-11B**
**Potential to Emit Regulated Hazardous Air Pollutants (HAPs) Due to Combustion of Ultra Low Sulfur Diesel Fuel**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Regulated Hazardous Air Pollutant[a] (HAP) | ID/CAS Number | Emission Factor | | Reference | Estimated Uncontrolled Emissions | | Individual HAP[e] (X=yes) | POM[f-1] (X=yes) |
|---|---|---|---|---|---|---|---|---|
| | | (lb/$10^3$ gal) | (lb/MMBtu)[b] | | (lbs/hr)[c] | (tons/year)[d] | | |
| Benzene | 71-43-2 | 2.14E-04 | 1.53E-06 | A | 3.67E-04 | 1.61E-03 | X | |
| Ethylbenzene | 100-41-4 | 6.36E-05 | 4.54E-07 | A | 1.09E-04 | 4.78E-04 | X | |
| Formaldehyde | 50-00-0 | 3.30E-02 | 2.36E-04 | A | 5.66E-02 | 2.48E-01 | X | |
| Toluene | 108-88-3 | 6.20E-03 | 4.43E-05 | A | 1.06E-02 | 4.66E-02 | X | |
| o-Xylene | 95-47-6 | 1.09E-04 | 7.79E-07 | A | 1.87E-04 | 8.18E-04 | X | |
| Polycyclic Organic Matter (POM)[e,f] | POM | | | | 2.04E-03 | 8.94E-03 | X | |
| Acenaphthene | 83-32-9 | 2.11E-05 | 1.51E-07 | A | 3.62E-05 | 1.58E-04 | | X |
| Acenaphthylene | 208-96-8 | 2.53E-07 | 1.81E-09 | A | 4.34E-07 | 1.90E-06 | | X |
| Anthracene | 120-12-7 | 1.22E-06 | 8.71E-09 | A | 2.09E-06 | 9.16E-06 | | X |
| Benzo(a)anthracene | 56-55-3 | 4.01E-06 | 2.86E-08 | A | 6.87E-06 | 3.01E-05 | | X |
| Benzo(b)fluoranthene | 205-99-2 | 1.48E-06 | 1.06E-08 | A | 2.54E-06 | 1.11E-05 | | X |
| Benzo(g,h,i)perylene | 191-24-2 | 2.26E-06 | 1.61E-08 | A | 3.87E-06 | 1.70E-05 | | X |
| Chrysene | 218-01-9 | 2.38E-06 | 1.70E-08 | A | 4.08E-06 | 1.79E-05 | | X |
| Dibenzo(a,h)anthracene | 53-70-3 | 1.67E-06 | 1.19E-08 | A | 2.86E-06 | 1.25E-05 | | X |
| Fluoranthene | 206-44-0 | 4.84E-06 | 3.46E-08 | A | 8.30E-06 | 3.63E-05 | | X |
| Fluorene | 86-73-7 | 4.47E-06 | 3.19E-08 | A | 7.66E-06 | 3.36E-05 | | X |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 2.14E-06 | 1.53E-08 | A | 3.67E-06 | 1.61E-05 | | X |
| Naphthalene | 91-20-3 | 1.13E-03 | 8.07E-06 | A | 1.94E-03 | 8.48E-03 | X | X |
| Phenanthrene | 85-01-8 | 1.05E-05 | 7.50E-08 | A | 1.80E-05 | 7.88E-05 | | X |
| Pyrene | 129-00-0 | 4.25E-06 | 3.04E-08 | A | 7.29E-06 | 3.19E-05 | | X |
| Regulated Trace Elements | TRACE | **lb/$10^{12}$ Btu** | **(lb/MMBtu)** | | 1.18E-02 | 5.15E-02 | | |
| Arsenic | 7440-38-2 | 4.00E+00 | 4.00E-06 | B | 9.60E-04 | 4.20E-03 | X | |
| Beryllium | 7440-41-7 | 3.00E+00 | 3.00E-06 | B | 7.20E-04 | 3.15E-03 | X | |
| Cadmium | 7440-43-9 | 3.00E+00 | 3.00E-06 | B | 7.20E-04 | 3.15E-03 | X | |
| Chromium | 7440-47-3 | 3.00E+00 | 3.00E-06 | B | 7.20E-04 | 3.15E-03 | X | |
| Lead | 7439-92-1 | 9.00E+00 | 9.00E-06 | B | 2.16E-03 | 9.46E-03 | X | |
| Manganese | 7439-96-5 | 6.00E+00 | 6.00E-06 | B | 1.44E-03 | 6.31E-03 | X | |
| Mercury | 7439-97-6 | 3.00E+00 | 3.00E-06 | B | 7.20E-04 | 3.15E-03 | X | |
| Nickel | 7440-02-0 | 3.00E+00 | 3.00E-06 | B | 7.20E-04 | 3.15E-03 | X | |
| Selenium | 7782-49-2 | 1.50E+01 | 1.50E-05 | B | 3.60E-03 | 1.58E-02 | X | |
| **HAP Total** | | -- | -- | -- | **0.08** | **0.36** | | |

| Equipment | | Operation Time (hr/yr) | Heat Input Rate | | | |
|---|---|---|---|---|---|---|
| | | | Maximum (MMBtu/hr) | Average (MMBtu/hr) | Annual (MMBtu/yr) | Gallons/Year ($10^3$ gal) |
| Boiler Startup & Stabilization Burner[g] | | 8760 | 240 | 240 | 2,102,400 | 15,017 |
| **Total** | | **--** | **240** | **240** | **2,102,400** | **15,017** |

**Notes:**
a) 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 li
b) Diesel Fuel Heat Content = 140 Btu/1000 gal fuel oil
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$^{o}$C
f) Subtotal includes estimated emissions from compounds which are not individually regulated HAPs.
g) Worst case theoretical emission estimate for natural gas HAP emissions. Actual emissions of HAP will be significantly less.

**References:**
(A) AP-42 Fuel Oil Combustion (9/98), Table 1.3-9
(B) AP-42 Fuel Oil Combustion (9/98), Table 1.3-10

**Table 2-12**
**Potential to Emit Regulated Hazardous Air Pollutants (HAPs) Due to Combustion of Woody Biomass in the Fluidized Bed Boiler**
**ADAGE Gadsen LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Regulated HAP[a] | ID/CAS Number[b] | Emission Factor (lb/MMBtu) | Reference[c] | Comments | Regulated Individual HAP[d] (X=yes) | POM[e,g] (X=yes) | D/F[f,g] (X=yes) | PTE (tpy) |
|---|---|---|---|---|---|---|---|---|
| Acetaldehyde | 75-07-0 | 4.71E-05 | MACT FBC | | X | | | 1.6E-01 |
| Acetophenone | 98-86-2 | 3.20E-09 | AP-42 Wood | | X | | | 1.06E-05 |
| Acrolein | 107-02-8 | 9.78E-06 | MACT FBC | Removed outlier from database[h] | X | | | 3.25E-02 |
| Benzene | 71-43-2 | 1.11E-05 | MACT FBC | | X | | | 3.70E-02 |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | 6.98E-05 | MACT Wood | | X | | | 2.32E-01 |
| Bromomethane | 74-83-9 | 2.38E-06 | MACT FBC | | X | | | 7.90E-03 |
| Carbon tetrachloride | 56-23-5 | 4.23E-06 | MACT FBC | | X | | | 1.40E-02 |
| Chlorine | 7782-50-5 | 2.80E-04 | MACT Wood | | X | | | 9.28E-01 |
| Chlorobenzene | 108-90-7 | 7.54E-06 | MACT Wood | | X | | | 2.50E-02 |
| Chloroform | 67-66-3 | 5.13E-06 | MACT FBC | | X | | | 1.70E-02 |
| Chloromethane | 74-87-3 | 2.31E-05 | MACT FBC | | X | | | 7.67E-02 |
| Dibutylphthalate | 84-74-2 | 6.78E-05 | MACT Wood | | X | | | 2.25E-01 |
| 1,4-Dichlorobenzene | 106-46-7 | 5.10E-05 | MACT Wood | | X | | | 1.69E-01 |
| 2,4-Dinitrophenol | 51-28-5 | 3.65E-05 | MACT Wood | | X | | | 1.21E-01 |
| Ethylbenzene | 100-41-4 | 5.73E-07 | MACT FBC | | X | | | 1.90E-03 |
| Formaldehyde | 50-00-0 | 1.77E-04 | MACT FBC | | X | | | 5.87E-01 |
| Hexachlorobenzene | 118-74-1 | 2.16E-07 | MACT FBC | | X | | | 7.17E-04 |
| Methyl chloroform | 71-55-6 | 5.74E-06 | MACT FBC | | X | | | 1.90E-02 |
| Methylene chloride | 75-09-2 | 1.68E-06 | MACT FBC | | X | | | 5.58E-03 |
| 4-Nitrophenol | 100-02-7 | 3.50E-05 | MACT Wood | | X | | | 1.16E-01 |
| Pentachlorophenol | 87-86-5 | 2.16E-07 | MACT FBC | | X | | | 7.17E-04 |
| Phenol | 108-95-2 | 4.18E-05 | MACT FBC | | X | | | 1.39E-01 |
| Propionaldehyde | 123-38-6 | 6.11E-05 | MACT FBC | | X | | | 2.03E-01 |
| Styrene | 100-42-5 | 5.60E-07 | MACT FBC | | X | | | 1.86E-03 |
| Tetrachloroethene | 127-18-4 | 5.41E-06 | MACT FBC | | X | | | 1.80E-02 |
| Toluene | 108-88-3 | 4.60E-06 | MACT FBC | | X | | | 1.53E-02 |
| 1,1,1-Trichloroethane | 71-55-6 | 5.74E-06 | MACT FBC | | X | | | 1.90E-02 |
| Trichloroethene | 79-01-6 | 5.66E-06 | MACT FBC | | X | | | 1.88E-02 |
| 2,4,6-Trichlorophenol | 25167-82-2 | 2.16E-07 | MACT FBC | Represents all trichlorphenol isomers | X | | | 7.18E-04 |
| Vinyl Chloride | 75-01-4 | 3.13E-06 | MACT FBC | | X | | | 1.04E-02 |
| Xylenes (mixed) | 1330-20-7 | 4.06E-06 | MACT FBC | Mixed isomer subtotal[i] | | | | 1.35E-02 |
| o-Xylene | 95-47-6 | 3.47E-06 | MACT FBC | | X | | | 1.15E-02 |
| Hydrogen chloride | 7647-01-0 | 2.39E-02 | Custom | Woody biomass fuel sampling[k,l,m] | X | | | 9.7 |
| Hydrogen fluoride | 7664-39-3 | 1.22E-02 | Custom | Woody biomass fuel sampling[k,l,m] | X | | | 4.9 |
| Polycyclic Organic Matter (POM) | POM | 6.8E-06 | -- | Group Regulated as Individual HAP[g,j] | X | | | 2.2E-02 |
| Acenaphthene | 83-32-9 | 1.09E-07 | MACT FBC | | | X | | 3.63E-04 |
| Acenaphthylene | 208-96-8 | 2.52E-07 | MACT FBC | | | X | | 8.38E-04 |
| Anthracene | 120-12-7 | 1.12E-07 | MACT FBC | | | X | | 3.73E-04 |
| Benzo(a)anthracene | 56-55-3 | 1.01E-07 | MACT FBC | | | X | | 3.36E-04 |
| Benzo(a)pyrene | 50-32-8 | 4.31E-07 | MACT FBC | | | X | | 1.43E-03 |
| Benzo(b)fluoranthene | 205-99-2 | 1.01E-07 | MACT FBC | | | X | | 3.36E-04 |
| Benzo(k)fluoranthene | 207-08-9 | 1.00E-07 | MACT FBC | | | X | | 3.34E-04 |
| Benzo(j,k)fluoranthene | 206-44-0 | 1.62E-07 | MACT FBC | | | X | | 5.37E-04 |

**Table 2-12**
**Potential to Emit Regulated Hazardous Air Pollutants (HAPs) Due to Combustion of Woody Biomass in the Fluidized Bed Boiler**
**ADAGE Gadsen LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Regulated HAP[a] | ID/CAS Number[b] | Emission Factor (lb/MMBtu) | Reference[c] | Comments | Regulated Individual HAP[d] (X=yes) | POM[e,g] (X=yes) | D/F[f,g] (X=yes) | PTE (tpy) |
|---|---|---|---|---|---|---|---|---|
| Benzo(e)pyrene | 192-97-2 | 2.10E-09 | MACT FBC | | | X | | 6.99E-06 |
| Benzo(g,h,i)perylene | 191-24-2 | 1.01E-07 | MACT FBC | | | X | | 3.34E-04 |
| Chrysene | 218-01-9 | 1.02E-07 | MACT FBC | | | X | | 3.38E-04 |
| Decachlorobiphenyl | 2051-24-3 | 4.04E-09 | MACT FBC | | | X | | 1.34E-05 |
| Dibenzo(a,h)anthracene | 53-70-3 | 1.00E-07 | MACT FBC | | | X | | 3.33E-04 |
| Dichlorobiphenyl | DiCBP | 1.53E-08 | MACT FBC | | | X | | 5.07E-05 |
| Fluoranthene | 206-44-0 | 1.62E-07 | MACT FBC | | | X | | 5.37E-04 |
| Fluorene | 86-73-7 | 1.21E-07 | MACT FBC | | | X | | 4.02E-04 |
| Heptachlorobiphenyl | HepCBP | 2.44E-09 | MACT FBC | | | X | | 8.09E-06 |
| Hexachlorobiphenyl | HexCBP | 2.75E-09 | MACT FBC | | | X | | 9.15E-06 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 1.00E-07 | MACT FBC | | | X | | 3.33E-04 |
| 2-Methylnaphthalene | 91-57-6 | 4.05E-08 | MACT FBC | | | X | | 1.34E-04 |
| Monochlorobiphenyl | MonCBP | 5.83E-09 | MACT FBC | | | X | | 1.94E-05 |
| Naphthalene | 91-20-3 | 4.10E-06 | MACT FBC | | X | X | | 1.36E-02 |
| Nonachlorobiphenyl | NonCBP | 2.88E-09 | MACT FBC | | | X | | 9.56E-06 |
| Octachlorobiphenyl | OctCBP | 2.04E-09 | MACT FBC | | | X | | 6.78E-06 |
| Perylene | 198-55-0 | 2.27E-10 | MACT FBC | | | X | | 7.52E-07 |
| Phenanthrene | 85-01-8 | 3.31E-07 | MACT FBC | | | X | | 1.10E-03 |
| Pentachlorobiphenyl | PenCBP | 3.17E-09 | MACT FBC | | | X | | 1.05E-05 |
| Pyrene | 129-00-0 | 1.38E-07 | MACT FBC | | | X | | 4.57E-04 |
| Tetrachlorobiphenyl | 26914-33-0 | 5.69E-09 | MACT FBC | | | X | | 1.89E-05 |
| Trichlorobiphenyl | 25323-68-6 | 3.41E-08 | MACT FBC | | | X | | 1.13E-04 |
| Dioxins and Furans (D/F) | DF | 2.8E-08 | -- | Subset of POM Group[j] | | X | X | 9.5E-05 |
| Heptachlorodibenzo-p-dioxins | 37871-00-4 | 1.19E-08 | MACT FBC | | | X | X | 3.95E-05 |
| Heptachlorodibenzo-p-furans | 38998-75-3 | 1.48E-09 | MACT FBC | | | X | X | 4.90E-06 |
| Hexachlorodibenzo-p-dioxins | 34465-46-8 | 3.21E-09 | MACT FBC | | | X | X | 1.06E-05 |
| Hexachlorodibenzo-p-furans | 55684-94-1 | 2.93E-09 | MACT FBC | | | X | X | 9.72E-06 |
| Octachlorodibenzo-p-dioxins | 3268-87-9 | 5.03E-09 | MACT FBC | | | X | X | 1.67E-05 |
| Octachlorodibenzo-p-furans | OCDF | 3.53E-10 | MACT FBC | | | X | X | 1.17E-06 |
| Pentachlorodibenzo-p-dioxins | 36088-22-9 | 6.53E-10 | MACT FBC | | | X | X | 2.17E-06 |
| Pentachlorodibenzo-p-furans | 30402-15-4 | 2.14E-09 | MACT FBC | | | X | X | 7.12E-06 |
| 2,3,7,8-Tetrachlorodibenzo-p-dioxin | 1746-01-6 | 4.98E-12 | MACT FBC | | X | X | X | 1.65E-08 |
| Tetrachlorodibenzo-p-dioxins | 41903-57-5 | 1.07E-10 | MACT FBC | | | X | X | 3.55E-07 |
| 2,3,7,8-Tetrachlorodibenzo-p-furans | 51207-31-9 | 6.33E-11 | MACT FBC | | | X | X | 2.10E-07 |
| Tetrachlorodibenzo-p-furans | 30402-14-3 | 6.25E-10 | MACT FBC | | | X | X | 2.07E-06 |
| Regulated Trace Elements | TRACE | 3.52E-04 | -- | Group not regulated as an individual HAP | | | | 1.2 |
| Antimony | 7440-36-0 | 1.73E-06 | MACT FBC | | X | | | 5.73E-03 |
| Arsenic | 7440-38-2 | 4.81E-06 | MACT FBC | | X | | | 1.60E-02 |
| Beryllium | 7440-41-7 | 2.55E-08 | MACT FBC | | X | | | 8.48E-05 |
| Cadmium | 7440-43-9 | 9.38E-07 | MACT FBC | | X | | | 3.11E-03 |
| Chromium, total | 7440-47-3 | 9.32E-06 | MACT FBC | | X | | | 3.09E-02 |
| Cobalt | 7740-48-4 | 7.50E-07 | MACT FBC | | X | | | 2.49E-03 |
| Lead | 7439-92-1 | 4.99E-05 | MACT FBC | | X | | | 1.66E-01 |

**Table 2-12**
**Potential to Emit Regulated Hazardous Air Pollutants (HAPs) Due to Combustion of Woody Biomass in the Fluidized Bed Boiler**
**ADAGE Gadsen LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Regulated HAP[a] | ID/CAS Number[b] | Emission Factor (lb/MMBtu) | Reference[c] | Comments | Regulated Individual HAP[d] (X=yes) | POM[e,g] (X=yes) | D/F[f,g] (X=yes) | PTE (tpy) |
|---|---|---|---|---|---|---|---|---|
| Manganese | 7439-96-5 | 2.48E-04 | MACT FBC | | X | | | 8.24E-01 |
| Mercury | 7439-97-6 | 1.86E-07 | MACT FBC | | X | | | 6.19E-04 |
| Nickel | 7440-02-0 | 1.45E-05 | MACT FBC | | X | | | 4.82E-02 |
| Phosphorus | 7723-14-0 | 1.93E-05 | MACT FBC | | X | | | 6.41E-02 |
| Selenium | 7782-49-2 | 2.55E-06 | MACT FBC | | X | | | 8.48E-03 |
| **HAP Total** | | | | | | | | **19.0** |

**Color Code:**

| |
|---|
| ID Number Represents Group of Compounds |
| Subtotal of Multiple Compounds |

**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 prefered 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$^{o}$C.

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

g) POM subtotal includes D/F

h) 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.

i) Xylene emission factors were reported in databases only for total xylene (all isomers) and o-xylene. Each isomer (o-, m-, p-) is an individually regulated HAP.

j) 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.

k) Selected emission factor represents uncontrolled emissions based on blend of wood fuels and calculations as specified in Tables 2-3A through 2-3F.

l) Maximum based on upper limit of 95% confidence interval for representative fuel woods tested as indicated in Table 2-3D.

m) HCl and HF emission reduction estimated at 88% based on dry in-duct sorbent injection (DSI).

**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 758 MMBtu/hr.

Table 2-13
Preliminary Best Management Practices (BMP) Plan for Minimization of Fugitive Dust,
Pile Management and Fire Prevention
ADAGE Gadsden LLC Gadsden County, Florida
Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

| Practice | Description |
|---|---|
| Best Management Practice – Minimization of Fugitive Dust | 1) Conveyor systems and associated drop points shall be covered or partially enclosed.<br>2) Drop points to woody biomass storage areas shall be designed to minimize the overall exposed (or exposed to atmosphere) drop height.<br>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.<br>4) Fuel bins shall be equipped with vent screens.<br>5) Daily observations of the conveyor systems and associated drop point integrity to identify any equipment abnormalities.<br>6) Plant personnel shall be trained on identification of warning signs for potential equipment malfunction.<br>7) 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.<br>8) All major roadways at the plant shall be paved.<br>9) Mud, dirt or similar debris shall be removed promptly from the paved roads.<br>10) Plant personnel shall be trained on what constitutes excessive dust on paved roads. |
| Storage Pile Management | 1) Woody biomass storage areas shall be managed to avoid excessive wind erosion.<br>2) A woody biomass fugitive dust minimization plan shall be developed and maintained onsite. Plan shall identify warning signs for conditions that could result in excessive fugitive dust formation. Plant personnel shall be trained on what warning signs to look for.<br>3) Mechanical moving of woody biomass by front end loaders and other supporting equipment shall be minimized on high wind event days.<br>4) Objectionable odor is prohibited with first in first out biomass utilization implemented to minimize odors.<br>5) Daily visual observations of the woody biomass storage areas shall be performed and if conditions are right for fugitive dust formation, procedures from the fugitive dust plan shall be implemented. |

Table 2-13
Preliminary Best Management Practices (BMP) Plan for Minimization of Fugitive Dust,
Pile Management and Fire Prevention
ADAGE Gadsden LLC Gadsden County, Florida
Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

| 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.<br>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.<br>3) Daily observations of the woody biomass storage areas shall be performed by plant personnel to identify potential fire hazards. Plant personnel shall be trained on identification of potential fire hazards.<br>4) Signs shall be posted at the plant, which identify potential fire hazards.<br>5) Incoming unprocessed materials shall be stored in areas with a clearance between each storage area.<br>6) The stacker reclaimer being used shall maximize the removal of older material in order to minimize the stacking of new material on top of older material.<br>7) Compaction of woody biomass materials in the storage areas 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 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.<br>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. This also includes, but is not limited to, wood, wood residue, bark, or any derivative fuel or residue thereof, in any form, including but not limited to sawdust, sander dust, wood chips, scraps, slabs, millings, shavings, and processed pellets made from wood or other forest residues.<br>3) The woody biomass feedstock will be delivered to the Gadsden County Plant in vehicles designed to prevent release.<br>4) For each shipment of woody biomass, the permittee shall record the date, quantity and a description of the material received.<br>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.<br>6) The permittee shall maintain records of rejected shipments and disposition thereof. Such records shall be made available to the Department upon request. |

# 3. Regulatory Applicability

The proposed nominal 55.5-MW net woody biomass power 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 proposed plant, are provided in following section.

This section discusses the pertinent Federal, state, and local air pollution control regulations that may be applicable to the proposed project. 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 discussion on how the proposed project will comply with these applicable regulations.

## 3.1. Air Quality Status

The proposed project is located in Gadsden 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 ($PM_{2.5}$)** | Unclassifiable |
| **Carbon Monoxide (CO)** | Attainment |
| **Ozone ($O_3$)** | Attainment |
| **Lead (Pb)** | Unclassifiable |

Since the proposed site area is classified as attainment or unclassifiable 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 FDEP/EPA

as meeting the National Ambient Air Quality Standards (NAAQS) which were established to protect human health and welfare. Figure 3-1 shows the attainment status of Gadsden County, Florida and the surrounding areas.

## 3.2. Federal Requirements

EPA has developed regulations that are designed to control air pollution. Refer to Table 3-1 for a listing of potentially applicable federal regulations to the proposed biomass power plant. These regulations include permitting requirements for new major stationary sources located in nonattainment and attainment areas, as well as Standards of Performance (i.e., New Source Performance Standards – NSPS) for certain types of new sources. As discussed in Section 3.1, Gadsden County is classified as attainment or unclassifiable for all regulated criteria air pollutants. Thus, major sources (as defined by rule) are subject to the Prevention of Significant Deterioration (PSD) requirements, which are implemented by the state under rule 62-212.400 F.A.C. The state/federal nonattainment area requirements do not apply to air pollutant sources to be located in Gadsden County.

### 3.2.1. PSD Air Permitting Requirements

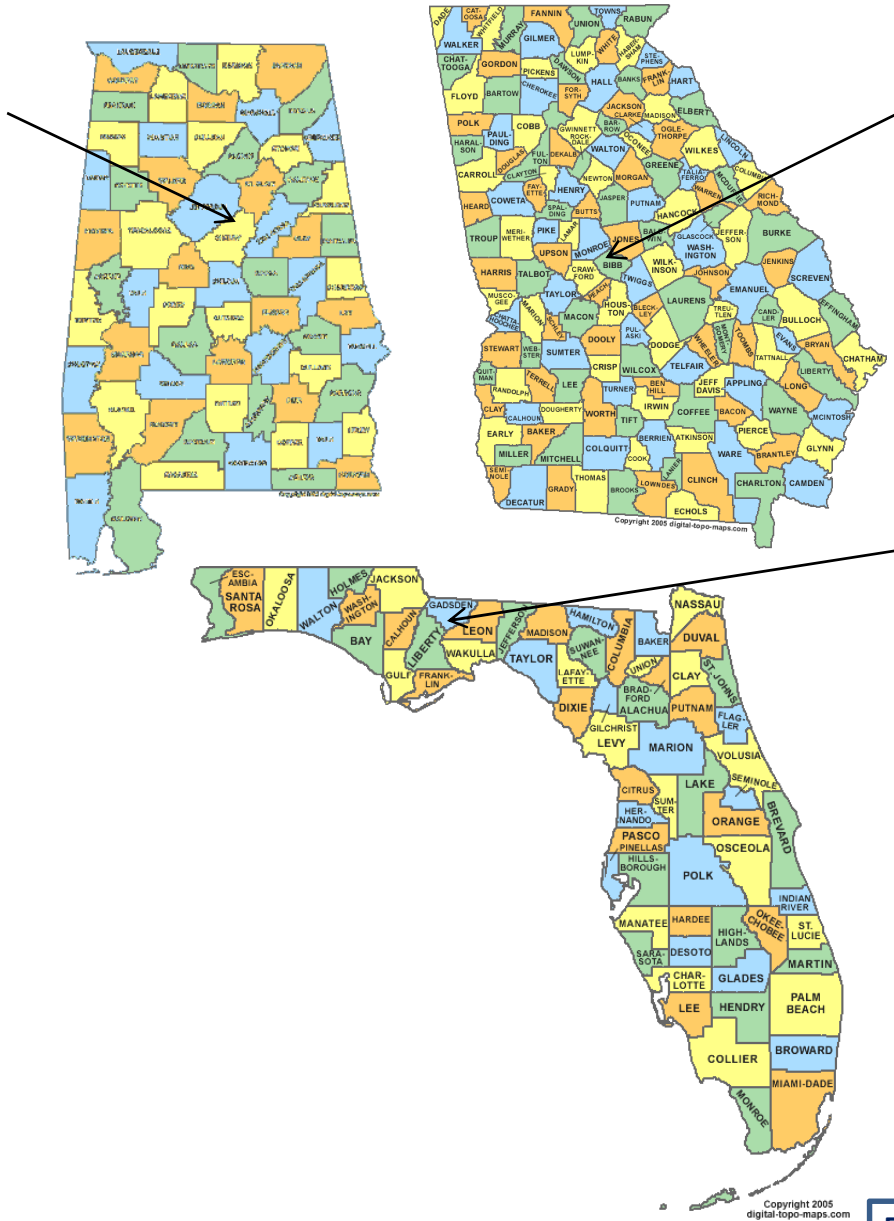
The PSD regulations, found in Rule 62-212.400, F.A.C., specify that any major new stationary source or major expansion project to an existing major source within an air quality attainment area must undergo PSD review. A major source is defined as:

- 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).

"Potential emissions" are defined as the emissions of any pollutant at maximum design capacity (or less than maximum design capacity if specified as a permit condition), including the control efficiency of air pollution control equipment.

A PSD review is triggered in certain instances when emissions associated with a new major source are "significant". "Significant" emission thresholds are defined in two ways. The first is in terms of emission rates (tons/year) for listed air pollutants (refer to Table 3-1A) for which significant emission rates have been established. Significant increases in emission rates are subject to PSD review for new sources as follows:

The nonattainment area in Alabama closest to Gadsden County, Florida is Shelby County. Shelby County, AL was classified as Nonattainment for *PM-2.5 (2006)*, according to the U.S. EPA Green Book "Currently Designated Nonattainment Areas for All Criteria Pollutants," updated November 13, 2009.




The nonattainment area in Georgia closest to Gadsden County, Florida is Bibb County. Bibb County, GA was classified as Nonattainment for *PM-2.5 (1997),* according to the U.S. EPA Green Book "Currently Designated Nonattainment Areas for All Criteria Pollutants," updated November 13, 2009.

Gadsden County, Florida is in attainment for all criteria pollutants. The entire state of Florida is in attainment for all criteria pollutants, according to the U.S. EPA Green Book "Currently Designated Nonattainment Areas for All Criteria Pollutants," updated November 13, 2009.

**Figure 3-1: Attainment Status of Gadsden County, Florida and Surrounding Area**

- For a new source which is major for at least one regulated attainment or non-criteria pollutant (i.e., is subject to PSD review), all pollutants for which the area is not classified as nonattainment and which are emitted in amounts equal to or greater than those specified in Table 3-1A are subject to PSD review.

Also, a "significant" emission threshold is defined as any emissions rate at a new major stationary source (or any net emissions increase associated with a modification to an existing major stationary source) that is constructed within 10 kilometers of a Class I area and which would increase the 24-hour average concentration of any regulated pollutant in that area by 1 $\mu g/m^3$ or greater. Exceedance of this threshold triggers PSD review.

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 criteria pollutant from the source exceed 100 tons per year. As discussed previously, the proposed power plant will not have equipment with capabilities exceeding 250 MMBtu/hr of fossil fuel heat input and will have potential emissions of less than 250 ton per year major source threshold for sources not classified in the 28 designated source categories.

Gadsden County is designated attainment, unclassifiable, or better than the national standards for all regulated criteria air pollutants, thus the following steps were evaluated to determine if the proposed project will trigger PSD applicability under F.A.C. 62-212.400:

- **Step 1** – Is the proposed woody biomass power plant classified as a major stationary source? No, the proposed plant will have the potential to emit (PTE) air pollutants levels at less than 250 tons per year associated with the woody biomass power plant; and
- **Step 2 – Since the proposed plant will not be considered major, the project should be classified as a minor stationary source and should not trigger applicability of the PSD regulations, as defined under F.A.C. 62-212.400.**

### 3.2.2. Non-Attainment Area New Source Review

Section 62-212.500 of the F.A.C. contains preconstruction review requirements for new major sources in non-attainment areas. The regulation states that any major new source which would be located in an area designated as an ozone transport region or which would be in an area designated as non-attainment for a pollutant that the source would be major in may be constructed only if certain conditions are met. These conditions ensure that emissions will be controlled to the greatest degree possible, that more than equivalent

offsetting emission reductions (emission offsets) will be obtained from existing sources, and that there will be progress toward achievement of NAAQS.

**Since the proposed plant will be located in an area (i.e. Gadsden County) that is designated attainment or unclassifiable for all criteria air pollutants, these review requirements will not apply to the proposed biomass power plant.**

### 3.2.3. New Source Performance Standards (NSPS)

The NSPS have been developed by EPA for specific source categories. These standards are codified in the Code of Federal Regulations (CFR) under Part 60 (40 CFR 60). A listing of these standards is provided in Table 3-2. Those standards applicable to the proposed biomass power plant project are highlighted in this table.

The following NSPS regulations are potentially applicable to the proposed project:

- NSPS Subpart A – General Provisions;
- NSPS Subpart Db – Industrial, Commercial, Institutional Steam Generating Units;
- NSPS Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 (This NSPS is not applicable as discussed below);
- NSPS Subpart IIII – Stationary Compression Ignition Internal Combustion Engines; and
- NSPS Subpart OOO – Nonmetallic Mineral Processing Plant.

The proposed project will be in compliance with the above stated NSPS requirements. A discussion on each applicable NSPS subpart is provided below.

#### 3.2.3.1. NSPS 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 240 MMBtu/hr when combusting natural gas, propane and ultra low sulfur distillate fuel. The proposed boiler will also be capable of combusting wood at an estimated maximum design heat input rate of 758 MMBtu/hr (24-hour average). Based on the fuels to be combusted and maximum heat inputs, the proposed boiler will meet the applicability

requirements of NSPS Db. The following Subpart Db requirements are applicable to the proposed boiler:

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). **ADAGE has designed the equipment to minimize fugitive particulate matter, thus is proposing a more restrictive opacity limit of 10 percent to reflect this environmentally efficient design. The proposed boiler will achieve 10% 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, propane or ultra low sulfur distillate fuel during startup, shutdown and boiler bed stabilization and woody biomass during normal operation. ADAGE is not proposing to take a limitation to restrict natural gas to an annual capacity factor of 10 percent (0.10) or less.

  **During combustion of woody biomass, natural gas or propane 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 bubbling fluidized bed boiler design in conjunction with clean burning fossil fuels will achieve this $NO_x$ limitation.**

The proposed BFB boiler may be capable of combusting ULSD fuel during startup, shutdown and bed stabilization. Simultaneous combustion of ULSD and clean woody biomass could occur during startup, shutdown or bed stabilization. However, the total maximum heat input from combustion of diesel fuel will be 240 MMBtu/hr or less. If ULSD oil is chosen as the supplemental fuel, the boiler will be subject to 40 CFR 60.44b(l)(1), which limits $NO_x$ emissions to 0.2 lbs/MMBtu.

**The BFB boiler will easily achieve the 0.2 or 0.3 lbs/MMBtu $NO_x$ limitations depending on the supplemental fuel, based on the efficient combustion nature of the BFB boiler when combusting clean natural gas, propane or ULSD during startup, shutdown or bed stabilization.**

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 - 60.48b(a) - 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.

- $NO_x$ – 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 $CO_2$) emission discharged to the atmosphere (60.48b (b)(1)).

**ADAGE 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).

**ADAGE 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.

**ADAGE 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 30$^{th}$ day following the end of the reporting period.

**ADAGE is aware of these reporting requirements and will meet these requirements.**

#### 3.2.3.2. NSPS Subpart Kb – "Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984"

This subpart applies to each storage vessel with a capacity greater than or equal to 19,800 gallons that is used to store volatile organic liquids for which construction, reconstruction, or modification is commenced after July 23, 1984. This subpart does not apply to storage vessels with a capacity greater than or equal to 39,900 gallons storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 19,800 gallons but less than 39,900 gallons storing a liquid with a maximum true vapor pressure less than 15.0 kPa.

**The 50,000 gallon storage tank will be storing ULSD which has a true vapor pressure of less than 3.5 kPa (0.5 psia) and thus the requirements of 40 CFR Part 60, Subpart Kb would not apply to the distillate fuel oil storage tank being proposed for the plant.**

#### 3.2.3.3. NSPS Subpart IIII "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, nonmethane hydrocarbons (NMHC), and PM. Applicable NSPS IIII emission standards for the emergency generator and firewater 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 use a diesel fuel must meet a sulfur content of 0.0015% by weight.

**ADAGE will be utilizing a diesel fuel with a sulfur content of 0.0015% by weight or less. The emergency generator and firewater pump will comply with the applicable requirements of NSPS Subpart IIII.**

#### 3.2.3.4. NSPS Subpart OOO "Standards of Performance for Nonmetallic Mineral Processing Plants"

As part of the proposed in-duct sorbent injection system, milling of the sorbent may be required prior to injection into the biomass combustion system. The type of sorbent to be used could meet the definition of a nonmetallic mineral as defined in 40 CFR Part 60.671.

Applicability of Subpart OOO applies to affected facilities in fixed or portable nonmetallic processing plants, including each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, and enclosed truck or railcar loading station. Nonmetallic mineral processing plant means any combination of equipment that is used to crush or grind any nonmetallic mineral at any type of plant. This subpart contains standards for particulate matter, monitoring of operations, test methods and procedures as well as reporting and recordkeeping requirements.

Based on the design of the proposed in-duct sorbent injection system, the storage silo appears to be subject to a 7% opacity limitation. The milling operation, since it will be totally enclosed, would also be subject to a 7% opacity limitation.

**ADAGE is aware of the requirements contained in Subpart OOO and will meet these requirements if a nonmetallic mineral is being processed in the in-duct sorbent injection system. The storage silo will be equipped with a PM control device designed to achieve 0.01 grains/dscf. The inclusion of this control device and enclosure of the milling operation should easily satisfy the 7% opacity limitation.**

### 3.2.4. National Emission Standards for Hazardous Air Pollutants (NESHAPs) – 40 CFR Part 61 Provisions

USEPA initially established emission standards for HAP emissions from twenty-two specific source categories. These source categories include requirements for specific categories and types of emissions; radon emissions from various source categories,

standards for beryllium, mercury, vinyl chloride, and asbestos, and standards for equipment leaks (fugitive emission sources).

**The emission sources associated with the proposed plant are not subject to the requirements contained within this part.**

### 3.2.5. National Emission Standards for Hazardous Air Pollutants (NESHAPs) – 40 CFR Part 63 Provisions (MACT Source Categories)

USEPA has revised the NESHAP provisions to include control technology requirements for source categories that are a major source of HAP emissions. A major source includes those that emit 10 tons/year of any one individual HAP or 25 tons/year of aggregate HAP emissions. A listing of the individual source categories with specific control technology requirements, commonly called maximum available control technology (MACT) is provided in Table 2-3. **The proposed project will not be a major source of HAP emissions. Thus, the MACT control technology requirements do not apply to the proposed biomass power plant project.** Refer to the tables in Section 2 of this application for the calculations of HAP emissions from the proposed biomass power plant project.

EPA has developed a MACT standard, referred to as Subpart ZZZZ – "National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines." This subpart established national emission limitations and operating limitations for HAPs emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP. The proposed Plant is classified as an area source of HAP emissions. The engines being proposed by ADAGE do not appear to the meet the definition of a) emergency stationary RICE, or b) limited use stationary RICE, thus do not meet the exemption criteria for this subpart as stated in 63.6590(c). The proposed emergency fire pump is rated at less than 500 brake HP, thus is exempt from MACT Subpart ZZZZ, however they must meet the requirements in NSPS IIII.

On March 5, 2009, EPA issued a proposed rule for National Emission Standards for Hazardous Air Pollutants for reciprocating internal combustion engines. This rule proposed revisions to Subpart ZZZZ to incorporate requirements for non-major stationary sources (i.e., defined as area sources) that use reciprocating internal combustion engines.

**ADAGE will meet the applicable requirements of this rule as currently issued by EPA. ADAGE will also monitor the changes to this rule and how they may affect the RICE units at the proposed Plant.**

### 3.2.6. Acid Rain Provisions

The USEPA'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 USEPA 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. ADAGE 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 ADAGE under separate cover.**

ADAGE will appoint a Designated Representative to represent the owners and operators of the proposed woody biomass plant project 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 ADAGE's understanding that an acid rain permit application must be submitted to the FDEP 24 months prior to commencement of operation of the proposed biomass power plant.**

### 3.2.7. Clean Air Interstate Rule (CAIR)

On March 10, 2005, EPA issued the final Clean Air Interstate Rule (CAIR). The objective of CAIR is to assist states with $PM_{2.5}$ and 8-hour ozone nonattainment areas to achieve attainment by reducing precursor emissions at sources located in 28 states (including Florida) situated upwind of these nonattainment areas. Based on regional dispersion modeling, EPA determined that these 28 upwind states significantly contribute to $PM_{2.5}$ and 8-hour ozone nonattainment in downwind areas.

The CAIR reductions of precursor emissions address annual $SO_2$ and $NO_x$ emissions (for reductions in annual and daily ambient $PM_{2.5}$ impacts) and ozone season (May through September) $NO_x$ emissions (for reductions in 8-hour average ambient ozone impacts). The $SO_2$ and $NO_x$ reductions will be implemented by means of a regional two-phase cap-and-trade program. For $SO_2$, the first cap begins in calendar year 2010 and extends through 2014. The second phase cap for both pollutants becomes effective in calendar year 2015 and thereafter. The $SO_2$ caps will reduce current ARP $SO_2$ emissions by 50

percent in Phase I and by 65 percent in Phase II. The NOx caps reflect $NO_x$ emission rates of 0.15 and 0.125 lbs/MMBtu for the first and second phase caps, respectively.

For each phase cap, CAIR assigns $SO_2$ and $NO_x$ emission budgets (in units of tons per year and tons per ozone season) to each affected upwind state. The state emission budgets were developed by EPA based on the application of cost-effective control technologies (i.e., flue gas desulfurization) for $SO_2$ and SCR for $NO_x$. The affected states were required to submit revised state implementation plans (SIPs) within 18 months (i.e., by September 11, 2006) for EPA review and approval. Florida's proposed SIP revisions implementing CAIR were submitted to EPA Region 4 on March 16, 2007, for review and approval in accordance with EPA's abbreviated SIP approval process. The SIPs will provide details as to the procedures that will be used to allocate the state $NO_x$ and $SO_2$ budgets to individual sources. On October 12, 2007, EPA approved Florida's CAIR SIP revisions. The SIP was withdrawn by EPA on April 28, 2008.

Following SIP approval and allocation of the state $SO_2$ and $NO_x$ budgets to individual emission sources, emission units at these sources must possess sufficient $SO_2$ and $NO_x$ allowances such that actual emissions (as measured by CEMS) do not exceed the allocations for each control period beginning in 2009 (for $NO_x$) and 2010 (for $SO_2$). Sources that have actual emissions in excess of their allocations will need to reduce actual emission rates or purchase additional allowances on the open market. Emission sources that have surplus allowances may bank the allowances for use in any future control period or sell the surplus allowances on the open market.

40 CFR Part 96.104 "Applicability" states that this rule applies to any stationary, fossil fuel-fired boiler or stationary, fossil fuel-fired combustion turbine serving at any time, since the later of November 15, 1990 or the start-up of the unit's combustion chamber, a generator with nameplate capacity of more than 25 MW producing electricity for sale. Fossil fuel-fired means, with regard to a unit, combusting any amount of fossil fuel in any calendar year. The proposed woody biomass boiler will be a $NO_x$ CAIR source, thus will be subject to 40 CFR Part 96 Subpart AA (Annual Trading Program) and 40 CFR Part 96 Subpart AAAA (Ozone Season Trading Program). The proposed boiler will also be considered a $SO_2$ CAIR source and will be subject to 40 CFR Part 96 Subpart AAA (CAIR $SO_2$ Trading Program General Provisions). The CAIR rules were successfully challenged and remanded to EPA for revision. EPA has not yet proposed revisions but is expected to do so in the coming months.

**ADAGE is aware of these requirements and understands that it must file a CAIR application during the Title V Operating Permit process.**

### 3.2.8. Chemical Accident Prevention Provisions – 40 CFR Part 68

EPA has promulgated specific regulations to prevent chemical accidents from occurring at industrial type facilities. These regulations are contained in 40 CFR Part 68 of the Code of Federal Regulations.

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.

ADAGE is proposing to use two chemicals that are listed substances in this regulation; ammonia and propane.

- Ammonia will be utilized in the SCR control technology system being proposed for the biomass boiler. ADAGE 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; and

- Propane may be utilized as a startup, shutdown and bed stabilization fuel in the proposed fluidized bed boiler. ADAGE has not identified the specific quantity of propane to be stored on-site. However, if this quantity exceeds 10,000 pounds it is ADAGE's understanding that the applicability requirements of this regulation will be satisfied and the use of propane at the proposed site must meet the appropriate requirements prior to commencing operation of the propane storage tank.

### 3.2.9. Compliance Assurance Monitoring (CAM) Applicability

Pursuant to requirements concerning enhanced monitoring and compliance certification under the Clean Air Act, EPA has promulgated regulations (40 CFR Part 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 applicable 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 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 limits) apply to the emissions unit.

**ADAGE 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 operating permit. It appears that the only PSEU associated with the proposed biomass power plant will be PM emissions from the biomass boiler. ADAGE will be following EPA guidance on development of CAM plans for equipment utilizing fabric filter baghouses.**

## 3.3. Additional Federal Requirements

The proposed woody biomass plant will be subject to other federal requirements in addition to air permitting requirements. These other relevant requirements are discussed below.

### 3.3.1. 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; 2) the date an application for a construction permit is to be filed.

**ADAGE 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 biomass boiler stack exceeds 200 feet. The purpose of this notification is for the FAA to define stack lighting and color requirements.**

## 3.4. State Requirements

Standards and limitations for visible, particulate matter emissions, sulfur emissions, VOC emissions, CO emissions, and $NO_x$ emissions are also contained in the Florida rules and regulations. These are discussed below, along with any emission standards or limitations contained in these rules that may apply to the primary sources associated with the proposed project. A listing of the individual state rules is provided in Tables 3-4 thru 3-4O, along with a determination of whether or not the rules will apply to the proposed project.

### 3.4.1. 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.

#### 3.4.1.1. 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 that 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 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.

**ADAGE as part of this application has addressed the requirements referenced above.**

#### 3.4.1.2. 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.

**ADAGE as part of this application has provided the information required by this subpart.**

### 3.4.1.3. 62-204.240 Ambient Air Quality Standards

The ambient air quality standards set forth in 62-204.240 are as follows:

- $SO_2$
  - Maximum three hour concentration – 1300 micrograms per cubic meter (0.5 ppm)
  - Maximum 24-hr concentration – 260 micrograms per cubic meter (0.1 ppm)
  - Annual arithmetic mean – 60 micrograms per cubic meter (0.02 ppm)
- $PM_{10}$
  - 24-hr average concentration – 150 micrograms per cubic meter
  - Expected annual arithmetic mean concentration – 50 micrograms per cubic meter
- Carbon Monoxide
  - Maximum one hour concentration – 35 ppm (40 milligrams per cubic meter)
  - Maximum eight hour concentration – 9 ppm (10 milligrams per cubic meter)
- Ozone
  - Daily maximum one hour concentration – 0.12 ppm (235 micrograms per cubic meter)
- Nitrogen Dioxide
  - Annual arithmetic mean – 100 micrograms per cubic meter (0.05 ppm)

**The design (incorporation of state of the art air pollution control devices and techniques) of the proposed biomass power plant will result in potential plant wide air pollutant emissions that will protect these ambient air quality standards. ADAGE will be providing to the FDEP (under separate cover) an addendum to this application, which will contain the results of a voluntary air quality impact**

**evaluation demonstrating compliance with these applicable ambient air quality standards.**

### 3.4.2. Chapter 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 relating 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.

#### 3.4.2.1. 62-210.300 Permits Required

According to 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.

**ADAGE is aware of this requirement and is applying for an air construction permit for the proposed woody biomass power plant.**

#### 3.4.2.2. 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).

**ADAGE is aware of the public notice requirements and will work with the FDEP to meet these requirements.**

#### 3.4.2.3. 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 air quality impact evaluation that is presented in Section 6 of this application demonstrates that the criteria of this policy were satisfied.**

### 3.4.3. 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.

**The proposed biomass power plant will not trigger applicability of either of these regulatory requirements. Thus, this regulation will not apply.**

### 3.4.4. 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.

#### 3.4.4.1. 62-296.320 General Pollutant Emission Limitation Standards

**ADAGE is aware of the following emission limitations and has designed the proposed biomass power plant to meet these individual 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.

- 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 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).

- 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.

#### 3.4.4.2. 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 bubbling fluidized bed 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
- Sulfur Dioxide – Best Available Control Technology.

**The combustion of natural gas/propane/ULSD fuel for startup, shutdown and boiler bed stabilization should easily meet the 20% opacity requirement. The use of only natural gas/propane/ULSD fuel and good combustion practices when utilizing these fuels in the bubbling fluidized bed 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 bubbling fluidized bed boiler that would be technically feasible. Thus, the combustion of natural gas/propane/ULSD fuel and good combustion practices in the bubbling fluidized bed boiler is considered BACT.**

#### 3.4.4.3. 62-296.410 Carbonaceous Fuel Burning Equipment

The proposed biomass boiler would be 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/propane/ULSD fuel during startup, shutdown and boiler bed stabilization. During combustion of wood biomass, good combustion practices will be utilized in combination with a baghouse to minimize PM emissions. **The combination of these control technologies will meet the limitations (0.1 lbs of PM/MMBtu for natural gas/propane/ULSD fuel and 0.2 lbs/MMBtu for woody biomass) imposed by this regulation. ADAGE will also be installing a COM on the biomass boiler that will be used to show compliance with the opacity standard (30%). In fact, the biomass boiler is subject to a more stringent opacity standard of 20% under NSPS Db. ADAGE has designed the equipment to minimize fugitive particulate matter, thus is proposing a more restrictive opacity of 10 percent to reflect this environmentally efficient design.**

#### 3.4.4.4. 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.

**ADAGE is aware of this requirement and will work with the FDEP to obtain the required permits prior to plant operation.**

### 3.4.5. 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.

**ADAGE is aware of these test procedures and will follow these procedures when required.**

#### 3.4.5.1. 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.

**ADAGE is aware of these training and certification requirements and will follow these requirements as they pertain to the proposed woody biomass power plant.**

**Table 3-1**
**List of Applicable and Non-Applicable Federal Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| | | **Reason Code*** |
|---|---|---|
| **40 C.F.R. Part 50** | **National Primary and Secondary Ambient Air Quality Standards** | **A** |
| 40 C.F.R. Part 51 | Requirements for Preparation, Adoption and Submittal of Implementation Plans | C |
| 40 C.F.R. Part 52 | Approval and Promulgation of Implementation Plans | C |
| 40 C.F.R. Part 53 | Ambient Air Monitoring Reference and Equivalent Methods | C |
| 40 C.F.R. Part 54 | Prior Notice of Citizen Suits | C |
| 40 C.F.R. Part 55 | Outer Continental Shelf Air Regulations | C |
| 40 C.F.R. Part 56 | Regional Consistency | C |
| 40 C.F.R. Part 57 | Primary Nonferrous Smelter Orders | C |
| 40 C.F.R. Part 58 | Ambient Air Quality Surveillance | C |
| 40 C.F.R. Part 59 | National Volatile Organic Compound Emission Standards for Consumer and Commercial Products | C |
| **40 C.F.R. Part 60** | **Standards of Performance for New Stationary Sources (NSPS Subpart $D_b$, Subpart IIII and Subpart OOO only. Refer to Table 3-2)** | **A**** |
| 40 C.F.R. Part 61 | National Emission Standards for Hazardous Air Pollutants | C |
| 40 C.F.R. Part 62 | Approval and Promulgation of State Plans for Designated Facilities and Pollutants | C |
| 40 C.F.R. Part 63 | National Emission Standards for Hazardous Air Pollutants for Source Categories | C |
| **40 C.F.R Part 64** | **Compliance Assurance Monitoring (Part of Initial Part 70 Application Submittal)** | **B** |
| 40 C.F.R. Part 65 | Consolidated Federal Air Rule | C |
| 40 C.F.R. Part 66 | Assessment and Collection of Noncompliance Penalties by EPA | C |
| 40 C.F.R. Part 67 | EPA Approval of State Noncompliance Penalty Program | C |
| **40 C.F.R. Part 68** | **Chemical Accident Prevention Provisions (i.e., Propane)** | **A** |
| 40 C.F.R. Part 69 | Special Exemptions from Requirements of the Clean Air Act | C |
| **40 C.F.R. Part 70** | **State Operating Permit Programs** | **B** |
| 40 C.F.R. Part 71 | Federal Operating Permit Programs | C |

**Table 3-1**
**List of Applicable and Non-Applicable Federal Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| **40 C.F.R. Parts 72,73,74,75,76,77 and 78** | **Permits Regulation (Part 72)** | **Reason Code* A** |
|---|---|---|
| 40 C.F.R. Parts 79 and 80 | Registration and Regulation of Fuels and Fuel Additives (Sulfur Limits for Diesel Fuel) | C |
| 40 C.F.R. Part 81 | Designation of Areas for Air Quality Planning Purposes | C |
| **40 C.F.R. Part 82** | **Protection of Stratospheric Ozone** | **B** |
| 40 C.F.R. Part 85 | Control of Air Pollution from Mobile Sources | C |
| 40 C.F.R. Part 86 | Control of Emissions from New and In-Use Highway Vehicles and Engines | C |
| 40 C.F.R. Part 87 | Control of Air Pollution from Aircraft and Aircraft Engines | C |
| 40 C.F.R. Part 88 | Clean-Fuel Vehicles | C |
| 40 C.F.R. Part 89 | Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines | C |
| 40 C.F.R. Part 90 | Control of Emissions from Nonroad Spark-Ignition Engines at or below 19 Kilowatts | C |
| 40 C.F.R. Part 91 | Control of Emissions from Marine Spark-Ignition Engines | C |
| 40 C.F.R. Part 92 | Control of Air Pollution from Locomotives and Locomotive Engines | C |
| 40 C.F.R. Part 93 | Determining Conformity of Federal Actions to State or Federal Implementation Plans | C |
| 40 C.F.R. Part 94 | Control of Air Pollution from Marine Compression-Ignition Engines | C |
| 40 C.F.R. Part 95 | Mandatory Patent Licenses | C |
| **40 C.F.R. Part 96** | **$NO_x$ Budget Trading Program and CAIR $NO_x$ and $SO_2$ Trading Programs for State Implementation Plans** | **A** |
| 40 C.F.R. Part 97 | Federal $NO_x$ Budget Trading Program and CAIR $NO_x$ and $SO_2$ Trading Programs | C |
| 40 C.F.R. Parts 98 and 99 | Reserved | C |

# Table 3-1
# List of Applicable and Non-Applicable Federal Air Pollution Regulations
# ADAGE Gadsden LLC Gadsden County, Florida
# Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

*Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**40 CFR Part 60 Subparts Eb and CCCC are not applicable due to the biomass power plant qualifying as a small power production facility, as defined in Section 3(17)(c) of the Federal Power Act (16 U.S.C. 7961(17)(c). Refer to 40 CFR Part 60.50b(e).

TABLE 3-1A

# NATIONAL / FLORIDA AMBIENT AIR QUALITY STANDARDS (NAAQS), PSD INCREMENTS, PSD SIGNIFICANT EMISSION RATE THRESHOLDS, SIGNIFICANT IMPACT INCREMENTS, AND MONITORING DE MINIMIS CONCENTRATIONS

| POLLUTANT | AVERAGING PERIOD | NAAQS ($\mu g/m^3$) | | PSD INCREMENTS ($\mu g/m^3$) | | | PSD SIGNIFICANT EMISSION RATES (tons/year) | PSD SIGNIFICANT IMPACT INCREMENTS ($\mu g/m^3$) | PSD MONITORING DE MINIMIS CONCENTRATIONS ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| | | PRIMARY | SECONDARY | CLASS I | CLASS II | CLASS III | | | |
| Total Suspended Particulate Matter (TSP)[a] | Annual | -- | -- | 5[a] | 19[a] | 37[a] | 25 | 1 | -- |
| | 24-Hour | -- | -- | 10[a,b] | 37[a,b] | 75[a,b] | | 5 | 10 |
| Particulate Matter Less than 10 µm ($PM_{10}$)[a] | Annual | 50[i] | [c] | 4 | 17 | 34 | 15 | 1 | -- |
| | 24-Hour | 150[b, i] | [c] | 8[b] | 30[b] | 60[b] | | 5 | 10 |
| Particulate Matter Less than 2.5 µm ($PM_{10}$)[a] | Annual | 15[h] | [c] | [a] | [a] | [a] | | | |
| | 24-Hour | 35[c] | [c] | [a] | [a] | [a] | | | |
| Sulfur Dioxide | Annual | 60 / 80[i] | -- | 2 | 20 | 40 | 40 | 1 | -- |
| | 24-Hour | 260 / 365[b, i] | -- | 5[b] | 91[b] | 182[b] | | 5 | 13 |
| | 3-Hour | 1300[i] | 1300[b] | 25[b] | 512[b] | 700[b] | | 25 | -- |
| Nitrogen Dioxide | Annual | 100[i] | [c] | 2.5 | 25 | 50 | 40 | 1 | 14 |
| Ozone[g] | 1-Hour | 235[d, i] | [c] | -- | -- | -- | 40[e] | -- | [f] |
| | 8-Hour | 146[g] | [c] | -- | -- | -- | 40[e] | -- | [f] |
| Carbon Monoxide | 8-Hour | 10,000[b, i] | [c] | -- | -- | -- | 100 | 500 | 575 |
| | 1-Hour | 40,000[b, i] | [c] | -- | -- | -- | | 2000 | -- |
| Lead | Calendar Quarter | 1.5[i] | [c] | -- | -- | -- | 0.6 | -- | 0.1 |
| Total Reduced Sulfur (TRS) Reduced Sulfur Compounds | 1-Hour | -- | -- | -- | -- | -- | 10 | -- | 10 |
| Fluorides | 24-Hour | -- | -- | -- | -- | -- | 3 | -- | 0.25 |
| Sulfuric Acid Mist | -- | -- | -- | -- | -- | -- | 7 | -- | -- |
| Hydrogen Sulfide | 1-Hour | -- | -- | -- | -- | -- | 10 | -- | 0.2 |

[a] TSP increment was replaced by $PM_{10}$ increment effective June 3, 1994. EPA has not yet provided guidance on how to demonstrate compliance with the $PM_{2.5}$ standards
[b] Concentration not to be exceeded more than once per year.
[c] Same as primary NAAQS.
[d] Expected number of days in which one or more hourly ozone concentrations exceed this value must be greater than 1.
[e] Emissions of volatile organic compounds.
[f] Increase in volatile organic compounds of more than 100 tons/year.
[g] New standard is 75 ppb averaged over 8-hour block. Compliance based on the fourth highest daily maximum 8-hour average ozone level of each of three consecutive years. Standard effective date is May 27, 2008.
[h] The annual standard is 15 $ug/m^3$ based on a 3-year average on annual concentrations. The 24-hour standard is 65 $ug/m^3$ based on a 3-year average of the 98th percentile.
[i] Florida Ambient Air Quality Standards (F.A.C. 62-204.240)

**Table 3-2**
**Summary of Applicable New Source Performance Standards (NSPS)**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Subpart Designation | Description | Applicable to ADAGE Proposed Biomass Power Plant Project? |
|---|---|---|
| **A** | **General Provisions** | **Yes** |
| B | Adoption and Submittal of State Plans for Designate Facilities | No |
| C | Emission Guidelines for Compliance Times | No |
| Cb | Emission Guidelines and Compliance Times for Municipal Waste Combusters That Are Constructed on or Before December 19, 1995 | 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 on or 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* | Municipal Waste Combustors for Which Construction is Commenced After September 20, 1994 | 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**
**Summary of Applicable New Source Performance Standards (NSPS)**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Subpart Designation | Description | Applicable to ADAGE Proposed Biomass Power Plant Project? |
|---|---|---|
| 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 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 |
| 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 |
| 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 | Leaks of VOC in the SOCMI Industry | 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 |
| DDD | VOC Emission from the Polymer Manufacturing Industry | No |
| FFF | Flexible Vinyl and Urethane Coating and Printing | No |
| GGG | Equipment Leaks of VOC in Petroleum Refineries | 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 |
| 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 |
| NNN | VOC Emissions from the SOCMI Distillation Operations | No |

**Table 3-2**
**Summary of Applicable New Source Performance Standards (NSPS)**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Subpart Designation | Description | Applicable to ADAGE Proposed Biomass Power Plant Project? |
|---|---|---|
| **OOO** | **Nonmetallic Mineral Processing Plants** | **Yes** |
| 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 | 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 after June 1, 2001 | No |
| DDDD | 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 after June 16, 2006 | No |
| FFFF | Emission Guidelins 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 |

Existing requirement applicable to the proposed biomass power plant project at the ADAGE Gadsden County, Florida site.

Notes:

* Proposed biomass power plant qualifies as a small power production facility, thus is not subject to NSPS Subparts Eb and AAAA. Refer to 40 CFR Part 60.50b(e) and 40 CFR Part 60.1020(b), respectively.

**Table 3-3A**
**Summary of Applicable National Emission Standards for Hazardous Air Pollutants (NESHAPs)**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Subpart | Promulgated NESHAP Standard (40 CFR Part 61) | Applicable to ADAGE Proposed Biomass Power Plant Project? |
|---|---|---|
| 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 | 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-3B**
**Summary of Applicable National Emission Standards for Hazardous Air Pollutants (NESHAPs) - MACT Source Categories**
**ADAGE Gasden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Subpart | Promulgated MACT Standard (40 CFR Part 63) | Applicable to ADAGE Proposed Biomass Power Plant Project? |
|---|---|---|
| A | General Provisions | No |
| 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 | SOCMI Industry | No |
| G | SOCMI Industry - 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 |
| L | Coke and Oven Batteries | No |
| M | National Perchloroethylene Air Emissions standards for Dry Cleaning Facilities | No |
| N | Chromium Emissions | No |
| O | Ethylene Oxide Emission Standards for Sterilization Facilities | 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 |
| W | Epoxy Resin Production and Non-Vinyl Polymides Production | No |
| X | Secondary Lead Smelting | No |
| Y | Marine Tank Vessel Loading Operations | 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 |
| 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 |
| 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 |
| CCC | Steel Pickling - HCL Process Facilities and HCL Regeneration Plants | No |
| DDD | Mineral Wool Production | No |

**Table 3-3B**
**Summary of Applicable National Emission Standards for Hazardous Air Pollutants (NESHAPs) - MACT Source Categories**
**ADAGE Gasden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Subpart | Promulgated MACT Standard (40 CFR Part 63) | Applicable to ADAGE Proposed Biomass Power Plant Project? |
|---|---|---|
| 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 |
| 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 | POTWs | 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 Productions | No |
| EEEE | Organic Liquids Distribution (Non-Gasoline) | No |
| FFFF | Misc. 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 |
| WWWW | Reinforced Plastics Composites Manufacturing | No |
| XXXX | Rubber Tire Manufacturing | No |
| YYYY | Stationary Combustion Turbines | No |
| **ZZZZ** | **Stationary Reciprocating Internal Combustion Engines* (Refer to Section 3 of the Application)** | **Yes** |
| AAAAA | Lime Manufacturing | No |
| BBBBB | Semiconductor Manufacturing | No |
| CCCCC | Coke Oven Pushing, Quenching, Stacks | No |
| DDDDD | Industrial, Commercial and Instructional Boilers and Process Heaters | No |
| EEEEE | Iron and Steel Foundries | No |
| FFFFF | Integrated Iron and Steel Manufacturing Facilities | No |
| GGGGG | Site Remediation | No |
| HHHHH | Miscellaneous Coating Manufacturing | No |

**Table 3-3B**
**Summary of Applicable National Emission Standards for Hazardous Air Pollutants (NESHAPs) - MACT Source Categories**
**ADAGE Gasden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Subpart | Promulgated MACT Standard (40 CFR Part 63) | Applicable to ADAGE Proposed Biomass Power Plant Project? |
|---|---|---|
| IIIII | Mercury Cell Chlor-Alkali Plants | No |
| JJJJJ | Brick and Structural Clay Products Manufacturing | No |
| KKKKK | Clay Ceramics Manufacturing | No |
| LLLLL | Asphalt Roofing and Processing | No |
| MMMMM | Flex. Polyurethane Foam Fabrication Operations | No |
| NNNNN | Hydrochloric Acid Production | 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 |
| WWWWW | Hospital Ethylenne Oxide Sterilizers | No |
| YYYYY | Electric Arc Furnace Steelmaking Facilities | No |
| ZZZZZ | Iron and Steel Foundries Area Sources | 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 |
| LLLLLL | Paint Stripping and Miscellaneous Surface Coating Operations at 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 |
| 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 |
| WWWWWW | Area Source Standards for Plating and Polishing Operations | No |
| XXXXXX | Nine Metal Fabrication and Finishing Source Categories - Area Sources | No |
| YYYYYY | Area Sources Ferroalloys Production Facilities | No |

Existing requirement applicable to the proposed biomass power plant project at the ADAGE Gadsden County, Florida site.

Note: *On Thursday, March 5, 2009, EPA proposed in the Federal Register a revision to Subpart ZZZZ incorporating provisions for engines located at non-major sources of HAP. ADAGE will monitor development of this rule change and its applicability to the engine at the proposed plant.

**Table 3-4**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Woody Biomass Power Plant**

| 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4a**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| **Chapter 62-4** | **Permits** | **Reason Code*** |
|---|---|---|
| 62-4.001 | Scope of Part I. | C |
| 62-4.020 | Definitions. | C |
| 62-4.021 | Transferability of Definitions. | C |
| 62-4.030 | General Prohibition. | C |
| 62-4.040 | Exemptions. | C |
| **62-4.050** | **Procedure to Obtain Permits and other Authorizations; Applications.** | **A** |
| 62-4.052 | Regulatory Program and Surveillance Fees for Wastewater Facilities or Activities Discharging to Surface Waters. | C |
| 62-4.055 | Permit Processing. | C |
| 62-4.060 | Consultation. | C |
| 62-4.070 | Standards of Issuing or Denying Permits; Issuance; Denial. | C |
| **62-4.080** | **Modification of Permit Conditions.** | **B** |
| 62-4.090 | Renewals. | C |
| 62-4.100 | Suspension and Revocation. | C |
| **62-4.110** | **Financial Responsibility.** | **B** |
| **62-4.120** | **Transfer of Permits.** | **B** |
| 62-4.130 | Transferability of Definitions. | C |
| 62-4.150 | Review. | C |
| **62-4.160** | **Permit Conditions.** | **B** |
| 62-4.200 | Scope of Part II. | C |
| **62-4.210** | **Construction Permits.** | **A** |
| **62-4.220** | **Operation Permit for New Sources.** | **B** |
| 62-4.240 | Permits for Water Pollution Sources. | C |

**Table 3-4a**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| | | |
|---|---|---|
| 62-4.242 | Antidegradation Permitting Requirements; Outstanding Florida Waters; Outstanding National Resource Waters; Equitable Abatement. | C |
| 62-4.243 | Exemptions from Water Quality Criteria. | C |
| 62-4.244 | Mixing Zones; Surface Waters. | C |
| 62-4.246 | Sampling, Testing Methods, and Method Detection Limits for Water Pollution Sources. | C |
| 62-4.249 | Preservation of Rights. | C |
| 62-4.250 | Water Pollution Temporary Operation Permits; Conditions. | C |
| 62-4.510 | Scope of Part III | C |
| 62-4.520 | Definition. | C |
| 62-4.530 | Procedures. | C |
| 62-4.540 | General Conditions for All General Permits. | C |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4b**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| **Chapter 62-204** | **Air Pollution Control – General Provisions** | **Reason Code*** |
|---|---|---|
| 62-204.100 | Purpose and Scope. | C |
| 62-204.200 | Definitions. | C |
| 62-204.220 | Ambient Air Quality Protection. | C |
| **62-204.240** | **Ambient Air Quality Standards.** | **A** |
| 62-204.260 | Prevention of Significant Deterioration Maximum Allowable Increases (PSD Increments). | C |
| 62-204.300 | Approved State Implementation Plan. (Repealed). | C |
| 62-204.320 | Procedures for Designation and Redesignation of Areas. | C |
| **62-204.340** | **Designation of Attainment, Nonattainment, and Maintenance Areas.** | **B** |
| 62-204.360 | Designation of Prevention of Significant Deterioration Areas. | C |
| 62-204.400 | Public Notice and Hearing Requirements for State Implementation Plan Revisions. | C |
| 62-204.500 | Conformity. | C |
| 62-204.600 | Transportation Conformity. (Repealed). | C |
| **62-204.800** | **Federal Regulations Adopted by Reference.** | **A** |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4c**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| **Chapter 62-210** | **Stationary Sources – General Requirements** | **Reason Code*** |
|---|---|---|
| 62-210.100 | Purpose and Scope. | C |
| 62-210.200 | Definitions. | C |
| 62-210.220 | Small Business Assistance Program. | C |
| **62-210.300** | **Permits Required.** | **A** |
| 62-210.310 | Air General Permits. | C |
| 62-210.340 | Citrus Juice Processing Facilities. | C |
| **62-210.350** | **Public Notice and Comment.** | **A** |
| **62-210.360** | **Administrative Permit Corrections.** | **B** |
| **62-210.370** | **Emissions Computation and Reporting.** | **B** |
| 62-210.400 | Emission Estimates. (Repealed). | C |
| 62-210.500 | Air Quality Models. (Repealed). | C |
| **62-210.550** | **Stack Height Policy.** | **A** |
| **62-210.650** | **Circumvention.** | **A** |
| **62-210.700** | **Excess Emissions.** | **A** |
| **62-210.900** | **Forms and Instructions.** | **B** |
| 62-210.920 | Registration Forms for Air General Permits. | C |
| 62-210.980 | Severability. (Repealed). | C |
| 62-210.990 | Effective Date. (Repealed). | C |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4d**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| **Chapter 62-212** | **Stationary Sources – Preconstruction Review** | **Reason Code*** |
|---|---|---|
| 62-212.100 | Purpose and Scope. | C |
| 62-212.200 | Definitions. (Repealed). | C |
| **62-212.300** | **General Preconstruction Review Requirements.** | **A** |
| 62-212.400 | Prevention of Significant Deterioration (PSD). | C |
| 62-212.410 | Best Available Control Technology (BACT). (Repealed). | C |
| 62-212.500 | Preconstruction Review for Nonattainment Areas. | C |
| 62-212.510 | Lowest Achievable Emission Rate (LAER). (Repealed). | C |
| 62-212.600 | Sulfur Storage and Handling Facilities. | C |
| 62-212.700 | Emissions Unit Reclassification. (Repealed). | C |
| 62-212.710 | Air Emissions Bubble. | C |
| 62-212.720 | Actuals Plantwide Applicability Limits (PALs). | C |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4e**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Chapter 62-213 | Operation Permits For Major Sources of Air Pollution | Reason Code* |
|---|---|---|
| 62-213.100 | Purpose and Scope. | C |
| 62-213.200 | Definitions. (Repealed). | C |
| **62-213.202** | **Responsible Official.** | **B** |
| **62-213.205** | **Annual Emissions Fee.** | **B** |
| 62-213.210 | Permit Application Processing Fee. (Repealed). | C |
| 62-213.220 | Florida Air-Operation License Fee Account. (Repealed). | C |
| 62-213.300 | Title V Air General Permits. | C |
| **62-213.400** | **Permits and Permit Revisions Required.** | **B** |
| 62-213.405 | Concurrent Processing of Permit Applications. | C |
| **62-213.410** | **Changes Without Permit Revision.** | **B** |
| 62-213.412 | Immediate Implementation Pending Revision Process. | C |
| 62-213.413 | Fast-Track Revisions of Acid Rain Parts. | C |
| 62-213.415 | Trading of Emissions Within a Source. | C |
| **62-213.420** | **Permit Applications.** | **B** |
| 62-213.430 | Permit Issuance, Renewal, and Revision. | C |
| 62-213.440 | Permit Content. | C |
| 62-213.450 | Permit Review by EPA and Affected States. | C |
| **62-213.460** | **Permit Shield.** | **B** |
| 62-213.900 | Forms and Instructions. | C |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4f**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Chapter 62-214 | Requirements For Sources Subject To The Federal Acid Rain Program | Reason Code* |
|---|---|---|
| **62-214.100** | **Purpose and Scope.** | **B** |
| **62-214.200** | **Definitions. (Repealed).** | C |
| **62-214.300** | **Applicability.** | **B** |
| **62-214.320** | **Applications.** | **B** |
| **62-214.330** | **Acid Rain Compliance Plan and Compliance Options.** | **B** |
| **62-214.340** | **Exemptions.** | **B** |
| **62-214.350** | **Certification.** | **B** |
| **62-214.360** | **Department Action on Applications.** | C |
| **62-214.370** | **Revisions and Administrative Corrections.** | **B** |
| **62-214.420** | **Acid Rain Part Content.** | **B** |
| **62-214.430** | **Implementation and Termination of Compliance Options.** | **B** |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4g**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Chapter 62-242 | Motor Vehicle Emissions Standards and Test Procedures | Reason Code* |
|---|---|---|
| 62-242.100 | Purpose and Scope. | C |
| 62-242.200 | Definitions. | C |
| 62-242.300 | Program Areas. (Repealed). | C |
| 62-242.400 | Standards and Procedures for Inspection of Gasoline-Fueled Vehicles; Pass/Fail Criteria. | C |
| 62-242.500 | Standards and Procedures for Inspection of Diesel Fueled Vehicles; Pass/Fail Criteria. | C |
| 62-242.600 | Equipment Performance Specifications. | C |
| 62-242.700 | Tampering Inspection. | C |
| 62-242.800 | Low Emissions Adjustment. | C |
| 62-242.900 | Training Criteria for Motor Vehicle Emissions Inspection Personnel. | C |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4h**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Chapter 62-243 | Tampering With Motor Vehicle Air Pollution Control Equipment | Reason Code* |
|---|---|---|
| 62-243.100 | Purpose and Scope. | C |
| 62-243.200 | Definitions. | C |
| 62-243.300 | Exemptions. | C |
| 62-243.400 | Prohibitions. | C |
| 62-243.500 | Certification. | C |
| 62-243.600 | Enforcement. | C |
| 62-243.700 | Penalties. (Repealed). | C |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4i**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| **Chapter 62-252** | **Gasoline Vapor Control** | **Reason Code*** |
|---|---|---|
| 62-252.100 | Purpose and Scope. | C |
| 62-252.200 | Definitions. | C |
| 62-252.300 | Gasoline Dispensing Facilities – Stage I Vapor Recovery. | C |
| 62-252.400 | Gasoline Dispensing Facilities – Stage II Vapor Recovery. | C |
| 62-252.500 | Gasoline Tanker Trucks or Trailers. | C |
| 62-252.800 | Penalties. (Repealed). | C |
| 62-252.900 | Form. | C |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4j**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| **Chapter 62-256** | **Open Burning and Frost Protection Fires** | **Reason Code*** |
|---|---|---|
| 62-256.100 | Declaration and Intent. (Repealed). | C |
| 62-256.200 | Definitions. | C |
| **62-256.300** | **Prohibitions.** | **B** |
| 62-256.400 | Agricultural and Silvicultural Fires. (Repealed). | C |
| 62-256.450 | Burning for Cold or Frost Protection. (Repealed). | C |
| 62-256.500 | Land Clearing. (Repealed). | C |
| 62-256.600 | Industrial, Commercial, Municipal, and Research Open Burning. (Repealed). | C |
| 62-256.700 | Open Burning Allowed. | C |
| 62-256.800 | Effective Date. (Repealed). | C |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4k**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| **Chapter 62-257** | **Asbestos Program** | **Reason Code*** |
|---|---|---|
| 62-257.100 | Purpose and Scope. | C |
| 62-257.200 | Definitions. | C |
| 62-257.300 | Applicability. (Repealed). | C |
| 62-257.301 | Notification Procedure and Fee. | C |
| 62-257.350 | National Emission Standard for Asbestos. (Repealed). | C |
| 62-257.400 | Fee Schedule. | C |
| 62-257.401 | Enforcement. (Repealed). | C |
| 62-257.900 | Form. | C |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4l**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| **Chapter 62-281** | **Motor Vehicle Air Conditioning Refrigerant Recovery and Recycling** | **Reason Code*** |
|---|---|---|
| 62-281.100 | Purpose, Scope, and Compliance Requirements For Affected Establishments. | C |
| 62-281.200 | Definitions. (Repealed). | C |
| 62-281.300 | Applicability. (Repealed). | C |
| 62-281.400 | Compliance Requirements for Affected Establishments. (Repealed). | C |
| 62-281.500 | Establishment Certification. (Repealed). | C |
| 62-281.600 | Training Requirements. (Repealed). | C |
| 62-281.700 | Equipment Certification. (Repealed). | C |
| 62-281.800 | Penalties. (Repealed). | C |
| 62-281.900 | Forms. (Repealed). | C |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4m**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| **Chapter 62-285** | **Greenhouse Gas Emissions Reduction** | **Reason Code*** |
|---|---|---|
| 62-285.400 | Adoption of California Motor Vehicle Emission Standards | C |
| 62-285.420 | Heavy-Duty Vehicle Idling Reduction | C |
| 62-285.421 | Clean Diesel Rebate Program | C |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4n**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| **Chapter 62-296** | **Stationary Sources – Emission Standards** | **Reason Code*** |
|---|---|---|
| 62-296.100 | Purpose and Scope. | C |
| 62-296.200 | Definitions. (Repealed). | C |
| 62-296.310 | General Particulate Emission Limiting Standards. (Repealed). | C |
| **62-296.320** | **General Pollutant Emission Limiting Standards.** | **A** |
| 62-296.330 | Best Available Control Technology (BACT). (Repealed). | C |
| 62-296.340 | Best Available Retrofit Technology. | C |
| 62-296.341 | Regional Haze – Reasonable Progress Control Technology. | C |
| 62-296.400 | Specific Emission Limiting and Performance Standards. (Repealed). | C |
| 62-296.401 | Incinerators. | C |
| 62-296.402 | Sulfuric Acid Plants. | C |
| 62-296.403 | Phosphate Processing. | C |
| 62-296.404 | Kraft (Sulfate) Pulp Mills and Tall Oil Plants. | C |
| 62-296.405 | Fossil Fuel Steam Generators with More Than 250 Million Btu Per Hour Heat Input. | C |
| **62-296.406** | **Fossil Fuel Steam Generators with Less Than 250 Million Btu Per Hour Heat Input, New and Existing Emissions Units.** | **A** |
| 62-296.407 | Portland Cement Plants. | C |
| 62-296.408 | Nitric Acid Plants. | C |
| 62-296.409 | Sulfur Recovery Plants. | C |
| **62-296.410** | **Carbonaceous Fuel Burning Equipment.** | **A** |
| 62-296.411 | Sulfur Storage and Handling Facilities. | C |
| 62-296.412 | Dry Cleaning Facilities. | C |
| 62-296.413 | Synthetic Organic Fiber Production. | C |
| 62-296.414 | Concrete Batching Plants. | C |
| 62-296.415 | Soil Thermal Treatment Facilities. | C |
| 62-296.416 | Waste-to-Energy Facilities. | C |
| 62-296.417 | Volume Reduction, Mercury Recovery and Mercury Reclamation. | C |

**Table 3-4n**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| | | |
|---|---|---|
| 62-296.418 | Bulk Gasoline Plants. | C |
| **62-296.470** | **Implementation of Federal Clean Air Interstate Rule.** | **A** |
| 62-296.480 | Implementation of Federal Clean Air Mercury Rule. | C |
| 62-296.500 | Reasonably Available Control Technology (RACT) – Volatile Organic Compounds (VOC) and Nitrogen Oxides (NOx) Emitting Facilities. | C |
| 62-296.501 | Can Coating. | C |
| 62-296.502 | Coil Coating. | C |
| 62-296.503 | Paper Coating. | C |
| 62-296.504 | Fabric and Vinyl Coating. | C |
| 62.296.505 | Metal Furniture Coating. | C |
| 62-296.506 | Surface Coating of Large Appliances. | C |
| 62-296.507 | Magnet Wire Coating. | C |
| 62-296.508 | Petroleum Liquid Storage. | C |
| 62-296.509 | Bulk Gasoline Plants. (Repealed). | C |
| 62-296.510 | Bulk Gasoline Terminals. | C |
| 62-296.511 | Solvent Metal Cleaning. | C |
| 62-296.512 | Cutback Asphalt. | C |
| 62-296.513 | Surface Coating of Miscellaneous Metal Parts and Products. | C |
| 62-296.514 | Surface Coating of Flat Wood Paneling. | C |
| 62-296.515 | Graphic Arts Systems. | C |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

**Table 3-4o**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| **Chapter 62-297** | **Stationary Sources – Emissions Monitoring** | **Reason Code*** |
|---|---|---|
| 62-297.100 | Purpose and Scope. | C |
| 62-297.200 | Definitions. (Repealed) | C |
| **62-297.310** | **General Compliance Test Requirements.** | **A** |
| **62-297.320** | **Standards for Persons Engaged in Visible Emissions Observations.** | **A** |
| 62-297.330 | Applicable Test Procedures. (Repealed) | C |
| 62-297.340 | Frequency of Compliance Tests. (Repealed) | C |
| 62-297.345 | Stack Sampling Facilities Provided by the Owner of an Emissions Unit. | C |
| 62-297.350 | Determination of Process Variables. (Repealed) | C |
| 62-297.400 | EPA Methods Adopted by Reference. (Repealed) | C |
| 62-297.401 | Compliance Test Methods. | C |
| 62-297.411 | DEP Method 1. (Repealed) | C |
| 62-297.412 | DEP Method 2. (Repealed) | C |
| 62-297.413 | DEP Method 3. (Repealed) | C |
| 62-297.414 | DEP Method 4. (Repealed) | C |
| 62-297.415 | DEP Method 5. (Repealed) | C |
| 62-297.416 | DEP Method 5A. (Repealed) | C |
| 62-297.417 | DEP Method 6. (Repealed) | C |
| 62-297.418 | DEP Method 7. (Repealed) | C |
| 62-297.419 | DEP Method 8. (Repealed) | C |
| 62-297.420 | DEP Method 9. (Repealed) | C |
| 62-297.421 | DEP Method 10. (Repealed) | C |
| 62-297.422 | DEP Method 11. (Repealed) | C |
| 62-297.423 | EPA Method 12 – Determination of Inorganic Lead Emissions from Stationary Emissions Units. (Repealed) | C |
| 62-297.424 | DEP Method 13. (Repealed) | C |
| 62-297.440 | Supplementary Test Procedures. | C |
| 62-297.450 | EPA VOC Capture Efficiency Test Procedures. | C |
| 62-297.500 | Continuous Emission Monitoring Requirements. (Repealed) | C |

**Table 3-4o**
**List of Applicable and Non-Applicable State Air Pollution Regulations**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| | | |
|---|---|---|
| **62-297.520** | **EPA Continuous Monitor Performance Specifications.** | **B** |
| 62-297.570 | Test Reports. (Repealed) | C |
| **62-297.620** | **Exceptions and Approval of Alternate Procedures and Requirements.** | **B** |

Applicability Reason Codes:

A – The emission sources associated with the proposed biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site 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 biomass power plant project at the ADAGE Gadsden County, Florida site.

# 4. Method of Compliance

As discussed within this application request for construction, the proposed nominal 55.5-MW net woody biomass power 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 an indication as to the type of air pollutants that could potentially be emitted from these areas:

| EMISSION GROUP | IDENTIFICATION # | REGULATED AIR POLLUTANTS* |
|---|---|---|
| Fuel Receiving, Handling, Storage and Processing (Includes Portable Chipper) | EU-001 | PM, $NO_x$, $SO_2$, CO, VOC, HAPs |
| Power Island (Fluidized Bed Boiler and Support Silos) | EU-002 | PM, $NO_x$, $SO_2$, CO, VOC, $H_2SO_4$, Fluorides, HAPs (specifically HCl) |
| Ash Handling, Storage and Shipment | EU-003 | PM |
| Emergency Support Equipment | EU-004 | PM, $NO_x$, $SO_2$, CO, VOC HAPs (considered negligible) |

*Notes: 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 ADAGE 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 ADAGE, 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 bubbling fluidized bed boiler.

Table 4-1
Summary of Proposed Regulated Air Pollutant Emission Limits and Supporting Methods of Demonstrating Compliance
ADAGE Gadsden LLC Gadsden County, Florida
Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

**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:**<br>**-- Truck Dumpers #1 - 3 and One (1) Self-Dumping Station**<br>**-- Fuel Yard Covered Conveyor System and Associated Drop Points**<br>**-- Fuel Handling and Portable Wood Chipper** | | | | | |
| $PM/PM_{10}$ | 10% | FAC 62-296.320(4)(b) General Visible Emission Standards - 20%*<br><br>FAC 62-296.320(4)(c) Unconfined Emissions of Particulate Matter<br><br>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 (10% opacity) will be based on design of the equipment (covered conveyor and drop points when technically feasible excluding drop points to storage areas and areas for visual examination and removal of reject materials).<br>Best Management practices including periodic maintenance will be utilized to maintain equipment integrity. |

*ADAGE has designed the equipment to minimize fugitive particulate matter, thus is proposing a more restrictive opacity of 10 percent to reflect this environmentally efficient design.

**Table 4-1 Continues on Next Page**

Table 4-1
Summary of Proposed Regulated Air Pollutant Emission Limits and Supporting Methods of Demonstrating Compliance
ADAGE Gadsden LLC Gadsden County, Florida
Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

**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:<br>-- Natural Gas, Propane or Ultra Low Sulfur Diesel Fuel - Startup, Shutdown, and Boiler Stabilization<br>-- Woody Biomass - Normal Operation** | | | | | |
| $NO_x$ | 0.3[(a)] lbs/MMBtu<br>(30-day rolling average) | NSPS $D_b$<br>40 CFR 60.44b<br>(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. |
| $NO_x$ | 0.2[(a)] lbs/MMBtu<br>(30-day rolling average) | NSPS $D_b$<br>40 CFR 60.44a<br>(Combust distillate oil with a high heat release) | 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 0.20 $NO_x$ 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. |
| $NO_x$ | 53.1 lb/hr[(a)]<br>(12-month average, rolled monthly) | Natural Minor Status<br>(Incorporation of control devices)<br>ESCPSD | 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 $NO_x$ lb/hr 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 pounds/hour. This $NO_x$ emission rate will be based on CEM measurement data. Meething this limit will ensure $NO_x$ tons/year less than 250 tons/year. |
| CO | 56.0 lb/hr<br>(12-month average, rolled monthly)) | Natural Minor Status<br>ESCPSD | 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 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 lbs/hr. This CO emission rate will be based on CEM measurement data and initial testing. Meething this limit will ensure CO tons/year less than 250 tons/year. |
| $PM/PM_{10}$ | 0.029[(b)] lbs/MMBtu<br>(filterable and condensable)<br>22.0[(d)] lb/hr<br>(filterable and condensable)<br>0.01 gr/dscf @ 7% $O_2$<br>(filterable only) | 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.<br>Compliance with the 0.2 lbs/MMBtu limit found in F.A.C. 62-296.410 will be satisfied by compliance with the limit of 0.029 lbs/MMBtu (filterable and condensable).<br>Compliance with the limit of 0.029 lbs/MMBtu is a demonstration of compliance with the NSPS Db limit of 0.030 lbs/MMBtu (filterable) and the equivalent limit of 0.01 gr/dscf @ 7% $O_2$ (filterable). A rate of 0.01 gr/dscr @ 7% $O_2$ demonstrates a PM control efficiency of the baghouse of 99.9% |
| $PM/PM_{10}$ | 10% Opacity<br>6-minute average except for one 6-minute period per hour of not more than 20% opacity<br>(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. ADAGE is proposing a more stringent limit of 10% opacity because of the BFB boiler and baghouse configuration.<br>Compliance with the 10% opacity limitation will be confirmed by the use of a continuous opacity monitor (COM), following NSPS Db provisions, on the BFB boiler exhaust stack. |
| $SO_2$ | 34.1 lb/hr<br>(12-month average, rolled monthly) | Exemption from NSPS $D_b$ 60.42b(k)(2)<br>Natural Minor Status<br>ESCPSD | 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, ULSD FO, natural gas and propane 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 and inclusion of IDSIS. 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 pounds per hour. Meething this limit will ensure $SO_2$ tons/year are less than 250 tons/year. |
| HCl (Hydrochloric Acid - CAS # 7647-01-0) | 2.22 lb/hr<br>9.7 tons per year, 12-month average, rolled monthly (CEMS-based average) | Natural Minor Status<br>ESCMACT | 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, in-duct sorbent injection and the injection rate 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) ADAGE has designed the equipment to minimize fugitive particulate matter, thus is proposing a more restrictive opacity of 10 percent to reflect this environmentally efficient design.
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
ADAGE Gadsden LLC Gadsden County, Florida
Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

**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:<br>-- Fly Ash Conveying System Drop Points<br>-- Fly Ash Silo with Baghouse** | | | | | |
| $PM/PM_{10}$ | 10% | 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 (10% 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 ADAGE | 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 baghouse. 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:<br>-- 1000 bHp Emergency Generator** | | | | | |
| NMHC + $NO_x$ | 6.4 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 per year of 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 | 3.5 g/Hp-hr | NSPS Subpart IIII | Refer to Process Design Column | Refer to Process Design Column | |
| PM | 0.2 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:<br>-- 450 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 per year of 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 | |

*ADAGE has designed the equipment to minimize fugitive particulate matter, thus is proposing a more restrictive opacity of 10 percent to reflect this environmentally efficient design.

**End of Table 4-1**

Table 4-2
Summary of State and Federal Emission Limitations for Proposed Woody Biomass Boiler
ADAGE Gadsden LLC Gadsden County, Florida
Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

| Regulated Air Pollutant | Combustion Fuel - Fluidized Bed Boiler | | | |
|---|---|---|---|---|
| | Natural Gas, Propane or ULSD for Startup and Boiler Bed Stabilization | | 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 | 0.20 lbs/MMBtu - NSPS Db - 60.44b(a) Applies if you combust natural gas or distillate oil with a high heat release. | 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 | N/A | 0.2 lbs/MMBtu - 62-296.410 | 0.03 lbs/MMBtu (Filterable Only) - NSPS $D_b$ - 60.43b(h)(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% - 62-296.406* | N/A | 30% - 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 |

Notes:
* Does not apply during periods of startup, shutdown and malfunctions

# 5. 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

## 5.1. Application Forms Included in this Application

ADAGE 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 biomass 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 proposed facility (i.e., nominal 55.5-MW net woody biomass power plant);
- Emission unit information forms have been included for the following emission units associated with the proposed biomass power 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.

# 6. Voluntary Air Quality Impact Evaluation

This section contains the results of a voluntary air quality impact evaluation performed by ADAGE that demonstrates emissions of regulated criteria air pollutants from the proposed woody biomass electric power plant will not cause or contribute to violation of a state or federal ambient air quality standard. The FDEP and U.S. EPA have established ambient air quality standards that are designed to protect human health and welfare with an adequate margin of safety.

## 6.1. 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. Additionally, the State of Florida has set ambient air quality standards identified as the Florida Ambient Air Quality Standards (FAAQS), which are also designed to protect public health and public welfare.

A voluntary air quality impact evaluation was performed by ADAGE to demonstrate that potential emissions of regulated criteria air pollutants from the proposed woody biomass electric generating plant will not cause or contribute to a violation of the NAAQS or FAAQS. This evaluation was performed using tools and procedures developed by U.S. EPA and the FDEP. The tool that is used to perform air quality impact evaluation 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 ADAGE. In conjunction with this dispersion modeling tool, actual hourly meteorological conditions (i.e., representative of the Gadsden 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 and the FDEP for demonstrating compliance with the NAAQS and FAAQS.

The purpose of this voluntary evaluation is to demonstrate that the proposed woody biomass power plant will not cause or contribute to a violation of the NAAQS or FAAQS 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 ADAGE Gadsden LLC woody biomass electric generating plant. ADAGE has performed this evaluation on a voluntary basis.

## 6.2. Site Information

The proposed nominal 55.5-MW net woody biomass power plant will be located at the intersection of Greensboro Road (SR-12) and Blue Star Highway (US-90) in Gadsden County. Figure 1-1 identifies the location of the proposed plant.

ADAGE has entered into an agreement with local land owners to purchase approximately 72 acres of property. The footprint of the proposed plant will occupy roughly 50 acres in the middle of the acquired property.

## 6.3. Contents of This Section

To assist the FDEP in approval and issuance of a construction permit, the following information is provided in this Section.

- **Section 6.4: Voluntary Air Quality Impact Evaluation – Procedures:** This section contains a description of the procedures used in the voluntary air quality impact evaluation;

- **Section 6.5: Voluntary Air Quality Impact Evaluation – Results:** This section summarizes relevant results obtained from the air quality impact evaluation; and

- **Section 6.6: Voluntary Air Quality Impact Evaluation – Electronic File Submission:** This section discusses the method by which electronic files pertinent to this section were submitted to FDEP and briefly describes the various file types used in the air quality impact evaluation.

## 6.4. Voluntary Air Quality Impact Evaluation – Procedures

ADAGE has performed a voluntary air quality impact evaluation to demonstrate that the proposed woody biomass power plant will not adversely impact human health and

welfare. This evaluation was performed for potential air pollutant emissions from the proposed plant that have health standards (i.e., NAAQS, FAAQS) established by the U.S. EPA and the FDEP. The following air pollutants from the proposed biomass plant were evaluated and shown to have no adverse impact to human health and welfare:

- Oxides of Nitrogen ($NO_x$);
- Carbon Monoxide (CO);
- Particulate Matter less than 10 microns in diameter ($PM_{10}$); and
- Sulfur Dioxide ($SO_2$).

The U.S. EPA and the FDEP have established air quality standards for ozone. Due to the complexity involved in the formation of ozone, which involves chemical reactions between volatile organic compounds (VOCs), $NO_x$, sunlight and other variables, regulatory agencies have not developed a screening tool for quantifying this chemical reaction. In fact, U.S. EPA under its Prevention of Significant Deterioration (PSD) regulations has stated that no ambient impact analysis is required for new emission sources with potential VOC emissions less than 100 tons/year. Since the proposed plant will have potential VOC emissions well below 100 tons/year, the affect on ozone formation is assumed to be non-significant. Thus, an evaluation of the potential impacts of VOC emissions from the proposed biomass plant on ambient air quality was not performed. Potential emissions of VOC from the proposed plant have been assumed to have a minimal affect on human health and welfare.

Provided in this section is:

1) A description of the dispersion modeling tool that was used to perform the air quality impact evaluation, and
2) Technical data required as input to the dispersion modeling tool, including building profiles, meteorological data, receptor network and terrain effects, background concentrations and the inventory of emission sources associated with the proposed woody biomass electric power plant.

### 6.4.1. Description of Air Quality Dispersion Model

As discussed in Section 1, dispersion modeling tools and procedures approved by the U.S. EPA and the FDEP were followed as part of this voluntary air quality impact evaluation. A description of the air dispersion modeling tool and supporting information utilized, is provided below.

#### 6.4.1.1. AMS/EPA Regulatory Model (AERMOD)

The air quality modeling analyses employed the American Meteorological Society (AMS)/United States Environmental Protection Agency (EPA) Regulatory Model (AERMOD). Trinity Consultant's BREEZE AERMOD program was used to run this model. The BREEZE AERMOD program contains a Windows-style graphical user interface for AERMOD.

AERMOD (Version 09292) was specially designed to support the EPA's regulatory modeling programs and includes a wide range of options for modeling air quality impacts of pollution sources. The following options are available in AERMOD:

- Regulatory default option, which includes the use of stack-tip downwash, and a routine for processing averages when calm winds or missing meteorological data occur;
- Concentration estimates for 1 hour to annual average;
- Capability of simulating point, line, volume and area sources. Line sources may also be modeled as a string of volume sources or as elongated area sources;
- Contains algorithms for modeling the effects of aerodynamic downwash due to nearby buildings on point source emissions;
- Source emission rates can be treated as constant throughout the modeling period, or may be varied by month, season, hour-of-day, or other optional periods of variation;
- Capability of specifying multiple receptor networks in a single run, and may also mix Cartesian grid receptor networks and polar grid receptor networks in the same run;
- AERMOD does not make any distinction between elevated terrain below release height (simple terrain) and terrain above release height (complex terrain) as in earlier regulatory models. For applications involving elevated terrain, the user must also input a hill height scale along with the receptor elevation. The USEPA AERMAP terrain-preprocessing program can be used to generate this;
- AERMOD requires two types of meteorological data files, a file containing surface scalar parameters (i.e., wind speed, wind direction and turbulence parameters) and a file containing vertical profiles. These two files are produced by the USEPA's AERMET meteorological preprocessor program; and
- Two additional output file options were included in AERMOD. One type of file lists concentrations by rank (RANKFILE). The other type of output file

(EVALFILE) provides arc maxima results along with detailed information about the plume characteristics associated with the arc maximum.

Details of the algorithms employed by AERMOD may be found in the User's Guide for AERMOD. The regulatory default option was selected such that USEPA guideline requirements were met.

#### 6.4.1.2. Building Profile Input Program (BPIP)

The emission points of the proposed project will be influenced by aerodynamic downwash. Since downwash is a function of projected building width and height, it is necessary to account for the changes in building projection as they relate to changes in wind direction. Once these projected dimensions are determined, they can be used as input to AERMOD.

In October 1993, USEPA released the Building Profile Input Program (BPIP) to determine wind direction – dependent building dimensions. BPIP determines whether or not a stack is subject to wake effects from a structure or structures. Values are calculated for GEP stack height, GEP related building heights (BH's) and projected building widths (PBW's). Indication is given to which stacks are being affected by which structure wake effects. The calculations are performed only if a stack is being influenced by structure wake effects.

The BPIP algorithms as described in the User's Guide have been incorporated into the commercially available BREEZE AERMOD program. The BREEZE AERMOD program was used to determine the wind direction – dependent building dimensions for input to AERMOD. AERMOD requires enhanced downwash analysis data that is incorporated by the BPIP-PRIME program. BPIP-PRIME calculates BH and PBW as noted above, as well as the projected length of the building along the flow (BUILDLEN), along-flow distance from the stack to the center of the upwind face of the projected building (XBADJ) and across-flow distance from the stack to the center of the upwind face of the projected building (YBADJ). BPIP-PRIME was incorporated into the BREEZE AERMOD program.

The BPIP-PRIME program builds a mathematical representation of each building to determine projected building dimensions and its potential zone of influence. These calculations are performed for 36 different wind directions (at 10-degree intervals). For example, the BPIP-PRIME building dimension for a wind direction orientation of 30 degrees was used for wind directions between 26 and 35 degrees. If the BPIP-PRIME program determines that a source is under the influence of several potential building wakes, the structure or combination of structures which has the greatest influence (hb + 1.5 lb) is selected for input to AERMOD. Conversely, if no building wake effects are

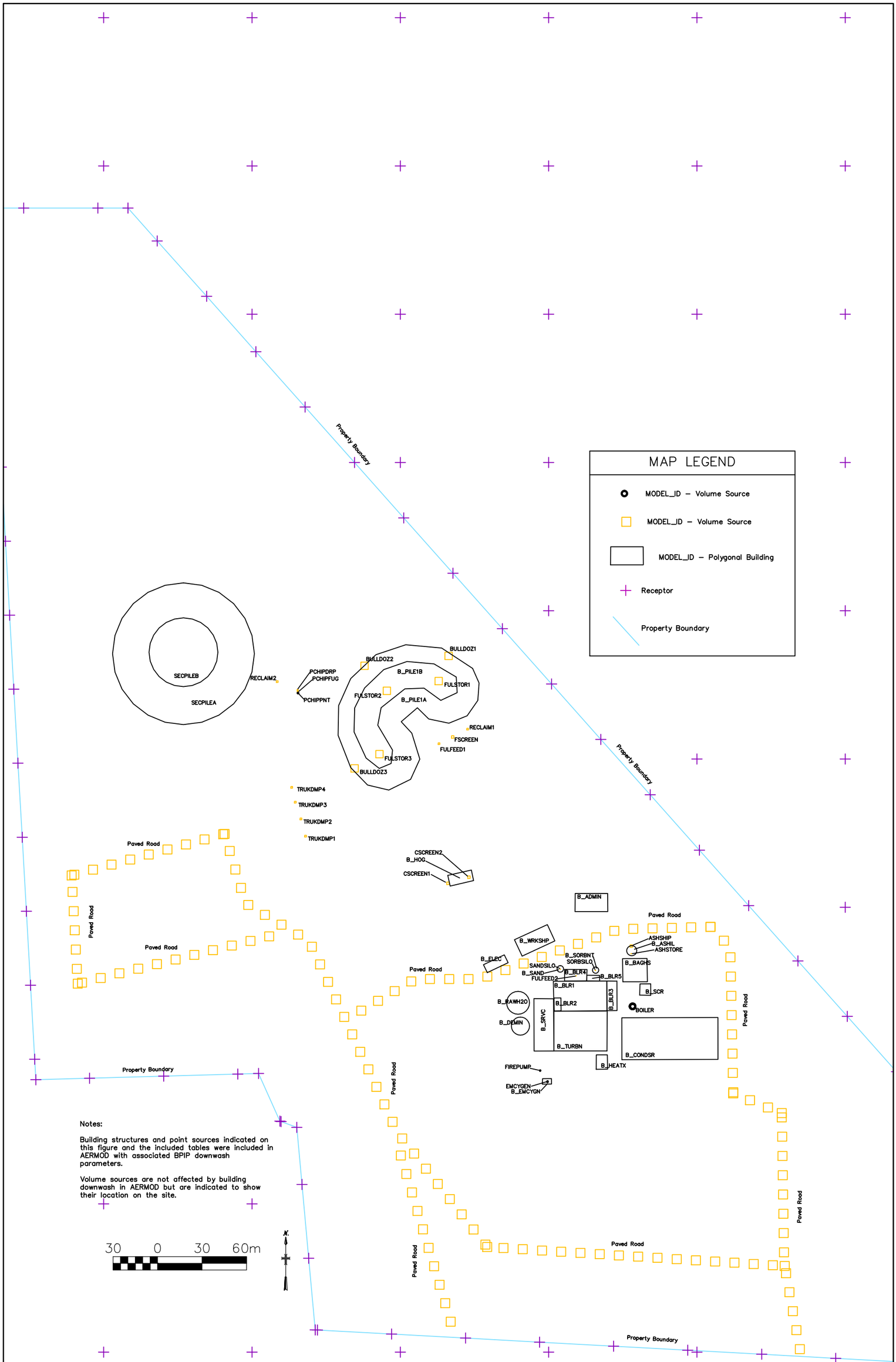
predicted to occur for a source for a particular wind direction, or if the worst-case building dimensions for that direction yield a wake region height less than the source's physical stack height, building parameters are set equal to zero for that wind direction. For this case, wake effect algorithms are not exercised when the model is run. The building wake criteria influence zone is 5 lb downwind, 2 lb upwind, and 0.5 lb crosswind. These criteria are based on recommendations by USEPA. Figure 6-1 illustrates the location of the emission sources in relation to building structures considered in the GEP stack height analysis. Table 6-13 indicates structures included in the BPIP analysis for the proposed ADAGE Gadsden LLC Plant. Figures 6-2 and 6-3 show three dimensional rendering of the AERMOD model objects at the site including buildings, point sources, volume sources, boundary receptors, and receptor grids.

### 6.4.2. Meteorological Data

The meteorological data used in the dispersion modeling analysis consisted of five (5) years, 2001 through 2005, of surface data and coincident upper air meteorological data collected at the Tallahassee Municipal Airport (TLH) in Tallahassee, Florida, approximately 22 miles southeast of the proposed project site. FDEP prepared the meteorological data (TLH-TLH met data) for use in AERMOD (versions 07026 and 09292) and provided the AERMOD-ready meteorological files for the analysis. The Tallahassee Municipal Airport station elevation is 16.8 meters (55 feet) above sea level. The TLH-TLH met data is deemed to be representative of the project site due to the proximity of the data collection site to the proposed power plant site and the qualitative similarities in surrounding terrain between the two sites. Within one kilometer, the northeast quadrant of each site – the project site and TLH-TLH met data site – appears to be wooded and the other three quadrants are a mix of grassy fields, farmland, and paved surfaces based on aerial photography.

### 6.4.3. Receptor Network and Terrain Effects

The receptor network (i.e., geographical points of model impacts) used in the air dispersion modeling analyses was designed to identify the maximum air quality impact due to the proposed 55.5-MW net woody biomass power plant. The receptor network consisted of 3,491 receptors, extending to a downwind distance of 11 kilometers (km) from the site of the proposed power plant. A receptor point is a specific point in which the dispersion modeling tool AERMOD predicts a concentration based on emissions/stack information and meteorological conditions. As discussed below, concentrations were predicted at over 3,000 individual points. These points had a spatial distance as close as 50 meters to identify the maximum concentration from the proposed plant.

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ADAGE Gadsden LLC
Gadsden County, Florida
Voluntary Air Quality Impact Evaluation

Proposed Nominal 55.5–MW Net Woody Biomass Power Plant
Site Layout of Sources and Structures Included in BPIP Downwash Model
SCALE: As Indicated by Scale Bar

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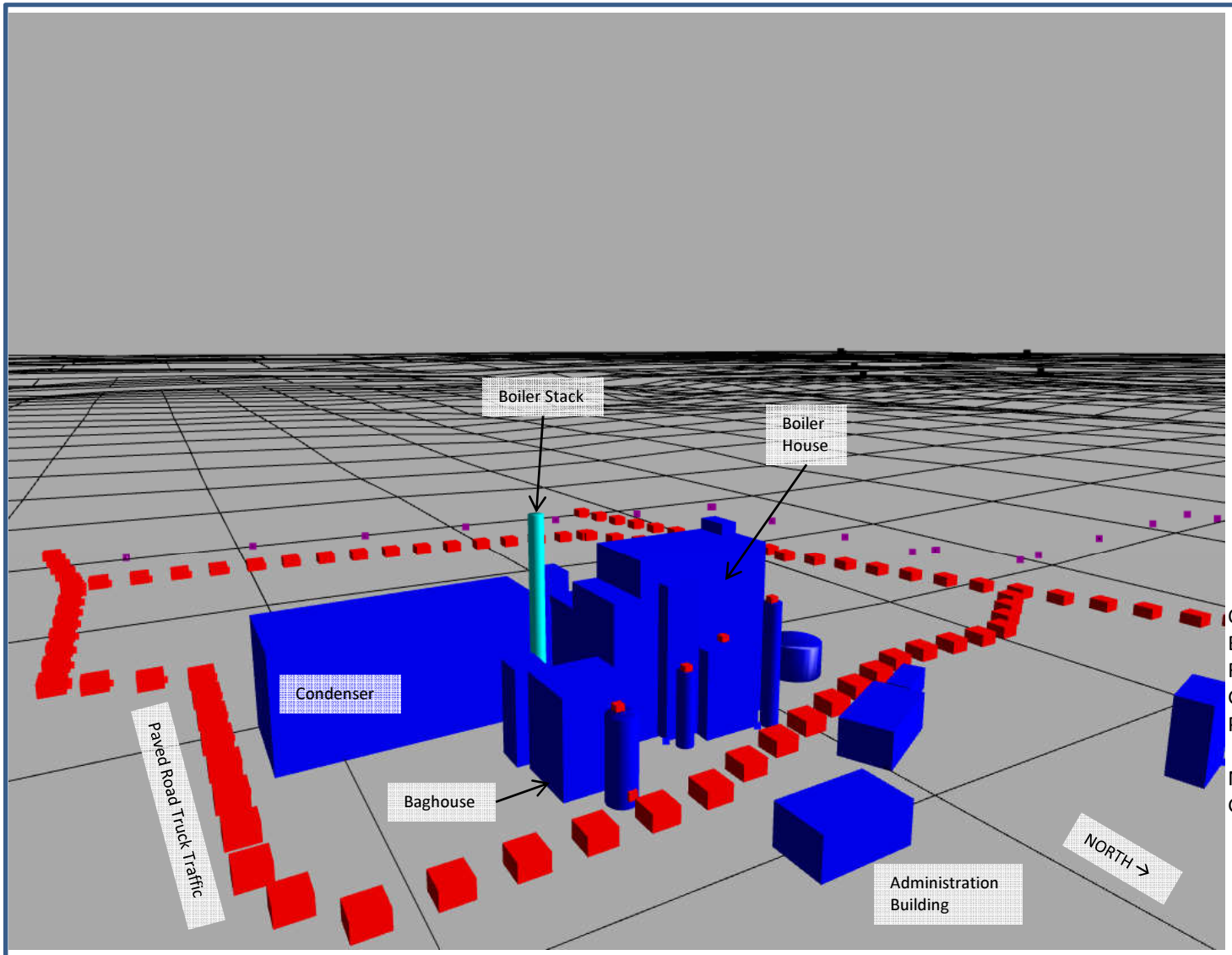
January 2010
Figure 6–1




Color Key:
Blue = BPIP Structure
Red = Volume Source
Green/Cyan = Point Source
Purple = Boundary Receptor

Notes:
Grid is 100 meters x 100 meters

**Figure 6-2.**
**3D Representation of AERMOD Model Objects: Proposed Plant**

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Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

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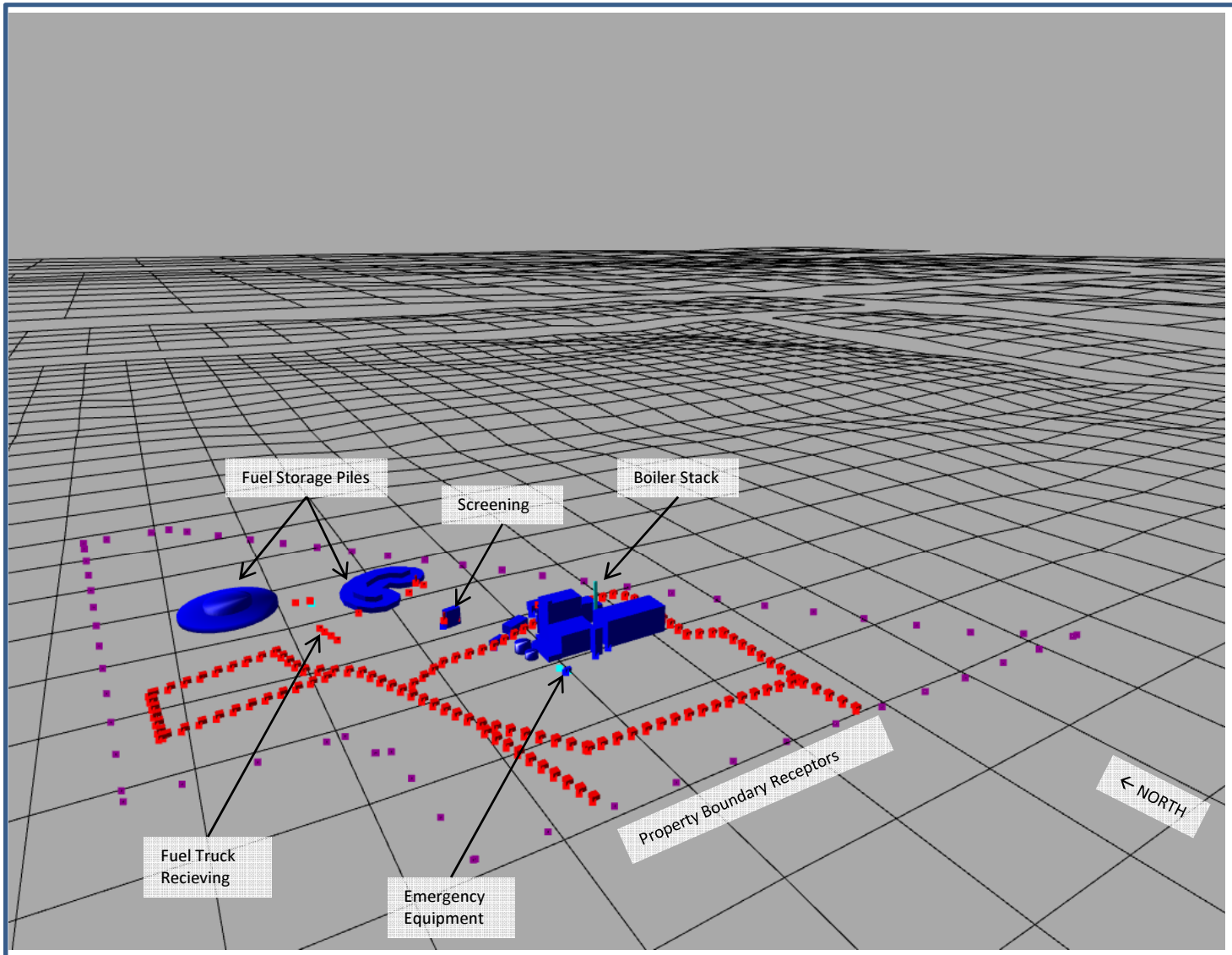


Color Key:
Blue = BPIP Structure
Red = Volume Source
Green/Cyan = Point Source
Purple = Boundary Receptor

Notes:
Grid is 100 meters x 100 meters on proposed plant site.

**Figure 6-3.**
**3D Representation of AERMOD Model Objects: Project Site**

ADAGE Gadsden LLC - Gadsden County, Florida
Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

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Since the point emission sources associated with the project have stack heights less than GEP stack height, receptors were closely spaced (50 meters) along the fence line of the proposed project site to identify the influence of aerodynamic building downwash. The following receptor spacing was used:

- 50-meter spacing along the property boundary;
- 100-meter spacing from boundary to at least one kilometer;
- 200-meter spacing from one kilometer to two kilometers;
- 500-meter spacing from two kilometers to seven kilometers; and
- 1000-meter spacing from seven kilometers to eleven kilometers.

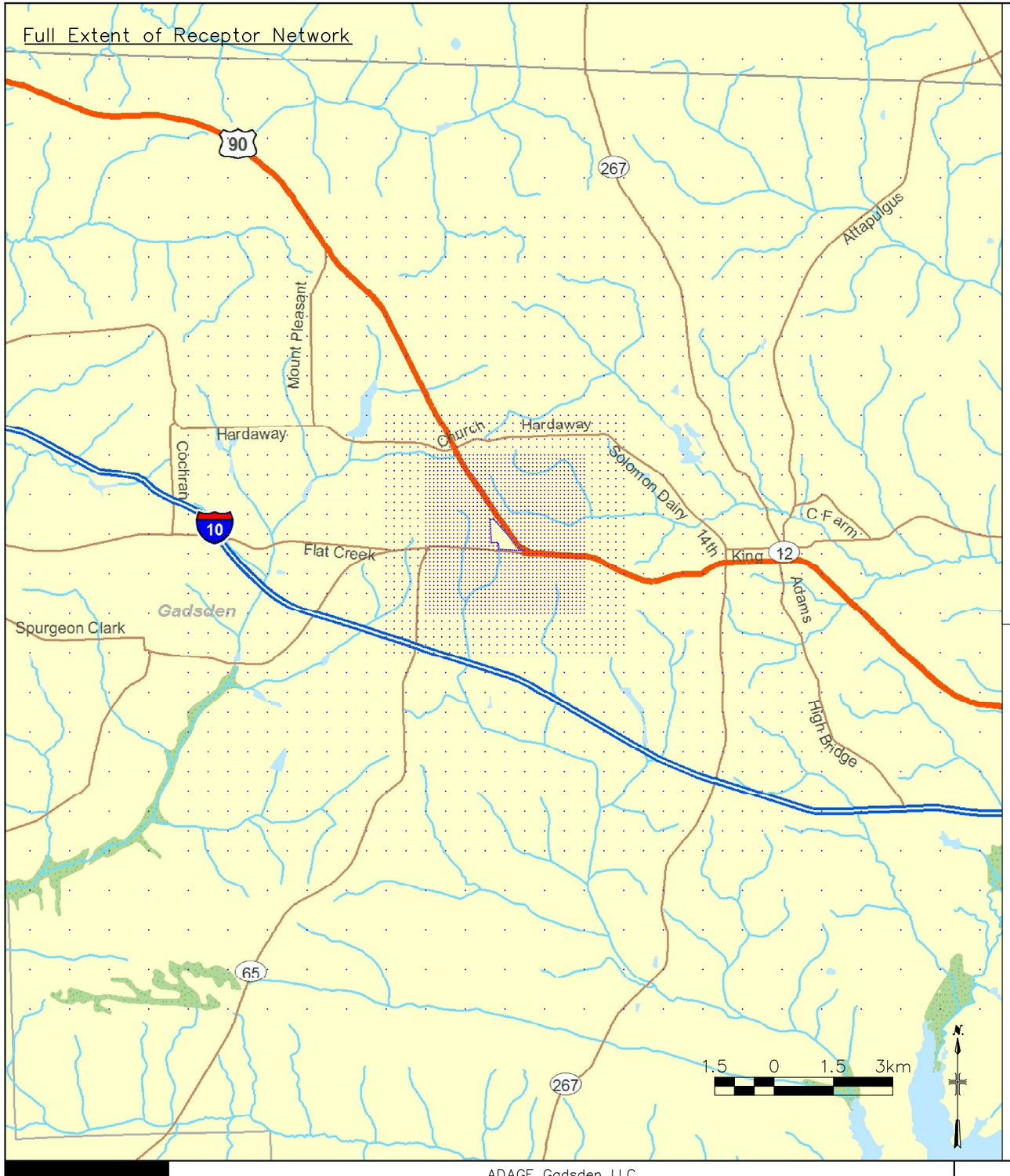
Receptor terrain data was obtained from 1-arc second National Elevation Data (NED) files retrieved from the United States Geological Survey (USGS) Seamless Data Server (http://seamless.usgs.gov/index.php). AERMAP (Version 09040), the AERMOD terrain preprocessor, was used to assign an elevation and hill height scale to each receptor. The use of AERMAP is necessary for AERMOD to appropriately incorporate terrain effects into its calculations. USEPA strongly recommends the use of the latest version of AERMAP (Version 09040) and NED files obtained from the USGS Seamless Data Server for AERMOD modeling. The base elevation of the project site is about 269 feet (82 meters) above sea level. The receptor network and property boundary at the site are illustrated in Figure 6-4.

### 6.4.4. Background Concentrations

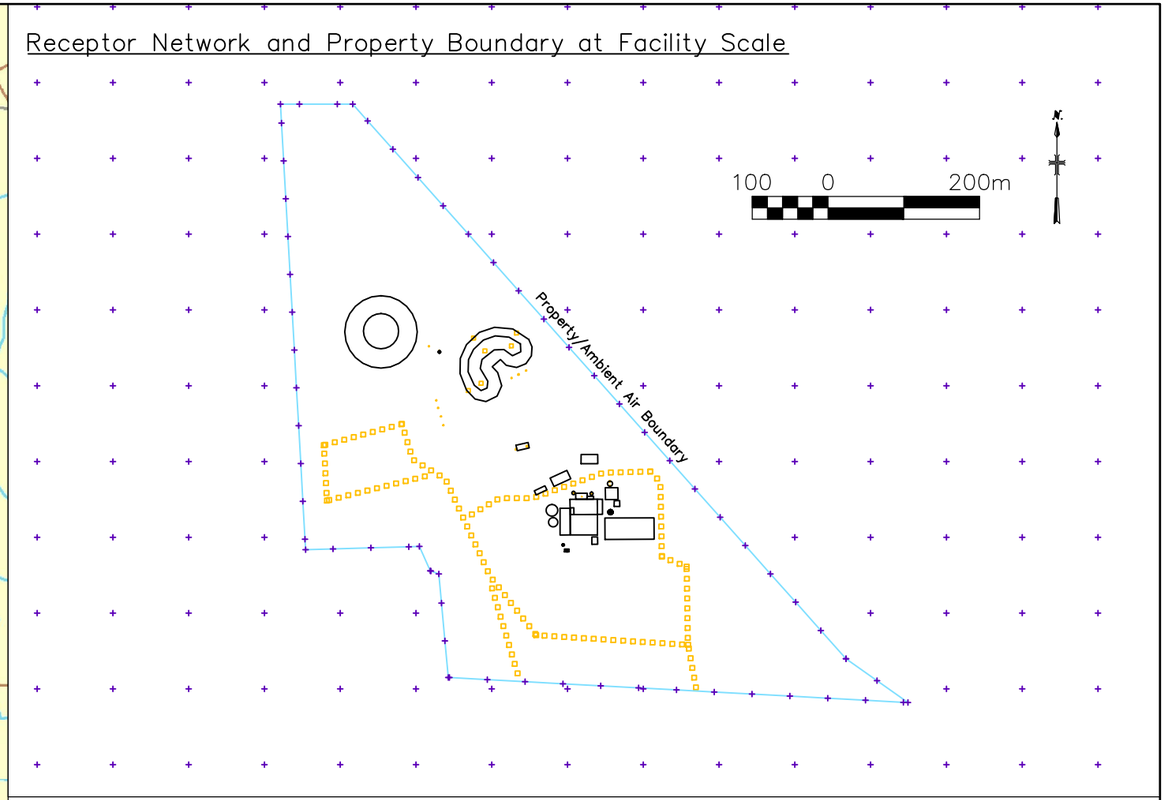
As discussed above air quality impacts from the proposed biomass plant have been evaluated. Impact from other sources in the area can be defined based on concentrations actually measured by ambient monitors. The actual measured concentrations, most often the second-highest measured concentration in a year for short-term averaging periods, are called “background concentrations”. The background concentrations define the existing level of air quality in a given area. The impact from the proposed plant is then summed with the background concentration for direct comparison with the NAAQS and FAAQS.

This traditional approach to accounting for background concentrations of air pollutants is conservative because the high value of “background concentration”, as defined, does not necessarily coincide in time and space with the maximum model-predicted concentration. In reality, the monitored and modeled maximum concentrations are extremely unlikely to occur coincidentally. The conservative approach used in the ADAGE Gadsden LLC compliance demonstration shows that the NAAQS and FAAQS will not be exceeded.

Full Extent of Receptor Network




Receptor Network and Property Boundary at Facility Scale




Receptor Network Grid Spacing:

- 50–meter spacing on property boundary
- 100–meter spacing from boundary to at least 1.5 km out
- 200–meter spacing from 1.5 km to 2.5 km out
- 500–meter spacing from 2.5 km to 7 km out
- 1–km spacing from 7 km to at least 11 km out

Receptors were spaced every 100 meters or finer at locations of maximum predicted impacts due to emissions from the proposed ADAGE Gadsden LLC 50–MW woody biomass power plant.

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ADAGE Gadsden LLC
Gadsden County, Florida
Voluntary Air Quality Impact Evaluation

Proposed Nominal 55.5–MW Net Woody Biomass Power Plant
Receptor Network Used for AERMOD
Air Dispersion Analysis
SCALE: As Indicated by Scale Bar

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January 2010
Figure 6–4

Background $PM_{10}$, $NO_2$, $SO_2$ and CO concentrations were determined based on ambient air monitors located in the region. The monitors for $PM_{10}$, $NO_2$, and $SO_2$ were located in Escambia County about 150 miles west of the ADAGE Gadsden LLC site. CO ambient concentrations were obtained from monitors in Jacksonville, Florida (Duval County), about 180 miles east of the site in a more urbanized setting. The monitor data from Jacksonville is expected to provide a conservatively high estimate of the background concentration in the area which ADAGE Gadsden LLC may potentially impact air quality. A summary of the monitor data and background concentration determination can be found in Table 6-1.

## 6.4.5. Regulated Air Pollutant Emission Source Inventory

### 6.4.5.1. Proposed Nominal 55.5-MW Net Woody Biomass Power Plant Emission Source Inventory

Potential air pollutant emission sources of $PM_{10}$, $NO_x$, CO, and $SO_2$ for the proposed power plant were identified, along with the maximum air pollutant emission rates for these sources. Details of the methods used to estimate these air pollutant emission rates can be found in Section 2.

The boiler stack and three emergency engine stacks for the emergency generator, fire pump, and boiler coolant water pump are classified as point sources. The remaining sources are fugitive in nature, such as emissions from the paved roads and equipment moving on the woody biomass pile, emitted from conveyor drop points, or emitted from silo vents. All of these non-point sources are represented by volume sources in AERMOD. Tables 6-2, 6-3, and 6-4 indicate the source characteristics and emission rates incorporated into the AERMOD dispersion model.

#### 6.4.5.1.1. Paved Roads

Paved roads were modeled as a series of volume sources, per the guidance in the AERMOD user's manual. The parameters of the volume source characterization were determined based on the method commonly recommended in dispersion modeling guidance and referenced here from the New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines (April 2007 – DRAFT):

- Volume Height = 2 x Truck Height
    - Truck height estimated as 4 meters
- Volume Release Height = ½ Volume Height

- Volume Width = Road Width + 6 meters to account for turbulent wake zone
    - Road width estimated as 7 meters
- Initial Vertical Dimension ($\sigma_z$) = Volume Height / 2.15
- Initial Lateral Dimension ($\sigma_y$) = Volume Width / 2.15
- Volume Spacing = Volume Width (adjacent volume sources)

#### 6.4.5.1.2. Truck Dumper Hoppers

The hoppers for truck dumpers #1 – 3 were represented as volume sources. The emissions from the self-dumping station and their associated conveyor drop point were also included in these sources. The volume source width was the lesser of the hopper's rectangular opening dimensions and the volume height was set equal to the height of a truck as assumed for the paved road volume source characterization. The initial lateral dimension was determined for each volume by dividing the volume width by 4.3, as recommended for a single volume source in the AERMOD user's guide. The initial vertical dimension was determined by dividing the volume source height by 2.15, as recommended for a surface-based source in the AERMOD user's guide.

#### 6.4.5.1.3. Ash Shipment

Potential emissions due to ash shipment operations including a drop point from the ash silo to the ash conditioner and loading chute to trucks were characterized as a volume source. The initial lateral and vertical dimensions were determined per the AERMOD user's guide recommendation for a single surface-based volume source. The volume source width was set to the assumed road width of seven meters and the volume height was set equal to the height of a truck as assumed for the paved road volume source characterization.

#### 6.4.5.1.4. Outdoor Storage Conveyor Drop Point

The outdoor storage conveyor drop point was characterized as a series of three elevated volume sources on or adjacent to a building. The building in this case was the outdoor woody biomass storage pile itself, which was included in the modeling as a structure that may cause aerodynamic downwash of point source plumes. Three volumes were used to represent the range of locations at which the conveyor may drop the chipped wood fuel on the storage pile. The volume width was assumed to be half the base width of the representative outdoor storage pile, and the volume height was assumed to equal the height of the representative outdoor storage pile.

#### 6.4.5.1.5. Woody Biomass Storage Area Bulldozing

Bulldozing operations on the woody biomass storage area were represented as a single elevated volume source on or adjacent to a building. The building in this case was the outdoor woody biomass storage pile itself, which was included in the modeling as a structure that may cause aerodynamic downwash of point source plumes. The volume width was assumed to be half the base width of the representative outdoor storage pile, and the volume height was assumed to equal to one third the height of the representative outdoor storage pile, which is the centroid height of the crescent-shaped triangular prism assumed to represent the shape of the outdoor storage pile.

#### 6.4.5.1.6. Fly Ash Storage Drop Point

The fly ash storage emission sources, which consist of drop points for a variety of conveyors in the system, were modeled as a single elevated volume source on or adjacent to a building. The building in this case was the main boiler baghouse structure. The volume height and width were assumed to equal one meter and 3.05 meters, respectively. The release height was assumed to equal the height of the baghouse structure itself.

#### 6.4.5.1.7. Silo Drop Points

Emissions from drop points at silos were modeled as single elevated volume sources on or adjacent to a building. The release height of each volume was set equal to the corresponding silo structure height. The height and width of each volume was assumed to equal 3.05 meters and one meter, respectively.

#### 6.4.5.1.8. Screening Building Drop Points

The fuel screening system building will receive fuel at the top and release the screened fuel to a conveyor near the bottom of the building. Two volume sources represent the potential emissions from these drop points and screening operations. The volume representing material entering the screens and being screened was assumed to have a height equal to that of the screening building itself (18.3 meters), a width of 7 meters, and a release height half that of the screening building. The volume point representing the exiting fuel was assumed to have a release height of 6.1 meters (the approximate height of the exiting conveyor), a volume height of 3.05 meters, and a volume width of 7 meters.

#### 6.4.5.1.9. Fuel Reclaim Drop Points and Storage Pile Pickup Conveyor

Fuel reclaim systems will be required to unload fuel from storage pile areas. Fugitive emissions from these reclaim points were modeled as volume sources on the ground surface with volume source characteristics equal to those of the truck unloading hoppers.

#### 6.4.5.1.10. Boiler Fuel Feeding Bin

The drop point associated with loading fuel to the boiler fuel feeding bin was modeled as a volume source with a height of 3.05 meters, width of one meter, and height of 21.3 meters which is the approximate height at which the conveyor will enter the fuel feeding system.

#### 6.4.5.1.11. Portable Wood Chipper

Potential fugitive dust emissions from the portable wood chipper were modeled as two volume sources – one representing emissions from the chipping process itself and the other representing emissions from dropping the chipped material onto a storage pile. The volume height, width, and release height were each assumed to be 3.05 meters for both volumes. Potential combustion emissions from the diesel engine powering the wood chipper were modeled as point source with stack characteristics equal to those of the emergency diesel generator.

#### 6.4.5.1.12. Wind Erosion

Emissions due to wind erosion of the outdoor woody biomass storage areas were not included in AERMOD. As detailed in the wind erosion emission estimation method, emissions from this source only occur when wind speed is greater than the threshold friction velocity. When wind speeds are sufficient to cause wind erosion, dispersion from the high wind speed minimizes predicted impacts from this type of area source. On the other hand, high ambient concentrations due to emissions from this type of area source are predicted in AERMOD when wind speeds are low or calm, although no emissions are estimated to occur under these low and calm wind speeds which are below the threshold friction velocity.

## 6.5. Voluntary Air Quality Impact Evaluation – Results

The results obtained from the voluntary air quality impact evaluation show that the proposed new 55.5-MW woody biomass power plant will not cause or contribute a violation of the NAAQS or the FAAQS. Results of the analysis for emissions of $PM_{10}$, $SO_2$, $NO_2$ and CO from the proposed woody biomass electric power plant are summarized below and in Tables 6-5 through 6-12, respectively.

### 6.5.1. Particulate Matter Less than 10 Microns ($PM_{10}$) Compliance Demonstration

The NAAQS for $PM_{10}$ is not to be exceeded more than once per year on average. Over an entire five-year meteorological data set, the $PM_{10}$ NAAQS may be exceeded up to five

times. Therefore, for potential emissions of proposed project $PM_{10}$ sources, the sum of the predicted sixth high 24-hour average concentration of $PM_{10}$ over the entire five-year meteorological data set and the background $PM_{10}$ concentration should be compared with the NAAQS for $PM_{10}$. To be consistent with the FAAQS based on 24-hour average $PM_{10}$ concentration, which is not to be exceeded more than once per year, and to provide for a conservative NAAQS compliance demonstration, the sum of the highest, second high concentration from each of five modeled years and background concentration representative of existing sources was compared with the NAAQS and FAAQS. The maximum predicted combined impact was less than the NAAQS and FAAQS for $PM_{10}$, as shown in Tables 6-5 and 6-6.

Figures 6-5A and 6-5B present isopleths concentration impacts from the proposed plant (excluding background concentrations for $PM_{10}$ emissions). The isopleths concentration impacts were determined from the concentrations predicted by the EPA recommended AERMOD dispersion model. The isopleths on the drawing present the concentrations predicted at that spot translated to a percentage of the acceptable air quality standards. For example, in Figure 6-5A, the proposed plant is predicted to have potential $PM_{10}$ emission impacts that range from 2% to 5% at the women's prison. This means that the predicted concentrations are less than 5% of the NAAQS and FAAQS of 150 $\mu g/m^3$ or only 7.5 $\mu g/m^3$. Subsequently, predicted concentrations of $PM_{10}$ are several orders of magnitude below the air quality standards which were developed to protect human health and welfare. The two figures provided present the same level of information; however the background areas are different to highlight the areas of predicted concentrations. Figure 6-5A represents a USGS map background, while Figure 6-5B has a Google earth map background. Slight changes in the concentration isopleths occur between these figures, which is a result of the background scaling factor.

Based on the results obtained from the air quality impact evaluation, the proposed plant is not expected to adversely impact human health and welfare, since predicted concentrations from emissions of $PM_{10}$ from the proposed biomass plant are below the NAAQS or FAAQS for $PM_{10}$. Predicted concentrations are no greater than 11 and 8 percent of the corresponding short and long term health standards, respectively. This percentage takes into account the representative background concentration which was added to the predicted concentration as shown in Tables 6-5 and 6-6. Inclusion of a representative background concentration is a conservative approach to define potential impacts to ambient air quality. The approach tends to overstate the actual background concentrations levels in rural, non-industrial areas. In summary, the plant will not cause or contribute to a violation of the NAAQS or FAAQS for $PM_{10}$.

Contour lines represent maximum* AERMOD-predicted ambient PM10 concentration due to emissions from the proposed nominal 55.5-MW woody biomass power plant expressed as a percentage of the PM10 NAAQS (150 ug/m3).

*Maximum is defined as the highest, second high 24-hour average concentration over five years of modeled meteorological data. This definition is consistent with the design value for the NAAQS.

0m 250m 500m
Projection: UTM Zone 16
Datum: WGS 84

English Branch
Quincy Creek
Flat Creek
Little Telogia Creek
Mill Dam Creek
Elementary School
Project Site
Women's Prison
12
65
90
10

0.5%
1.0%
2.0%
5.0%
7.5%

3389000
3388500
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3387500
3387000
3386500
3386000
3385500
3385000

721500 722000 722500 723000 723500 724000 724500 725000 725500 726000 726500 727000 727500 728000 728500

MALCOLM PIRNIE

ADAGE
An AREVA/Duke Energy advanced biopower company

ADAGE Gadsden LLC
Gadsden County, Florida
Voluntary Air Quality Impact Evaluation

Proposed Nominal 55.5-MW Woody Biomass Power Plant

Contour Plot of Maximum AERMOD-Predicted 24-hour Average PM10 Concentration

Malcolm Pirnie, Inc.
January 2010

**Figure 6-5 A**

Contour lines represent maximum* AERMOD-predicted ambient PM10 concentration due to emissions from the proposed nominal 55.5-MW woody biomass power plant expressed as a percentage of the PM10 NAAQS (150 ug/m3).

*Maximum is defined as the highest, second high 24-hour average concentration over five years of modeled meteorological data. This definition is consistent with the design value for the NAAQS.

0m 250m 500m

Projection: UTM Zone 16
Datum: WGS 84

N

Elementary School

Project Site

Women's Prison

0.5%
1.0%
2.0%
5.0%
7.5%

3389000
3388500
3388000
3387500
3387000
3386500
3386000
3385500
3385000

721500 722000 722500 723000 723500 724000 724500 725000 725500 726000 726500 727000 727500 728000 728500

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Gadsden County, Florida
Voluntary Air Quality Impact Evaluation

Proposed Nominal 55.5-MW Woody Biomass Power Plant

Contour Plot of Maximum AERMOD-Predicted 24-hour Average PM10 Concentration

Malcolm Pirnie, Inc.

January 2010

**Figure 6-5 B**

### 6.5.2. Sulfur dioxide ($SO_2$) Compliance Demonstration

The NAAQS and FAAQS for $SO_2$ are based on 3-hour and 24-hour averages which are not to be exceeded more than once per modeled calendar year and an annual average which is not to be exceeded in any modeled calendar year. Therefore, the sum of highest, second high 3-hour and 24-hour average concentrations, the highest annual average concentration, and appropriate background concentrations representative of existing sources was compared with the NAAQS and FAAQS for $SO_2$. The maximum predicted combined impact was less than the NAAQS and FAAQS for $SO_2$ for each averaging period, as indicated in Tables 6-7, 6-8, and 6-9. In fact predicted concentrations are less than 7 percent of the corresponding health standards. The proposed plant will not be expected to cause or contribute to a violation of the NAAQS or FAAQS for $SO_2$.

Figures 6-6A, 6-6B, 6-7A and 6-7B present predicted $SO_2$ concentration isopleths for the 3-hour and 24-hour averaging periods. Respectively, these averaging periods correlate to the ambient air quality standards established by the EPA and the FDEP. These concentration isopleths reflect a percentage of the corresponding health standards for predicted $SO_2$ concentration impacts at the women's prison. In short, predicted concentration impacts will be less than 3.0% of the health standard over the 3 and 24-hour averaging periods, which is well below the standards that protect human health and welfare.

Based on the results obtained from the air quality impact evaluation, the proposed plant is not expected to adversely impact human health and welfare, since predicted concentrations from emissions of $SO_2$ from the proposed biomass plant are well below the NAAQS or FAAQS for $SO_2$. In summary, the plant is not expected to cause or contribute to a violation of the NAAQS and FAAQS for $SO_2$.

### 6.5.3. Nitrogen dioxide ($NO_2$) Compliance Demonstration

The NAAQS and FAAQS for $NO_2$ are based on an annual average which is not to be exceeded in any modeled calendar year. Therefore, the sum of the highest predicted calendar-year annual average concentration of $NO_x$ and the background $NO_2$ concentration representative of existing sources was compared with the NAAQS and FAAQS for $NO_2$. The maximum predicted combined impact was less than the NAAQS and FAAQS for $NO_2$, as indicated in Table 6-10. The resulting predicted concentrations are no greater than one (1) percent of the corresponding health standards. The proposed plant is not expected to cause a violation of the NAAQS or FAAQS for $NO_2$. Figures 6-8A and 6-8B present predicted concentration isopleths. In summary, the plant is not expected to cause or contribute to a violation of the NAAQS or FAAQS for $NO_2$.

Contour lines represent maximum* AERMOD-predicted ambient SO2 concentration due to emissions from the proposed nominal 55.5-MW woody biomass power plant expressed as a percentage of the SO2 NAAQS (1300 ug/m3).

*Maximum is defined as the highest, second high 3-hour average concentration over five years of modeled meteorological data. This definition is consistent with the design value for the NAAQS.

0m 250m 500m
Projection: UTM Zone 16
Datum: WGS 84

Elementary School
Project Site
Women's Prison
English Branch
Quincy Creek
Flat Creek
Little Telogia Creek
Mill Dam Creek
12
65
90
10

0.5%
1.0%
2.0%

3389000
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3386500
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3385500
3385000

721500 722000 722500 723000 723500 724000 724500 725000 725500 726000 726500 727000 727500 728000 728500

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ADAGE Gadsden LLC
Gadsden County, Florida
Voluntary Air Quality Impact Evaluation

Proposed Nominal 55.5-MW Woody Biomass Power Plant

Contour Plot of Maximum AERMOD-Predicted 3-hour Average SO2 Concentration

Malcolm Pirnie, Inc.
January 2010

**Figure 6-6 A**

Contour lines represent maximum* AERMOD-predicted ambient SO2 concentration due to emissions from the proposed nominal 55.5-MW woody biomass power plant expressed as a percentage of the SO2 NAAQS (1300 ug/m3).

*Maximum is defined as the highest, second high 3-hour average concentration over five years of modeled meteorological data. This definition is consistent with the design value for the NAAQS.

0m 250m 500m

Projection: UTM Zone 16
Datum: WGS 84

N

Elementary School

Project Site

Women's Prison

0.5%

1.0%

2.0%

3389000
3388500
3388000
3387500
3387000
3386500
3386000
3385500
3385000

721500 722000 722500 723000 723500 724000 724500 725000 725500 726000 726500 727000 727500 728000 728500

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Contour Plot of Maximum AERMOD-Predicted 3-hour Average SO2 Concentration

Malcolm Pirnie, Inc.

January 2010

**Figure 6-6 B**

Contour lines represent maximum* AERMOD-predicted ambient SO2 concentration due to emissions from the proposed nominal 55.5-MW woody biomass power plant expressed as a percentage of the SO2 NAAQS (365 ug/m3).

*Maximum is defined as the highest, second high 24-hour average concentration over five years of modeled meteorological data. This definition is consistent with the design value for the NAAQS.

0m 250m 500m
Projection: UTM Zone 16
Datum: WGS 84

English Branch
Quincy Creek
Flat Creek
Little Telogia Creek
Mill Dam Creek
Elementary School
Project Site
Women's Prison
12
65
90
10

0.5%
1.0%
2.0%
3.0%

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721500 722000 722500 723000 723500 724000 724500 725000 725500 726000 726500 727000 727500 728000 728500

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Contour Plot of Maximum AERMOD-Predicted 24-hour Average SO2 Concentration

Malcolm Pirnie, Inc.

January 2010

**Figure 6-7 A**

Contour lines represent maximum* AERMOD-predicted ambient SO2 concentration due to emissions from the proposed nominal 55.5-MW woody biomass power plant expressed as a percentage of the SO2 NAAQS (365 ug/m3).

*Maximum is defined as the highest, second high 24-hour average concentration over five years of modeled meteorological data. This definition is consistent with the design value for the NAAQS.

0m 250m 500m

Projection: UTM Zone 16
Datum: WGS 84

N

Elementary School

Project Site

Women's Prison

0.5%
1.0%
2.0%
3.0%

3389000
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3388000
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3386000
3385500
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721500 722000 722500 723000 723500 724000 724500 725000 725500 726000 726500 727000 727500 728000 728500

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Contour Plot of Maximum AERMOD-Predicted 24-hour Average SO2 Concentration

Malcolm Pirnie, Inc.

January 2010

**Figure 6-7 B**

Contour lines represent maximum* AERMOD-predicted ambient NO2 concentration due to emissions from the proposed nominal 55.5-MW woody biomass power plant expressed as a percentage of the NO2 NAAQS (100 ug/m3).

*Maximum is defined as the highest annual average concentration over five years of modeled meteorological data. This definition is consistent with the design value for the NAAQS.

0m 250m 500m

Projection: UTM Zone 16
Datum: WGS 84

English Branch

Quincy Creek

Elementary School

Project Site

Women's Prison

Flat Creek

Little Telogia Creek

Mill Dam Creek

0.2%
0.4%
0.6%
0.8%

12
65
90
10

3389000
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721500 722000 722500 723000 723500 724000 724500 725000 725500 726000 726500 727000 727500 728000 728500

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Voluntary Air Quality Impact Evaluation

Proposed Nominal 55.5-MW Woody Biomass Power Plant

Contour Plot of Maximum AERMOD-Predicted Annual Average NO2 Concentration

Malcolm Pirnie, Inc.
January 2010

**Figure 6-8 A**

Contour lines represent maximum* AERMOD-predicted ambient NO2 concentration due to emissions from the proposed nominal 55.5-MW woody biomass power plant expressed as a percentage of the NO2 NAAQS (100 ug/m3).

*Maximum is defined as the highest annual average concentration over five years of modeled meteorological data. This definition is consistent with the design value for the NAAQS.

0m 250m 500m

Projection: UTM Zone 16
Datum: WGS 84

N

Elementary School

Project Site

Women's Prison

0.2%
0.4%
0.6%
0.8%

3389000
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721500 722000 722500 723000 723500 724000 724500 725000 725500 726000 726500 727000 727500 728000 728500

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Proposed Nominal 55.5-MW Woody Biomass Power Plant

Contour Plot of Maximum AERMOD-Predicted Annual Average NO2 Concentration

Malcolm Pirnie, Inc.
January 2010

**Figure 6-8 B**

### 6.5.4. Carbon monoxide (CO) Compliance Demonstration

The NAAQS and FAAQS for CO are based on 1-hour and 8-hour averages which are not to be exceeded more than once per modeled calendar year. Therefore, the sum of highest, second high 1-hour and 8-hour average concentrations and appropriate background concentrations representative of existing sources was compared with the NAAQS and FAAQS for CO. The maximum predicted combined impact was less than the NAAQS and FAAQS for CO for each averaging period, as indicated in Tables 6-11 and 6-12. The proposed plant is not expected to cause or significantly contribute to a violation of the NAAQS or FAAQS for CO. Predicted concentrations represent only 0.1 and 0.1 percent of the corresponding 1-hour and 8-hour health standards, respectively.

Based on the results obtained from the air quality impact evaluation, the proposed plant is not expected to adversely impact human health and welfare, since predicted concentrations from emissions of CO from the proposed biomass plant are well below the NAAQS or FAAQS for CO. In summary, the plant is not expected to cause or contribute to a violation of the NAAQS and FAAQS for CO.

## 6.6. Voluntary Air Quality Impact Evaluation – Electronic File Submission

This report was submitted to FDEP electronically in portable document file (pdf) format through email. Also, electronic copies of the files used for the AERMOD analysis were provided to FDEP on a compact disc (CD) or through file transfer protocol (FTP) as part of the submission. The modeling files were contained in the common zip file archive format. The following table briefly describes each file type for the modeling files provided:

| File Extension | Description |
|---|---|
| .ami | AERMOD input file in ASCII text file format. The ami extension is the standard extension for Breeze AERMOD versions 6 and 7. |
| .aml | AERMOD output (list) file in ASCII text file format. The aml extension is the standard extension for AERMOD list files in Breeze AERMOD versions 6 and 7. |
| .zip (NED) | National Elevation Data (NED) GeoTIFF file used for AERMAP analysis in zip archive. |

| | |
|---|---|
| .amz | AERMOD zip file in zip archive file format. Breeze AERMOD versions 6 and 7 produce amz files which are zip archives containing all files relevant to the model run (except for the terrain input files) including:<br>• Terrain processing files<br>  o AERMAP input<br>  o AERMAP output<br>• Building downwash files<br>  o BPIP input<br>  o BPIP output<br>• Aerial photo<br>• AERMOD meteorological data<br>  o Surface (SFC) file<br>  o Profile (PFL) file<br>• AERMOD input file (ami)<br>• AERMOD output file(s)<br>  o List file (aml)<br>  o Plot files (plt)<br>• AutoCAD DXF format drawing of AERMOD model objects |

**Table 6-1**
**Ambient Air Monitoring Data and Representative Background Concentration Determination for NAAQS Compliance Demonstration**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

**$PM_{10}$ - Pensacola (Ellyson Industrial Park) Monitor**

| Year | n'th High | 24-hr Average Concentration ($ug/m^3$) | Annual Average Concentration ($ug/m^3$) |
|---|---|---|---|
| 2004 | 2 | 35 | 19 |
| 2005 | 2 | 39 | 19 |
| 2006 | 2 | 42 | 20 |
| Average | -- | **38.7** | **19.3** |

**$NO_2$ - Pensacola (Ellyson Industrial Park) Monitor**

| Year | Annual Average Concentration (ppm) | Annual Average Concentration ($ug/m^3$) |
|---|---|---|
| 2006 | 0.005 | 9.4 |
| 2007 | 0.005 | 9.4 |
| 2008 | 0.005 | 9.4 |
| Average | 0.005 | **9.4** |

**$SO_2$ - Pensacola (Ellyson Industrial Park) Monitor**

| Year | n'th High | 3-hr Average Concentration (ppm) | 3-hr Average Concentration ($ug/m^3$) | n'th High | 24-hr Average Concentration (ppm) | 24-hr Average Concentration ($ug/m^3$) | Annual Average Concentration (ppm) | Annual Average Concentration ($ug/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 2006 | 2 | 0.068 | 178.0 | 2 | 0.024 | 62.8 | 0.003 | 7.9 |
| 2007 | 2 | 0.063 | 164.9 | 2 | 0.017 | 44.5 | 0.003 | 7.9 |
| 2008 | 2 | 0.072 | 188.5 | 2 | 0.017 | 44.5 | 0.003 | 7.9 |
| Average | -- | 0.068 | **177.1** | -- | 0.019 | **50.6** | 0.003 | **7.9** |

**CO - Jacksonville (Rossell/Copeland) Monitor**

| Year | n'th High | 1-hr Average Concentration (ppm) | 1-hr Average Concentration ($ug/m^3$) | n'th High | 8-hr Average Concentration (ppm) | 8-hr Average Concentration ($ug/m^3$) |
|---|---|---|---|---|---|---|
| 2006 | 2 | 3.6 | 4123 | 2 | 1.3 | 1489 |
| 2007 | 2 | 2.5 | 2863 | 2 | 1.9 | 2176 |
| 2008 | 2 | 2.2 | 2519 | 2 | 1.1 | 1260 |
| Average | -- | 2.8 | **3168** | -- | 1.4 | **1641** |

**Monitor Location Data (Obtained from FDEP 2007 Annual Network Monitoring Plan)**

| AQS # | Monitor Name/Description | County | Monitor Address | Easting[(a)] (m) | Northing[(a)] (m) | UTM Zone |
|---|---|---|---|---|---|---|
| 033-0004 | Pensacola (Ellyson Industrial Park) | Escambia | Copter Road | 480,400 | 3,376,800 | 16 |
| 031-0084 | Jacksonville (Rossell/Copeland) | Duval | Rossell & Copeland | 432,168 | 3,352,640 | 17 |

**Notes:**
a) UTM Zone 17 - WGS 84

**Color Key:**

| | |
|---|---|
| | Concentration deemed an outlier and discarded from the representative background concentration average determination. |
| **##** | Concentration selected as representative background concentration for NAAQS and FAAQS compliance demonstration |

**Table 6-2**
**Parameters of AERMOD Point Sources Representing the Proposed ADAGE Gadsden LLC Plant**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Source ID | Description | $PM_{10}$[(a)] (g/s) | $NO_x$ (g/s) | $SO_2$ (g/s) | CO (g/s) | Height (m) | Temperature[(b)] (K) | Velocity (m/s) | Diameter (m) |
|---|---|---|---|---|---|---|---|---|---|
| BLR100H | Woody Biomass Boiler Stack 100% Load High Moisture Content Fuel | 2.77 | 6.69 | 18.15 | 57.30 | 51.82 | 419 | 13.76 | 3.66 |
| BLR100L | Woody Biomass Boiler Stack 100% Load Low Moisture Content Fuel | 2.44 | 5.89 | 15.99 | 50.50 | 51.82 | 419 | 11.09 | 3.66 |
| BLR50H | Woody Biomass Boiler Stack 50% Load High Moisture Content Fuel | 1.38 | 3.34 | 9.07 | 28.65 | 51.82 | 414 | 6.88 | 3.66 |
| BLR50L | Woody Biomass Boiler Stack 50% Load Low Moisture Content Fuel | 1.22 | 2.95 | 8.00 | 25.25 | 51.82 | 414 | 5.55 | 3.66 |
| EMCYGEN | 2200-bhp Emergency Generator | 0.003 | 0.038 | 0.002 | 0.72 | 4.27 | 700 | 51 | 0.35 |
| FIREPUMP | 450-bhp Emergency Fire Pump | 0.0016 | 0.011 | 0.12 | 0.33 | 3.66 | 694 | 124 | 0.10 |
| PCHIPPNT | Portable Chipper Diesel Engine | 0.11 | 0.20 | 0.002 | 0.83 | 4.27 | 700 | 51 | 0.35 |

**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) Assumed 1 $^{o}$F drop in temperature from 100% load for every 5% drop in load on the boiler

**Table 6-3**
**Parameters fo AERMOD Volume Sources Representing the Paved Roads at the Proposed ADAGE Gadsden LLC Plant**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| | | Transportation activities associated with each volume are indicated by an "X". | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Source ID | Volume Source[a,c] Emission Rate: $PM_{10}$ (g/s) | Fuel Receiving - Full Truck (in) | Fuel Receiving - 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) | Dry Sorbent Receiving -Empty Truck (out) |
| ROAD_001 | 1.15E-03 | X | | X | | X | | X | |
| ROAD_002 | 1.15E-03 | X | | X | | X | | X | |
| ROAD_003 | 1.15E-03 | X | | X | | X | | X | |
| ROAD_004 | 1.15E-03 | X | | X | | X | | X | |
| ROAD_005 | 1.15E-03 | X | | X | | X | | X | |
| ROAD_006 | 1.15E-03 | X | | X | | X | | X | |
| ROAD_007 | 9.83E-04 | X | | | | | | | |
| ROAD_008 | 9.83E-04 | X | | | | | | | |
| ROAD_009 | 9.83E-04 | X | | | | | | | |
| ROAD_010 | 9.83E-04 | X | | | | | | | |
| ROAD_011 | 9.83E-04 | X | | | | | | | |
| ROAD_012 | 9.83E-04 | X | | | | | | | |
| ROAD_013 | 9.83E-04 | X | | | | | | | |
| ROAD_014 | 9.83E-04 | X | | | | | | | |
| ROAD_015 | 9.83E-04 | X | | | | | | | |
| ROAD_016 | 9.83E-04 | X | | | | | | | |
| ROAD_017 | 9.83E-04 | X | | | | | | | |
| ROAD_018 | 9.83E-04 | X | | | | | | | |
| ROAD_019 | 9.83E-04 | X | | | | | | | |
| ROAD_020 | 9.83E-04 | X | | | | | | | |
| ROAD_021 | 9.83E-04 | X | | | | | | | |
| ROAD_022 | 9.83E-04 | X | | | | | | | |
| ROAD_023 | 9.83E-04 | X | | | | | | | |
| ROAD_024 | 9.83E-04 | X | | | | | | | |
| ROAD_025 | 9.83E-04 | X | | | | | | | |
| ROAD_026 | 9.83E-04 | X | | | | | | | |
| ROAD_027 | 9.83E-04 | X | | | | | | | |
| ROAD_028 | 9.83E-04 | X | | | | | | | |
| ROAD_029 | 9.83E-04 | X | | | | | | | |
| ROAD_030 | 1.49E-03 | X | X | | X | | X | | X |
| ROAD_031 | 1.49E-03 | X | X | | X | | X | | X |
| ROAD_032 | 1.49E-03 | X | X | | X | | X | | X |
| ROAD_033 | 1.49E-03 | X | X | | X | | X | | X |
| ROAD_034 | 1.49E-03 | X | X | | X | | X | | X |
| ROAD_035 | 1.49E-03 | X | X | | X | | X | | X |
| ROAD_036 | 1.49E-03 | X | X | | X | | X | | X |
| ROAD_037 | 1.34E-03 | X | X | | | | | | |
| ROAD_038 | 1.34E-03 | X | X | | | | | | |
| ROAD_039 | 1.34E-03 | X | X | | | | | | |
| ROAD_040 | 1.34E-03 | X | X | | | | | | |
| ROAD_041 | 1.34E-03 | X | X | | | | | | |
| ROAD_042 | 1.34E-03 | X | X | | | | | | |
| ROAD_043 | 9.83E-04 | X | | | | | | | |
| ROAD_044 | 9.83E-04 | X | | | | | | | |
| ROAD_045 | 9.83E-04 | X | | | | | | | |
| ROAD_046 | 9.83E-04 | X | | | | | | | |
| ROAD_047 | 9.83E-04 | X | | | | | | | |
| ROAD_048 | 9.83E-04 | X | | | | | | | |
| ROAD_049 | 9.83E-04 | X | | | | | | | |
| ROAD_050 | 3.52E-04 | | X | | | | | | |
| ROAD_051 | 3.52E-04 | | X | | | | | | |
| ROAD_052 | 3.52E-04 | | X | | | | | | |
| ROAD_053 | 3.52E-04 | | X | | | | | | |
| ROAD_054 | 3.52E-04 | | X | | | | | | |

**Table 6-3**
**Parameters fo AERMOD Volume Sources Representing the Paved Roads at the Proposed ADAGE Gadsden LLC Plant**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| | | Transportation activities associated with each volume are indicated by an "X". | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Source ID | Volume Source[(a,c)] Emission Rate: $PM_{10}$ (g/s) | Fuel Receiving - Full Truck (in) | Fuel Receiving - 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) | Dry Sorbent Receiving -Empty Truck (out) |
| ROAD_055 | 3.52E-04 | | X | | | | | | |
| ROAD_056 | 3.52E-04 | | X | | | | | | |
| ROAD_057 | 3.52E-04 | | X | | | | | | |
| ROAD_058 | 3.52E-04 | | X | | | | | | |
| ROAD_059 | 3.52E-04 | | X | | | | | | |
| ROAD_060 | 3.52E-04 | | X | | | | | | |
| ROAD_061 | 3.52E-04 | | X | | | | | | |
| ROAD_062 | 3.52E-04 | | X | | | | | | |
| ROAD_063 | 3.52E-04 | | X | | | | | | |
| ROAD_064 | 3.52E-04 | | X | | | | | | |
| ROAD_065 | 3.52E-04 | | X | | | | | | |
| ROAD_066 | 3.52E-04 | | X | | | | | | |
| ROAD_067 | 3.52E-04 | | X | | | | | | |
| ROAD_068 | 3.52E-04 | | X | | | | | | |
| ROAD_069 | 3.52E-04 | | X | | | | | | |
| ROAD_070 | 3.52E-04 | | X | | | | | | |
| ROAD_071 | 3.52E-04 | | X | | | | | | |
| ROAD_072 | 3.52E-04 | | X | | | | | | |
| ROAD_073 | 3.52E-04 | | X | | | | | | |
| ROAD_074 | 3.52E-04 | | X | | | | | | |
| ROAD_075 | 3.52E-04 | | X | | | | | | |
| ROAD_076 | 3.52E-04 | | X | | | | | | |
| ROAD_077 | 1.65E-04 | | | X | | X | | X | |
| ROAD_078 | 1.65E-04 | | | X | | X | | X | |
| ROAD_079 | 1.65E-04 | | | X | | X | | X | |
| ROAD_080 | 1.65E-04 | | | X | | X | | X | |
| ROAD_081 | 1.65E-04 | | | X | | X | | X | |
| ROAD_082 | 1.65E-04 | | | X | | X | | X | |
| ROAD_083 | 1.65E-04 | | | X | | X | | X | |
| ROAD_084 | 1.65E-04 | | | X | | X | | X | |
| ROAD_085 | 1.65E-04 | | | X | | X | | X | |
| ROAD_086 | 1.65E-04 | | | X | | X | | X | |
| ROAD_087 | 1.65E-04 | | | X | | X | | X | |
| ROAD_088 | 1.65E-04 | | | X | | X | | X | |
| ROAD_089 | 1.65E-04 | | | X | | X | | X | |
| ROAD_090 | 1.65E-04 | | | X | | X | | X | |
| ROAD_091 | 1.65E-04 | | | X | | X | | X | |
| ROAD_092 | 1.65E-04 | | | X | | X | | X | |
| ROAD_093 | 1.65E-04 | | | X | | X | | X | |
| ROAD_094 | 1.65E-04 | | | X | | X | | X | |
| ROAD_095 | 1.65E-04 | | | X | | X | | X | |
| ROAD_096 | 1.65E-04 | | | X | | X | | X | |
| ROAD_097 | 1.65E-04 | | | X | | X | | X | |
| ROAD_098 | 1.65E-04 | | | X | | X | | X | |
| ROAD_099 | 1.65E-04 | | | X | | X | | X | |
| ROAD_100 | 1.65E-04 | | | X | | X | | X | |
| ROAD_101 | 1.65E-04 | | | X | | X | | X | |
| ROAD_102 | 1.65E-04 | | | X | | X | | X | |
| ROAD_103 | 1.65E-04 | | | X | | X | | X | |
| ROAD_104 | 1.65E-04 | | | X | | X | | X | |
| ROAD_105 | 1.50E-04 | | | | X | | X | | X |
| ROAD_106 | 1.50E-04 | | | | X | | X | | X |
| ROAD_107 | 1.50E-04 | | | | X | | X | | X |
| ROAD_108 | 1.50E-04 | | | | X | | X | | X |
| ROAD_109 | 1.50E-04 | | | | X | | X | | X |
| ROAD_110 | 1.50E-04 | | | | X | | X | | X |

**Table 6-3**
**Parameters fo AERMOD Volume Sources Representing the Paved Roads at the Proposed ADAGE Gadsden LLC Plant**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| | | Transportation activities associated with each volume are indicated by an "X". | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Source ID | Volume Source[a,c] Emission Rate: $PM_{10}$ (g/s) | Fuel Receiving - Full Truck (in) | Fuel Receiving - 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) | Dry Sorbent Receiving -Empty Truck (out) |
| ROAD_111 | 1.50E-04 | | | | X | | X | | X |
| ROAD_112 | 1.50E-04 | | | | X | | X | | X |
| ROAD_113 | 1.50E-04 | | | | X | | X | | X |
| ROAD_114 | 1.50E-04 | | | | X | | X | | X |
| ROAD_115 | 1.50E-04 | | | | X | | X | | X |
| ROAD_116 | 1.50E-04 | | | | X | | X | | X |
| ROAD_117 | 1.50E-04 | | | | X | | X | | X |
| ROAD_118 | 1.50E-04 | | | | X | | X | | X |
| ROAD_119 | 5.02E-04 | | X | | X | | X | | X |
| ROAD_120 | 5.02E-04 | | X | | X | | X | | X |
| ROAD_121 | 5.02E-04 | | X | | X | | X | | X |
| ROAD_122 | 5.02E-04 | | X | | X | | X | | X |
| ROAD_123 | 5.02E-04 | | X | | X | | X | | X |
| ROAD_124 | 5.02E-04 | | X | | X | | X | | X |
| ROAD_125 | 5.02E-04 | | X | | X | | X | | X |
| ROAD_126 | 5.02E-04 | | X | | X | | X | | X |
| ROAD_127 | 5.02E-04 | | X | | X | | X | | X |
| ROAD_128 | 5.02E-04 | | X | | X | | X | | X |
| Number of volumes associated with each activity | | 49 | 50 | 34 | 31 | 34 | 31 | 34 | 31 |
| Unit Rate: PM emissions per volume by activity[b] | | 5.04E-03 | 1.80E-03 | 1.27E-04 | 4.51E-04 | 3.58E-04 | 1.60E-04 | 3.58E-04 | 1.60E-04 |
| Unit Rate: $PM_{10}$ emissions per volume by activity[b] | | 9.83E-04 | 3.52E-04 | 2.47E-05 | 8.81E-05 | 6.99E-05 | 3.11E-05 | 6.99E-05 | 3.11E-05 |
| Unit Rate: $PM_{2.5}$ emissions per volume by activity[b] | | 1.47E-04 | 5.28E-05 | 3.71E-06 | 1.32E-05 | 1.05E-05 | 4.67E-06 | 1.05E-05 | 4.67E-06 |

| Volume Source Parameters | | Parameter Notes[d] |
|---|---|---|
| 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) Emissions of fugitive dust for sources with release height less than 10 meters were multiplied by a correction factor of 0.6 as recommended by the TCEQ in a memo "Modeling Adjustment Factor for Fugitive Emissions" dated March 6, 2002.

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 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.

d) The truck traffic parameters were determined following the commonly accepted guidelines for modeling haul road traffic emissions in AERMOD. These guidelines can be found in several state agency guidance documents including those of North Carolina and New Mexico.

**Table 6-4**
**Parameters of AERMOD Volume Sources Representing the Proposed ADAGE Gadsden LLC Plant**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Volume ID | Description | Fugitive Correction Factor[(a)] | $PM_{10}$ (g/s/vol) | Number of Volumes (i) | Release Height (m) | $\sigma_y$ Init. Lat. Dim. (m) | $\sigma_z$ Init. Vert. Dim. (m) | Volume Height (m) | Volume Width (m) | Volume Location |
|---|---|---|---|---|---|---|---|---|---|---|
| TRUKDMP1 | Truck Fuel Receiving - Dumpers #1-3 (Drop Point #1), Auxiliary Truck Fuel Dumper #4 (Drop Point #2), and Fuel Receiving Dumpers to Coarse Screen Conveyor (Drop Point #3) | 0.6 | 4.05E-03 | 4 | 2.00 | 1.12 | 1.86 | 4.00 | 4.80 | Surface |
| TRUKDMP2 | Truck Fuel Receiving - Dumpers #1-3 (Drop Point #1), Auxiliary Truck Fuel Dumper #4 (Drop Point #2), and Fuel Receiving Dumpers to Coarse Screen Conveyor (Drop Point #3) | 0.6 | 4.05E-03 | 4 | 2.00 | 1.12 | 1.86 | 4.00 | 4.80 | Surface |
| TRUKDMP3 | Truck Fuel Receiving - Dumpers #1-3 (Drop Point #1), Auxiliary Truck Fuel Dumper #4 (Drop Point #2), and Fuel Receiving Dumpers to Coarse Screen Conveyor (Drop Point #3) | 0.6 | 4.05E-03 | 4 | 2.00 | 1.12 | 1.86 | 4.00 | 4.80 | Surface |
| TRUKDMP4 | Truck Fuel Receiving - Dumpers #1-3 (Drop Point #1), Auxiliary Truck Fuel Dumper #4 (Drop Point #2), and Fuel Receiving Dumpers to Coarse Screen Conveyor (Drop Point #3) | 0.6 | 4.05E-03 | 4 | 2.00 | 1.12 | 1.86 | 4.00 | 4.80 | Surface |
| CSCREEN1 | Fuel Screening and Sizing (Drop Point #4A, #4B) | 0.6 | 6.47E-03 | 1 | 9.15 | 1.63 | 8.51 | 18.30 | 7.00 | On-Adjacent to Building |
| CSCREEN2 | Coarse Screen Conveyor to Storage Pile Conveyor (Drop Point #5) | 0.6 | 6.47E-03 | 1 | 6.10 | 1.63 | 1.42 | 3.05 | 7.00 | On-Adjacent to Building |
| FULSTOR1 | Storage Pile Conveyor to Storage Pile (Drop Point #6) | 0.6 | 2.16E-03 | 3 | 4.06 | 4.96 | 5.67 | 12.19 | 21.34 | Surface |
| FULSTOR2 | Storage Pile Conveyor to Storage Pile (Drop Point #6) | 0.6 | 2.16E-03 | 0 | 4.06 | 4.96 | 5.67 | 12.19 | 21.34 | Surface |
| FULSTOR3 | Storage Pile Conveyor to Storage Pile (Drop Point #6) | 0.6 | 2.16E-03 | 0 | 4.06 | 4.96 | 5.67 | 12.19 | 21.34 | Surface |
| FULFEED1 | Storage Pile Pickup Conveyor (Drop Point #7) | 0.6 | 6.47E-03 | 1 | 2.00 | 1.12 | 1.86 | 4.00 | 4.80 | Surface |
| FSCREEN | Storage Pile Conveyor to Fine Screening (Drop Point #8) | 0.6 | 6.47E-03 | 1 | 9.15 | 1.63 | 8.51 | 18.30 | 7.00 | On-Adjacent to Building |
| RECLAIM1 | Fuel Reclaim #1 (Drop Point #9) | 0.6 | 6.47E-03 | 1 | 2.00 | 1.12 | 1.86 | 4.00 | 4.80 | Surface |
| RECLAIM2 | Fuel Reclaim #2 (Drop Point #10) | 0.6 | 6.47E-03 | 1 | 2.00 | 1.12 | 1.86 | 4.00 | 4.80 | Surface |
| FULFEED2 | Storage Pile Conveyor to BFB Boiler Feed Bins (Drop Point #11) | 1 | 1.08E-02 | 1 | 21.30 | 0.23 | 1.42 | 3.05 | 1.00 | On-Adjacent to Building |
| ASHSTORE | Fly Ash Transfer Conveyor and Fly Ash Elevating Conveyor | 1 | 2.06E-04 | 1 | 18.30 | 0.23 | 1.42 | 3.05 | 1.00 | On-Adjacent to Building |
| ASHSHIP | Fly Ash Silo to Fly Ash Conditioner Drop and Fly Ash Silo, Fly Ash Conditioner Chute | 0.6 | 1.49E-03 | 1 | 2.00 | 1.63 | 1.86 | 4.00 | 7.00 | Surface |

**Table 6-4**
**Parameters of AERMOD Volume Sources Representing the Proposed ADAGE Gadsden LLC Plant**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

| Volume ID | Description | Fugitive Correction Factor[(a)] | $PM_{10}$ (g/s/vol) | Number of Volumes (i) | Release Height (m) | $\sigma_y$ Init. Lat. Dim. (m) | $\sigma_z$ Init. Vert. Dim. (m) | Volume Height (m) | Volume Width (m) | Volume Location |
|---|---|---|---|---|---|---|---|---|---|---|
| SORBSILO | Sorbent Material Storage Silo | 1 | 2.36E-03 | 1 | 17.70 | 0.23 | 1.42 | 3.05 | 1.00 | On-Adjacent to Building |
| SANDSILO | Boiler Sand Storage Silo | 1 | 2.36E-03 | 1 | 30.50 | 0.23 | 1.42 | 3.05 | 1.00 | On-Adjacent to Building |
| BULLDOZ1 | Bulldozing on Woody Biomass Storage Areas | 0.6 | 4.61E-04 | 3 | 2.03 | 4.96 | 1.89 | 4.06 | 21.34 | On-Adjacent to Building |
| BULLDOZ2 | Bulldozing on Woody Biomass Storage Areas | 0.6 | 4.61E-04 | 0 | 2.03 | 4.96 | 1.89 | 4.06 | 21.34 | On-Adjacent to Building |
| BULLDOZ3 | Bulldozing on Woody Biomass Storage Areas | 0.6 | 4.61E-04 | 0 | 2.03 | 4.96 | 1.89 | 4.06 | 21.34 | On-Adjacent to Building |
| PCHIPFUG | Portable Wood Chipper Fugitive Dust | 0.6 | 3.02E-02 | 1 | 3.05 | 0.71 | 1.42 | 3.05 | 3.05 | On-Adjacent to Building |
| PCHIPDRP | Portable Wood Chipper Drop Point | 0.6 | 2.59E-03 | 1 | 3.05 | 0.71 | 1.42 | 3.05 | 3.05 | Surface |

**Notes:**

a) Emissions of fugitive dust for sources with release height less than 10 meters were multiplied by a correction factor of 0.6 as recommended by the TCEQ in a memo "Modeling Adjustment Factor for Fugitive Emissions" dated March 6, 2002.

**Tables 6-5 and 6-6**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**
**Impacts on Ambient Air Quality**
**Particulate Matter**

**Table 6-5. Maximum Predicted 24-hour Average $PM_{10}$ Ambient Concentrations Compared with the Florida and National Ambient Air Quality Standards**

| AERMOD Meteorological Data Year | Maximum[(a)] Predicted 24-hour Average $PM_{10}$ Ambient Concentration, $C_{H2H}$ (ug/m$^3$) | $C_{H2H}$:NAAQS Ratio[(b)] | $C_{H2H}$:FAAQS Ratio[(c)] | Cumulative Impact[(d,e)], $C_{cum}$ (ug/m$^3$) | NAAQS Compliance[(f)] Demonstrated? | FAAQS Compliance[(g)] Demonstrated? |
|---|---|---|---|---|---|---|
| 2001 | 15.8 | 11% | 11% | 54.5 | Yes - Compliant | Yes - Compliant |
| 2002 | 15.0 | 10% | 10% | 53.7 | Yes - Compliant | Yes - Compliant |
| 2003 | 14.3 | 10% | 10% | 53.0 | Yes - Compliant | Yes - Compliant |
| 2004 | 13.6 | 9% | 9% | 52.2 | Yes - Compliant | Yes - Compliant |
| 2005 | 16.6 | 11% | 11% | 55.3 | Yes - Compliant | Yes - Compliant |

**Notes:**

| Note/Parameter | Value |
|---|---|
| a) High, Second High ($C_{H2H}$) | -- |
| b) National Ambient Air Quality Standard, NAAQS (ug/m$^3$) | 150 |
| c) Florida Ambient Air Quality Standard, FAAQS (ug/m$^3$) | 150 |
| d) Background Concentration, $C_{bg}$ (ug/m$^3$) | 38.7 |
| e) $C_{cum} = C_{H2H} + C_{bg}$ | -- |

f) This NAAQS is not to be exceeded more than once per year on average over five modeled years (the period is three years for monitoring). Correspondingly, compliance with the NAAQS is officially demonstrated by comparing the high, sixth high concentration over five years of modeled meteorological data with the NAAQS. In this case, the high, second high concentration in each of five years of modeled meteorological data was compared with the NAAQS. The high, sixth high concentration over a full five year period will never be greater than the greatest high, second high concentration from each of those five years. Therefore, a worst-case conservative comparison with the NAAQS is made above.

g) This FAAQS is not to be exceeded more than once per year. Therefore, the high, second high predicted concentration plus background contration comprises the cumulative impact compared with the standard.

**Table 6-6. Maximum Predicted Annual Average $PM_{10}$ Ambient Concentrations Compared with the Florida Ambient Air Quality Standard**

| AERMOD Meteorological Data Year | Maximum Predicted Annual Average $PM_{10}$ Ambient Concentration, $C_{ann}$ (ug/m$^3$) | $C_{ann}$:NAAQS Ratio[(a,e)] | $C_{ann}$:FAAQS Ratio[(b)] | Cumulative Impact[(c,d)], $C_{cum}$ (ug/m$^3$) | NAAQS Compliance[(e)] Demonstrated? | FAAQS Compliance Demonstrated? |
|---|---|---|---|---|---|---|
| 2001 | 4.07 | 8% | 8% | 23.4 | Yes - Compliant | Yes - Compliant |
| 2002 | 3.82 | 8% | 8% | 23.2 | Yes - Compliant | Yes - Compliant |
| 2003 | 3.93 | 8% | 8% | 23.3 | Yes - Compliant | Yes - Compliant |
| 2004 | 3.56 | 7% | 7% | 22.9 | Yes - Compliant | Yes - Compliant |
| 2005 | 3.83 | 8% | 8% | 23.2 | Yes - Compliant | Yes - Compliant |

**Notes:**

| Note/Parameter | Value |
|---|---|
| a) National Ambient Air Quality Standard (see note "e"), NAAQS (ug/m$^3$) | 50 |
| b) Florida Ambient Air Quality Standard, FAAQS (ug/m$^3$) | 50 |
| c) Background Concentration, $C_{bg}$ (ug/m$^3$) | 19.3 |
| d) $C_{cum} = C_{ann} + C_{bg}$ | -- |

e) The annual average NAAQS for $PM_{10}$ has been repealed. However, the old NAAQS has been shown here because demonstration of $PM_{10}$ NAAQS compliance is used as a surrogate for demonstration of $PM_{2.5}$ NAAQS compliance for both 24-hour and annual averaging periods.

**Tables 6-7, 6-8 and 6-9**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**
**Impacts on Ambient Air Quality - Sulfur Dioxide ($SO_2$)**

**Table 6-7. Maximum Predicted 3-hour Average $SO_2$ Ambient Concentrations Compared with the Florida and National Ambient Air Quality Standards**

| AERMOD Meteorological Data Year | Maximum[(a)] Predicted 3-hour Average $SO_2$ Ambient Concentration, $C_{H2H}$ ($ug/m^3$) | $C_{H2H}$:NAAQS Ratio[(b)] | $C_{H2H}$:FAAQS Ratio[(c)] | Cumulative Impact[(d,e,f)], $C_{cum}$ ($ug/m^3$) | NAAQS Compliance[(f)] Demonstrated? | FAAQS Compliance[(f)] Demonstrated? |
|---|---|---|---|---|---|---|
| 2001 | 45.1 | 3.5% | 3.5% | 222.2 | Yes - Compliant | Yes - Compliant |
| 2002 | 40.1 | 3.1% | 3.1% | 217.2 | Yes - Compliant | Yes - Compliant |
| 2003 | 54.2 | 4.2% | 4.2% | 231.3 | Yes - Compliant | Yes - Compliant |
| 2004 | 34.4 | 2.6% | 2.6% | 211.6 | Yes - Compliant | Yes - Compliant |
| 2005 | 35.8 | 2.8% | 2.8% | 213.0 | Yes - Compliant | Yes - Compliant |

**Notes:**

| Note/Parameter | Value |
|---|---|
| a) High, Second High ($C_{H2H}$) | -- |
| b) National Ambient Air Quality Standard, NAAQS ($ug/m^3$) | 1,300 |
| c) Florida Ambient Air Quality Standard, FAAQS ($ug/m^3$) | 1,300 |
| d) Background Concentration, $C_{bg}$ ($ug/m^3$) | 177.1 |
| e) $C_{cum} = C_{H2H} + C_{bg}$ | -- |

f) These NAAQS and FAAQS is not to be exceeded more than once per year. Therefore, the high, second high predicted concentration plus background contration comprises the cumulative impact compared with the standard.

**Table 6-8. Maximum Predicted 24-hour Average $SO_2$ Ambient Concentrations Compared with the Florida and National Ambient Air Quality Standards**

| AERMOD Meteorological Data Year | Maximum[(a)] Predicted 24-hour Average $SO_2$ Ambient Concentration, $C_{H2H}$ ($ug/m^3$) | $C_{H2H}$:NAAQS Ratio[(b)] | $C_{H2H}$:FAAQS Ratio[(c)] | Cumulative Impact[(d,e,f)], $C_{cum}$ ($ug/m^3$) | NAAQS Compliance[(f)] Demonstrated? | FAAQS Compliance[(f)] Demonstrated? |
|---|---|---|---|---|---|---|
| 2001 | 15.2 | 4.2% | 5.9% | 65.8 | Yes - Compliant | Yes - Compliant |
| 2002 | 15.1 | 4.1% | 5.8% | 65.7 | Yes - Compliant | Yes - Compliant |
| 2003 | 16.9 | 4.6% | 6.5% | 67.5 | Yes - Compliant | Yes - Compliant |
| 2004 | 12.3 | 3.4% | 4.7% | 62.9 | Yes - Compliant | Yes - Compliant |
| 2005 | 16.6 | 4.5% | 6.4% | 67.2 | Yes - Compliant | Yes - Compliant |

**Notes:**

| Note/Parameter | Value |
|---|---|
| a) High, Second High ($C_{H2H}$) | -- |
| b) National Ambient Air Quality Standard, NAAQS ($ug/m^3$) | 365 |
| c) Florida Ambient Air Quality Standard, FAAQS ($ug/m^3$) | 260 |
| d) Background Concentration, $C_{bg}$ ($ug/m^3$) | 50.6 |
| e) $C_{cum} = C_{H2H} + C_{bg}$ | -- |

f) These NAAQS and FAAQS is not to be exceeded more than once per year. Therefore, the high, second high predicted concentration plus background contration comprises the cumulative impact compared with the standard.

**Table 6-9. Maximum Predicted Annual Average $SO_2$ Ambient Concentrations Compared with the Florida and National Ambient Air Quality Standards**

| AERMOD Meteorological Data Year | Maximum Predicted Annual Average $SO_2$ Ambient Concentration, $C_{ann}$ ($ug/m^3$) | $C_{ann}$:NAAQS Ratio[(a)] | $C_{ann}$:FAAQS Ratio[(b)] | Cumulative Impact[(c,d)], $C_{cum}$ ($ug/m^3$) | NAAQS Compliance Demonstrated? | FAAQS Compliance Demonstrated? |
|---|---|---|---|---|---|---|
| 2001 | 2.40 | 3.0% | 4.0% | 10.3 | Yes - Compliant | Yes - Compliant |
| 2002 | 2.42 | 3.0% | 4.0% | 10.3 | Yes - Compliant | Yes - Compliant |
| 2003 | 2.26 | 2.8% | 3.8% | 10.1 | Yes - Compliant | Yes - Compliant |
| 2004 | 2.15 | 2.7% | 3.6% | 10.0 | Yes - Compliant | Yes - Compliant |
| 2005 | 2.25 | 2.8% | 3.8% | 10.1 | Yes - Compliant | Yes - Compliant |

**Notes:**

| Note/Parameter | Value |
|---|---|
| a) National Ambient Air Quality Standard, NAAQS ($ug/m^3$) | 80 |
| b) Florida Ambient Air Quality Standard, FAAQS ($ug/m^3$) | 60 |
| c) Background Concentration, $C_{bg}$ ($ug/m^3$) | 7.9 |
| d) $C_{cum} = C_{ann} + C_{bg}$ | -- |

**Table 6-10**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**
**Impacts on Ambient Air Quality**
**Nitrogen Dioxide ($NO_2$)**

**Table 6-10. Maximum Predicted Annual Average $NO_x$ Ambient Concentrations Compared with the Florida and National Ambient Air Quality Standards**

| AERMOD Meteorological Data Year | Maximum Predicted Annual Average $NO_x$ Ambient Concentration, $C_{ann}$ ($ug/m^3$) | $C_{ann}$:NAAQS Ratio[(a)] | $C_{ann}$:FAAQS Ratio[(b)] | Cumulative Impact[(c,d)], $C_{cum}$ ($ug/m^3$) | NAAQS Compliance Demonstrated? | FAAQS Compliance Demonstrated? |
|---|---|---|---|---|---|---|
| 2001 | 1.23 | 1.2% | 1.2% | 10.6 | Yes - Compliant | Yes - Compliant |
| 2002 | 1.32 | 1.3% | 1.3% | 10.7 | Yes - Compliant | Yes - Compliant |
| 2003 | 1.27 | 1.3% | 1.3% | 10.7 | Yes - Compliant | Yes - Compliant |
| 2004 | 1.24 | 1.2% | 1.2% | 10.6 | Yes - Compliant | Yes - Compliant |
| 2005 | 1.11 | 1.1% | 1.1% | 10.5 | Yes - Compliant | Yes - Compliant |

**Notes:**

| Note/Parameter | Value |
|---|---|
| a) National Ambient Air Quality Standard, NAAQS ($NO_2$ $ug/m^3$) | 100 |
| b) Florida Ambient Air Quality Standard, FAAQS ($NO_2$ $ug/m^3$) | 100 |
| c) Background Concentration, $C_{bg}$ ($ug/m^3$) | 9.4 |
| d) $C_{cum} = C_{ann} + C_{bg}$ | -- |

**Tables 6-11 and 6-12**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**
**Impacts on Ambient Air Quality**
**Carbon Monoxide (CO)**

**Table 6-11. Maximum Predicted 1-hour Average CO Ambient Concentrations Compared with the Florida and National Ambient Air Quality Standards**

| AERMOD Meteorological Data Year | Maximum[(a)] Predicted 1-hour Average CO Ambient Concentration, $C_{H2H}$ (ug/m$^3$) | $C_{H2H}$:NAAQS Ratio[(b)] | $C_{H2H}$:FAAQS Ratio[(c)] | Cumulative Impact[(d,e,f)], $C_{cum}$ (ug/m$^3$) | NAAQS Compliance[(f)] Demonstrated? | FAAQS Compliance[(f)] Demonstrated? |
|---|---|---|---|---|---|---|
| 2001 | 424.0 | 1.1% | 1.1% | 3592.4 | Yes - Compliant | Yes - Compliant |
| 2002 | 408.7 | 1.0% | 1.0% | 3577.1 | Yes - Compliant | Yes - Compliant |
| 2003 | 377.3 | 0.9% | 0.9% | 3545.7 | Yes - Compliant | Yes - Compliant |
| 2004 | 389.6 | 1.0% | 1.0% | 3558.0 | Yes - Compliant | Yes - Compliant |
| 2005 | 383.1 | 1.0% | 1.0% | 3551.5 | Yes - Compliant | Yes - Compliant |

**Notes:**

| Note/Parameter | Value |
|---|---|
| a) High, Second High ($C_{H2H}$) | -- |
| b) National Ambient Air Quality Standard, NAAQS (ug/m$^3$) | 40,000 |
| c) Florida Ambient Air Quality Standard, FAAQS (ug/m$^3$) | 40,000 |
| d) Background Concentration, $C_{bg}$ (ug/m$^3$) | 3,168 |
| e) $C_{cum} = C_{H2H} + C_{bg}$ | -- |

f) These NAAQS and FAAQS is not to be exceeded more than once per year. Therefore, the high, second high predicted concentration plus background contration comprises the cumulative impact compared with the standard.

**Table 6-12. Maximum Predicted 8-hour Average CO Ambient Concentrations Compared with the Florida and National Ambient Air Quality Standards**

| AERMOD Meteorological Data Year | Maximum[(a)] Predicted 8-hour Average CO Ambient Concentration, $C_{H2H}$ (ug/m$^3$) | $C_{H2H}$:NAAQS Ratio[(b)] | $C_{H2H}$:FAAQS Ratio[(c)] | Cumulative Impact[(d,e,f)], $C_{cum}$ (ug/m$^3$) | NAAQS Compliance[(f)] Demonstrated? | FAAQS Compliance[(f)] Demonstrated? |
|---|---|---|---|---|---|---|
| 2001 | 125.0 | 1.2% | 1.2% | 1766.4 | Yes - Compliant | Yes - Compliant |
| 2002 | 144.6 | 1.4% | 1.4% | 1786.1 | Yes - Compliant | Yes - Compliant |
| 2003 | 167.3 | 1.7% | 1.7% | 1808.8 | Yes - Compliant | Yes - Compliant |
| 2004 | 126.1 | 1.3% | 1.3% | 1767.6 | Yes - Compliant | Yes - Compliant |
| 2005 | 146.5 | 1.5% | 1.5% | 1788.0 | Yes - Compliant | Yes - Compliant |

**Notes:**

| Note/Parameter | Value |
|---|---|
| a) High, Second High ($C_{H2H}$) | -- |
| b) National Ambient Air Quality Standard, NAAQS (ug/m$^3$) | 10,000 |
| c) Florida Ambient Air Quality Standard, FAAQS (ug/m$^3$) | 10,000 |
| d) Background Concentration, $C_{bg}$ (ug/m$^3$) | 1,641 |
| e) $C_{cum} = C_{H2H} + C_{bg}$ | -- |

f) These NAAQS and FAAQS is not to be exceeded more than once per year. Therefore, the high, second high predicted concentration plus background contration comprises the cumulative impact compared with the standard.

**Table 6-13**
**Structures Included in the BPIP Analysis for the Proposed ADAGE Gadsden LLC Plant**
**ADAGE Gadsden LLC Gadsden County, Florida**
**Proposed Nominal 55.5-MW Net Woody Biomass Power Plant**

Table 6-13-A. Base Elevation and Tier Height of Polygonal Structures Included in the BPIP Analysis

| AERMOD ID | Building Description | Elevation[(a)] (m) | Height (m) |
|---|---|---|---|
| B_BLR1 | BOILER BUILDING TIER 1 | 82.29 | 42.98 |
| B_BLR2 | BOILER BUILDING TIER 2 | 82.18 | 46.02 |
| B_BLR3 | BOILER BUILDING TIER 3 | 83.03 | 33.33 |
| B_BLR4 | BOILER BUILDING TIER 4 | 82.52 | 21.3 |
| B_BLR5 | BOILER BUILDING TIER 5 | 82.91 | 36.58 |
| B_TURBN | TURBINE BUILDING | 82.48 | 22.25 |
| B_SRVC | SERVICES BUILDING | 81.84 | 5.79 |
| B_CONDSR | AIR-COOLED CONDENSER STRUCTURE | 82.58 | 27.4 |
| B_BAGHS | BAGHOUSE STRUCTURE | 83.07 | 21.9 |
| B_WRKSHP | WORKSHOP | 82.04 | 9.1 |
| B_ADMIN | ADMINISTRATION BUILDING | 83.05 | 9.1 |
| B_ELEC | ELECTRICAL BUILDING | 81.21 | 5.79 |
| B_HEATX | AIR-COOLED HEAT EXCHANGER STRUCTURE | 82.21 | 27.4 |
| B_SCR | SCR STRUCTURE | 83.1 | 21.9 |
| B_EMCYGN | EMERGENCY GENERATOR STRUCTURE | 81.26 | 3.05 |
| B_HOG | HOG & SCREEN STRUCTURE | 81.53 | 18.29 |
| B_PILE1A | MAIN WOOD PILE | 83.58 | 6.1 |
| B_PILE1B | MAIN WOOD PILE | 83.2 | 12.2 |

Table 6-13-B Base Elevation, Tier Height, and Radius of Circular Structures Included in the BPIP Analysis

| AERMOD ID | Building Description | Elevation[(a)] (m) | Height (m) | Radius (m) |
|---|---|---|---|---|
| B_SORBNT | SORBENT SILO | 82.9 | 17.7 | 2.1 |
| B_ASHIL | FLY ASH SILO | 83.3 | 18.3 | 3.4 |
| B_RAWH2O | RAW WATER TANK STRUCTURE | 81.53 | 9.15 | 7.7 |
| B_DEMIN | DEMINERALIZED WATER TANK | 81.33 | 6.1 | 6.1 |
| B_SAND | Sand Silo Structure | 82.47 | 30.5 | 2.2 |
| SECPILEA | Secondary Fuel Pile (part A) | 79.86 | 6.1 | 47.8 |
| SECPILEB | Secondary Fuel Pile (part B) | 79.85 | 12.2 | 23.2 |

**Notes:**
a) Elevations were determined by AERMAP.

# 7. 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 nominal 55.5-MW net woody biomass power plant project meets these standards for permit issuance.

## 7.1. Standards for Issuing or Denying a Permit

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

### 7.1.1. 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 55.5-MW net woody biomass power 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.

**ADAGE is very confident that it has designed the proposed nominal 55.5-MW net woody biomass 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.**

### 7.1.2. 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 applicable state and federal regulations for the proposed woody biomass plant. ADAGE is confident that all of the applicable regulatory requirements have been discussed and the proposed plant will be in compliance with applicable laws and rules.**

### 7.1.3. 62-4.070(3)

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

**ADAGE is aware that the FDEP may find it necessary to issue permit conditions in order to insure that the proposed woody biomass 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.**

### 7.1.4. 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."*

**ADAGE is aware that operating permits are issued based on a five (5) year renewal period. ADAGE is also aware that there is a specific time limit for commencement of construction and commencement of operation. ADAGE 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.**

### 7.1.5. 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."*

**ADAGE will make sure that there are no violations during construction or installation of the proposed woody biomass plant. ADAGE is confident that the FDEP will be provided with reasonable assurances that standards will be met.**

### 7.1.6. 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."*

**ADAGE 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.**

### 7.1.7. 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."*

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

# 8. Proposed Permit Language

The purpose of this section is to provide FDEP with additional information pertinent to specific permit language. In order to expedite the permit writing process, ADAGE would like to provide FDEP with as much information as possible. The following sub-sections, suggest permit language for the individual emission units and follows the structure / format shown in previous permits issued by the FDEP.

## 8.1. Fuel Receiving, Handling, Storage and Processing (EU-001)

| **EU-001** |
|---|
| **Description:** EU-001 will consist of unloading, transferring, storage and delivery of clean woody biomass to the BFB boiler. The following equipment is associated with EU-001: truck dumper areas, covered conveyor systems, biomass storage areas, and boiler delivery fuel bins. This emission unit is being designed to accommodate clean woody biomass primarily in the form of pre-processed chips. The clean woody biomass in pre-processed chip form will be brought to the site in covered trucks. Storm damage wood debris may be brought to the site in open trucks. The trucks will enter the plant and will proceed to a scale station for weighing. The trucks will then proceed to the truck dumping stations where the contents (i.e. chipped biomass) from the trucks will be emptied into the receiving hoppers, as well as receiving hoppers that can be accessed by material handling equipment. Typical operation of the fuel receiving system will be 12 hours/day and 5 days/week. The fuel handling system will operate 24 hours a day and 7 days a week. Other design characteristics are as follows:<br><br>• Clean Woody Biomass Feedstock Throughput: 500 tons per hour (TPH);<br>• Truck Dumper Rates: Three at 500 TPH and 4,380,000 TPY. One at 250 TPH and 2,190,000 TPY;<br>• Covered Conveyors: 500 TPH and 4,380,000 TPY; and<br>• Fuel Reclaim #1 and #2: 500 TPH each and 4,380,000 TPY each.<br>• Portable Wood Chipper: 200 TPH and 96,000 TPY. |

**EQUIPMENT (EU-001)**

Equipment: Emission Unit EU-001 consists of Fuel Receiving, Handling, Storage and Processing systems containing the following equipment classified as potential sources of $PM/PM_{10}/PM_{2.5}$ emissions hence forth called PM:

a. Truck Dumper Areas: Truck Dumpers #1 – 3 and one (1) Self-Dumping Station;

b. Covered Conveyor Systems: Covered Conveyor Systems for woody biomass handling. Associated drop points within the conveyor system shall be enclosed where technically feasible;

c. Woody Biomass Storage Areas: Associated drop points from conveyor system to storage areas shall be designed to minimize fugitive PM emissions;

d. Boiler Delivery Bins: Fuel Bins #1 and 2 shall be constructed with vent screens to control PM emissions; and

e. Portable Wood Chipper: Utilized to chip oversized wood. Will be limited to 480 hours per year and will combust ULSD.

Air Pollution Control Equipment: To minimize fugitive PM, woody biomass conveyors shall be enclosed. Enclosed conveyors means that the conveyance belt for the biomass is totally enclosed from above, thus preventing wind from causing fugitive dust emissions. Conveyor transfer points shall also be covered to prevent wind from causing fugitive dust emissions from these transfer points. Sections of the conveyance belt are allowed to be open for visible inspection by plant personnel to examine and remove any foreign biomass material prior to processing.

Best Management Plan (BMP): A BMP shall be utilized to minimize fugitive PM emissions from receiving, handling, storage and processing of woody biomass. Best management practices shall be utilized to reduce the potential for spontaneous combustion of stored woody biomass and odors. The plan also includes quality control and assurance (Q&A) procedures to ensure woody biomass delivered by the vendors and suppliers to the ADAGE facility meet the applicable requirements. No later than 180 days before the ADAGE facility becomes operational, a final BMP shall be filed with the Compliance Authority to reflect the final engineering designs of the biomass receiving, handling, storage and processing systems. [Rule 62-4.070, F.A.C. Reasonable Assurance, and Rule 62-296.320, F.A.C.]

*{Permitting Note: The preliminary BMP plan will be updated by ADAGE as the engineering of the Biomass 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 ADAGE facility becomes operational }*

**PERFORMANCE RESTRICTIONS (EU-001)**

Hours of Operation: The hours of operation of EU-001 are not limited (i.e., unrestricted at 8,760 hours per year) except for the portable chipper which is limited to 480 hours per

year. [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

Clean Woody Biomass: The fuel to be received, handled, stored and processed shall consist of clean, untreated woody biomass as defined below.

| Fuel Group | Description |
|---|---|
| Field residuals and slash | Tops, limbs and whole tree soft or hardwood that result from harvest and/or thinning as well as the residue therefrom |
| Understory | Forest understory including smaller trees and saplings |
| Land clearing and storm debris | Tree parts and/or branches that have been cut down for land development or line clearing purposes or that have been gathered after storms |
| Production residuals | Butts, sticks, pole ends and tree surgeon material |
| Saw mill waste | Saw dust and kerf waste from cutting/milling whole green trees |
| Planer mill shavings | Fines from planning kiln-dried lumber |
| Source separated construction wood waste | Clean construction wood waste that was a primary mill product and has not been treated in any way such as pallets, dimensional lumber, clean wood trim, clean milled lumber |

Clean Woody Biomass Storage Areas: Primary (chipped woody biomass) and secondary (wood chips from storm damage) will be placed in two separate storage piles. The primary mile will be approximately 6,000,000 $ft^3$ in size while the secondary pile will be approximately 3,000,000 $ft^3$ in size. Woody biomass will be placed in the piles which will be largely managed by mechanical means such as front-end loaders. The biomass will then be taken by covered conveyors to the biomass storage bins and from there to the BFB boiler.

Paved Roadways and Gravel Areas: Fugitive dust emissions from the plant's roadways and gravel areas shall be controlled per the FDEP requirements for unconfined emissions of particulate matter. [Rule 62-4.070, F.A.C. Reasonable Assurance, and Rule 62-296.320, F.A.C.]

**EMISSION STANDARDS (EU-001)**

Opacity: As determined by EPA Method 9, there shall be no visible emissions greater than 10% opacity, except for one 6-minute period no greater than 20% from the outlets of

the drop points, transfer points, vent screens and dust collectors associated with this emission unit. [Rule 62-212.400(5)(c), F.A.C.].

**TESTING AND MONITORING REQUIREMENTS (EU-001)**

Initial Visible Emission (VE) Compliance Tests: The outlets of the drop points, transfer points, silo vent screens associated with the fuel bins and dust collectors, and portable wood chipper shall be tested to demonstrate initial compliance with the emission standards for opacity. The initial tests shall be conducted within 60 days after achieving permitted capacity, but no later than 180 days after initial operation of the emission unit. [Rules 62-4.070(3) and 62-297.310(7)(a)1, F.A.C.]

Annual VE Compliance Tests: During each federal fiscal year (October 1 to September 30), the outlets of drop points, transfer points, silo vent screens associated with the fuel bins and portable wood chipper of this emission unit shall be tested to demonstrate compliance with the emission standards for opacity. [Rule 62-297.310(7)(a)4, 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 Rule 62-297.310, F.A.C. [Rule 62-297.310(7)(a)9, F.A.C.]

Test Methods: Required tests shall be performed in accordance with the following reference methods: Method 9 – Visual Determination of the Opacity of Emissions from Stationary Sources. Method 9 is described in Appendix A of 40 CFR 60. No other methods may be used unless prior written approval is received from the Department. [Rules 62-204.800 and 62-297.100, F.A.C.; and Appendix A of 40 CFR 60]

**RECORDS AND REPORTS (EU-001)**

Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Rule 62-297.310, F.A.C. For each test run, the report shall also indicate the operating rate. [Rule 62-297.310(8), F.A.C.]

## 8.2. Power Island (EU-002)

| **EU-002** |
|---|
| **Description:** The boiler will be a woody biomass-fueled bubbling fluidized bed (BFB) boiler wherein wood is combusted within in a bed of hot sand. The heat from the exhaust will be recovered to generate superheated steam to generate a nominal 55.5 MW (net) of electricity in a Steam Turbine Generator (STG).<br><br>**Fuels:** The primary fuel will be clean woody biomass as described in subsection 3-A, Condition 5 and Appendix BMP of this permit. Natural gas, propane or ULSD FO with a sulfur content less than 0.0015% sulfur (S) will be used for startup, shutdown and combustion (bed) stabilization.<br><br>**Capacity:** The maximum heat input capacity is 758 MMBtu per hour (24-hour average). The steam production capability will be between 354,000 to 570,000 pounds per hour (lb/hr). The maximum heat input capacity using fossil fuels is 240 MMBtu/hr.<br><br>**Controls:** Efficient combustion of woody biomass in the BFB boiler to minimize formation of PM, $NO_x$, CO and VOC; limitation of biomass to woody untreated biomass to minimize $SO_2$ and HAP formation, including HCl; use of inherently clean fossil fuels for startup, shutdown and flame (bed) stabilization; $NH_3$ injection into SCR reactor to destroy $NO_x$; a IDSIS to further control $SO_2$ and HCl if needed; and a fabric filter baghouse to control PM and opacity, and in conjunction with absorption on wood ash or with supplement sorbent injection as needed to control HCl and PM to minor source levels.<br><br>**Stack Parameters:** The stack will be approximately 12.0 feet in diameter (maximum) and 170 feet tall (minimum). Exhaust flue gas will exit the stack at the following approximate conditions: an exit temperature of 295° F and a volumetric flow rate of between 246,900 to 306,400 actual cubic feet per minute (acfm).<br><br>**Continuous emissions and opacity monitoring systems (CEMS, COMS):** Emissions of CO, $NO_x$, $SO_2$, and HCl will be monitored and recorded by CEMS. VE will be monitored and recorded by a COMS.<br><br>**Applicability of 40 CFR Subpart Db (NSPS Subpart Db):** This unit is subject to NSPS Subpart $D_b$ - Industrial-Commercial-Institutional Steam Generating Units because it has a maximum heat input capacity greater than 100 MMBtu/hr from the fuels combusted and is not subject to NSPS Subpart $D_a$ because it has a maximum heat input capacity less than 250 MMBtu/hr from the fossil fuels combusted. |

**EQUIPMENT (EU-002)**

Construction of BFB Boiler: The permittee is authorized to construct a BFB boiler with fluidizing air supply, fossil fuel startup and stabilization burners, overfire air ports, steam

drum, superheater, economizer, air heater, ash hoppers, ducts, steam turbine-electrical generator, fuel feeding equipment, air-cooled condensing unit, air pollution control equipment and other associated equipment.

Air Pollution Control Equipment:

- Fabric Filter Baghouse: The permittee shall design, install, operate and maintain a fabric baghouse to control PM and VE. The control efficiency of the baghouse shall be demonstrated by an emission rate of 0.01 grains per dry standard cubic feet (gr/dscf) at 7% oxygen ($O_2$) at its outlet (filterable PM only).
- SCR System: The permittee shall design, install, operate, and maintain an NH3-based SCR system including reagent storage tank, pumps, metering system, injection grid, reactor and catalyst to reduce $NO_X$ emissions in the flue gas exhaust and achieve the $NO_X$ emissions standards specified in this subsection. The SCR shall be brought on line and functioning properly whenever the boiler is in operation in accordance with the manufacturer's procedures and guidelines.
- IDSIS: An IDSIS including a baghouse, sorbent storage silo, pumps, metering and injection equipment shall be installed to control HCl emissions to the emission standards specified in this section. As part of this IDSIS, the sorbent silo will be equipped with a vent filter to control PM emissions. The IDSIS will rely on the presence of alkaline fly ash and be augmented as necessary by the use of injected lime, trona, or sodium bicarbonate sorbent. The HCl CEMS output data expressed in lbs/hr averaged over a 24 hour period shall be reviewed by trained plant personnel on a daily and monthly basis to determine required operation of, or adjustment to the sorbent injection augmentation to ensure the HCl emission standards will be maintained. HCl emissions data shall be reported to the Department on a quarterly basis.

ULSD FO Storage Tank: The permittee is authorized to construct a 50,000 gallon above ground storage tank to store ULSD FO for use as a BFB biomass boiler fuel for startup, shutdown and flame (bed) stabilization. [Applicant request and 62-4.070(3), Reasonable Assurance]

*{Permitting Note: The ULSD FO storage tank at the ADAGE facility is not subject to NSPS Subpart Kb because it is larger or equal to 40,000 gallons (151 cubic meters) and stores a liquid (ULSD FO) with a maximum true vapor pressure less than 3.5 kPa (0.51 pounds per square inch (psi)). Accordingly, it is not required to meet the emission standards of this subpart.}*

[40 CFR 60.110b(a) and (c); Rule 62-204.800(7)(b), F.A.C.]

**PERFORMANCE REQUIREMENTS (EU-002)**

Authorized Fuels: The steam generating unit is allowed to combust clean woody biomass as its primary fuel. In addition, the boiler is authorized to combust natural gas, propane and ultra low sulfur distillate fuel during startup, shutdown and flame (bed) combustion stabilization. The burner equipment to fire fossil fuels in the BFB biomass boiler will not have the physical capabilities to burn more than 250 MMBtu/hr of fossil fuel heat input consisting of NG, ULSD FO or propane to satisfy the heat input limitation requirements of NSPS, Subpart Db.

*{Restriction of fossil fuels to ULSD FO, natural gas or propane satisfies the requirement to determine BACT for PM and $SO_2$ to the extent that fossil fuel is fired in accordance with Rule 62-296.410, F.A.C. for this class of boiler.}*

[Rules 62-4.070(3), 62-296.410, 62-210.200(PTE), F.A.C., and NSPS, Subpart Db]

Heat Input Rate from all Fuels: The maximum heat input capacity from all fuel combinations is 834 MMBtu/hr (4-hour average). [NSPS Subpart Db; Rules 62-4.070(3); and 62-210.200(PTE), F.A.C.]

Heat Input from Fossil Fuels: The maximum heat input capacity to combust all fossil fuels (ULSD FO, NG and propane) on a steady state basis, as determined by the physical design and characteristics of the boiler is limited to 240 MMBtu/hr. [NSPS Subpart Db; Rules 62-4.070(3); and 62-210.200(PTE), F.A.C.]

Operational Hours: The hours of operation of this emission unit are not restricted (8760 hours/year). [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

**EMISSION STANDARDS (EU-002)**

| Regulated Air Pollutant | Initial (I) or Annual (A) Test | CEMS/COMS Based Averages | |
|---|---|---|---|
| $NO_x$[a] | 53.1 lb/hr (I) | 53. 1 lb/hr<br>12-month, rolled monthly (CEMS based) | 0.20 lb/MMBtu<br>30-day rolling average (CEMS based) |
| $SO_2$[b] | 34.1 lb/hr (I) | 34.1 lb/hr, 12-month average, rolled monthly (CEMS based) | |
| CO[c] | 56.0 lb/hr (I) | 56.0 lb/hr, 12-month average, rolled monthly (CEMS based) | |
| HCl[d] | 2.22 lb/hr (I) | 9.7 tons per year, 12-month average, rolled monthly (CEMS based) | |

| Regulated Air Pollutant | Initial (I) or Annual (A) Test | CEMS/COMS Based Averages |
|---|---|---|
| $PM/PM_{10}$ [e, f] | 22.0 lb/hr (I,A)<br>0.029 lb/MMBtu (I,A)<br>0.01 gr/dscf @ 7% $O_2$ | Not Applicable |
| Opacity[g] | 10% (I,A) | Continuous Opacity Monitor |
| THC[h] | (I) | Not Applicable |
| $NH_3$ Slip[i] | 10 ppmvd @ 7% $O_2$ (I,A) | Not Applicable |

Notes:

a) $NO_x$ limit in lb/MMBtu is pursuant to NSPS Subpart Db. Mass rate limit in lb/hr insures annual emissions will be less than 250 TPY.

b) Use of low sulfur fuels including wood, ULSD FO, natural gas and propane insure that uncontrolled $SO_2$ emissions are less than 0.32 lb/MMBtu. Therefore no specific limit from NSPS Subpart Db applies. Mass rate limit in lb/hr insures annual emissions will be less than 250 TPY.

c) Mass rate CO emission limit insures annual emissions will be less than 250 TPY.

d) Mass rate HCl emission limit insures annual emissions will be less than 10 TPY.

e) Mass rate limit in lbs/hr insures annual emissions will be less than 250 TPY. Standard includes filterable and condensable $PM_{10}$.

f) Compliance with the $PM/PM_{10}$ lb/MMBtu emission limit ensures compliance with the 40 CFR 60, Part Db limit of 0.030 PM lb/MMBtu (filterable PM). This limit is equivalent to 0.01 gr/dscf @ 7% $O_2$ (filterable PM).

g) During startups, shutdowns and malfunction the following limits apply: 20% opacity (6-minute blocks) except for one 6-minute block per hour of 27%. During combustion of woody biomass a 10% opacity shall apply (6-minute blocks).

h) Total hydrocarbon (THC) as a surrogate for VOC. One initial test required to verify emission rate.

(i) Ammonia ($NH_3$) slip in parts per million by dry volume at 7% oxygen (ppmvd @ 7% $O_2$).

Sorbent Storage Silo VE: Opacity from the vent filter of the sorbent storage silo shall not exceed 5% opacity based on EPA Method 9 during initial and annual tests.

## CONTINUOUS EMISSION MONITORS (EU-002)

Continuous Monitoring Requirements: The permittee shall install, calibrate, maintain and operate CEMS, a COMS and a diluent monitor to measure and record the emissions of $SO_2$, opacity, $NO_X$, CO and HCl from the boiler stack in a manner sufficient to demonstrate continuous compliance with the CEMS-based and COMS-based emission standards set forth above. Each CEMS and COMS 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 $SO_2$, $NO_X$, CO or HCl standard (and subject to the specified averaging period), the permittee shall notify the Compliance Authority.

a. $SO_2$ CEMS: The $SO_2$ CEMS 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.

b. $NO_X$ CEMS: The $NO_X$ CEMS 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.

c. CO CEMS: The CO CEMS 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. The CO monitor span values shall be set appropriately, considering the allowable methods of operation and corresponding emission standards.

d. HCl CEMS: The HCl CEMS shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 15, EPA Method OTM 22 or alternative specifications approved by the Department. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F, EPA Method OTM 23 or alternative procedures approved by the Department. A Data Assessment Report shall be made each calendar quarter and reported semiannually to the Compliance Authority. The RATA tests required for the HCl monitor shall be performed using EPA Method 26 or 26A as detailed in Appendix A of 40 CFR 60 or by Method 320 as detailed in Appendix A of 40 CFR 63. The HCl monitor span values shall be set appropriately, considering the allowable methods of operation and corresponding emission standards. Approval of specific initial performance specifications and quality assurance and control (Q&A) procedures must be provided by the Department prior to installation and operation of the CEM system.

e. 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 steam generating unit. The

COMS shall be certified pursuant to 40 CFR 60 Appendix B, Performance Specification 1.

f. Diluent Monitor: The oxygen (O2) or carbon dioxide (CO2) 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 75.

[Rule 62-4.070(3), F.A.C.; 40 CFR 60, Subpart Db and Appendices]

**STARTUP, SHUTDOWN, AND MALFUNCTION REQUIREMENTS (EU-002)**

Malfunction Notifications: In case of excess emissions resulting from malfunctions, each owner or operator shall notify the Compliance Authority. If the permittee is temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by hazard of fire, wind or by other cause, the permittee shall immediately (within one working day) notify the Compliance Authority. Notification shall include pertinent information as to the cause of the problem, and what steps are being taken to correct the problem and to prevent its recurrence, and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with Department rules. If requested by the Compliance Authority, the owner or operator shall submit a quarterly written report describing the malfunction. [Rules 62-210.700(6) and 62-4.130, F.A.C.]

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 steam generating unit 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.]

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.

Emission Limit Compliance and Excess Emission: Because of the long-term nature of all of the $NO_X$, $SO_2$, CO and HCl mass emission rate limits and to avoid triggering PSD and MACT requirements, all emissions data for these pollutants, including periods of startup, shutdown and malfunction, shall be included in any compliance determinations based on CEMS data.

[Rules 62-210.700(4), 62-210.200(PTE) and 62-4.070(3), F.A.C.]

Excess Emissions Allowed – Opacity Requirements: 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.

a. Opacity: During startup, shutdown and malfunctions, the stack opacity shall not exceed 20% based on 6-minute block averages, except for one 6-minute block per hour that shall not exceed 27% opacity.

[Rules 62-210.700(5), 62-210.200(PTE) and 62-4.070(3), F.A.C.]

**TESTING REQUIREMENTS (EU-002)**

Boiler Heat Input Rate Calculation: Section 5 of Appendix F of 40 CFR 75 provides a methodology for calculation of the heat input rate to a boiler using F-Factors. This procedure shall be used to calculate the heat input rate in MMBtu/hr to the BFB boiler when using clean woody biomass as its primary fuel and NG, ULSD FO or propane as a startup, shutdown and flame (bed) stabilization fuel. [Rule 62-4.070(3), F.A.C. Reasonable Assurance]

Initial and Annual Stack Tests: In accordance with test methods specified in this permit, the BFB boiler stack shall be tested to demonstrate initial compliance with the emission standards for $NH_3$, CO, $NO_X$, PM, $PM_{10}$, $SO_2$, THC, opacity (boiler and vent filter of sorbent storage silo) and HCl. The tests shall be conducted within 60 days after achieving the maximum heat input rate to the boiler, but not later than 180 days after the initial startup of the boiler. Subsequent compliance stack tests for $NH_3$ slip, PM, $PM_{10}$ and opacity (vent filter stack of sorbent storage silo) shall also be conducted during each succeeding federal fiscal year (October 1st to September 30th). Tests shall be conducted between 90 and 100% of the maximum heat input rate when firing only the primary fuels. CEMS data for $CO_2$ (or $O_2$), $NO_X$, $SO_2$ and HCl along with COMS data for opacity shall be reported for each run of the required tests for $NH_3$, PM and $PM_{10}$. The Department may require the permittee to repeat some or all of these initial stack tests after major replacement or major repair of any air pollution control or process equipment. [Rules 62-212.400(5)(c) and 62-297.310(7)(a) and (b), F.A.C.; 40 CFR 60.8]

Test Methods: Any required stack tests shall be performed in accordance with the following methods.

| EPA Method | Description of Method and Comments |
|---|---|
| CTM-027 or 320 | Measurement of $NH_3$ Slip *or* Measurement of Vapor Phase Organic and Inorganic Emissions by Extractive Fourier Transform Infrared (FTIR) Spectroscopy |

| EPA Method | Description of Method and Comments |
|---|---|
| 1 - 4 | Determination of Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content *{Notes: Methods shall be performed as necessary to support other methods.}* |
| 5, 5B, 17 | Measurement of PM |
| 6C | Measurement of $SO_2$ Emissions (Instrumental) |
| 7E | Measurement of $NO_X$ Emissions (Instrumental) |
| 9 | Visual Determination of the Opacity |
| 10 | Measurement of CO Emissions (Instrumental) *{Note: The method shall be based on a continuous sampling train.}* |
| 18 | Measurement of Gaseous Organic Compound Emissions (Gas Chromatography) *{For concurrent use with EPA Method 25A to deduct emissions of methane and ethane from the THC emissions measured by Method 25A.}* |
| 15 | Determination of Hydrogen Sulfide, Carbonyl Sulfide and Carbon Disulfide Emissions form Stationary Sources |
| 19 | Calculation Method for $NO_X$, PM, and $SO_2$ Emission Rates |
| 25 | Determination of Total Gaseous Nonmethane Organic Emissions as Carbon |
| 25A | Measurement of Gaseous Organic Concentrations (Flame Ionization) |
| 26, 26A | Determination of HCl Emissions from Stationary Sources |
| 201, 201A, 202 | Measurement of $PM_{10}$ and Condensable PM |

Method CTM-027 is published on EPA's Technology Transfer Network Web Site at http://www.epa.gov/ttn/emc/ctm.html . The other methods are specified in Appendix A of 40 CFR 60, adopted by reference in Rule 62-204.800, F.A.C.

[Rules 62-204.800, F.A.C. and 40 CFR 60, Appendix A]

Required CEMS/COMS: The permittee shall install, calibrate, certify, operate and maintain CEMS and COMS on the BFB biomass boiler stack to demonstrate compliance with the $SO_2$, $NO_X$, CO and HCl emissions standards set forth above. The permittee shall comply with the CEMS requirements specified in Appendix CEMS of this permit. [Rule 62-4.070(3), F.A.C.]

**OTHER MONITORING REQUIREMENTS (EU-002)**

Steam Parameters: In accordance with the manufacturer's recommendations, the permittee shall install, calibrate, operate and maintain continuous monitoring and recording devices for the following parameters: steam temperature (°F), steam pressure (psig) and steam production rate (lb/hour). Records shall be maintained on site and made available upon request. [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

Pressure Drop: The permittee shall maintain and calibrate a device which continuously measures and records the pressure drop across each baghouse compartment controlling

the PM emissions from the steam generating unit. Records shall be maintained on site and made available upon request. [Rule 62-4.070(3), F.A.C.]

Bag Leak Detection: The permittee shall maintain continuous operation of bag leak detection systems on the steam generating unit baghouse including keeping records of the systems measurements. Baghouse leak detection records shall be kept on site and made available upon request. [Rule 62-4.070(3), F.A.C.].

SCR Ammonia Injection: In accordance with the manufacturer's specifications, the permittee shall install, calibrate, operate and maintain a flow meter to measure and record the ammonia injection rate for the SCR system for the steam generating unit. The permittee shall document the general range of $NH_3$ flow rates required to meet the $NO_X$ standard over the range of load conditions by comparing $NO_X$ emissions with ammonia flow rates. During $NO_X$ CEMS downtimes or malfunctions, the permittee shall operate at an $NH_3$ flow rate that is consistent with the documented flow rate for the given load condition. Records shall be maintained on site and made available upon request.

[Rule 62-4.070(3), F.A.C.]

**RECORDS AND REPORTS (EU-002)**

Stack Test Reports: In addition to the information required in Rule 62-297.310(8), F.A.C., each stack test report shall also include the following information: steam production rate (lb/hour), heat input rate (MMBtu/hour), calculated authorized fuels firing rate (tons/hour, cubic feet per minute or gallons per hour as appropriate), and emission rates (ammonia (NH3) slip in ppmvd @ 7% oxygen; $PM_{10}$, VOC, $NO_X$, $SO_2$, and CO and HCl in lb/hr). [Rule 62-4.070(3), F.A.C.]

Monthly Operations Summary: By the tenth calendar day of each month, the permittee shall record the following for each fuel used in the BFB biomass boiler in a written or electronic log for the previous month of operation: hours of operation, tons of clean woody biomass, cubic feet of natural gas, cubic feet of propane, or gallons of ULSD FO; pounds of steam per month; total heat input rate; and the updated 12-month rolling totals for each of these operating parameters. In addition, the hourly heat input rate to the BFB biomass boiler shall be recorded and reported. The Monthly Operations Summary shall be maintained on site and made available for inspection when requested by the Department. [Rules 62-4.070(3) F.A.C. Reasonable Assurance]

Quarterly CO, $NO_X$, $SO_2$, HCl and Opacity Emissions Report: Within 30 days following the end of each quarter, the permittee shall submit a report to the Compliance Authority summarizing CO, $NO_X$, $SO_2$, HCl and opacity emissions including periods of startups, shutdowns, malfunctions, and CEMS and COMS systems monitor availability for the

previous quarter. If opacity COMS data is excluded from a compliance determination during the quarter due to a malfunction, the permittee shall include a description of the malfunction, the actual emissions recorded, and the actions taken to correct the malfunction. [Rules 62-4.070(3), 62-4.130, and 62-210.400(5)(c), F.A.C.]

## 8.3. Ash Handling, Storage and Shipment (EU-003)

| **EU-003** |
|---|
| **Ash Handling, Storage and Shipment:** The Ash Handling, Storage and Shipment emission unit shall be designed to collect fly ash from the baghouse hoppers. Fly ash will be transferred via a totally enclosed system to a fly ash storage silo which shall be equipped with a silo baghouse. The baghouse will be designed to achieve a PM emission rate of 0.01 gr/dscf. Fly ash from the storage silo will be sent to a truck loading operation for removal off-site. The only PM emission points in the system will be the ash silo and the ash loadout operation to trucks. |

**EQUIPMENT (EU-003)**

Equipment: The permittee is authorized to construct Emission Unit EU-003, which consists of ash (fly and bottom) handling, storage and shipment systems containing the following equipment:

- Fly Ash Handling: The fly ash handling system consisting of totally enclosed hoppers and drop points associated with the collection and transfer of fly ash from the baghouse used to control PM emissions from the BFB biomass boiler to a storage silo.
- Fly Ash Storage: A fly ash storage system consisting of a storage silo and baghouse to control PM emissions.
- Fly Ash Shipment: The fly ash shipment system consisting of the drop points, conditioner and chutes associated with the transfer of the fly ash from the storage silo to trucks for shipment.
- Bottom Ash Handling and Shipment: The bottom ash handling and shipment system consisting of the hoppers, drop points, collecting conveyor and transfer conveyor associated with the collection, transfer and shipment of bottom ash from the BFB biomass boiler.

Air Pollution Control Equipment: To comply with the emission standards of this permit, the permittee shall install and operate the following air pollution control equipment on the ash (fly and bottom) handling, storage and shipment emission unit.

- Enclosures and Dust Collectors: To minimize fugitive PM, bottom and fly ash conveyors shall be enclosed. Where practical, dust collectors shall be installed on the bottom and fly ash transfer points, drop points, hoppers and chutes. [Rule 62-4.070, F.A.C. Reasonable Assurance].

- Fly Ash Silo Baghouse: One shaker type or similar baghouse shall be designed, installed and maintained to remove PM from the fly ash storage silo exhaust. The baghouse shall be installed and operational before the silo becomes operational. The baghouse will be designed to achieve a PM emission rate of 0.01 gr/dscf. [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

**PERFORMANCE RESTRICTIONS (EU-003)**

Hours of Operation: The hours of operation of this emissions unit is not limited (i.e., unrestricted at 8,760 hours per year).

Fly Ash Handling and Storage: The fly ash handling system shall have a maximum design transfer rate of approximately 7.0 TPH with a maximum annual transfer rate of approximately 61,320 TPY.

Fly Ash Shipment: The fly ash shipment system shall have a maximum design transfer rate of 84 TPH with a maximum annual design transfer rate of 61,320 TPY.

Bottom Ash Handling: The bottom ash handling system shall have a maximum design transfer rate of 1.0 TPH with a maximum annual design transfer rate of 8,760 TPY.

Ash Handling, Storage and Shipment: The overall ash handling, storage and shipment system (EU-003) shall have a maximum annual design transfer rate of 70,080 TPY.

[Rule 62-210.200(PTE), F.A.C.]

**EMISSION STANDARDS (EU-003)**

VE Standard: As determined by EPA Method 9, there shall be no visible emissions greater than 10% opacity, except for one 6 minute period no greater than 20% from the bottom and fly ash conveyors, transfer points, drop points, hoppers, chutes, dust collectors and fly ash silo baghouse. [Rule 62-4.070, F.A.C. Reasonable Assurance and Rule 62-212.400(5)(c), F.A.C.]

PM Emission Standard: PM emissions from baghouse of the fly ash silo shall not exceed 0.01 gr/dscf. [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C. and Rule 62-4.070, F.A.C. Reasonable Assurance]

Baghouse PM Standard by Opacity Measurement: A visible emission reading of 10% opacity or less may be used to demonstrate compliance with the PM emission standard set forth above**.** A visible emission reading greater than 10% opacity will require the permittee to perform a PM emissions stack test within 60 days to show compliance with the PM standard. [Rules 62-296.603; 62-296.712, F.A.C.; and 40 CFR 60.122(a)(2) and Rule 62-4.070, F.A.C. Reasonable Assurance]

Best Management Practices to Control Unconfined Emissions of PM: To ensure the emission standards with regard to opacity and PM of this subsection are complied with, the procedures set forth in the permit condition, "Unconfined Emissions of Particulate Matter," shall be adhered to where practical and cost effective. In addition, the procedures set forth in the BMP section of the Appendix of this permit with regard to fugitive emissions shall be adhered to. [Rule 62-4.070, F.A.C. Reasonable Assurance, and Rule 62-296.320 F.A.C.]

**TESTING AND MONITORING REQUIREMENTS**

Initial Compliance Tests: The bottom and fly ash conveyors, transfer points, drop points, hoppers, chutes, dust collectors and fly ash silo baghouse associated with this emission unit shall be tested to demonstrate initial compliance with the VE standards specified in Condition 8 of this subsection. The initial test shall be conducted within 180 days after initial operation. [Rule 62-297.310(7)(a)1., F.A.C. and Rule 62-4.070(3), F.A.C.]

Annual Compliance Tests: During each subsequent federal fiscal year (October 1st to September 30th), the bottom and fly ash conveyors, transfer points, drop points, hoppers, chutes, dust collectors and fly ash silo baghouse associated with this emission unit shall be tested to demonstrate compliance with the VE emissions standards set forth above. [Rule 62-297.310(7)(a)4, F.A.C. and Rule 62-4.070(3), F.A.C.]

Fly Ash Silo PM Compliance Test: The initial and annual VE tests with regard to the fly ash silo baghouse shall serve as a surrogate for the PM emissions tests. If the VE emissions standard is not met for the fly ash silo baghouse, a PM test utilizing EPA Method 5 must be conducted on baghouse stack to show compliance with the PM emissions standard within 60 days. [Rule 62-297.620(4), F.A.C.]

Bag Leak Detection: The permittee shall maintain continuous operation of bag leak detection systems, including records, on the fly ash storage silo baghouse. Baghouse leak detection records shall be kept on site and made available upon request.

[Rule 62-4.070(3), F.A.C.].

Test Methods: Any required tests shall be performed in accordance with the following methods: EPA 5 - Determination of Particulate Emissions. The minimum sample volume shall be 30 dry standard cubic feet and EPA 9 - Method 9 - Visual Determination of the Opacity of Emissions from Stationary Sources.

**RECORDS AND TEST REPORTS (EU-003)**

Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Rule 62-297.310, F.A.C. For each test run, the report shall also indicate the operating rate. [Rule 62-297.310(8), F.A.C.]

## 8.4. Emergency Support Equipment (EU-004)

| **EU-004** |
|---|
| **Description:** One emergency diesel generator with a maximum design rating of 750 kilowatts (kW) (1,000 hp) and one emergency diesel firewater pump engine with a maximum design rating of 450 hp. |

**NSPS AND NESHAP APPLICABILITY (EU-004)**

NSPS Subpart IIII Applicability: The emergency generator is a Stationary Compression Ignition Internal Combustion Engine (Stationary ICE) and shall comply with applicable provisions of 40 CFR 60, Subpart IIII, including emission testing or certification. [40 CFR 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines] The emergency diesel firewater pump engine is an Emergency Stationary Compression Ignition Internal Combustion Engine (Stationary 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]

NESHAPS Subpart ZZZZ Applicability: The emergency generator and emergency diesel firewater pump engine are Liquid Fueled Reciprocating Internal Combustion Engines (RICE) and shall comply with applicable provisions of 40 CFR 63, Subpart ZZZZ. Pursuant to 40 CFR 63.6590(c) generators must meet the requirements of Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart IIII.

[40 CFR 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)]

**EQUIPMENT (EU-004)**

Emergency Generators: The permittee shall be authorized to install, operate, and maintain one emergency generator with a maximum design rating of 750 kW (1,000 hp) or smaller. [Rule 62-210.200 (PTE), F.A.C.]

Engine Driven Pump: The permittee shall be authorized to install, operate, and maintain one emergency diesel fire pump engine. The pump engine will have a maximum rating of 450 hp or smaller. [Rule 62-210.200(PTE), F.A.C.]

**PERFORMANCE RESTRICTIONS (EU-004)**

Hours of Operation: The emergency generator and fire water pump may operate up to 250 hours per year for maintenance and testing purposes. [Rule 62-210.200 (PTE), F.A.C.]

Authorized Fuel: The emergency generator and fire water pump shall fire ULSD FO. The ULSD FO shall contain no more than 0.0015% sulfur by weight. [Rule 62-210.200 (PTE), F.A.C.]

**EMISSION LIMITATIONS (EU-004)**

Emissions Limits:

The emergency generator shall comply with the following emission limits and demonstrate compliance in accordance with the procedures given in 40 CFR 60, Subpart IIII the language of which is given in Appendix IIII of this permit. Manufacturer certification can be provided to the Department in lieu of actual stack testing.

| **Emergency Generator** (> 560 kW and < 2,237 kW) | **CO (**g/kW-hr)**1** | **PM (**g/kW-hr) | **SO22 (% S)** | **NMHC3+NOX (**g/kW-hr) |
|---|---|---|---|---|
| Subpart IIII (2007 and later) | 3.5 | 0.2 | 0.0015 | 6.4 |

1. g/kW-hr means grams per kilowatt-hour
2. $SO_2$ emission standard will be met by using ULSD FO in the emergency generator with fuel sulfur (S) content of 0.0015% by weight.
3. NMHC means Non-Methane Hydrocarbons.

[Application No. 0470016-001-AC and Subpart IIII and Rule 62-4.070(3), F.A.C.]

The emergency fire pump engine shall comply with the following emission limits and demonstrate compliance in accordance with the procedures given in 40 CFR 60, Subpart IIII. Manufacturer certification may be provided to the Department in lieu of actual testing. [40 CFR 60.4211 and Rule 62-4.070(3), F.A.C.]

| **Emergency Pumps** (> 300 hp and < 600 hp) | **CO (**g/hp-hr)1 | **PM (**g/hp-hr) | **$SO_2$[2] (% S)** | **NMHC+$NO_X$ (**g/hp-hr) |
|---|---|---|---|---|
| Subpart IIII (2009 and later) | 2.6 | 0.15 | 0.0015 | 3.0 |

1. g/hp-hr means grams per horsepower-hour.
2. $SO_2$ emission standard will be met by using ULSD FO in the emergency generator with a fuel sulfur content of 0.0015% by weight.

[Application No. 0470016-001-AC; 40 CFR 60, Subpart IIII; and Rule 62-4.070(3), F.A.C.]

**RECORDS AND REPORTS (EU-004)**

Notification, Recordkeeping and Reporting Requirements: The permittee shall adhere to the compliance testing and certification requirements listed in 40 CFR 60.4211 and maintain records demonstrating fuel usage and quality. [40 CFR 60.4211]

# 9. Summary

Provided below is a brief summary of the Gadsden County, Florida nominal 55.5-MW net Woody Biomass Plant being proposed by ADAGE. This summary is being provided to FDEP with sufficient information to assist them with the preparation of the "Notice of Intent to Issue a Permit" required under F.A.C. Chapters 62-110.106 and 62-210.350.

## 9.1. Applicant

The applicant for this project is ADAGE Gadsden LLC (i.e., ADAGE). The applicant's authorized representative and mailing address is:

***Mr. F. Reed Wills – President***

***ADAGE Gadsden LLC***

***225 Wilmington West Chester Pike, Suite 302***

***Chadds Ford, PA 19317***

***Phone Number: (610) 358-3404***

## 9.2. Facility Location

The proposed nominal 55.5-MW net Woody Biomass Power Plant will be located in Gadsden County at the intersection of State Highway 12/Greensboro Highway and Highway 90/Main Street, south of the town Gretna.

## 9.3. Project

ADAGE has submitted an air permit application to construct the nominal 55.5-megawatt (MW) net Woody Biomass Plant. The fuel source for the facility will be exclusively woody biomass that consists primarily of wood chips but may also include logging and lumber mill residues, untreated wood materials, and other clean wood materials. The material will be fed into a bubbling fluidized bed boiler, where steam from the boiler will be sent to a steam turbine which will drive a generator capable of producing nominal 55.5 MW net of electric power.

ADAGE's estimates of actual emissions in tons per year (tpy) from the proposed Woody Biomass Plant project are summarized in the following table. The potential emissions representing theoretical potential to emit are also included.

| Regulated Air Pollutants | Potential Emissions (tpy) |
|---|---|
| Carbon Monoxide (CO) | 248 |
| Nitrogen Oxides ($NO_x$) | 241 |
| Particulate Matter ($PM/PM_{10}$) | 104 |
| Sulfur Dioxide ($SO_2$) | 150 |
| Volatile Organic Compounds (VOC) | 58 |
| Hazardous Air Pollutants (Individual) | 9.7 |
| Hazardous Air Pollutants (Combined) | 20.8 |

*Note: Based on anticipated capacity rating of the plant. Potential Emission (tpy) estimate does not include potential PM emissions from all fugitive emission sources (i.e., paved roads, woody biomass storage areas).

The major components of the plant will consist of a woody biomass fuel receiving, handling, storage and processing system, bubbling fluidized bed boiler combustion and steam generation, and an ash handling system. Additionally, 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 each operate only a limited number of hours (i.e., <250) for testing purposes under normal conditions.

Potential regulated air pollutant emissions from the proposed plant include fugitive dust emissions from the fuel and fly ash handling, storage, and processing and combustion related emissions from the boiler (anticipated maximum design rate of approximately 758 MMBtu/hr (24-hour average), with natural gas/propane and ultra low sulfur distillate fuel oil for start-up, shutdown and bed stabilization (rated at 240 MMBtu/hr)) and emergency and limited use support engines.

Several control devices and methods will be utilized to minimize potential emissions from the plant. All conveyor systems in the fuel receiving, handling, storage, and processing system will be designed to minimize fugitive dust emissions, including covers on all conveyors (excluding portions for fuel viewing/removal) and covered chutes for dropping fuel to and from conveyors where physically possible. Best management practices will be utilized for the outdoor storage piles. Plant support silos and bins

(biomass, sand, sorbent and fly ash) will be equipped with vent filters or screens to minimize any dust releases. Vehicle haul-roads will be paved to minimize fugitive dust.

Combustion of woody biomass (normal operation) and natural gas/propane/ultra low sulfur distillate fuel (startup, shutdown and bed stabilization operation) in the proposed bubbling fluidized bed boiler produces the majority of the potential to emit regulated air pollutant emissions from the proposed plant. Emissions of particulate matter (PM), including particulates less than 10 ($PM_{10}$), 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. Emissions of $NO_x$ will also be substantially reduced through the use of selective catalytic reduction (SCR) control technologies. The Department also requires continuous emissions monitoring systems (CEMS) for $NO_x$, CO, $SO_2$, HCl and opacity. The bubbling fluidized bed boiler will also be equipped with dry in-duct sorbent injection which will be operated as needed to ensure that the plant will have minor emissions of hydrogen chloride (HCl).

This project did not trigger the rules for the Prevention of Significant Deterioration (PSD) regulations. Therefore, air quality impact modeling was not required. **A voluntary air quality impact evaluation was performed by ADAGE that demonstrated emissions of regulated criteria air pollutants from the proposed plant would not adversely impact human health and welfare.**

# Appendix A.

# Application for Air Permit – Long Form

## ADAGE Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

# Department of Environmental Protection

## Division of Air Resource Management

## APPLICATION FOR AIR PERMIT - LONG FORM

### 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 plantwide 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: **ADAGE Gadsden LLC (ADAGE)** | |
| 2. Site Name: **Gadsden County, Florida Nominal 55.5 MW Net Woody Biomass Power Plant** | |
| 3. Facility Identification Number: **To be Determined by FDEP** | |
| 4. Facility Location...<br>Street Address or Other Locator: **Intersection of State Highway 12/Greensboro Highway and Highway 90/Main Street**<br>City: **Gadsden County** County: **Gadsden** Zip Code: **32332** | |
| 5. Relocatable Facility?<br>☐ Yes ☒ No | 6. Existing Title V Permitted Facility?<br>☐ Yes ☒ No |

**Application Contact**

| |
|---|
| 1. Application Contact Name: **Mr. Bruno Morabito, Technical Services Director** |
| 2. Application Contact Mailing Address...<br>Organization/Firm: **ADAGE Gadsden LLC**<br>Street Address: **225 Wilmington West Chester Pike, Suite 302**<br>City: **Chadds Ford** State: **Pennsylvania** Zip Code: **19317** |
| 3. Application Contact Telephone Numbers...<br>Telephone: **(585) 239-7606** ext. Fax: **(513) 419-5774** |
| 4. Application Contact E-mail Address: **Bruno.Morabito@duke-energy.com** |

**Application Processing Information (DEP Use)**

| | |
|---|---|
| 1. Date of Receipt of Application: | 3. PSD Number (if applicable): |
| 2. Project Number(s): | 4. Siting Number (if applicable): |

# Department of
# Environmental Protection

## Division of Air Resource Management

## APPLICATION FOR AIR PERMIT - LONG FORM

**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**

**This application is for an air construction permit. ADAGE Gadsden LLC, a Delaware limited liability company (herein referred to as ADAGE), a joint venture between affiliates of AREVA SA and Duke Energy Corporation, is proposing the construction of a nominal 55.5-Megawatt (MW) Net Woody Biomass Power Plant in Northern Florida. ADAGE will be the owner of this power plant. The plant will be located in Gadsden County at the intersection of State Highway 12/Greensboro Highway and Highway 90/Main Street, south of the town of Gretna. The power plant is being constructed in support of Florida's targeted Renewable Energy Portfolio to provide 20 percent (20%) of its electrical power development from renewable energy sources by the year 2020. The attached Air Construction Permit Application Document (Application Document) provides detailed information regarding the proposed project. The proposed project 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 |
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**Application Processing Fee**

**Check one:** [X] Attached - Amount: $ **7,500** [ ] Not Applicable

**Owner/Authorized Representative Statement**

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

1. Owner/Authorized Representative Name :
   **F. Reed Wills – President**
2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **ADAGE**
   Street Address: **225 Wilmington West Chester Pike, Suite 302**
   City: **Chadds Ford** State: **PA** Zip Code: **19317**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(610) 358-3404** Fax: **(610) 358-3403**
4. Owner/Authorized Representative E-mail Address: **Reed.Wills@duke-energy.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.*

Signature

1/27/2010

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, CAIR source, or Hg Budget 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: **Malcolm Pirnie, Inc.**
   Street Address: **1300 East 8th Avenue, Suite F100**
   City: **Tampa** State: **Florida** Zip Code: **33605**
3. Professional Engineer Telephone Numbers...
   Telephone: **(813) 248 - 6900** ext. Fax: **(813) 248 - 8085**
4. Professional Engineer E-mail Address: **DCibik@pirnie.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 ☒, 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.*

David Cibik
Signature

1/26/10
Date

(seal)

* Attach any exception to certification statement.

## II. FACILITY INFORMATION

## A. GENERAL FACILITY INFORMATION

**Facility Location and Type**

| | | | |
|---|---|---|---|
| 1. Facility UTM Coordinates...<br>Zone **16** East (km) **725.400**<br>Datum **WGS84** North (km) **3,386.900** | | 2. Facility Latitude/Longitude...<br>Latitude (DD/MM/SS) **30°35'36"**<br>Longitude (DD/MM/SS) **84°38'57"** | |
| 3. Governmental Facility Code:<br>**0** | 4. Facility Status Code:<br>**C** | 5. Facility Major Group SIC Code:<br>**49** | 6. Facility SIC(s):<br>**4911** |
| 7. Facility Comment :<br>**The proposed nominal 55.5-MW net woody biomass power plant will be located at intersection of State Highway 12/Greensboro Highway and Highway 90/Main Street, south of the town of Gretna. The proposed plant is being constructed in support of Florida's Renewable Energy Standard Portfolio targets.** | | | |

**Facility Contact**

| |
|---|
| 1. Facility Contact Name:<br>**Mr. Bruno Morabito, Technical Services Director** |
| 2. Facility Contact Mailing Address...<br>Organization/Firm: **ADAGE**<br>Street Address: **225 Wilmington West Chester Pike, Suite 302**<br>City: **Chadds Ford** State: **PA** Zip Code: **19317** |
| 3. Facility Contact Telephone Numbers:<br>Telephone: (**585**) **239-7606** ext. Fax: (**513**) **419-5774** |
| 4. Facility Contact E-mail Address: **Bruno.Morabito@duke-energy.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:<br>**See Section I "Application Information"** |
| 2. Facility Primary Responsible Official Mailing Address...<br>Organization/Firm:<br>Street Address:<br>City: State: Zip Code: |
| 3. Facility Primary Responsible Official Telephone Numbers...<br>Telephone: ( ) - ext. Fax: ( ) - |
| 4. Facility Primary Responsible Official E-mail Address: |

**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. [X] Title V Source | |
| 4. ☐ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs) | |
| 5. [X] Synthetic Minor Source of Air Pollutants, Other than HAPs | |
| 6. ☐ Major Source of Hazardous Air Pollutants (HAPs) | |
| 7. [X] Synthetic Minor Source of HAPs | |
| 8. [X] 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 nominal 55.5-MW net Woody Biomass Power Plant 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 proposed plant will be a Major Stationary Source under the Title V provisions of the Clean Air Act. The plant's bubbling fluidized bed boiler will be subject to NSPS Subpart $D_b$, while the Emergency Equipment will be subject to NSPS Subpart IIII. An in-duct sorbent injection (which may include the processing of non-metallic minerals) is being proposed for as needed HCl control which may trigger NSPS OOO applicability. Since the proposed plant is an area source of HAP emissions, 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 proposed plant to achieve minor source 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** |
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## 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.** |
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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 – Not Applicable**

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)

3. Hg Budget Part (DEP Form No. 62-210.900(1)(c)):

   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable (not a Hg Budget unit)

**Additional Requirements Comment**

**The proposed nominal 55.5-MW net Woody Biomass Power Plant will be subject to the Acid Rain Regulations and CAIR Regulations. The proposed plant is not subject to the Mercury Budget requirements. Acid Rain and CAIR Regulations contain specific requirements which will be met by ADAGE. However, these requirements are not required to be met as part of the Construction Air Permitting process. The Acid Rain Part Application is required to be submitted to the agency 24 months prior to commencement of operation of the biomass boiler. ADAGE will be submitting this application to the FDEP under separate cover.**

# Application for Air Permit – Long Form

## ADAGE Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

## 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 – Not Applicable to this Project**

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 2010** | **Fall 2012** | **49** |

8. Federal Program Applicability: (Check all that apply) – **Does not apply to this emission unit.**

☐ Acid Rain Unit

☐ CAIR Unit

☐ Hg Budget 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:<br>**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:<br>**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:<br>**N.A.** |
| 2. Control Device or Method Code: **N.A.** |

**Emissions Unit Control Equipment/Method:** Control ___ of ___

| |
|---|
| 1. Control Equipment/Method Description:<br>**N.A.** |
| 2. Control Device or Method Code: **N.A.** |

## B. EMISSIONS UNIT CAPACITY INFORMATION
**(Optional for unregulated emissions units.)**

**Emissions Unit Operating Capacity and Schedule**

| | |
|---|---|
| 1. Maximum Process or Throughput Rate: **500 tons/hr** | |
| 2. Maximum Production Rate: **Not Applicable** | |
| 3. Maximum Heat Input Rate: million Btu/hr **Not Applicable** | |
| 4. Maximum Incineration Rate: pounds/hr **Not Applicable**<br>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.**

## 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: **N.A.** feet | 7. Exit Diameter: **N.A.** feet |
| 8. Exit Temperature: **N.A.** °F | 9. Actual Volumetric Flow Rate: **N.A.** acfm | 10. Water Vapor: **N.A.** % |
| 11. Maximum Dry Standard Flow Rate: **N.A.** dscfm | 12. Nonstack Emission Point Height: **N.A.** feet | |
| 13. Emission Point UTM Coordinates... Zone: **See Application Document** East (km): North (km): | 14. Emission Point Latitude/Longitude… Latitude (DD/MM/SS) **See Application** Longitude (DD/MM/SS) **Document** | |
| 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 roads.** | | |

## D. SEGMENT (PROCESS/FUEL) INFORMATION

**Segment Description and Rate:** Segment **1** of **13**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type): **Truck Fuel Receiving – Dumpers #1-3 (Drop Point #1)** | | |
| 2. Source Classification Code (SCC): **39999999** | 3. SCC Units: **tons transferred or handled** | |
| 4. Maximum Hourly Rate: **500** | 5. Maximum Annual Rate: **4,380,000** | 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 from unloading of woody biomass fuel from trucks into one of four unloading pits.** | | |

**Segment Description and Rate:** Segment **2** of **13**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type): **Auxiliary Truck Fuel Dumper #4 (Drop Point #2)** | | |
| 2. Source Classification Code (SCC): **39999999** | 3. SCC Units: **tons transferred or handled** | |
| 4. Maximum Hourly Rate: **250** | 5. Maximum Annual Rate: **2,190,000** | 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 from unloading of woody biomass fuel from trucks onto open areas (no unloading pits).** | | |

## D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

**Segment Description and Rate:** Segment **3** of **13**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type): **Fuel Receiving Dumpers to Coarse Screen Conveyor (Drop Point #3)** | | |
| 2. Source Classification Code (SCC): **39999999** | 3. SCC Units: **tons transferred or handled** | |
| 4. Maximum Hourly Rate: **500** | 5. Maximum Annual Rate: **4,380,000** | 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 truck unloading areas (Dumpers #1-4 and Auxiliary Dumper #5) to the coarse screen conveyor.** | | |

**Segment Description and Rate:** Segment **4** of **13**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type): **Fuel Screening and Sizing (Drop Point #4A, #4B)** | | |
| 2. Source Classification Code (SCC): **39999999** | 3. SCC Units: **tons transferred or handled** | |
| 4. Maximum Hourly Rate: **500** | 5. Maximum Annual Rate: **4,380,000** | 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 during the fuel screening and sizing process at two (2) drop points during the process.** | | |

## D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

**Segment Description and Rate:** Segment **5** of **13**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type):<br>**Coarse Screen Conveyor to Storage Pile Conveyor (Drop Point #5)** | | |
| 2. Source Classification Code (SCC):<br>**39999999** | 3. SCC Units:<br>**tons transferred or handled** | |
| 4. Maximum Hourly Rate:<br>**500** | 5. Maximum Annual Rate:<br>**4,380,000** | 6. Estimated Annual Activity Factor: **N.A.** |
| 7. Maximum % Sulfur:<br>**N.A.** | 8. Maximum % Ash:<br>**N.A.** | 9. Million Btu per SCC Unit:<br>**N.A.** |
| 10. Segment Comment:<br>**Fugitive PM/$PM_{10}$ emissions due to transfer of woody biomass fuel from the coarse screen conveyor to the storage pile conveyor.** | | |

**Segment Description and Rate:** Segment **6** of **13**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type):<br>**Storage Pile Conveyor to Storage Pile (Drop Point # 6)** | | |
| 2. Source Classification Code (SCC):<br>**39999999** | 3. SCC Units:<br>**tons transferred or handled** | |
| 4. Maximum Hourly Rate:<br>**500** | 5. Maximum Annual Rate:<br>**4,380,000** | 6. Estimated Annual Activity Factor: **N.A.** |
| 7. Maximum % Sulfur:<br>**N.A.** | 8. Maximum % Ash:<br>**N.A.** | 9. Million Btu per SCC Unit:<br>**N.A.** |
| 10. Segment Comment:<br>**Fugitive PM/$PM_{10}$ emissions due to transfer of woody biomass fuel from the storage pile conveyor to the storage pile.** | | |

## D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

**Segment Description and Rate:** Segment **7** of **13**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type): **Storage Pile Pickup Conveyor (Drop Point #7)** | | |
| 2. Source Classification Code (SCC): **39999999** | 3. SCC Units: **tons transferred or handled** | |
| 4. Maximum Hourly Rate: **500** | 5. Maximum Annual Rate: **4,380,000** | 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 woody biomass fuel via the storage pile pickup conveyor at a drop point within the storage pile pickup conveyor.** | | |

**Segment Description and Rate:** Segment **8** of **13**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type): **Storage Pile Conveyor to Fine Screening (Drop Point #8)** | | |
| 2. Source Classification Code (SCC): **39999999** | 3. SCC Units: **tons transferred or handled** | |
| 4. Maximum Hourly Rate: **500** | 5. Maximum Annual Rate: **4,380,000** | 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 storage pile conveyor to the fine screening operation.** | | |

## D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

**Segment Description and Rate:** Segment **9** of **13**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type):<br>**Fuel Reclaim #1 (Drop Point #9)** | | |
| 2. Source Classification Code (SCC):<br>**39999999** | 3. SCC Units:<br>**tons transferred or handled** | |
| 4. Maximum Hourly Rate:<br>**500** | 5. Maximum Annual Rate:<br>**4,380,000** | 6. Estimated Annual Activity Factor: **N.A.** |
| 7. Maximum % Sulfur:<br>**N.A.** | 8. Maximum % Ash:<br>**N.A.** | 9. Million Btu per SCC Unit:<br>**N.A.** |
| 10. Segment Comment:<br>**Fugitive PM/$PM_{10}$ emissions due to transfer of biomass fuel from fine screening to Fuel Reclaim #1.** | | |

**Segment Description and Rate:** Segment **10** of **13**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type):<br>**Fuel Reclaim #2 (Drop Point #10)** | | |
| 2. Source Classification Code (SCC):<br>**39999999** | 3. SCC Units:<br>**tons transferred or handled** | |
| 4. Maximum Hourly Rate:<br>**500** | 5. Maximum Annual Rate:<br>**4,380,000** | 6. Estimated Annual Activity Factor: **N.A.** |
| 7. Maximum % Sulfur:<br>**N.A.** | 8. Maximum % Ash:<br>**N.A.** | 9. Million Btu per SCC Unit:<br>**N.A.** |
| 10. Segment Comment:<br>**Fugitive PM/$PM_{10}$ emissions due to transfer of biomass fuel from fine screening to Fuel Reclaim #2.** | | |

## D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

**Segment Description and Rate:** Segment **11** of **13**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type):<br>**Storage Pile Conveyor to BFB Boiler Feed Bins (Drop Point #11)** | | |
| 2. Source Classification Code (SCC):<br>**39999999** | 3. SCC Units:<br>**tons transferred or handled** | |
| 4. Maximum Hourly Rate:<br>**500** | 5. Maximum Annual Rate:<br>**4,380,000** | 6. Estimated Annual Activity Factor: **N.A.** |
| 7. Maximum % Sulfur:<br>**N.A.** | 8. Maximum % Ash:<br>**N.A.** | 9. Million Btu per SCC Unit:<br>**N.A.** |
| 10. Segment Comment:<br>**Fugitive PM/$PM_{10}$ emissions due to transfer of biomass fuel from the storage pile conveyor to BFB boiler feed bins.** | | |

**Segment Description and Rate:** Segment **12** of **13**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type):<br>**Truck Traffic on Paved Roads Vehicle Miles Traveled (VMT)** | | |
| 2. Source Classification Code (SCC):<br>**39999993** | 3. SCC Units:<br>**Each (VMT)** | |
| 4. Maximum Hourly Rate:<br>**N.A.** | 5. Maximum Annual Rate:<br>**39,041** | 6. Estimated Annual Activity Factor: **N.A.** |
| 7. Maximum % Sulfur:<br>**N.A.** | 8. Maximum % Ash:<br>**N.A.** | 9. Million Btu per SCC Unit:<br>**N.A.** |
| 10. Segment Comment:<br>**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.** | | |

**Segment Description and Rate:** Segment **13** of **13**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type):<br>**Portable Wood Chipper (Drop Point #12)** | | |
| 2. Source Classification Code (SCC):<br>**39999999** | 3. SCC Units:<br>**tons transferred or handled** | |
| 4. Maximum Hourly Rate:<br>**200** | 5. Maximum Annual Rate:<br>**96,000** | 6. Estimated Annual Activity Factor: **N.A.** |
| 7. Maximum % Sulfur:<br>**N.A.** | 8. Maximum % Ash:<br>**N.A.** | 9. Million Btu per SCC Unit:<br>**N.A.** |
| 10. Segment Comment:<br>**Fugitive PM/$PM_{10}$ emissions due to transfer of biomass fuel from the chipper to storage pile. 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** |
| | | | |
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## 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: **34.5 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 2-4, 2-5, 2-6, & 2-7 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 (22.3 tpy of the total 34.5 tpy) are from paved road traffic which is classified as a fugitive emission source. The remaining will occur from wind erosion, pile processing (i.e. moving material with a bulldozer) and wood chipper which are also fugitive sources. The estimated potential emissions from these sources are 4.5 tpy. The remaining 7.7 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: **9.3 tons/year (tpy)** | 4. Synthetically Limited? ☐ Yes ☒ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** | |
| 6. Emission Factor: **Varies. See Tables 2-4, 2-5, 2-6, & 2-7 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 9.3 tpy can be categorized as follows: 3.7 tpy for handling and processing, 4.3 tpy from in-plant paved roads, 0.08 tpy from pile processing, 1.1 tpy from pile wind erosion and 0.1 tpy from the wood 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: **1.5 tons/year (tpy)** | 4. Synthetically Limited? ☐ Yes ☒ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **0.1 lb/hr; 0.6 tons/year** | |
| 6. Emission Factor: **Varies. See Tables 2-4, 2-5, 2-6, & 2-7 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 1.5 tpy can be categorized as follows: 0.55 tpy for handling and processing, 0.7 tpy from in-plant paved roads, 0.01 tpy from pile processing, 0.2 tpy from pile wind erosion and 0.10 tpy from the wood 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 7 of this air permit application.** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **See Application Document. The only emission limits or standards that apply 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): | |

## 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: **VE10** | 2. Basis for Allowable Opacity: [X] Rule [ ] Other |
|---|---|
| 3. Allowable Opacity: Normal Conditions: **10** % **(except for one 6-minute period no greater than 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 - (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. ADAGE has designed the equipment to minimize fugitive particulate matter, thus is proposing a more restrictive opacity of 10 percent to reflect this environmentally efficient design.** | |

**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 **1**

| | |
|---|---|
| 1. Parameter Code: **Not Applicable** | 2. Pollutant(s): **Not Applicable** |
| 3. CMS Requirement: ☐ Rule ☐ Other | |
| 4. Monitor Information...<br>Manufacturer:<br>Model Number: Serial Number: | |
| 5. Installation Date: | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment:<br>**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...<br>Manufacturer:<br>Model Number: Serial Number: | |
| 5. Installation Date: | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment: | |

## 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: _____
   [X] 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: _____ [X] 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)):<br>☐ 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.):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only)<br>☐ Attached, Document ID: _____ ☒ Not Applicable |

**Additional Requirements for Title V Air Operation Permit Applications – Not Applicable**

| |
|---|
| 1. Identification of Applicable Requirements:<br>☐ Attached, Document ID: _____ |
| 2. Compliance Assurance Monitoring:<br>☐ Attached, Document ID: _____ ☐ Not Applicable |
| 3. Alternative Methods of Operation:<br>☐ Attached, Document ID: _____ ☐ Not Applicable |
| 4. Alternative Modes of Operation (Emissions Trading):<br>☐ Attached, Document ID: _____ ☐ Not Applicable |

**Additional Requirements Comment**

| |
|---|
| |

# Application for Air Permit – Long Form

## ADAGE Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

## 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 2010** | **Fall 2012** | **49** |

8. Federal Program Applicability: (Check all that apply)

[X] Acid Rain Unit

[X] CAIR Unit

☐ Hg Budget 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: **Nominal 55.5 MW Net**

11. Emissions Unit Comment:

**The bubbling fluidized bed boiler capacity will be equipped with a burner rated at 240 MMBtu/hr for natural gas, propane or ultra low sulfur diesel fuel for startup, shutdown, and bed stabilization and approximately 758 MMBtu/hr (24-hour average) for maximum operation on woody biomass fuel. With the highest moisture fuel, short term heat inputs of up to 834 MMBtu/hr may be achieved. ADAGE is requesting that the maximum heat input be established at 834 MMBtu/hr (4-hour average) for the BFB boiler. A shorter term average is being proposed (4-hour versus 24-hour), since these ideal conditions are not anticipated to fluctuate over an extended period of time.**

**EMISSIONS UNIT INFORMATION**
**Section [ 2 ]**

**Emissions Unit Control Equipment/Method:** Control **1** of **4**

| |
|---|
| 1. Control Equipment/Method Description:<br>**Dry In-Duct Sorbent Injection** |
| 2. Control Device or Method Code: **206** |

**Emissions Unit Control Equipment/Method:** Control **2** of **4**

| |
|---|
| 1. Control Equipment/Method Description:<br>**Fabric Filter (Baghouse)** |
| 2. Control Device or Method Code: **127** |

**Emissions Unit Control Equipment/Method:** Control **3** of **4**

| |
|---|
| 1. Control Equipment/Method Description:<br>**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:<br>**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: **758** Million Btu/hr **(approximate) (24-hour average)** | |
| 4. Maximum Incineration Rate: **Not Applicable** pounds/hr<br>**Not Applicable** tons/day | |
| 5. Requested Maximum Operating Schedule: | |
| **24** hours/day | **7** days/week |
| **52** weeks/year | **8,760** hours/year |
| 6. Operating Capacity/Schedule Comment:<br>**a) Natural gas, propane or ultra low sulfur diesel fuel combustion to be used for startup, shutdown and bed stabilization only at a rated heat input of 240 MMBtu/hr.**<br>**b) Woody biomass combustion to be used for normal operation at maximum heat input rate of approximately 758 MMBtu/hr (24-hour average). With the highest moisture fuel, short term heat inputs of up to 834 MMBtu/hr may be achieved. ADAGE is requesting that the maximum heat input be established at 834 MMBtu/hr (4-hour average) for the BFB boiler. A shorter term average is being proposed (4-hour versus 24-hour), since these ideal conditions are not anticipated to fluctuate over an extended period of time.** | |

## 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: **170** feet | 7. Exit Diameter: **12.0** feet |
| 8. Exit Temperature: **295** °F | 9. Actual Volumetric Flow Rate: **306,400** acfm at 55% moisture | 10. Water Vapor: **TBD** % |
| 11. Maximum Dry Standard Flow Rate: **To Be Determined** | 12. Nonstack Emission Point Height: **Not Applicable** feet | |
| 13. Emission Point UTM Coordinates... Zone: **See Application Document** East (km): North (km): | 14. Emission Point Latitude/Longitude… Latitude (DD/MM/SS) **See Application** Longitude (DD/MM/SS) **Document** | |
| 15. Emission Point Comment: **The boiler will be a bubbling fluidized bed 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.** | | |

## D. SEGMENT (PROCESS/FUEL) INFORMATION

**Segment Description and Rate:** Segment **1** of **2**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type): **Natural Gas, Propane or Ultra Low Sulfur Diesel Fuel for Startup, Shutdown and Boiler Bed Stabilization** | | |
| 2. Source Classification Code (SCC): **10100601** | 3. SCC Units: **million cubic feet burned** | |
| 4. Maximum Hourly Rate: **0.240** | 5. Maximum Annual Rate: **2,100** | 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 240 MMBtu/hr using natural gas or propane for use 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: **99** | 5. Maximum Annual Rate: **867,240** | 6. Estimated Annual Activity Factor: **N.A.** |
| 7. Maximum % Sulfur: **0.06% by weight** | 8. Maximum % Ash: **7% by weight** | 9. Million Btu per SCC Unit: **7.7** |
| 10. Segment Comment: **Woody biomass boiler capacity will be approximately 758 MMBtu/hr (24-hour average) for normal operating conditions. Design woody biomass higher heating value is approximately 3,825 Btu/lb wet at 55% moisture. This heating value can fluctuate depending on fuel storage.** | | |

**EMISSIONS UNIT INFORMATION**
**Section [ 2]**

## D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

**Segment Description and Rate:** Segment 3 of

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type):<br>**N.A.** | | |
| 2. Source Classification Code (SCC): | 3. SCC Units: | |
| 4. Maximum Hourly Rate: | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: |
| 7. Maximum % Sulfur: | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: |
| 10. Segment Comment: | | |

**Segment Description and Rate:** Segment 4 of

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type):<br>**N.A.** | | |
| 2. Source Classification Code (SCC): | 3. SCC Units: | |
| 4. Maximum Hourly Rate: | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: |
| 7. Maximum % Sulfur: | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: |
| 10. Segment Comment: | | |

**EMISSIONS UNIT INFORMATION**
**Section [ 2]**

## 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** |
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## 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** lb/hour tons/year | 4. Synthetically Limited? ☐ Yes ☒ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** to tons/year | |
| 6. Emission Factor: **See Application Document** Reference: | 7. Emissions Method Code: **0** |
| 8.a. Baseline Actual Emissions (if required): **Not Required** tons/year | 8.b. Baseline 24-month Period: From: **N.A.** To: |
| 9.a. Projected Actual Emissions (if required): **Not Required** tons/year | 9.b. Projected Monitoring Period: **N.A.** ☐ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Application Document, Section 2.0.** | |
| 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** lb/hour tons/year | 4. Synthetically Limited? ☐ Yes ☒ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** to tons/year | |
| 6. Emission Factor: **See Application Document** Reference: | 7. Emissions Method Code: **0** |
| 8.a. Baseline Actual Emissions (if required): **Not Required** tons/year | 8.b. Baseline 24-month Period: From: **N.A.** To: |
| 9.a. Projected Actual Emissions (if required): **Not Required** tons/year | 9.b. Projected Monitoring Period: **N.A.** ☐ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Application Document, Section 2.0.** | |
| 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** lb/hour tons/year | 4. Synthetically Limited? ☐ Yes ☒ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** to tons/year | |
| 6. Emission Factor: **See Application Document** Reference: | 7. Emissions Method Code: **0** |
| 8.a. Baseline Actual Emissions (if required): **Not Required** tons/year | 8.b. Baseline 24-month Period: From: **N.A.** To: |
| 9.a. Projected Actual Emissions (if required): **Not Required** tons/year | 9.b. Projected Monitoring Period: **N.A.** ☐ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Application Document, Section 2.0.** | |
| 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** lb/hour tons/year | 4. Synthetically Limited? ☐ Yes ☒ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** to tons/year | |
| 6. Emission Factor: **See Application Document** Reference: | 7. Emissions Method Code: **0** |
| 8.a. Baseline Actual Emissions (if required): **Not Required** tons/year | 8.b. Baseline 24-month Period: From: **N.A.** To: |
| 9.a. Projected Actual Emissions (if required): **Not Required** tons/year | 9.b. Projected Monitoring Period: **N.A.** ☐ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Application Document, Section 2.0.** | |
| 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** lb/hour tons/year | 4. Synthetically Limited? ☐ Yes ☒ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** to tons/year | |
| 6. Emission Factor: **See Application Document** Reference: | 7. Emissions Method Code: **0** |
| 8.a. Baseline Actual Emissions (if required): **Not Required** tons/year | 8.b. Baseline 24-month Period: From: **N.A.** To: |
| 9.a. Projected Actual Emissions (if required): **Not Required** tons/year | 9.b. Projected Monitoring Period: **N.A.** ☐ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Application Document, Section 2.0.** | |
| 11. Potential, Fugitive, and Actual Emissions Comment: **See Application Document. The proposed bubbling fluidized bed 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** lb/hour tons/year | 4. Synthetically Limited? ☐ Yes ☒ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** to tons/year | |
| 6. Emission Factor: **See Application Document** Reference: | 7. Emissions Method Code: **3** |
| 8.a. Baseline Actual Emissions (if required): **Not Required** tons/year | 8.b. Baseline 24-month Period: From: **N.A.** To: |
| 9.a. Projected Actual Emissions (if required): **Not Required** tons/year | 9.b. Projected Monitoring Period: **N.A.** ☐ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Application Document, Section 2.0.** | |
| 11. Potential, Fugitive, and Actual Emissions Comment: **See Application Document. The proposed bubbling fluidized bed boiler design provides highly efficient and complete combustion. HCl emissions are dependent on chlorine content of fuel. Inclusion of in-duct sorbent injection 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: **53.1 lb/hr $NO_x$ (12-month average, rolled monthly)** | 4. Equivalent Allowable Emissions: **232.6** tons/year |
| 5. Method of Compliance: **See Application Document.** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **See Application Document.** | |

**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: **56.0 lb/hr CO (12-month average, rolled monthly)** | 4. Equivalent Allowable Emissions: **245** tons/year |
| 5. Method of Compliance: **See Application Document.** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **See Application Document.** | |

**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: **34.1 lb/hr $SO_2$ (12-month average, rolled monthly)** | 4. Equivalent Allowable Emissions: **149.4** tons/year |
| 5. Method of Compliance: **See Application Document.** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **See Application Document.** | |

## 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: **RULE** | 2. Future Effective Date of Allowable Emissions: **Not Applicable** |
| 3. Allowable Emissions and Units: **0.029 lb/MMBtu PM/$PM_{10}$ (Filterable and Condensible)** | 4. Equivalent Allowable Emissions: **22.0** lb/hour **99.6** tons/year |
| 5. Method of Compliance: **See Application Document.** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **See Application Document. Compliance with PM/$PM_{10}$ 0.029 lb/MMBtu emission limit ensures compliance with the 40 CFR 60, Subpart Db limit of 0.030 lb PM/MMBtu (filterable PM).** | |

**Allowable Emissions** Allowable Emissions **5** of **7**

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: **Not Applicable** |
| 3. Allowable Emissions and Units: **0.01 grains/dscf PM/$PM_{10}$ @7% $O_2$ (filterable only)** | 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. This emission rate demonstrates a control efficiency of the baghouse of 99.9%.** | |

**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: **9.7 tons/year HCl (12-month average, rolled monthly)** | 4. Equivalent Allowable Emissions: lb/hour **9.7** tons/year |
| 5. Method of Compliance: **See Application Document.** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **See Application Document. Annual emission limit of 9.7 tons/year of HCl is requested for the proposed biomass 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: **0.2 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. 0.2 lb/MMBtu $NO_x$ is based on NSPS Subpart Db, 30-day rolling average.** | |

**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 [ 2] of [ ]**

## 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: **VE10** | 2. Basis for Allowable Opacity: [X] Rule [ ] Other |
| 3. Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: 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: **N.A.** | 2. Basis for Allowable Opacity: **N.A.** [ ] Rule [ ] Other |
| 3. Allowable Opacity: **N.A.** Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour | |
| 4. Method of Compliance: **N.A.** | |
| 5. Visible Emissions Comment: **N.A.** | |

## 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: **October 2012** | 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: **October 2012** | 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 (CONTINUED)

**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: **October 2012** | 6. Performance Specification Test Date: **To be determined.** |
| 7. Continuous Monitor Comment: **See Application Document.** | |

**Continuous Monitoring System:** Continuous Monitor **4** of **5**

| | |
|---|---|
| 1. Parameter Code: **EM** | 2. Pollutant(s): **$SO_2$** |
| 3. CMS Requirement: ☒ Rule ☐ Other | |
| 4. Monitor Information... Manufacturer: **To be determined during final engineering** Model Number: Serial Number: | |
| 5. Installation Date: **October 2012** | 6. Performance Specification Test Date: **To Be Determined** |
| 7. Continuous Monitor Comment: **CEM required pursuant to Acid Rain Program (ARP)** | |

**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 determined during final engineering** Model Number: Serial Number: | |
| 5. Installation Date: **October 2012** | 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** | |

## 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: **See Application Document**
   [ ] 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)):<br>☐ 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.):<br>☐ Attached, Document ID: **See Application Document** ☒ Not Applicable |
| 3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only)<br>☐ Attached, Document ID: ☒ Not Applicable |

**Additional Requirements for Title V Air Operation Permit Applications**

| |
|---|
| 1. Identification of Applicable Requirements: **Not Applicable**<br>☐ Attached, Document ID: _____ |
| 2. Compliance Assurance Monitoring:<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 3. Alternative Methods of Operation:<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 4. Alternative Modes of Operation (Emissions Trading):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |

**Additional Requirements Comment**

**See Application Document**

# Application for Air Permit – Long Form

## ADAGE Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

## 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).

☒ 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 2010** | **Fall 2012** | **49** |

8. Federal Program Applicability: (Check all that apply) **Not Applicable**

☐ Acid Rain Unit

☐ CAIR Unit

☐ Hg Budget 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: **Not Applicable** MW

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 4 of

1. Control Equipment/Method Description:
   **N.A.**

2. Control Device or Method Code: **N.A.**

## B. EMISSIONS UNIT CAPACITY INFORMATION
**(Optional for unregulated emissions units.)**

**Emissions Unit Operating Capacity and Schedule**

| | |
|---|---|
| 1. Maximum Process or Throughput Rate: **70,080 tons/year** | |
| 2. Maximum Production Rate: **Not Applicable** | |
| 3. Maximum Heat Input Rate: **Not Applicable** million Btu/hr | |
| 4. Maximum Incineration Rate: **Not Applicable** pounds/hr<br>**Not Applicable** tons/day | |
| 5. Requested Maximum Operating Schedule: | |
| **24** hours/day | **7** days/week |
| **52** weeks/year | **8760** 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.**

## 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 baghouse 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.** | | |
| 5. Discharge Type Code: **F** | 6. Stack Height: **N.A.** feet | 7. Exit Diameter: **N.A.** feet |
| 8. Exit Temperature: **N.A.** °F | 9. Actual Volumetric Flow Rate: **N.A.** acfm | 10. Water Vapor: **N.A.** % |
| 11. Maximum Dry Standard Flow Rate: **N.A.** dscfm | 12. Nonstack Emission Point Height: **N.A.** feet | |
| 13. Emission Point UTM Coordinates... Zone: **See Application Document** East (km): North (km): | 14. Emission Point Latitude/Longitude… Latitude (DD/MM/SS) **See Application** Longitude (DD/MM/SS) **Document** | |
| 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 baghouse, 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):<br>**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):<br>**39999999** | 3. SCC Units:<br>**tons transferred or handled** | |
| 4. Maximum Hourly Rate:<br>**1.0 tons/hour** | 5. Maximum Annual Rate:<br>**8760 tons/year** | 6. Estimated Annual Activity Factor: **N.A.** |
| 7. Maximum % Sulfur:<br>**N.A.** | 8. Maximum % Ash:<br>**N.A.** | 9. Million Btu per SCC Unit:<br>**N.A.** |
| 10. Segment Comment:<br>**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):<br>**Fly Ash Handling (Baghouse Hoppers; Convection Pass Hoppers (Gen Bank and Econimizer); Collecting Conveyors; and Fly Ash Transfer Conveyors)** | | |
| 2. Source Classification Code (SCC):<br>**39999999** | 3. SCC Units:<br>**tons transferred or handled** | |
| 4. Maximum Hourly Rate:<br>**7.0 tons/hour (Max.)** | 5. Maximum Annual Rate:<br>**61,320 tons/year** | 6. Estimated Annual Activity Factor: **N.A.** |
| 7. Maximum % Sulfur:<br>**N.A.** | 8. Maximum % Ash:<br>**N.A.** | 9. Million Btu per SCC Unit:<br>**N.A.** |
| 10. Segment Comment:<br>**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):<br>**Fly Ash Storage (Fly Ash Transfer Conveyor; Fly Ash Elevating Conveyor)** | | |
| 2. Source Classification Code (SCC):<br>**39999999** | 3. SCC Units:<br>**tons transferred or handled** | |
| 4. Maximum Hourly Rate:<br>**7.0 tons/hour (Max.)** | 5. Maximum Annual Rate:<br>**61,320 tons/year** | 6. Estimated Annual Activity Factor: **N.A.** |
| 7. Maximum % Sulfur:<br>**N.A.** | 8. Maximum % Ash:<br>**N.A.** | 9. Million Btu per SCC Unit:<br>**N.A.** |
| 10. Segment Comment:<br>**Fugitive PM/$PM_{10}$ emissions from drop point from ash elevating conveyor to ash silo.** | | |

**Segment Description and Rate:** Segment **4** of **4**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type):<br>**Ash Shipment (Fly Ash Silo to Ash Conditioner Drop Point; Ash Conditioner Chutes)** | | |
| 2. Source Classification Code (SCC):<br>**39999999** | 3. SCC Units:<br>**tons transferred or handled** | |
| 4. Maximum Hourly Rate:<br>**84 tons/hour** | 5. Maximum Annual Rate:<br>**61,320 tons/year** | 6. Estimated Annual Activity Factor: **N.A.** |
| 7. Maximum % Sulfur:<br>**N.A.** | 8. Maximum % Ash:<br>**N.A.** | 9. Million Btu per SCC Unit:<br>**N.A.** |
| 10. Segment Comment:<br>**Fugitive PM/$PM_{10}$ emissions from drop point from the ash conditioner chutes to covered trucks.** | | |

**EMISSIONS UNIT INFORMATION**
**Section [3] of [ ]**

## 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** |
| **$PM_{10}$** | **054** | **099** | **NS** |
| | | | |
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## 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: **0.05** lb/hour **0.04** tons/year | 4. Synthetically Limited? ☐ Yes ☒ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** to tons/year | |
| 6. Emission Factor: **Varies. See Table 2-7 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: **0.02** lb/hour **0.02** tons/year | 4. Synthetically Limited? ☐ Yes ☒ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): to tons/year | |
| 6. Emission Factor: **Varies. See Table 2-7 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.** | |

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

| | |
|---|---|
| 1. Pollutant Emitted:<br>**Particulate Matter – PM2.5** | 2. Total Percent Efficiency of Control:<br>**0%** |
| 3. Potential Emissions:<br>**0.003** lb/hour **0.003** tons/year | 4. Synthetically Limited?<br>☐ Yes [X] No |
| 5. Range of Estimated Fugitive Emissions (as applicable):<br>to tons/year | |
| 6. Emission Factor: **Varies. See Table 2-7 of Application Document for detailed calculations.**<br>Reference: **AP-42** | 7. Emissions Method Code:<br>**3** |
| 8.a. Baseline Actual Emissions (if required):<br>tons/year **Not Required** | 8.b. Baseline 24-month Period:<br>From: **N.A.** To: **N.A.** |
| 9.a. Projected Actual Emissions (if required):<br>tons/year **Not Required** | 9.b. Projected Monitoring Period: **N.A.**<br>☐ 5 years ☐ 10 years |
| 10. Calculation of Emissions:<br>**See Application Document.** | |
| 11. Potential, Fugitive, and Actual Emissions Comment:<br>**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 _ of _

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **N/A** | 2. Future Effective Date of Allowable Emissions: **N/A** |
| 3. Allowable Emissions and Units: | 4. Equivalent Allowable Emissions: **N.A.** lb/hour **N.A.** tons/year |
| 5. Method of Compliance: **N/A** | |
| 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 __ of ____

| 1. Visible Emissions Subtype: **VE10** | 2. Basis for Allowable Opacity: [X] Rule [ ] Other |
|---|---|
| 3. Allowable Opacity: Normal Conditions: **10 % (except for one 6-minute period no greater than 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 - (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. ADAGE has designed the equipment to minimize fugitive particulate matter, thus is proposing a more restrictive opacity of 10 percent to reflect this environmentally efficient design.** | |

**Visible Emissions Limitation:** Visible Emissions Limitation __ of ____

| 1. Visible Emissions Subtype: **Not Applicable.** | 2. Basis for Allowable Opacity: **N.A.** [ ] Rule [ ] Other |
|---|---|
| 3. Allowable Opacity: **N.A.** Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour | |
| 4. Method of Compliance: **N.A.** | |
| 5. Visible Emissions Comment: **N.A.** | |

## 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): **N.A.** |
| 3. CMS Requirement: **N.A.** | ☐ Rule ☐ Other |
| 4. Monitor Information...<br>Manufacturer: **N.A.**<br>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: **N.A.** | 2. Pollutant(s): **N.A.** |
| 3. CMS Requirement: **N.A.** | ☐ Rule ☐ Other |
| 4. Monitor Information...<br>Manufacturer: **N.A.**<br>Model Number: | Serial Number: |
| 5. Installation Date: **N.A.** | 6. Performance Specification Test Date: **N.A.** |
| 7. Continuous Monitor Comment: **N.A.** | |

## H. CONTINUOUS MONITOR INFORMATION (CONTINUED)

**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...<br>Manufacturer: **N.A.**<br>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: **N.A.** | 2. Pollutant(s): **N.A.** |
| 3. CMS Requirement: **N.A.** ☐ Rule ☐ Other | |
| 4. Monitor Information...<br>Manufacturer: **N.A.**<br>Model Number: Serial Number: | |
| 5. Installation Date: **N.A.** | 6. Performance Specification Test Date: **N.A.** |
| 7. Continuous Monitor Comment: **N.A.** | |

## 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)):<br>☐ 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.):<br>☐ Attached, Document ID: ☒ Not Applicable |
| 3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only)<br>☐ Attached, Document ID: ☒ Not Applicable |

**Additional Requirements for Title V Air Operation Permit Applications**

| |
|---|
| 1. Identification of Applicable Requirements: **Not Applicable**<br>☐ Attached, Document ID: _____ |
| 2. Compliance Assurance Monitoring:<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 3. Alternative Methods of Operation:<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 4. Alternative Modes of Operation (Emissions Trading):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |

**Additional Requirements Comment**

**See Application Document**

# Application for Air Permit – Long Form

## ADAGE Proposed Nominal 55.5-MW Net Woody Biomass Power Plant

## 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] of [ ]**

## 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 2010** | **Fall 2012** | **49** |

8. Federal Program Applicability: (Check all that apply) **Not Applicable**

☐ Acid Rain Unit

☐ CAIR Unit

☐ Hg Budget 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: **Not Applicable**

11. Emissions Unit Comment:

**Emergency support equipment includes an emergency generator and emergency fire water pump. All will be fueled with ultra low sulfur diesel fuel and be limited hours of operation for testing purposes.**

**EMISSIONS UNIT INFORMATION**
**Section [ 4]**

**Emissions Unit Control Equipment/Method:** Control 1 of **0**

| |
|---|
| 1. Control Equipment/Method Description:<br>**Not Applicable** |
| 2. Control Device or Method Code: |

**Emissions Unit Control Equipment/Method:** Control 2 of **0**

| |
|---|
| 1. Control Equipment/Method Description: |
| 2. Control Device or Method Code: |

**Emissions Unit Control Equipment/Method:** Control 3 of **0**

| |
|---|
| 1. Control Equipment/Method Description: |
| 2. Control Device or Method Code: |

**Emissions Unit Control Equipment/Method:** Control 4 of **0**

| |
|---|
| 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** tons/hr |
| 2. Maximum Production Rate: **Not Applicable** |
| 3. Maximum Heat Input Rate: **Not Applicable (see each segment)** million Btu/hr |
| 4. Maximum Incineration Rate: **Not Applicable** pounds/hr<br>**Not Applicable** tons/day |
| 5. Requested Maximum Operating Schedule:<br>hours/day days/week<br>weeks/year **250*** hours/year |
| 6. Operating Capacity/Schedule Comment:<br>***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 (T.B.D.)** | 6. Stack Height: **T.B.D.** feet | 7. Exit Diameter: **T.B.D.** feet |
| 8. Exit Temperature: **T.B.D.** °F | 9. Actual Volumetric Flow Rate: **T.B.D.** acfm | 10. Water Vapor: **T.B.D.** % |
| 11. Maximum Dry Standard Flow Rate: **T.B.D.** dscfm | 12. Nonstack Emission Point Height: **N.A.** feet | |
| 13. Emission Point UTM Coordinates... Zone: **See Application Document** East (km): North (km): | 14. Emission Point Latitude/Longitude… Latitude (DD/MM/SS) **See Application** Longitude (DD/MM/SS) **Document** | |
| 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: **0.06** | 5. Maximum Annual Rate: **15.5** | 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: **0.03** | 5. Maximum Annual Rate: **7** | 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** | | |

**EMISSIONS UNIT INFORMATION**
**Section [ 4 ]**

## 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** |
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## 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: **0.48** lb/hour **0.06** tons/year | 4. Synthetically Limited? [X] Yes [ ] No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** to tons/year | |
| 6. Emission Factor: **See Application Document** Reference: **NSPS Subpart IIII** | 7. Emissions Method Code: **0** |
| 8.a. Baseline Actual Emissions (if required): **Not Required** tons/year | 8.b. Baseline 24-month Period: **Not Required** From: To: |
| 9.a. Projected Actual Emissions (if required): **Not Required** tons/year | 9.b. Projected Monitoring Period: **Not Required** [ ] 5 years [ ] 10 years |
| 10. Calculation of Emissions: **See 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 – $PM_{10}$** | 2. Total Percent Efficiency of Control: |
| 3. Potential Emissions: **0.48** lb/hour **0.06** tons/year | 4. Synthetically Limited? [X] Yes [ ] No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** to tons/year | |
| 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): **Not Required** tons/year | 8.b. Baseline 24-month Period: **Not Required** From: To: |
| 9.a. Projected Actual Emissions (if required): **Not Required** tons/year | 9.b. Projected Monitoring Period: **Not Required** [ ] 5 years [ ] 10 years |
| 10. Calculation of Emissions: **See 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: **8.3** lb/hour **1.0** tons/year | 4. Synthetically Limited? [X] Yes [ ] No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** to tons/year | |
| 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): **Not Required** tons/year | 8.b. Baseline 24-month Period: **Not Required** From: To: |
| 9.a. Projected Actual Emissions (if required): **Not Required** tons/year | 9.b. Projected Monitoring Period: **Not Required** [ ] 5 years [ ] 10 years |
| 10. Calculation of Emissions: **See 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: **13.6** lb/hour **1.7** tons/year | 4. Synthetically Limited? [X] Yes [ ] No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** to tons/year | |
| 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): **Not Required** tons/year | 8.b. Baseline 24-month Period: **Not Required** From: To: |
| 9.a. Projected Actual Emissions (if required): **Not Required** tons/year | 9.b. Projected Monitoring Period: **Not Required** [ ] 5 years [ ] 10 years |
| 10. Calculation of Emissions: **See 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: **0.93** lb/hour **0.12** tons/year | 4. Synthetically Limited? [X] Yes [ ] No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** to tons/year | |
| 6. Emission Factor: **Varies by Segment. See Application Document** Reference: **AP-42** | 7. Emissions Method Code: **3** |
| 8.a. Baseline Actual Emissions (if required): **Not Required** tons/year | 8.b. Baseline 24-month Period: **Not Required** From: To: |
| 9.a. Projected Actual Emissions (if required): **Not Required** tons/year | 9.b. Projected Monitoring Period: **Not Required** [ ] 5 years [ ] 10 years |

10. Calculation of Emissions:
**See 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: **VOC** | 2. Total Percent Efficiency of Control: |
| 3. Potential Emissions: **13.6** lb/hour **1.7** tons/year | 4. Synthetically Limited? [X] Yes [ ] No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** to tons/year | |
| 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): **Not Required** tons/year | 8.b. Baseline 24-month Period: **Not Required** From: To: |
| 9.a. Projected Actual Emissions (if required): **Not Required** tons/year | 9.b. Projected Monitoring Period: **Not Required** [ ] 5 years [ ] 10 years |
| 10. Calculation of Emissions: **See 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: **0.025** lb/hour **0.003** tons/year | 4. Synthetically Limited? [X] Yes [ ] No |
| 5. Range of Estimated Fugitive Emissions (as applicable): **Not Applicable** to tons/year | |
| 6. Emission Factor: **Varies by Segment. See Application Document** Reference: **AP-42** | 7. Emissions Method Code: **3** |
| 8.a. Baseline Actual Emissions (if required): **Not Required** tons/year | 8.b. Baseline 24-month Period: **Not Required** From: To: |
| 9.a. Projected Actual Emissions (if required): **Not Required** tons/year | 9.b. Projected Monitoring Period: **Not Required** [ ] 5 years [ ] 10 years |
| 10. Calculation of Emissions: **See 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 NOx, PM, VOC (or non-methane hydrocarbon (NMHC)), and CO. SO2 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: **Not Applicable** | 2. Future Effective Date of Allowable Emissions: **N.A.** |
| 3. Allowable Emissions and Units: **N.A.** | 4. Equivalent Allowable Emissions: **N.A.** lb/hour tons/year |
| 5. Method of Compliance: **N.A.** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **N.A.** | |

## 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 __ of ____

| | |
|---|---|
| 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 - (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: **Not Applicable** | 2. Basis for Allowable Opacity: **N.A.** [ ] Rule [ ] Other |
| 3. Allowable Opacity: **N.A.** Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour | |
| 4. Method of Compliance: **N.A.** | |
| 5. Visible Emissions Comment: **N.A.** | |

## 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...<br>Manufacturer: **N.A.**<br>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: **N.A.** | 2. Pollutant(s): **N.A.** |
| 3. CMS Requirement: **N.A.** | ☐ Rule ☐ Other |
| 4. Monitor Information...<br>Manufacturer: **N.A.**<br>Model Number: | Serial Number: |
| 5. Installation Date: **N.A.** | 6. Performance Specification Test Date: **N.A.** |
| 7. Continuous Monitor Comment: **N.A.** | |

## H. CONTINUOUS MONITOR INFORMATION (CONTINUED)

**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...<br>Manufacturer: **N.A.**<br>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: **N.A.** | 2. Pollutant(s): **N.A.** |
| 3. CMS Requirement: **N.A.** ☐ Rule ☐ Other | |
| 4. Monitor Information...<br>Manufacturer: **N.A.**<br>Model Number: Serial Number: | |
| 5. Installation Date: **N.A.** | 6. Performance Specification Test Date: **N.A.** |
| 7. Continuous Monitor Comment: **N.A.** | |

## 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: _____

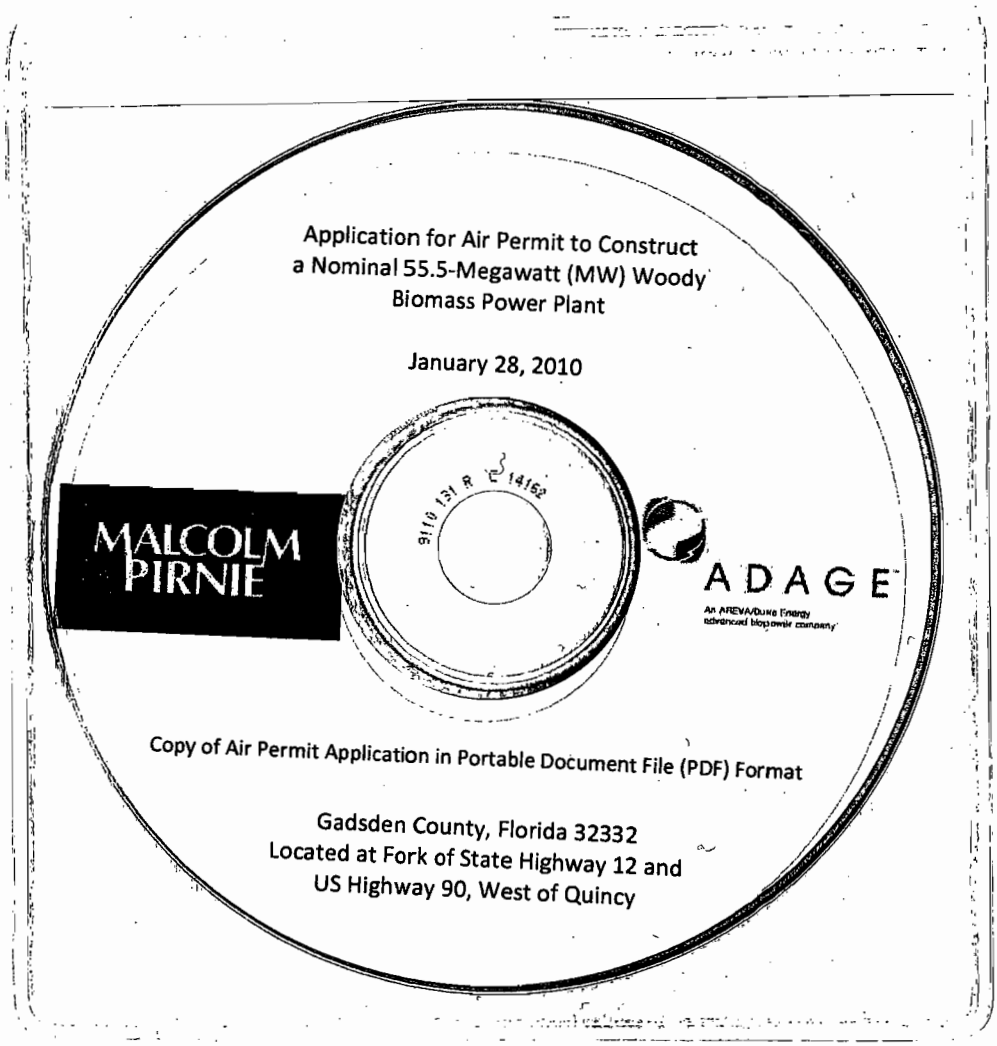
2. Compliance Assurance Monitoring:
   ☐ Attached, Document ID: _____ ☒ Not Applicable

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**

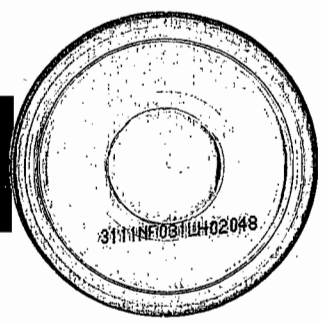
**See Application Document**


Application for Air Permit to Construct
a Nominal 55.5-Megawatt (MW) Woody
Biomass Power Plant
January 28, 2010
MALCOLM
PIRNIE
ADAGE
An AREVA/Duke Energy
advanced biopower company
Copy of Air Permit Application in Portable Document File (PDF) Format
Gadsden County, Florida 32332
Located at Fork of State Highway 12 and
US Highway 90, West of Quincy

Application for Air Permit to Construct
a Nominal 55.5-Megawatt (MW) Woody
Biomass Power Plant

January 28, 2010

MALCOLM PIRNIE




ADAGE

An AREVA/Duke Energy
advanced biopower company

Backup Air Quality Modeling Electronic Files
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Environmental Protection Review Only)

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Located at Fork of State Highway 12 and
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