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PERMITTEE

Northwest Florida Renewable Energy Center, LLC
11993 South Street, Route 63
Clinton, Indiana 47842

Authorized Representative:
Mr. Kenn Davis, Manager

Air Permit No. 0450012-001-AC
Expires: December 31, 2013
Northwest Florida Renewable Energy Center
Biomass-Fed Integrated Gasification Combined Cycle
Facility ID No. 0450012
Gulf County

PROJECT AND LOCATION

This permit authorizes the construction of a 47 megawatts (MWnet) biomass-fed integrated gasification and combined cycle power plant called the Northwest Florida Renewable Energy Center (NWFREC). The proposed project location is 521 Premier Drive in Port St. Joe, Gulf County, Florida. The UTM coordinates for this site are Zone 16; 664.16 kilometers (km) East and 3,301.96 km North.

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C.

CONTENTS

Section 1. General Information

Section 2. Administrative Requirements

Section 3. Emissions Unit Specific Conditions

Section 4. Appendices

Executed in Tallahassee, Florida

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_____ _____

Joseph Kahn, Director (Date)
Division of Air Resource Management

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CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Permit package (including the Final Determination and Final Permit with Appendices) was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on _____ to the persons listed below.

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Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

_____ _____
(Clerk) (Date)

FACILITY AND PROJECT DESCRIPTION

The proposed facility is a 47 MW (net) biomass-fed integrated gasification combined cycle (BIGCC) power plant called the NWFREC. The fuel source for the facility will be exclusively untreated woody biomass that consists primarily of wood chips but may also include agricultural crops and byproducts, logging and lumber mill residues. Municipal solid waste (MSW) is expressly prohibited as a fuel source for the NWFREC.

The woody biomass will be dried and fed into a gasifier vessel containing a heated bed of circulating sand where the woody biomass will be gasified and converted to biomass product gas (BPG). The BPG will be cleaned, compressed and used as fuel in two 16 MW (gross) combustion turbine-electrical generators (CTG). Heat from the CTG exhaust gas will be recovered in two heat recovery steam generators (HRSG) equipped with BPG-fueled duct burners (DB). The resulting steam from the HRSG will drive a single 26.2 MW (gross) steam turbine-electrical generator (STG). The parasitic electrical loads at the facility are estimated to be 11.3 MW resulting in a net electrical power output of 47 MW that can be supplied to the power grid.

This project creates the following new emissions units.

ID No.	Emission Unit Description
001	Biomass handling, storage and drying system
002	Biomass gasifier with natural gas (NG) startup burner
003	Char combustor sand heater with NG startup burner and sand handling equipment
004	BPG flare systems
005	BPG cleanup system
006	16 MW Solar Model No. T-130 BPG-fueled CTG and DB-fired HRSG
007	16 MW Solar Model No. T-130 BPG-fueled CTG and DB-fired HRSG
008	Cooling towers
009	Auxiliary boiler with a maximum heat input rate of 62 mmBtu/hour from firing NG, biodiesel or ultra low sulfur distillate fuel oil (ULSD FO)
010	Miscellaneous support systems

FACILITY REGULATORY CLASSIFICATION

- The facility is not a major source of hazardous air pollutants (HAP).
- The facility operates units subject to the acid rain provisions of the Clean Air Act (CAA).
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is not a major stationary source in accordance with Rule 62-212.400(PSD), F.A.C.
- The facility is subject to the provisions of the Clean Air Interstate Rule (CAIR), including applicable portions of Chapters 62-204, 62-210 and 62-296, F.A.C.
- The facility is subject to Chapter 62-204-800, F.A.C for New Source Performance Standards (NSPS) under Section 111 of the Clean Air Act.

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1. Permitting Authority: The permitting authority for this project is the Bureau of Air Regulation, Division of Air Resource Management, Florida Department of Environmental Protection (Department). The Bureau of Air Regulation's mailing address is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400. All documents related to applications for permits to operate an emissions unit shall be submitted to the Title V Section of the same office.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Air Resource Section of the Department's Northwest District Office at 160 Governmental Center, Suite 308, Pensacola, Florida 32502-5794. The telephone number of the district office is 850/595-8300. Copies of these documents shall also be submitted to the Northwest District's Branch Office at 630-3 Capital Circle Northeast (NE), Tallahassee, Florida 32301. The telephone number of the branch office is 850/488-3704.

3. Appendices: The following Appendices are attached as part of this permit and must be complied with by the permittee:
   a. Appendix A — Identification of General Provisions - NSPS 40 CFR 60, Subpart A;
   b. Appendix BMP — Best Management Practices Plan;
   c. Appendix CC — Common Conditions;
   d. Appendix CEMS — Continuous Emissions Monitoring System (CEMS) Requirements;
   e. Appendix CF — Citation Formats and Glossary of Common Terms;
   f. Appendix CTR — Common Testing Requirements;
   g. Appendix Dc — NSPS, 40 CFR 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units;
   h. Appendix GC — General Conditions; and,
   i. Appendix KKKK — NSPS – Standards of Performance for Stationary Combustion Turbines

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.

5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

6. Modifications: The permittee shall notify the Compliance Authority upon commencement of construction. No new emissions unit shall be constructed and no existing emissions unit shall be modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

7. Source Obligation:

   (a) Authorization to construct shall expire if construction is not commenced within 18 months after receipt of the permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. This provision does not apply to the time period between construction of the approved phases of a phased construction project except that each phase must commence construction within 18 months of the commencement date established by the Department in the permit.

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(b) At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

(c) At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by exceeding its projected actual emissions, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

[Rule 62-212.400(12), F.A.C.]

8. Application for Title V Permit: This permit authorizes construction of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V air operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V air operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the appropriate Permitting Authority with copies to the Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220 and Chapter 62-213, F.A.C.]

9. Objectionable Odors Prohibited: No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. [Rule 62-296.320(2), F.A.C.]

   {Permitting Note: An objectionable odor is defined in Rule 62-210.200(Definitions), F.A.C., as any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance.}

10. Open Burning Prohibited: No person shall ignite, cause to be ignited, or permit to be ignited, any material which will result in any prohibited open burning as regulated by chapter 62-256, F.A.C.; nor shall any person suffer, allow, conduct or maintain any prohibited open burning. [Rule 62-256.300, F.A.C.]

11. Unconfined Emissions of Particulate Matter: 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. Any permit issued to a facility with emissions of unconfined particulate matter shall specify the reasonable precautions to be taken by that facility to control the emissions of unconfined particulate matter. Appendix BMP of this permit provides a Best Management Plan (BMP) of reasonable precautions specific to the NWFREC facility to control fugitive PM emissions. Reasonable precautions include the following: a) Paving and maintenance of roads, parking areas and yards; b) Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing; c) Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities; d) Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent re-entrainment, and from buildings or work areas to prevent particulate from becoming airborne; e) Landscaping or planting of vegetation; f) Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter; g) Confining abrasive blasting where possible; and, h) Enclosure or covering of conveyor systems. In determining what constitutes reasonable precautions for a particular facility, the Department shall consider the cost of the

control technique or work practice, the environmental impacts of the technique or practice, and the degree of reduction of emissions expected from a particular technique or practice. [Rule 62-296.320(4)(c), F.A.C.]

12. Excess Emissions: Except as required by specific conditions of this permit dealing with excess emissions with regard to individual emission units, the following conditions apply to excess emissions at NWFREC.
    a. Allowed: Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration.
    b. Malfunction: Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown, or malfunction shall be prohibited.
    c. Department Discretion: Considering operational variations in types of industrial equipment operations affected by this rule, the Department may adjust maximum and minimum factors to provide reasonable and practical regulatory controls consistent with the public interest.
    d. Department Notification: In case of excess emissions resulting from malfunctions, each owner or operator shall notify the Department in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department.

    [Rule 62-210.700, F.A.C.]

13. Facility-wide Emissions Report: The owner or operator shall submit an Annual Operating Report (AOR) for Air Pollutant Emitting Facility (DEP Form No. 62-210.900(5)) to the Department annually pursuant to Rule 62-210.370(3), F.A.C. Using the computation methods described in Rule 62-210.370(2), F.A.C., the required AOR shall also include a demonstration that facility emissions of NO_X, CO, SO_2, VOC and PM/PM_{10} are each less than 250 tons per year (TPY). [Rule 62-210.370, F.A.C.]

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A. Biomass Handling, Storage and Drying System (EU-001)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
001	Biomass handling, storage and drying system: The feedstock will consist of untreated woody biomass or crops that will be processed at a remote fuel preparation area (or areas) where it will be sorted, screened and chipped to size. The woody biomass and crop feedstock properties and the best management practices (BMP) are given in Appendix BMP along with a plan for quality control. Deliveries will be made via truck to the site at a rate of approximately 65 trucks per day. The trucks will be unloaded via a truck receiving system equipped with two 75 foot platforms. The biomass fuel will then conveyed, via a series of belt conveyors, to the fuel storage pile. All conveyors are covered, except the main unloading conveyor from the truck dump to the hog tower. This conveyor is uncovered to facilitate the belt magnet and allow for visual inspection of the received fuel for quality control (QC) purposes. The fuel will then be conveyed to an unfired dryer and then to the gasification process area. The fuel storage pile will contain 10 to 14 days of fuel storage.

EQUIPMENT

1. Equipment: The permittee is authorized to construct a biomass handling, storage and drying system consisting of the following equipment.
   a. Truck Unloading System: The truck unloading system dumps into two receiving hoppers and shall be designed to minimize the generation of fugitive dust.
   b. Biomass Belt Conveyor Systems: All belt conveyor systems shall be enclosed and have totally enclosed head boxes, chutes and skirtboard systems to contain the fuel as well as prevent dust generation at the transfer points.
   c. Biomass Storage Pile: The biomass storage pile shall be managed in accordance with Appendix BMP.
   d. Biomass Dryer: The biomass dryer shall use thermal heat transfer (no additional combustion) to dry biomass, if needed, prior to gasification.
   e. Storage/Feeder Bin: The storage/feeder bin shall be enclosed and include a spreader conveyor, a bin vent filter and a bottom screw feeder for unloading.
   f. Bucket Elevator: The bucket elevator shall be enclosed.
   g. Baghouses: Based on the preliminary design, the permittee shall install the following baghouses. Each baghouse shall be designed and maintained to achieve an outlet dust loading rate of 0.01 grains per dry standard cubic feet (gr/dscf) in its exhaust. Based on the final engineering design needs, additional baghouses may be installed as necessary to control fugitive dust from material handling and storage. The Compliance Authority shall be notified 180 days before NWFREC becomes operational of any final engineering design changes. Should the preliminary design change, the permittee shall provide final design details for all baghouses in the application for a Title V air operation permit along with a concurrent modification of this air construction permit.
      1) *Baghouse #1* shall control dust from the transfer points and belts on the conveyor systems at a designed volumetric flow rate of 1,000 standard cubic feet per minute (scfm) exhausted to the atmosphere at ambient temperature.
      2) *Baghouse #2* shall control dust from the transfer points and belts on the conveyor systems and the bucket elevator at a designed volumetric flow rate of 1,000 scfm exhausted to the atmosphere at ambient temperature.
      3) *Baghouse #3* shall control dust from the thermal heat biomass dryer at a design volumetric flow rate of 110,000 scfm exhausted to the atmosphere at approximately 175 degrees Fahrenheit (° F).

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h. Bin Vent Filter: A bin vent filter shall control dust from the storage/feeder bin. The filter shall be designed and maintained to control at least 99.8% of the inlet dust loading for a designed feed rate of 1,000 tons per day (TPD) on a dry basis.

{Permitting Note: The biomass feed rate in TPD at various points in the process will vary with the corresponding moisture content of the biomass. The approximate processing rates range from 1,000 TPD on a dry basis to 1,820 TPD at a 45 percent moisture content}

{Permitting Note: Enclosed conveyors means that the conveyance belt for the biomass is totally enclosed from above thus preventing wind from causing fugitive dust emissions. However, the bottom of the conveyance belt shall be accessible for maintenance and repairs.}

[Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

2. Circumvention: The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly.
[Rule 62-210.650, F.A.C.]

3. Best Management Practice (BMP) Plan: A BMP plan 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. A preliminary BMP plan is contained in Appendix BMP of this permit. This plan also includes quality control and assurance (Q&A) procedures to ensure woody biomass delivered by vendors and suppliers to the NWFREC meet the requirements given in **Condition 6** of this subsection. No later than 180 days before the NWFREC becomes operational, a final BMP plan shall be filed with the Compliance Authority to reflect the final engineering designs of the biomass receiving, handling, storage and processing systems. The final BMP plan will also be incorporate into the Title V operating permit.

PERFORMANCE RESTRICTIONS

4. Approximate Capacities: Each truck dumper will unload approximately 150 tons per hour of biomass with an estimated moisture content of 45%. The covered storage area will hold approximately 12 to 14 days of biomass feedstock (approximately 20,000 tons on a wet basis). The dryer will dry approximately 1,286 TPD of wet biomass per day (assumes moisture content of 30%) and the feeder will transfer approximately 1,000 tons of dry biomass feedstock to the gasifier.
[Application No. 0450012-001-AC; and Rule 62-210.200(PTE), F.A.C.]

5. Restricted Operation: The hours of operation of this emission unit are not limited (8,760 hours per year).
[Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

6. Woody Biomass Fuels: Municipal Solid Waste (MSW) is prohibited from use at this facility. The fuel shall consist of untreated woody biomass as described in Appendix-BMP of this permit. Inspection and testing procedures describe in Appendix- BMP shall be followed to insure that appropriate woody biomass is used as fuel and that MSW is not used as fuel. [Rules 62-4.070(3) F.A.C., and 40 CFR 60.51b.]

7. Paved Roadways and Gravel Areas: Fugitive dust emissions from the plant's paved roadways and gravel areas shall be controlled in accordance with **Condition 11 of Section 2** of this permit.
[Rule 62-4.070, F.A.C. Reasonable Assurance, and Rule 62-296.320, F.A.C.]

EMISSIONS STANDARDS

8. Opacity: As determined by EPA Method 9, there shall be no visible emissions (VE) 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 baghouses associated with this emission unit.
[Rules 62-4.070(3), 62-297.310(7)(c), and 62-212.400(5)(c), F.A.C.].

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TESTING AND MONITORING REQUIREMENTS

9. Initial VE Compliance Tests: The outlets of the drop points, transfer points, silo vent screens associated with the fuel bins and dust collectors of this emissions unit shall be tested to demonstrate initial compliance with the emissions standards for opacity given in **Condition 8** of this subsection. The initial tests shall be conducted within 60 days after achieving permitted capacity, but not 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.]

10. Annual VE Compliance Tests: During each federal fiscal year (October 1st to September 30th), the outlets of the drop points, transfer points, silo vent screens associated with the fuel bins and dust collectors of this emissions unit shall be tested to demonstrate compliance with the emissions standards for opacity given in **Condition 8** of this subsection. [Rule 62-297.310(7)(a)4, F.A.C.]

11. Test Requirements: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix CTR (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]

12. Test Methods: Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
9	Visual Determination of the Opacity of Emissions from Stationary Sources

The above method is described in Appendix A of 40 CFR 60 which is included as Appendix A of this permit and is adopted by reference in Rule 62-204.800, F.A.C. 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

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

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B. Biomass Gasifier with NG Startup Burner (EU-002)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
002	Biomass gasifier with NG startup burner: The biomass feedstock will be converted in the gasifier by pyrolysis to BPG in a circulating fluidized bed (CFB) of hot sand that uses steam as the fluidization medium. During the process, the sand cools and the biomass feedstock breaks down to produce BPG including tar, char and ash. Cooled sand and char are captured in the gasifier cyclones and returned to the char combustor (EU 003) to support combustion and reheat the sand. The BPG from the gasifier cyclone is cooled in a heat exchanger and then cleaned as described in EU 005 or flared as described in EU 004.

EQUIPMENT

1. Equipment: The permittee is authorized to construct a gasifier consisting of the following equipment: CFB gasifier vessel; NG-fueled startup burner; and cyclones.
   [Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

2. Cyclone Separators: One cyclone separator shall be designed, installed and maintained to remove char and sand from the raw BPG and recirculate it to the char combustor for combustion of the char and reheating of the sand. Another cyclone separator shall be designed, installed and maintained to remove the remaining coarse solid ash prior to BPG cleanup or flaring.
   [Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

PERFORMANCE RESTRICTIONS

3. Gasifier Capacity: The maximum rate of biomass feed to the gasifier is 1,000 dry tons per day. The gasifier fuel feed rate shall be measured and recorded by permanently installed equipment including but not limited to a belt scale to measure the actual mass flow, and daily gasifier feedstock sampling and analysis to determine the as-fed moisture content.

   The moisture content shall be obtained by using an accepted American Society of Testing and Materials (ASTM) method suitable for wood or woody biomass when used as a fuel. An accepted method suitable for wood or woody biomass as a fuel from the American Society of Mechanical Engineers (ASME) or the American Boiler Manufacturers Association (ABMA) can be used in lieu of an ASTM method. Records of daily feed rate and moisture content shall be available, and retained as accessible records.

   [Application No. 0450012-001-AC and Rules 62-210.200(PTE) and 62-4.070, F.A.C.]

4. Gasifier Startup Burner Capacity: The design heat input rate of the NGs-fueled startup burner is 25 mmBtu per hour. [Application No. 0450012-001-AC and Rule 62-210.200(PTE), F.A.C.]

5. Restricted Operation: The hours of operation of the gasifier are not limited (8,760 hours per year). The gasifier startup burner may be used only for the purpose of starting up the gasifier.
   [Application No. 0450012-001-AC and Rule 62-210.200(PTE), F.A.C.]

NSPS APPLICABILITY

6. NSPS Subpart Dc and Subpart A Applicability: The gasifier startup burner is subject to all applicable requirements of 40 CFR 60, Subpart Dc which applies to Small Industrial, Commercial or Institutional Boilers and Subpart A, General Provisions. Specifically, this emission unit shall comply with 40 CFR60.48c Reporting and Recordkeeping Requirements. The applicable conditions are given in Appendices A and Dc of this permit.
   [Rule 62-204.800(7)(b) and 40 CFR 60, NSPS-Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units and 40 CFR 60 Subpart A, General Provisions]

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C. Char Combustor Sand Heater (EU-003)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
003	Char combustor sand heater with NG startup burner and sand handling equipment: Sand and char captured in the gasifier cyclones and tars (returned from downstream BPG cleaning system) are fed to the char combustor. Air is introduced at the bottom of the vessel and supports combustion of the char and tars in a circulating fluidized bed (CFB) of sand. Heated sand is captured in the char combustor cyclones and returned to the gasifier to sustain pyrolysis. Exhaust gas from the char combustor passes through a sand cyclone and a hot ash cyclone, is cooled in a heat exchanger and then filtered in a baghouse.

EQUIPMENT

1. Equipment: The permittee is authorized to construct a char combustor/sand heater system consisting of the following equipment: Sand storage silo; CFB char combustor vessel; NG-fueled startup burner; cyclones and a fabric filter baghouse.
[Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

2. Cyclone Separators: One cyclone separator shall be designed, installed and maintained to remove the heated sand from the char combustor exhaust and recycle it back to the gasifier (EU 001). Another cyclone separator shall be designed, installed and maintained to remove most of the hot gasification ash prior to further particulate removal in one of the fabric filter baghouses described in **Condition 3** of this subsection.
[Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

3. Baghouses: The permittee shall install and maintain the following baghouses. Exhaust from these baghouses discharges directly to the ambient air. Should the preliminary design of the baghouses change, the permittee shall provide final design details for all baghouses and controls in the application for a Title V air operation permit along with a concurrent modification of this air construction permit. The Compliance Authority shall be notified 180 days before NWFREC becomes operational of any final engineering design changes. Should the preliminary design change, the permittee shall provide final design details for all baghouses in the application for a Title V air operation permit along with a concurrent modification of this air construction permit.

   a. Exhaust from the sand storage silo shall be controlled by a baghouse designed and maintained to limit PM/PM_{10} emissions to 0.03 gr/dscf or better in the baghouse exhaust.

   b. Exhaust from the second char combustor cyclone (ash) separator shall be further controlled by a separate baghouse designed and maintained to 0.01 gr/dscf or better in the baghouse exhaust.

   [Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

4. Circumvention: The permittee shall not circumvent the air pollution control equipment or allow the emissions of air pollutants without this equipment operating properly. [Rule 62-210.650, F.A.C.]

PERFORMANCE RESTRICTIONS

5. Char Combustor Capacity: The design heat input rate of the char combustor is 124 mmBtu per hour.
[Application No. 0450012-001-AC and Rule 62-210.200(PTE), F.A.C.]

6. Char Combustor Startup Burner Capacity: The design heat input rate of the NG-fueled startup combustor burner is 17 mmBtu per hour. [Application No. 0450012-001-AC and Rule 62-210.200(PTE), F.A.C.]

7. Restricted Operation: The hours of operation of this emissions unit is not limited (8,760 hours per year). The char combustor startup burner may be used only for the purpose of starting up the char combustor.
[Application No. 0450012-001-AC and Rule 62-210.200(PTE), F.A.C.]

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NSPS APPLICABILITY

8. NSPS Subpart Dc and Subpart A Applicability: The gasifier startup burner is subject to all applicable requirements of 40 CFR 60, Subpart Dc which applies to Small Industrial, Commercial or Institutional Boilers and Subpart A, General Provisions. Specifically, this emission unit shall comply with 40 CFR60.48c Reporting and Recordkeeping Requirements. The applicable conditions are given in Appendices A and Dc of this permit.
[Rule 62-204.800(7)(b) and 40 CFR 60, NSPS-Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units and 40 CFR 60 Subpart A, General Provisions]

EMISSIONS STANDARDS

9. Char Combustor Baghouse – Opacity Standard: In accordance with EPA Method 9, VE from the second char combustor cyclone (ash) separator baghouse shall not exceed 5% opacity on a 6-minute average as demonstrated by initial and annual compliance tests. [Rules 62-4.070(3) and 62-297.310(7)(c), F.A.C.]

10. Sand Silo Baghouse – Opacity Standard: In accordance with EPA Method 9, VE from the sand silo baghouse shall not exceed 5% opacity based on a 6-minute average.
[Rules 62-4.070(3) and 62-297.310(7)(c), F.A.C.]

11. Particulate emission (PM/PM_{10}) Standard: PM/PM_{10} emissions from the char combustor exhaust stack shall not exceed 2.5 pounds per hour (lbs/hr) as demonstrated by initial and annual compliance tests.
[Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

12. Nitrogen Oxides (NO_X) Standard: NO_X emissions from the char combustor exhaust stack shall not exceed 9.5 lb/hr as demonstrated by initial and annual compliance tests.
[Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

13. Sulfur Dioxide (SO_2) Standard: SO_2 emissions from the char combustor exhaust stack shall not exceed 5.0 lb/hr as demonstrated by initial and annual compliance tests.
[Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

14. Carbon Monoxide (CO) Standard: Emissions of CO from the char combustor exhaust stack shall not exceed 5.0 lb/hr as demonstrated by initial and annual compliance tests. In addition, three quarterly compliance tests shall be conducted between the initial compliance test and the first annual compliance test and results compared with CO process monitor requirements in **Condition 18** of this subsection.
[Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

15. Dioxin/furan (D/F): D/F emissions shall meet 0.15 toxic equivalent nanograms/dry standard cubic meter at 7% oxygen (TEQ ng/dscm @7% O_2) demonstrated by an initial compliance test no later than 180 days after initial operation. Thereafter an annual compliance test shall be performed during each federal fiscal year (October 1st to September 30th) to show that the dioxin/furan standard is met. If exceeded, the applicant shall: design and install an activated carbon injection system; or modify the char combustor, its riser, duct work, temperature controls, heat exchanger or baghouse; or make other process changes within 180 days of the failed test as necessary to meet the design value. [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

TESTING AND MONITORING REQUIREMENTS

16. Continuous Opacity Monitoring Systems (COMS): A COMS shall be installed, calibrated, operated, and maintained in the char combustor exhaust stack, after the baghouse, in a manner sufficient to demonstrate continuous compliance with the opacity standard specified in **Condition 9** of this subsection. Opacity shall be based on a 6-minute block average. For the COMS, the 6-minute block averages shall begin at the top of each hour. [Rule 62-4.070(3), F.A.C.]

17. COMS Certification: The COMS required by this permit shall be installed prior to startup. Within 60 calendar days of achieving the first gasifier startup, the owner or operator shall certify the COMS. Upon

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certification of the COMS, the owner or operator shall demonstrate compliance with all applicable standards as specified in this permit. [Rule 62-4.070(3)]

18. CO Process Monitor: At least one process monitor shall be installed no later than 180 days after initial operation at an appropriate point between the ash cyclone and the exhaust stack to continuously monitor CO content in the process gases to enable the operator to properly operate the unit while minimizing emissions of CO, opacity, PM/PM_{10} and D/F. The data from the process monitors shall be available at the facility for Department inspection and in a suitable engineering format such as parts per million by volume (ppmv). The process monitor data shall be used in conjunction with the annual stack test data to calculate annual emissions as required in **Section 2, Specific Condition 13**. [62-4.070(3), F.A.C.]

19. Opacity Compliance Tests: The sand silo and char combustor baghouses shall be tested for 30 minutes to demonstrate initial compliance with the opacity standard specified in **Conditions 9 and 10** of this subsection within 60 days after achieving permitted capacity, but no later than 180 days after initial operation of the unit. During each federal fiscal year (October 1st to September 30th), the sand silo baghouse shall be tested in accordance with EPA Method 9 for 30 minutes to demonstrate compliance with the opacity standard. [Rules 62-4.070(3) and 62-297.310(7)(a)1, F.A.C.]

20. CO, PM/PM_{10}, NO_X, SO_2 and D/F Compliance Tests: The char combustor exhaust stack shall be tested to demonstrate initial compliance with the CO, PM/PM_{10}, NO_X, SO_2 and D/F standards no later than 180 days after initial operation. During each federal fiscal year (October 1st to September 30th), the char combustor shall be tested to demonstrate compliance with the CO, PM/PM_{10}, NO_X, SO_2 and D/F standards. [Rule 62-4.070(3), F.A.C.]

21. Test Requirements: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix CTR (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]

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

Method	Description of Method and Comments
EPA 1 - 4	Determination of Traverse Points, Velocity and Flow Rate, Gas Analysis and Moisture Content. Methods shall be performed as necessary to support other methods.
EPA 5, 5B, 17	Determination of Particulate Emissions.
6C	Measurement of SO_2 Emissions (Instrumental)
EPA 7E	Determination of NO_X Emissions (Instrumental).
EPA 9	Visual Determination of Opacity.
EPA 10	Measurement of Carbon Monoxide Emissions (Instrumental).
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.}*
19	Calculation Method for NO_X, PM, and SO_2 Emission Rates
EPA 23	Measurement of Dioxin/Furan Emissions.
25	Determination of Total Gaseous Nonmethane Organic Emissions as Carbon
25A	Measurement of Gaseous Organic Concentrations (Flame Ionization)

RECORDS AND REPORTS

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

D. BPG Flare Systems (EU-004)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
004	BPG flare systems: The flare systems shall only be used to flare BPG gas during startup, planned shutdown, and emergency shutdown (e.g. CTG/DB or gasifier trips). Raw BPG from the biomass gasifier (EU-002) may be flared and not sent to the BPG cleanup system (EU-005). Cleaned, sweetened BPG from the cleanup system may be flared and not further processed for use in the CTG/DB (EU 006 and 007).

EQUIPMENT

1. Equipment: The permittee is authorized to construct two BPG flare systems, including one for the raw BPG and one for "cleaned" BPG, with continuous pilots and combustion chambers to destroy unused BPG. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.
   [Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

PERFORMANCE RESTRICTIONS

2. Approximate Capacities: Each flare system is designed to combust BPG with a design heat input rate of 150 mmBtu per hour. NG shall be used as fuel for the pilots.
   [Application No. 0450012-001-AC and Rule 62-210.200(PTE), F.A.C.]

3. Restricted Operation: Although the hours of operation of the flare systems are not limited, the applicant anticipates that the flares will operate approximately 100 hours per year (hr/yr). The flare systems shall only be used to flare BPG gas during startup, planned shutdown, and emergency shutdown (e.g. CTG/DB or gasifier trips). [Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

EMISSIONS STANDARDS

4. Visible Emissions (VE) Standard: The flares shall be designed for and operated with no VE except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. [Rules 62-4.070(3), F.A.C.]

TESTING AND MONITORING REQUIREMENTS

5. VE Compliance Tests: The flare system exhaust shall be tested to demonstrate initial compliance with the VE standard given in **Condition 4** of this subsection no later than 180 days after initial operation and during each federal fiscal year (October 1st to September 30th) thereafter. EPA Method 22 VE compliance test shall be used to determine the compliance of the flare with the VE requirements. The observation period is 2 hours and shall be used according to Method 22. [Rule 62-4.070(3), F.A.C.]

6. Test Requirements: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix CTR (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]

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

Method	Description of Method and Comments
EPA 22	Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares 2 Hour Duration

8. Work Practice: Good combustion practices will be utilized at all times to ensure emissions from the flare systems are minimized. Therefore, all operators and supervisors shall be properly trained to operate and ensure maintenance of these systems in accordance with the guidelines and procedures established by the manufacturer. The training shall include good operating practices as well as methods for minimizing excess emissions. The flare pilots shall be operated with a flame present at all times. The presence of flare

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pilot flames shall be monitored using a thermocouple or any other equivalent device to detect the presence of flames. [Rules 62-4.070(3) F.A.C.]

RECORDS AND REPORTS

9. Records: The permittee shall record in a written log the duration of each flare event and the reason for flaring. If requested by the Compliance Authority, the permittee shall provide a copy of these records or a summary of these records. [Rule 62-4.070(3), F.A.C.]

10. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix CTR (Common Testing Requirements) of this permit. [Rule 62-297.310(8), F.A.C.]

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E. BPG Cleanup System (EU-005)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
005	BPG Cleanup System: The BPG cleanup system consists of specialized oil scrubbers and an aqueous scrubber with a caustic section. The cooled raw BPG from the gasifier/coarse solids cyclone (EU-002) is treated to remove tars and finer particles in an oil-based gas washer. Tars are returned to support combustion in the char combustor (EU-003). Removal of ammonia (NH_3), hydrogen sulfide (H_2S) and hydrogen chloride (HCl) is accomplished in a wet scrubber that will include a section that will scrub H_2S using caustic soda (NaOH). Cooled, sweetened, and cleaned BPG is then compressed or boosted for delivery to the CT/DB (EU-006 and 007) or flared (EU-004).

EQUIPMENT

1. Equipment: The permittee is required to construct a BPG cleanup system consisting of the following control equipment. None of the control equipment shall discharge directly to the ambient air.

   a. Oil Based Scrubber: A two-stage scrubber that utilizes specialized oils and is designed to remove heavy tars in the first stage and light tars in the second stage. The heavy and light tars are then recycled back to the char combustor.

   b. Aqueous Scrubber: An aqueous scrubber that is designed to remove inorganic impurities.

   [Application No. 0450012-001-AC and Rules 62-4.070(3), F.A.C.]

2. Circumvention: The permittee shall not circumvent the BPG cleanup system except during startup, planned shutdown, and emergency shutdown (e.g. CTG/DB or gasifier trips).
   [Application No. 0450012-001-AC and Rules 62-4.070(3) and 62-210.650, F.A.C.]

TAR HANDLING AND STORAGE

3. Tars shall be continuously returned to the char combustor and not accumulated, stored or disposed of on-site or off-site. [Application No. 0450012-001-AC and Rules 62-4.070(3), F.A.C.]

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F. BPG-Fueled CTG and DB-Fired HRSG (EU-006, EU-007)

This section of the permit addresses the following emissions units.

ID No.	Emission Unit Description
006	One 16 MW (gross) BPG-fueled Solar T-130 CTG and supplementary-fired HRSG with a nominal 71 mmBtu/hour BPG-fueled DB. Steam from the HRSG is used in the shared 26.2 MW (gross) STG.
007	One 16 MW (gross) BPG-fueled Solar T-130 CTG and supplementary-fired HRSG with a nominal 71 mmBtu/hour BPG-fueled DB. Steam from the HRSG is used in the shared 26.2 MW (gross) STG.

EQUIPMENT

1. CTG: The permittee is authorized to install, tune, operate and maintain a combined cycle CTG system consisting of the following equipment: two 16 MW BPG-fueled Solar T-130 CTG; two inlet air filtration systems; two automated CTG control systems; two HRSG with BPG-fueled DB systems; two HRSG stacks; and a shared 26.2 MW STG. NG, biodiesel or ULSD FO will be used during commissioning and during startups, malfunctions and shutdowns. [Application No. 0450012-001-AC and Rule 62-4.070(3), F.A.C.]

2. Wet Injection: The permittee shall install, operate, and maintain a wet injection system (water or steam) to reduce NO_X emissions from each CTG. Prior to the initial emissions performance tests required for each CTG, the wet injection system shall be tuned to achieve sufficiently low CO and NO_X values to meet the CO and NO_X limits with the additional oxidation catalyst and SCR control technology described below. Thereafter, each CTG shall be maintained and tuned in accordance with the manufacturer's recommendations.

3. Selective Catalytic Reduction (SCR) Systems: The permittee shall install an SCR system for each CT/HRSG exhaust stream to control NO_X emissions and further assist in D/F destruction. Each SCR system will consist of an ammonia injection grid, catalyst, ammonia storage, monitoring and control system, electrical, piping and other ancillary equipment. Each SCR system shall be designed, constructed and operated to achieve the permitted levels of NO_X emissions indicated in this subsection. The SCR system shall be designed to achieve a maximum ammonia slip level of 5 ppmvd @ 15% oxygen.
[Application No. 0450012-001-AC and Rule 62-4.070(3), F.A.C.]

   {Permitting Note: In accordance with 40 CFR 60.130, the storage of ammonia shall comply with all applicable requirements of the Chemical Accident Prevention Provisions in 40 CFR 68.}

4. Oxidation Catalyst Systems: The permittee shall install an oxidation catalyst system for each CT/HRSG exhaust stream to control CO and VOC emissions. Each oxidation catalyst system shall be designed, constructed and operated to achieve the permitted levels of CO emissions specified in the subsection.
[Application No. 0450012-001-AC and Rule 62-4.070(3), F.A.C.]

5. Circumvention: The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. Ammonia shall be injected as necessary to ensure compliance with the permitted levels of NO_X emissions specified in this subsection.
[Rules 62-210.650 and Rule 62-4.070(3), F.A.C.]

6. NO_X CEMS: In accordance with §60.4335(b) and §60.4345, the permittee shall install, calibrate, operate and maintain a CEMS to continuously monitor and record NO_X emissions from each combustion turbine exhaust stream within 60 calendar days after achieving permitted capacity.
[Application No. 0450012-001-AC; Rule 62-4.070(3), F.A.C.; and Subpart KKKK in 40 CFR 60]

7. CO CEMS: The permittee shall install, calibrate, operate and maintain a CEMS to continuously monitor and record CO emissions from each combustion turbine exhaust stream within 60 calendar days after achieving permitted capacity. [Application No. 0450012-001-AC; Rule 62-4.070(3), F.A.C]

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PERFORMANCE RESTRICTIONS

8. Authorized Fuels: The only authorized fuels for the CTG and DB systems are:

   a. BPG from the cleanup system containing no more than 0.02% sulfur by volume, 30-operating-day basis.

   b. NG containing no more than 20 grains of sulfur per 100 standard cubic feet (gr S/100 SCF).

   c. Biodiesel (if available) or ULSD FO containing 0.0015% sulfur or less.

   {Permitting Note: only BPG can be burned in the DB; NG, biodiesel or ULSD FO cannot be used}

   [Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

9. Permitted Capacities:

   a. CTG: The maximum heat input rate of each CTG is 161 mmBtu/hour on a 4 hour average basis. This rate is based on a compressor inlet temperature of 59 °F, International Organization for Standardization (ISO) conditions, and the lower heating value (LHV) of the BPG or NG. Heat input rates will vary depending upon CTG characteristics, ambient conditions and alternate methods of operation. The permittee shall provide manufacturer's performance curves (or equations) that correct for site conditions to the Permitting and Compliance Authorities within 45 days of completing the initial compliance testing. Operating data may be adjusted for the appropriate site conditions in accordance with the performance curves and/or equations on file with the Department.

   b. DB Systems: The design heat input rate of each DB located within each HRSG is 71 mmBtu per hour based on the LHV of BPG. [Application No. 0450012-001-AC and Rule 62-210.200(PTE), F.A.C.]

   {Permitting Note: The estimated LHV is 435 British thermal unit per standard cubic foot (Btu/scf) for BPG and 980 Btu/scf for natural gas.}

10. Restricted Operation: Each CTG shall fire NG, biodiesel or ULSD FO no more than a combined 750 hours at permitted capacity during any consecutive 12 month period. When firing the CTG at less than the permitted capacity, fuel usage shall be prorated over the hours of operation by reducing the hours when firing the fuel based on the percentage of the fired capacity compared to the maximum, e.g. 90 percent (5 hours x 0.9 = 4.5 hours of fuel firing). The hours of operation are not otherwise limited (8,760 hours per year). [Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

11. Authorized Method of Operation: Both CTG are permitted to operate only as part of a combined cycle system. [Application No. 0450012-001-AC]

NSPS APPLICABILITY

12. NSPS Subpart KKKK and Subpart A Applicability: The CTG and associated DB are subject to all applicable requirements of 40 CFR 60, Subpart KKKK - Standards of Performance for Stationary Combustion Turbines which applies to CTG and DB constructed after February 18, 2005 and Subpart A, General Provisions.
    [Rule 62-204.800(7)(b), F.A.C. and 40 CFR 60.4300, NSPS - Subpart KKKK - Standards of Performance for Stationary Combustion Turbines (see Appendix KKKK of this permit) and 40 CFR 60 Subpart A, General Provisions (see Appendix A of this permit].

EMISSION LIMITS

13. Emission Standards: The following standards are at least as stringent as the Subpart KKKK limits described in **Condition 12** of this subsection and in Appendix KKKK of this permit. They also include more stringent limits to insure that the facility PSD-pollutant emissions are less than the respective major stationary source thresholds. Emissions from each CTG/DB systems shall not exceed the following standards.

Pollutant	Method of Operation	Initial/Annual Stack Test 3-Run Average		CEMS-Based Averages [h]	
		ppmvd [a]	lb/hr [g]	ppmvd [a]	lb/hr
CO [b]	CTG (BPG)	25.0	9.5	23.0, 30 unit operating day rolling average	N/A
	CTG & DB (BPG)	23.0	12.6		
	CTG (NG)	NA	12.1		N/A
	CTG, All Modes and All Fuels	N/A	12.6	N/A	12.6, 12-month rolling, rolled monthly
NO_X [c]	CTG (BPG)	15.0	9.3	15.0, 30 unit operating day rolling [g h]	N/A
	CTG & DB (BPG)	15.0	13.7		
	CTG (NG)	25.0	8.8		
	CTG All Modes and All Fuels			N/A	13.7 lb/hr 12-months rolling, rolled monthly
PM/PM_{10} [d]	All Modes and All Fuels	N/A	2.6	N/A	
		Fuel Specification: 20 gr S/100 SCF in NG, 0.02% S in BPG and 0.0015% in biodiesel or ULSD FO			
		Visible emissions shall not exceed 10% opacity for each 6-minute block average.			
SAM/SO_2 [e]	All Modes and All Fuels	20 gr S/100 SCF in NG, 0.02% S in BPG and 0.0015% S in biodiesel or ULSD FO [h]			
Ammonia [f]	CTG, All Modes and All Fuels	5	NA	NA	

a. Parts per million by volume dry (ppmvd) corrected to 15% oxygen (O_2).

b. Continuous compliance with the 30 day rolling average CO standard shall be demonstrated based on data collected by the required CEMS. The initial and annual EPA Method 10 tests associated with the certification of the CEMS instruments shall also be used to demonstrate compliance with the individual standards for normal BPG and the DB modes. The twelve month mass emission rate values rolled monthly determined by data collected by the CEMS shall be used to demonstrate yearly emission limits in tons per year (TPY) proving avoidance of PSD.

c. The initial and annual EPA Method 7E or Method 20 tests associated with demonstration of compliance with 40 CFR 60, Subpart KKKK or certification of the CEMS instruments shall also be used to demonstrate compliance with the individual standards for normal BPG and duct burner modes during the time of those tests. NO_X mass emission rates are defined as oxides of nitrogen expressed as nitrogen dioxide (NO_2). Continuous compliance with the 30 day rolling average NO_X standards shall be demonstrated based on data collected by the required CEMS. Twelve month mass emission rate values rolled monthly determined by data collected by the CEMS shall be used to demonstrate yearly emission limits in TPY proving avoidance of PSD.

d. After the initial compliance test the sulfur fuel specification combined with the efficient combustion design and operation of the CTG shall indicate compliance. Compliance with the fuel specifications, CO standards, and visible emissions standards shall serve as indicators of good combustion. Compliance with the fuel specifications shall be demonstrated by keeping records of the fuel sulfur content. Compliance with the visible emissions standard shall be demonstrated by conducting tests in accordance with EPA Method 9.

e. The fuel sulfur specification effectively limits the potential emissions of SAM and SO_2 from the CT. Compliance with the fuel sulfur specifications for NG and BPG shall be determined by the ASTM method D5504-8 while ASTM

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method D5453-09 shall be used for biodiesel or ULSD FO. In lieu of ASTM testing, the permitted can accept fuel supplier/vendor reports on fuel sulfur content.

f. Compliance with the ammonia slip standard shall be demonstrated by conducting tests in accordance with EPA Method CTM-027 or EPA Method 320.

g. The mass emission rate standards are based on a turbine inlet condition of 59 °F. Mass emission rate may be adjusted to actual test conditions in accordance with the performance curves and/or equations on file with the Department.

h. CEMS monitoring compliance shall be in accordance with the 40 CFR 60, NSPS, Subpart KKKK for NO_X as described in 60.4380(b)(1).

[Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

14. Ammonia Slip: Each SCR system shall be designed to achieve a maximum ammonia slip of 5 ppmvd @ 15% oxygen. Actual ammonia slip levels shall not exceed 5 ppmvd @ 15% oxygen as determined by EPA Method CTM-027 based on the average of three test runs. [Rules 62-4.070(3) and 62-297.310(7)(b), F.A.C.]

EXCESS EMISSIONS

15. Excess Emissions Calculations: The following conditions apply only to the SIP-based emissions standards specified above in this subsection. Rule 62-210.700, F.A.C. (Excess Emissions) cannot vary or supersede any federal NSPS, NESHAP, or Acid Rain provision. As provided by the authority in Rule 62-210.700(5), F.A.C., the following conditions supersede the provisions in Rule 62-210.700(1), F.A.C.

a. *CO Emissions Standards*: No excess emissions provisions are made for excess CO emissions.

b. *NO_X Emissions*: Excess NO_X emissions based on the 30-day rolling average standard shall be calculated in accordance with the NSPS Subpart KKKK provisions. NO_X emissions in excess of the 12-month rolling total are not allowed.

c. *Opacity*: As determined by EPA Method 9, visible emissions from each CTG during startup and shutdown shall not exceed 20% opacity based on 6-minute averages. Excess visible emissions resulting from malfunction shall be permitted providing: (1) best operational practices to minimize emissions are adhered to, and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24-hour period.

16. Definitions Related to Excess Emissions: Rule 62-210.200(Definitions), F.A.C. defines the following terms.

a. *Startup* is defined as the commencement of operation of any emissions unit which has shut down or ceased operation for a period of time sufficient to cause temperature, pressure, chemical or pollution control device imbalances, which result in excess emissions.

b. *Shutdown* is the cessation of the operation of an emissions unit for any purpose.

c. *Malfunction* is defined as any unavoidable mechanical and/or electrical failure of air pollution control equipment or process equipment or of a process resulting in operation in an abnormal or unusual manner.

17. Excess Emissions Prohibited: Excess emissions caused entirely or in part by poor maintenance, poor operation or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. All such preventable emissions shall be included in any compliance determinations based on CEMS data. [Rule 62-210.700(4), F.A.C.]

GENERAL COMPLIANCE REQUIREMENTS

MONITORING

18. Fuel Sulfur Monitoring: The permittee shall conduct the following monitoring to demonstrate compliance with the fuel sulfur specifications.

a. For BPG, the permittee shall monitor the fuel sulfur content in accordance with the provisions of Section 60.4370 in NSPS Subpart KKKK of 40 CFR 60. In addition, the permittee shall sample and analyze the

BPG for the heating value at least once per week.

b. For NG, biodiesel and ULSD FO, the permittee shall either obtain reliable fuel sulfur data from the fuel vendor or analyze a weekly sample for the fuel sulfur content.

[Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

RECORDS AND REPORTS

19. Monitoring of Capacity: The permittee shall monitor and record the operating rate of each CTG on a daily average basis, considering the number of hours of operation during each day (including the times of startup, shutdown and malfunction). This shall be achieved through monitoring daily rates of consumption and heat content of each allowable fuel in accordance with the provisions of Appendix D in 40 CFR 75 and recording the data using a monitoring component of the CEMS system required above.
[Rule 62-4.070(3), F.A.C. and 40 CFR 75]

20. Monthly Operations Summary: By the fifth calendar day of each month, the permittee shall record the following for each fuel in a written or electronic log for the previous month and the previous consecutive 12 months: total heat input rate to each CTG from each fuel (mmBtu); the total heat input rate to the duct burner (mmBtu); and the 12-month rolling total of NO_X and CO emissions (tons). Annual NO_X and CO emissions shall be determined in accordance with Rule 62-210.370, F.A.C. Information recorded and stored as an electronic file shall be available for inspection and printing within at least three days of a request by the Department. Fuel consumption shall be monitored in accordance with the provisions of Appendix D in 40 CFR 75. [Rules 62-4.070(3), F.A.C.]

21. Stack Test Reports: The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Compliance Authority on the results of each such test. The required test report shall be filed with the Compliance Authority as soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Compliance Authority to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report shall provide the applicable information specified in Rule 62-297.310(8), F.A.C. and summarized in Appendix D in 40 CFR 75.
[Rule 62-297.310(8), F.A.C.]

PERFORMANCE TESTS

22. Initial Compliance Tests: Each CTG shall be tested to demonstrate initial compliance with the emissions standards for CO, NO_X, PM/PM_{10}, opacity and ammonia slip. The initial tests shall be conducted within 60 days after achieving permitted capacity, but not later than 180 days after initial operation of the unit. Each CTG shall demonstrate compliance with the NO_X standard in accordance with the methods specified in NSPS Subpart KKKK of 40 CFR 60. [Rules 62-4.070(3) and 62-297.310(7)(a)1, F.A.C.]

23. Annual Compliance Tests: During each federal fiscal year (October 1st to September 30th), each CTG shall be tested to demonstrate compliance with the emissions standards for opacity and ammonia slip. Each CTG shall demonstrate compliance with the NO_X standard in accordance with the methods specified in NSPS Subpart KKKK of 40 CFR 60. [Rule 62-297.310(7)(a)4, F.A.C.]

24. Test Requirements: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix CTR (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]

25. Test Methods: Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
7E	Determination of NO_X Emissions from Stationary Sources.
9	Visual Determination of the Opacity of Emissions from Stationary Sources.
10	Determination of CO Emissions from Stationary Sources
19	Determination of SO_2 Removal Efficiency and PM, SO_2 and NO_X Emission Rates Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.
CTM-027	Procedure for Collection and Analysis of Ammonia in Stationary Source.

The above methods are described in Appendix A of 40 CFR 60 and are adopted by reference in Rule 62-204.800, F.A.C. 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]

CONTINUOUS MONITORING REQUIREMENTS

26. CEMS: The permittee shall install, calibrate, maintain and operate CEMS and a diluent monitor to measure and record the emissions of CO and NO_X from each CTG in a manner sufficient to demonstrate continuous compliance with the CEMS emission standards of this section. Each monitoring system shall be installed, calibrated and properly functioning within 60 calendar days of achieving permitted capacity as defined in Rule 62-297.310(2), F.A.C., but no later than 180 calendar days after initial startup and prior to the initial performance tests. Within one working day of discovering emissions in excess of a CO or NO_X standard (and subject to the specified averaging period), the permittee shall notify the Compliance Authority. See Appendix CEMS of this permit for additional CEMS requirements.

    a. *CO Monitor:* The CO monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4 or 4A. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F, and the Data Assessment Report of Section 7 shall be made each calendar quarter, and reported semiannually to the Compliance Authority. The RATA tests required for the CO monitor shall be performed using EPA Method 10 in Appendix A of 40 CFR 60 and shall be based on a continuous sampling train. The CO monitor span values shall be set appropriately, considering the allowable methods of operation and corresponding emission standards.

    b. *NO_X Monitor:* The NO_X monitor shall be certified, operated, and maintained in accordance with the requirements of 40 CFR 75. Record keeping and reporting shall be conducted pursuant to Subparts F and G in 40 CFR 75. The RATA tests required for the NO_X monitor shall be performed using EPA Method 20 or 7E in Appendix A of 40 CFR 60.

    c. *Diluent Monitor:* The oxygen (O_2) or carbon dioxide (CO_2) content of the flue gas shall be monitored at the location where CO and NO_X are monitored to correct the measured emissions rates to 15% oxygen. If a CO_2 monitor is installed, the oxygen content of the flue gas shall be calculated using F-factors that are appropriate for the fuel fired. Each monitor shall comply with the performance and quality assurance requirements of 40 CFR 75.

27. CEMS Data Requirements:

    a. *Data Collection*: Emissions shall be monitored and recorded at all times including startup, operation, shutdown and malfunction except for continuous monitoring system breakdowns, repairs, calibration checks and zero and span adjustments. The CEMS shall be designed and operated to sample, analyze, and record data evenly spaced over an hour. If the CEMS measures concentration on a wet basis, the

DRAFT

CEM system shall include provisions to determine the moisture content of the exhaust gas and an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). Alternatively, the owner or operator may develop through manual stack test measurements a curve of moisture contents in the exhaust gas versus load, and use these typical values in an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). Final results of the CEMS shall be expressed as ppmvd corrected to 15% oxygen. The CEMS shall be used to demonstrate compliance with the CEMS emission standards for CO and NO_X as specified in this permit. For purposes of determining compliance with the CEMS emissions standards of this permit, missing (or excluded) data shall not be substituted with zeros. Upon request by the Department, the CEMS emissions rates shall be corrected to ISO conditions.

b. *Valid Hour*: Hourly average values shall begin at the top of each hour. Each hourly average value shall be computed using at least one data point in each fifteen-minute quadrant of an hour, where the unit combusted fuel during that quadrant of an hour. Notwithstanding this requirement, an hourly value shall be computed from at least two data points separated by a minimum of 15 minutes (where the unit operates for more than one quadrant of an hour). If less than two such data points are available, the hourly average value is not valid. The permittee shall use all valid measurements or data points collected during an hour to calculate the hourly average values.

c. *12-month Rolling Averages:* Compliance with the long-term emission limit for NO_X and CO shall be based on a 12-month rolling average. Each 12-month rolling average shall be the arithmetic average of all valid hourly averages collected during the current calendar month and the previous 11 calendar months.

d. *30 unit operating day Rolling Average:* Compliance with this rolling average is as described in 40 CFR 60.4380(b)(1).

e. *Availability*: Monitor availability for the CEMS shall be 95% or greater in any calendar quarter. The quarterly excess emissions report shall be used to demonstrate monitor availability. In the event 95% availability is not achieved, the permittee shall provide the Department with a report identifying the problems in achieving 95% availability and a plan of corrective actions that will be taken to achieve 95% availability. The permittee shall implement the reported corrective actions within the next calendar quarter. Failure to take corrective actions or continued failure to achieve the minimum monitor availability shall be violations of this permit, except as otherwise authorized by the Department's Compliance Authority.

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

28. Ammonia Monitoring Requirements: In accordance with the manufacturer's specifications, the permittee shall install, calibrate, operate and maintain an ammonia flow meter to measure and record the ammonia injection rate to each SCR system prior to the initial compliance tests. The permittee shall document and periodically update the general range of ammonia flow rates required to meet permitted emissions levels over the range of load conditions allowed by this permit by comparing NO_X emissions recorded by the CEM system with ammonia flow rates recorded using the ammonia flow meter. During NO_X monitor downtimes or malfunctions, the permittee shall operate at the ammonia flow rate that is consistent with the documented flow rate for the CTG load condition. [Rules 62-4.070(3)]

G. Cooling Towers (EU-008)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
008	Cooling towers

EQUIPMENT DESIGN

1. Cooling Tower Design: The permittee is authorized to construct a cooling tower system for the CT/HRSG/STG systems and the cooling of compressor gases with mist eliminators designed for a drift rate of 0.002% of the circulating water flow rate.

   [Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

PERFORMANCE REQUIREMENTS

2. Hours of Operation: Operation of the cooling towers is not restricted (8,760 hours per year). [Application No. 0450012-001-AC and Rule 62-210.200 (PTE), F.A.C.]

3. Circulating Water Flow Rate: Upon request, the applicant shall provide a means for determining the circulating water flow rate through the cooling tower systems. [Rule 62-4.070, F.A.C.]

4. Drift Rate: The permittee shall provide certification along with the application for Title V air operation permit that the cooling towers were constructed and installed to the design specifications in this permit. After this certification is provided, the cooling tower will be considered an unregulated emissions unit. [Rules 62-4.070 and 62-210.200 (PTE), F.A.C.]

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H. Auxiliary Boiler (EU-009)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
009	Auxiliary boiler: The auxiliary boiler fires NG, biodiesel or ULSD FO with a maximum heat input rate of 62 mmBtu/hour to start up the biomass gasification system. Exhaust gases exit a stack with design parameters of 2.75 feet in diameter, 50 feet in height, and a flow rate of 29,000 acfm and an exit temperature of 296 degrees ° F.

EQUIPMENT

1. Auxiliary Boiler: The permittee is authorized to install an auxiliary boiler rated at 62 mmBtu/hour of heat input from firing NG, biodiesel or ULSD FO. The auxiliary boiler shall only be operated for purposes of starting up the gasification system. [Application No. 0450012-001-AC]

PERFORMANCE RESTRICTIONS

2. Authorized Fuel: The auxiliary boiler shall fire only NG with a maximum fuel sulfur content of 20 grains/100 scf or biodiesel or ULSD FO with a sulfur content of 0.0015 percent or less. [Application No. 0450012-001-AC; and Rules 62-210.200(PTE) and 62-296.406(BACT), F.A.C.]

3. Permitted Capacity: The maximum heat input rate of the auxiliary boiler is 62 mmBtu/hour based on a 4-hour average. [Application No. 0450012-001-AC and Rule 62-210.200(PTE), F.A.C.]

4. Restricted Operation: The auxiliary boiler shall fire a combination of NG, biodiesel or ULSD FO no more than 500 hours at permitted capacity in any consecutive 12 month period. If the boiler is fired at less than the permitted capacity the operational hours shall be prorated. The hours of operation of are not otherwise limited. [Application No. 0450012-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

REGULATORY APPLICABILITY

5. Small Boiler BACT: The auxiliary boiler is subject to the requirements of Rule 62-296.406, F.A.C., which includes a determination of the Best Available Control Technology (BACT) for PM and SO_2 emissions. For this project, BACT for PM and SO_2 emissions is determine to be the firing of NG, biodiesel or ULSD FO as the only authorized fuels. [Rule 62-296.406, F.A.C.]

6. NSPS Subpart Dc and Subpart A Applicability: The gasifier startup burner is subject to all applicable requirements of 40 CFR 60, Subpart Dc which applies to Small Industrial, Commercial or Institutional Boilers and Subpart A, General Provisions. Specifically, this emission unit shall comply with 40 CFR60.48c Reporting and Recordkeeping Requirements. The applicable conditions are given in Appendices A and Dc of this permit.
[Rule 62-204.800(7)(b) and 40 CFR 60, NSPS-Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units and 40 CFR 60 Subpart A, General Provisions]

EMISSIONS STANDARDS

7. Opacity Standard: In accordance with EPA Method 9, VE shall not exceed 20% opacity except for one 6-minute period per hour that shall not exceed 27% opacity.
[Application No. 0450012-001-AC; and Rule 62-296.406(BACT), F.A.C.]

TESTING AND MONITORING REQUIREMENTS

8. Initial Compliance Tests: As determined by EPA Method 9, the emissions unit shall be tested to demonstrate initial compliance with the opacity standard given in **Condition 7** of this subsection within 60 days after achieving permitted capacity, but no later than 180 days after initial operation of the unit.
[Rules 62-4.070(3) and 62-297.310(7)(a)1, F.A.C.]

9. Annual Compliance Tests: During each federal fiscal year (October 1st to September 30th), the emissions unit shall be tested in accordance with EPA Method 9 to demonstrate compliance with the opacity standard given in **Condition 7** of this subsection. [Rule 62-297.310(7)(a)4, F.A.C.]

10. Test Requirements: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix CTR (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]

RECORDS AND REPORTS

11. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix CTR (Common Testing Requirements) of this permit. For each test run, the report shall also indicate the heat input rate. [Rule 62-297.310(8), F.A.C.]

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I. Miscellaneous Support Systems (EU-010)

This section of the permit addresses the following non regulated emissions units.

ID No.	Emission Unit Description
010	Miscellaneous support systems

EQUIPMENT

1. Equipment: The permittee is authorized to construct the following support equipment for this project.
   a. A water treatment system for the boilers;
   b. A wastewater treatment system for process wastewater;
   c. An ash handling system;
   d. Gas compressor systems for the BPG and NG; and,
   e. Miscellaneous diesel (biodiesel) and/or ULSD FO storage tanks.

   [Application No. 0450012-001-AC]

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