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**DIVISION OF AIR  
RESOURCE MANAGEMENT**

**AIR CONSTRUCTION PERMIT  
APPLICATION AND PREVENTION OF  
SIGNIFICANT DETERIORATION  
ANALYSIS**

**Anclote Power Generating Facility – Natural Gas Fuel  
Conversion**

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**June 2012**

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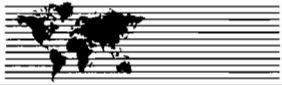
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## 1.0 INTRODUCTION

Progress Energy Florida, Inc. (PEF) is proposing modifications to its existing fossil fuel-fired steam generator Units 1 and 2, and associated equipment, at the Anclote Power Plant (Site location provided in Figure 1). The modification will consist of converting the fuel supply from residual fuel oil and natural gas to the exclusive firing of natural gas (the Project). The Project will also require additional fuel gas heaters for the two units.

The Project requires an air construction permit and prevention of significant deterioration (PSD) review. This application provides the necessary air quality assessments for determining the Project's compliance with applicable state and federal regulations. The critical aspects of these assessments include the air quality impact analyses performed using air dispersion modeling and the best available control technology (BACT) analyses performed to evaluate the selected emission control technology.

The Project will be a major modification to an existing air pollution source that will result in increases in air emissions in Pasco County. The U.S. Environmental Protection Agency (EPA) has implemented regulations requiring a PSD review. PSD regulations are promulgated under 40 Code of Federal Regulations (CFR) Part 52.21 and implemented through an EPA-approved regulation adopted by the Florida Department of Environmental Protection (DEP or Department). Florida's PSD regulations are codified in Rules 62-212.400, FAC. These regulations incorporate the EPA PSD regulations.

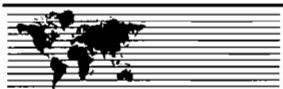
Based on the emissions from the project, presented in Table 1, a PSD review is required for emissions of carbon monoxide (CO) and volatile organic compounds (VOC), which are regulated pollutants.

The proposed project site is located within Pasco County, Florida, which is currently designated as being an attainment or unclassifiable area for all criteria pollutants [i.e., attainment: ozone ( $O_3$ ), particulate matter with aerodynamic diameter of 10 microns or less ( $PM_{10}$ ), particulate matter with aerodynamic diameter of 2.5 microns or less ( $PM_{2.5}$ ), sulfur dioxide ( $SO_2$ ), carbon monoxide (CO), and nitrogen dioxide ( $NO_2$ ); unclassifiable: lead] and is classified as a PSD Class II area for  $PM_{10}$ ,  $SO_2$ , and  $NO_2$ ; therefore, the PSD review will follow the regulations pertaining to such designations.

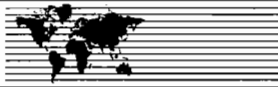
This air permit application contains the information required by Department, Form No. 62-210.900(1), Effective: 03/11/2011, Application for Air Permit — Long Form.

This air application report is divided into the following major sections:

- Section 1.0 provides the Project introduction.
- Section 2.0 presents a description of the Project.
- Section 3.0 summarizes and reviews the regulatory applicability analysis.
- Section 4.0 includes the control technology review with discussions on BACT.



- Section 5.0 discusses the ambient air monitoring analysis (pre-construction monitoring) required by PSD regulations.
- Section 6.0 provides the results of the Project's air quality impact analysis.
- Associated Tables, Figures and Appendices are provided at the end of the report.
- FDEP Form No. 62-210.900(1), Application for Air Permit — Long Form and associated attachments follows the report.



## 2.0 PROJECT DESCRIPTION

The project will consist of converting Anclote Units 1 and 2 from present use of heavy fuel oil and natural gas to exclusive firing of natural gas only. The current natural gas firing capability for each unit is limited to 45 percent of the total heat input. The balance of the heat input is from heavy fuel oil. The units are currently configured to operate on 100 percent heavy oil. Following the conversion, the use of heavy fuel oil will no longer be possible. The change in fuels is needed to exempt the units from the new Mercury and Air Toxics Standard (MATS) limits imposed by the U.S. EPA.

### 2.1 Existing Emission Units

Unit No.1, a fossil fuel-fired steam generator, consists of a Combustion Engineering, Inc. Controlled Circulation, Radiant Reheat (CCRR) type boiler/steam generator and steam turbine which drives a generator with a nameplate rating of 535 (summer)/540 (winter) megawatts (MW) (electric). This unit is authorized to fire fuel oil Nos. 1 through 6, and on-specification used oil, with a nominal maximum heat input of 4,964 MMBtu per hour. Pipeline quality natural gas may be fired alone or co-fired with fuel oil and is limited to a nominal maximum heat input of 2,300 MMBtu per hour. Unit No.1 is authorized to co-fire natural gas with fuel oil Nos. 1 through 6, and on-specification used oil, with a nominal maximum heat input of 5,073 MMBtu per hour. Fuel additives, typically of a magnesium oxide, hydroxide or sulfonate, or calcium nitrate origin, are used to enhance combustion and/or control acidity. Fossil fuel-fired steam generator Unit No. 1 began commercial operation on October 16, 1974.

Unit No.2, a fossil fuel-fired steam generator, consists of a Combustion Engineering, Inc. CCRR type boiler/steam generator and steam turbine which drives a generator with a nameplate rating of 525 (summer)/530 (winter) MW (electric). This unit is authorized to fire fuel oil Nos. 1 through 6, and on-specification used oil, with a nominal maximum heat input of 4,850 MMBtu per hour. Pipeline quality natural gas may be fired alone or co-fired with fuel oil and is limited to a nominal maximum heat input of 2,300 MMBtu per hour. Unit No.2 is authorized to co-fire natural gas with fuel oil Nos. 1 through 6, and on-specification used oil, with a nominal maximum heat input of 4,957 MMBtu per hour. Similar to Unit 1, fuel additives, typically of a magnesium oxide, hydroxide or sulfonate, or calcium nitrate origin, are used to enhance combustion and/or control acidity. Fossil fuel-fired steam generator Unit No. 2 began commercial operation on October 31, 1978.

These emission units may burn on-specification used oil generated on or off-site. Each boiler/steam generator for Unit Nos. 1 and 2 drives a turbine generator and both units share a common stack. The stack parameters are as follows:

- 499 feet stack height
- 24 foot stack diameter



- 349 degrees F exhaust stack temperature
- 3,440,279 acfm stack gas flow rate for both units combined

## 2.2 Proposed Project

The proposed natural gas conversion requires the installation of new natural gas burners, including replacement of the existing natural gas burners to provide full output on 100 percent natural gas. In addition, superheater surface area reductions, upgrade of associated superheater metallurgy, and upgrading the burner control and management system will be needed. The modifications also include changes to the natural gas delivery systems serving each of the units and replacement of the existing natural gas metering and regulating station.

The Project will also require the addition of two fuel gas heaters, one for each of the steam units. The estimated maximum hourly emissions and exhaust information representative of the natural gas heaters are presented in Table 3. The natural gas heaters will utilize a heat transfer fluid for heating the natural gas and be fired with only natural gas. Each heater will have an estimated heat input of 16.5 MMBtu/hr.

The Project will be designed to minimize NO<sub>x</sub> emissions by removing a portion of combustion air from the main firing zone and injecting it higher up in the furnace, above the main firing zone. This practice is known as "staging" and the air injected above the main firing zone is called "overfire air" (OFA). If the overfire air nozzles are placed directly above the top fuel firing elevation, this combustion air is called "close-coupled overfire air" (CCOFA).

With less air available for combustion in the main firing zone, the fire burns in a sub-stoichiometric condition. This results in a "cooler" flame, leading to a lower rate of formation of thermal NO<sub>x</sub>. The longer the residence time of the fireball at this sub-stoichiometric condition, the less thermal NO<sub>x</sub> will be produced. For this reason, a NO<sub>x</sub> reduction system utilizing CCOFA will be utilized for the Project.

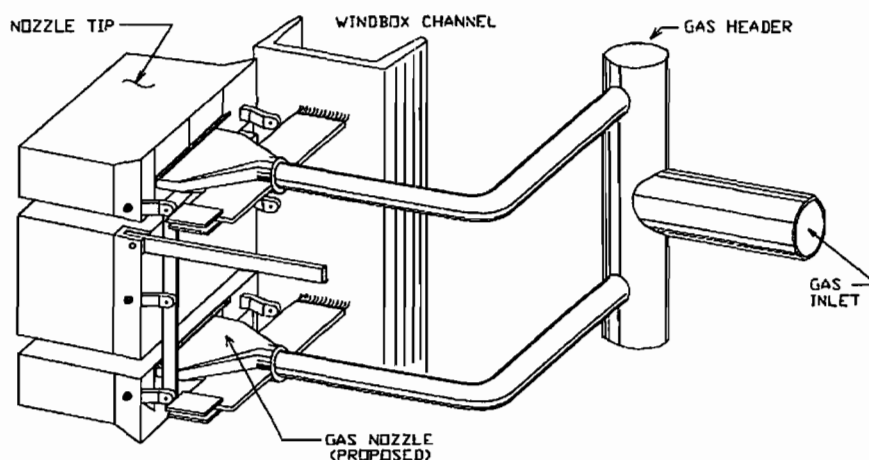
Alstom proposes to supply five elevations of new gas firing equipment to include gas guns, nozzle tips, and corner gas valve trains. The ignitors on the existing gas elevation are the original Alstom oil ignitors and will be replaced with new gas side ignitors for a total of 5 elevations of gas side ignitors.

The gas gun assembly will be Alstom's standard gas gun arrangement. This will be composed of two spuds located in the fuel compartment. Each spud is connected to a pipe that exits the side of the windbox into a header. A single flanged inlet pipe will protrude from the header to connect to the gas supply stainless steel flex hose. The gas gun assembly will be sized for approximately 268 MMBtu/hr per compartment. A typical arrangement of a gas gun assembly for the gas compartment is shown below.





## Gas Gun Assembly



### 2.3 Proposed Source Emissions and Stack Parameters

A summary of Project emissions are presented in Table 1. In addition, estimated maximum hourly emissions and exhaust information representative of each steam unit during normal operation are presented in Table 2, attached to this report. The proposed emissions from the modified units will be offset by a reduction in actual emissions associated with the exclusive firing of natural gas. The following table provides a summary of the highest two-year average actual emissions from existing Units 1 and 2 during the last five-year period.

#### Summary of the Highest Two-Year Average Emissions from Existing Units 1 and 2

Pollutant		Highest Two-Year Average <sup>a</sup>			
		EU001 (TPY)	Years	EU002 (TPY)	Years
Volatile Organic Compounds	VOCs	38.1	2006-2007	40.2	2006-2007
Sulfur Dioxide <sup>b</sup>	SO <sub>2</sub>	11,891	2006-2007	13,381	2006-2007
Nitrogen Oxides <sup>b</sup>	NO <sub>x</sub>	3,225	2006-2007	3,315	2006-2007
Carbon Monoxide	CO	246.6	2006-2007	259.6	2006-2007
PM—Total	PM	386.6	2006-2007	418.3	2006-2007
PM <sub>10</sub>	PM <sub>10</sub>	274.6	2006-2007	297.1	2006-2007
PM <sub>2.5</sub> <sup>c</sup>	PM <sub>2.5</sub>	103.3	2008-2009	89.7	2008-2009
Lead	Pb	0.36	2009-2010	0.36	2009-2010
Greenhouse Gases <sup>b</sup>	CO <sub>2</sub> e	1,226,371	2006-2007	1,291,035	2006-2007

Notes: <sup>a</sup> Based on actual emissions for the existing boilers reported in annual operating report (AOR) from 2006 through 2010.

<sup>b</sup> CEMS data based on Acid Rain Program (ARP) emission report from Clean Air Markets database.

<sup>c</sup> Data not available in AOR. Highest 2-year average based on latest three years (i.e., 2008, 2009, and 2010) data.



The above summary is for the most recent period of representative operation, determined to be calendar years 2006 through 2010. A comparison of calendar year 2011 to the representative five year period (i.e., 2006 through 2010) indicates a significant difference in fuel mix and is, therefore deemed to not be representative of recent normal operation. Specifically, as noted in the summary table below, the firing of No.6 fuel oil decreases significantly in 2011 when compared to the previous 5-year period.

#### Summary of Fuel Usage for Calendar Years 2006 through 2011 of Existing Units 1 and 2

Year	Anclote Unit 1		Anclote Unit 2	
	No. 6 Oil Usage (10 <sup>3</sup> gal/yr)	Natural Gas Usage (MMcf/yr)	No. 6 Oil Usage (10 <sup>3</sup> gal/yr)	Natural Gas Usage (MMcf/yr)
2006	92,879	99	98,495	103
2007	97,149	1,329	100,446	1,635
2008	53,607	4,457	61,124	4,032
2009	37,184	4,346	29,198	5,266
2010	23,466	7,574	26,299	7,369
2011	7,707	8,839	7,679	9,013

Source: FDEP AOR Data.

Table 1, attached to this report, presents the net emission changes, resulting from the conversion of the existing fossil fuel-fired boilers to the configuration allowing exclusive natural gas-firing, compared to the PSD significant emission rate (SER) thresholds. PSD review is required for emissions of a pollutant greater than the listed PSD SER thresholds. As shown in Table 1, the net emission changes for the proposed Project are less than the PSD SERs for all pollutants, except for CO and VOC. Therefore, PSD review is required for CO and VOC.

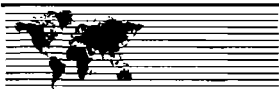
It should be noted that projections of future actual emissions are based on estimated operation of approximately 3,980 hours per year per unit. At these hours per year and full load, PSD review was triggered for emissions of CO and VOC. At assumed emission rates, PSD would theoretically be triggered for NOx and GHGs at higher annual operating hours. However, depending on actual emission rates and system wide demand, operation could be unlimited. PEF has conducted future operating projections for the Anclote Plant, both with and without the natural gas conversion, and the projections do not reflect any significant differences as a result of the conversion of these units to natural gas. Therefore, PEF's position is that there is not a causal relationship between the Project and future actual utilization and emission increases in these pollutants (in fact, hourly emission rates of NOx and GHGs will decrease as a result of the fuel conversion). In other words, future actual annual emissions of NOx and GHGs may be greater than past actual emissions, by a significant amount, but, if so, would be a reflection of system wide demand increase. Such an increase in emissions due to a demand increase unrelated to the Project would be excluded from the determination of regulatory applicability.



Emission factors for hazardous air pollutants (HAPs) were evaluated for the natural gas fired boilers as well as the natural gas-fired fuel gas heaters, based on U.S. EPA AP-42 Tables 1.4-3 and 1.4-4, Natural Gas Combustion. Summaries of the trace metal HAP emissions and the organic HAP emissions for the two natural gas-fired boilers are presented in Table 4 and Table 5, respectively. Summaries of the emission factors and emissions for the two fuel gas heaters are presented in Table 6.

## **2.4 Site Layout, Structures, and Stack Sampling Facilities**

A site layout is presented in Figure 2. The dimensions of the buildings and structures are further discussed in Section 6 of this report.



### **3.0 AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY**

The following discussion pertains to the federal, state, and local air regulatory requirements and their applicability to the Project. These requirements must be satisfied before the proposed facility can begin construction and/or operation.

#### **3.1 National, State, and Local AAQS**

The existing National and Florida AAQS are presented in Table 7. Primary AAQS were promulgated to protect the public health with an adequate margin of safety [42 USC Section 7409(b)(1)]. The primary AAQS are designed to protect children, the elderly, and those with respiratory diseases. Secondary AAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air [42 USC Section 7409(b)(2)]. Areas of the country in violation of AAQS are designated as nonattainment areas and new sources to be located in or near these areas may be subject to more stringent air permitting requirements.

#### **3.2 PSD Requirements**

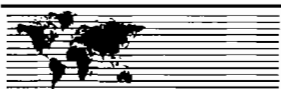
##### **3.2.1 General Requirements**

Under federal and State of Florida PSD review requirements, all new or modified major sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and a permit issued before the commencement of construction. Florida's State Implementation Plan (SIP), which contains PSD regulations, has been approved by EPA; therefore, PSD approval authority has been granted to DEP.

A "major facility" is defined as any one of 28 named source categories that have the potential to emit 100 tons per year (TPY) or more, or any other stationary facility that has the potential to emit 250 TPY or more, of any pollutant regulated under CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment.

Subject to certain exceptions, a "major modification" is defined under PSD regulations as a physical or operational change at an existing major facility that increases the facility's emissions by an amount that is greater than the defined significant emission rates. The comparison of net Project emissions and corresponding PSD significant emission rates are shown in Table 1.

EPA's regulations identify certain increases above an air quality baseline concentration level of SO<sub>2</sub>, PM<sub>10</sub>, and NO<sub>2</sub> concentrations that would constitute significant deterioration. The EPA class designations and allowable PSD increments are presented in the table below. The State of Florida has adopted the EPA class designations and allowable PSD increments for SO<sub>2</sub>, PM<sub>10</sub>, and NO<sub>2</sub>.

**Allowable PSD Increments**

Pollutant	Averaging Time	Class I PSD Increments	Class II PSD Increments
PM <sub>10</sub>	Annual Arithmetic Mean	4	17
	24-Hour Maximum	8	30
SO <sub>2</sub>	Annual Arithmetic Mean	2	20
	24-Hour Maximum	5	91
	3-Hour Maximum	25	512
CO	8-Hour Maximum	NA	NA
	1-Hour Maximum	NA	NA
NO <sub>2</sub>	Annual Arithmetic Mean	2.5	2.5
O <sub>3</sub>	1-Hour Maximum	NA	NA

**Note:** Short-term maximum concentrations are not be exceeded more than once per calendar year.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified facility. Federal PSD requirements are contained in 40 CFR 52.21, Prevention of Significant Deterioration of Air Quality. The State of Florida has adopted PSD regulations which have been approved by EPA [Rule 62-212.400 FAC]. Major facilities and major modifications are required to undergo the following analysis related to PSD for each pollutant emitted in significant amounts:

- Control technology review,
- Source impact analysis,
- Air quality analysis (monitoring),
- Source information, and
- Additional impact analyses.

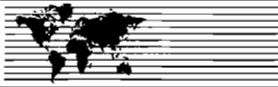
In addition to these analyses, a new or modified source must be reviewed with respect to GEP stack height regulations. Discussions concerning each of these requirements are presented in the following sections.

### **3.2.2 Control Technology Review**

The control technology review requirements of the federal and state PSD regulations require that all applicable federal and state emission-limiting standards be met, and that BACT be applied to control emissions from the source (Rule 62-212.410, FAC). The BACT requirements are applicable to all regulated pollutants for which the increase in emissions from the facility or modification exceeds the significant emission rate (see Table 1).

BACT is defined in 40 CFR 52.21(b)(12) as:

*An emissions limitation (including a visible emission standard) based on the maximum degree of reduction of each pollutant subject to regulation under the Act which would be emitted by any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and*



*economic impacts, and other costs, determination is achievable through application of production processes and available methods, systems, and techniques) for control of such pollutant. In no event shall application of best available control technology (BACT) result in emissions of any pollutant, which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular part of a source or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice, or operation and shall provide for compliance by means, which achieve equivalent results.*

*BACT was promulgated within the framework of the PSD requirements in the 1977 amendments of the CAA [Public Law 95-95; Part C, Section 165(a)(4)]. The primary purpose of BACT is to optimize consumption of PSD air quality increments and thereby enlarge the potential for future economic growth without significantly degrading air quality (EPA, 1978; 1980). Guidelines for the evaluation of BACT can be found in EPA's Guidelines for Determining Best Available Control Technology (BACT) (EPA, 1978) and in the PSD Workshop Manual (EPA, 1980). These guidelines were promulgated by EPA to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. In addition, through implementation of these guidelines, BACT in one area may not be identical to BACT in another area. According to EPA (1980), "BACT analyses for the same types of emissions unit and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site specific factors. Therefore, BACT analyses must be conducted on a case-by-case basis."*

BACT requirements are intended to ensure that the control systems incorporated in the design of a facility reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the proposed facility. BACT cannot be less stringent than any applicable NSPS for a source. An evaluation of the air pollution control techniques and systems is required, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emission reduction than the proposed control technology. The cost-benefit analysis requires the documentation of the material, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A decision on BACT is to be based on sound judgment, balancing environmental benefits with energy, economic, and other impacts (EPA, 1978).

Historically, a "bottom-up" approach consistent with the BACT Guidelines and PSD Workshop Manual has been used. With this approach, an initial control level, which is usually NSPS, is evaluated against successively more stringent controls until a BACT level is selected. However, EPA became concerned that the bottom-up approach was not providing the level of BACT decisions originally intended. As a result, in December 1987, the EPA Assistant Administrator for Air and Radiation mandated changes in the



implementation of the PSD program, including the adoption of a new “top-down” approach to BACT decision making.

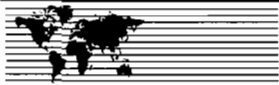
The top-down BACT approach essentially starts with the most stringent (or top) technology and emissions limit that have been applied elsewhere to the same or a similar source category. The applicant must next provide a basis for rejecting this technology in favor of the next most stringent technology or propose to use it. Rejection of control alternatives may be based on technical or economic infeasibility. Such decisions are made on the basis of physical differences (e.g., fuel type), locational differences (e.g., availability of water), or significant differences that may exist in the environmental, economic, or energy impacts. The differences between the proposed facility and the facility on which the control technique was applied previously must be justified. EPA has issued a draft guidance document on the top-down approach entitled *Top-Down Best Available Control Technology Guidance Document* (EPA, 1990). FDEP utilizes the “top-down” BACT approach.

### **3.2.3 Source Impact Analysis**

A source impact analysis must be performed for a proposed major source or major modification subject to PSD review for each pollutant for which the increase in emissions exceeds the significant emission rate (Table 8). The PSD regulations specifically provide for the use of atmospheric dispersion models in performing impact analyses, estimating baseline and future air quality levels, and determining compliance with AAQS and allowable PSD increments. Designated EPA models normally must be used in performing the impact analysis. Specific applications for other than EPA-approved models require EPA's consultation and prior approval. Guidance for the use and application of dispersion models is presented in the EPA publication *Guideline on Air Quality Models (Revised)*.

To address compliance with AAQS and PSD Class II increments, a source impact analysis must be performed for the criteria pollutants. However, this analysis is not required for a specific pollutant if the net increase in impacts as a result of the new source or modification is below significant impact levels. The significant impact levels are threshold levels that are used to determine the level of air impact analyses needed for the project. If the new or modified source's impacts are predicted to be less than significant, then the source's impacts will not have a significant adverse affect on air quality, and additional modeling with other sources is not required. However, if the source's impacts are predicted to be greater than the significant impact levels, additional modeling with other sources is required to demonstrate compliance with AAQS and PSD increments.

The EPA has proposed significant impact levels for Class I areas. The levels are as follows:

**Significant Impact Levels (SILs) for Class I Areas**

Pollutant	Averaging Time	Proposed EPA PSD Class I Significant Impact Levels (ug/m <sup>3</sup> )
SO <sub>2</sub>	1-hour	NA
	3-hour	1
	24-hour	0.2
	Annual	0.1
PM <sub>10</sub>	24-hour	0.3
	Annual	0.2
PM <sub>2.5</sub>	24-hour	NA
	Annual	NA
NO <sub>2</sub>	Annual	0.1
	1-hour	NA

Note: ug/m<sup>3</sup> = micrograms per cubic meter.

Although these levels have not been officially promulgated as part of the PSD review process and may not be binding for states in performing PSD reviews, the proposed levels serve as a guideline in assessing a source's impact in a Class I area. The EPA action to incorporate Class I significant impact levels in the PSD process is part of implementing NSR provisions of the 1990 CAA Amendments. Because the process of developing the regulations will be lengthy, EPA believes that the proposed rules concerning the significant impact levels is appropriate to assist states in implementing the PSD permit process. The FDEP has accepted the use of these significant impact levels.

Various lengths of meteorological data records can be used for impact analysis. A five-year period can be used with corresponding evaluation of highest, second-highest short-term concentrations for comparison to AAQS or PSD increments. The term "highest, second-highest" (HSH) refers to the highest of the second-highest concentrations at all receptors (i.e., the highest concentration at each receptor is discarded). The second-highest concentration is significant because short-term AAQS specify that the standard should not be exceeded at any location more than once a year. If fewer than five years of meteorological data are used in the modeling analysis, the highest concentration at each receptor normally must be used for comparison to air quality standards. Similarly, the term "H6H" refers to the highest of the sixth-highest concentrations at each receptor over 5 years (i.e., the six highest concentrations at each receptor for 5 years combined is identified, and the highest five concentrations at each receptor are discarded; the highest remaining concentration is used).

The term "baseline concentration" evolves from federal and state PSD regulations and refers to a concentration level corresponding to a specified baseline date and certain additional baseline sources.

By definition, in the PSD regulations as amended August 7, 1980, baseline concentration means the ambient concentration level that exists in the baseline area at the time of the applicable baseline date. A





baseline concentration is determined for each pollutant for which a baseline date is established and includes:

1. The actual emissions representative of facilities in existence on the applicable baseline date; and
2. The allowable emissions of major stationary facilities that commenced construction before January 6, 1975, for SO<sub>2</sub> and PM(TSP) concentrations or February 8, 1988, for NO<sub>2</sub> concentrations, but that were not in operation by the applicable baseline date.

The following emissions are not included in the baseline concentration and, therefore, will affect PSD increment consumption.

1. Actual emissions from any major stationary facility on which construction commenced after January 6, 1975, for SO<sub>2</sub> and PM(TSP) concentrations and after February 8, 1988, for NO<sub>2</sub> concentrations; and
2. Actual emission increases and decreases at any stationary facility occurring after the baseline date.

In reference to the baseline concentration, the term "baseline date" actually includes three different dates:

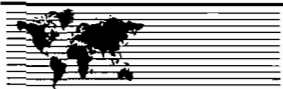
1. The major facility baseline date, which is January 6, 1975, in the cases of SO<sub>2</sub> and PM(TSP) and February 8, 1988, in the case of NO<sub>2</sub>.
2. The minor facility baseline date, which is the earliest date after the trigger date on which a major stationary facility or major modification subject to PSD regulations submits a complete PSD application.
3. The trigger date, which is August 7, 1977, for SO<sub>2</sub> and PM(TSP) and February 8, 1988, for NO<sub>2</sub>.

The minor source baseline date for SO<sub>2</sub> and PM(TSP) has been set as December 27, 1977, for the entire State of Florida (Rules 62-204.200(22); 204.360, FAC). The minor source baseline for NO<sub>2</sub> has been set as March 28, 1988 (Rule 62-204.200(22); 204.360, FAC). It should be noted that references to PM(TSP) are also applicable to PM<sub>10</sub>.

### **3.2.4 Air Quality Monitoring Requirements**

In accordance with requirements of 40 CFR 52.21(m) and Rule 62-212.400(5)(f), FAC, any application for a PSD permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary facility or major modification. For a new major facility, the affected pollutants are those that the facility potentially would emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceeds the significant emission rate (Table 8).

Ambient air monitoring for a period of up to one year generally is appropriate to satisfy the PSD monitoring requirements. A minimum of four months of data is required. Existing data from the vicinity of



the proposed source may be used if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring network is provided in EPA's Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA, 1987a).

The regulations include an exemption that excludes or limits the pollutants for which an air quality analysis must be conducted. This exemption states that Florida DEP may exempt a proposed major stationary facility or major modification from the monitoring requirements with respect to a particular pollutant if the emissions increase of the pollutant from the facility or modification would cause, in any area, air quality impacts less than the de minimis levels presented in Table 8 (Rule 62-212.400-3, FAC). If the facility's predicted impacts are less than the de minimis levels, then preconstruction monitoring is not required.

### **3.2.5 Source Information/GEP Stack Height**

Source information must be provided to adequately describe the project. The general type of information required for this project is presented in Section 2.0.

The 1977 CAA Amendments require that the degree of emission limitation required for control of any pollutant not be affected by a stack height that exceeds GEP or any other dispersion technique. On July 8, 1985, EPA promulgated final stack height regulations (EPA, 1985a). Identical regulations have been adopted by Florida DEP (Rule 62-210.550, FAC). GEP stack height is defined as the highest of:

1. 65 meters (m); or
2. A height established by applying the formula:

$$H_g = H + 1.5L$$

where:  $H_g$  = GEP stack height,

$H$  = Height of the structure or nearby structure, and

$L$  = Lesser dimension (height or Projected width) of nearby structure(s); or

3. A height demonstrated by a fluid model or field study.

"Nearby" is defined as a distance up to five times the lesser of the height or width dimensions of a structure or terrain feature, but not greater than 0.8 km. Although GEP stack height regulations require that the stack height used in modeling for determining compliance with AAQS and PSD increments not exceed the GEP stack height, the actual stack height may be greater.

The stack height regulations also allow increased GEP stack height beyond that resulting from the above formula in cases where plume impaction occurs. Plume impaction is defined as concentrations measured



or predicted to occur when the plume interacts with elevated terrain. Elevated terrain is defined as terrain that exceeds the height calculated by the GEP stack height formula.

### **3.2.6 Additional Impact Analysis**

In addition to air quality impact analyses, federal and State of Florida PSD regulations require analyses of the impairment to visibility and the impacts on soils and vegetation that would occur as a result of the proposed source [40 CFR 52.21(o); Rule 62-212.400(5)(e), F.A.C.]. These analyses are to be conducted primarily for PSD Class I areas. Impacts as a result of general commercial, residential, industrial, and other growth associated with the source also must be addressed. These analyses are required for each pollutant emitted in significant amounts.

### **3.2.7 Air Quality Related Values**

An Air Quality Related Value (AQRV) analysis is performed to assess the potential risk to AQRVs at the closest Class I area due to the proposed emissions from the project generating facility. The Chassahowitzka NWA is the closest Class I area to the site, and is located approximately 42 km northeast of the project.

The U.S. Department of the Interior in 1978 administratively defined AQRVs to be:

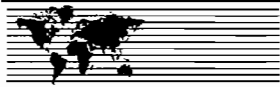
*All those values possessed by an area except those that are not affected by changes in air quality and include all those assets of an area whose vitality, significance, or integrity is dependent in some way upon the air environment. These values include visibility and those scenic, cultural, biological, and recreational resources of an area that are affected by air quality.*

*Important attributes of an area are those values or assets that make an area significant as a national monument, preserve, or primitive area. They are the assets that are to be preserved if the area is to achieve the purposes for which it was set aside (Federal Register 1978).*

The AQRVs include visibility, freshwater and coastal wetlands, dominant plant communities, unique and rare plant communities, soils and associated periphyton, and the wildlife dependent on these communities for habitat. Rare, endemic, threatened, and endangered species of the national park and bioindicators of air pollution (e.g., lichens) must also be evaluated.

## **3.3 Nonattainment Rules**

FDEP has nonattainment provisions (Rule 62-212.500, FAC) that apply to all major new facilities located in a nonattainment area. In addition, for major facilities that are located in an attainment or unclassifiable area, the nonattainment review procedures apply if the source or modification is located within the area of influence of a nonattainment area. The Anclote Power Plant is located in Pasco County, which is classified as an attainment area for all criteria pollutants. Therefore, nonattainment new source requirements are not applicable.



### 3.4 Emission Standards

#### 3.4.1 New Source Performance Standards

The NSPS are a set of national emission standards that apply to specific categories of new sources. As stated in the 1977 CAA Amendments, these standards "shall reflect the degree of emission limitation and the percentage reduction achievable through application of the best technological system of continuous emission reduction the Administrator determines has been adequately demonstrated."

The Anclote Power Plant does not operate units subject to the NSPS of 40 CFR 60, nor will the modification of the boilers trigger any NSPS requirements. Unit Nos. 1 and 2 began operation in 1974 and 1978, respectively and, as such, are existing units for purposes of 40 CFR 60.40c. For existing sources to become subject to NSPS, they must undergo a modification as defined in 40 CFR 60.14(a) or a reconstruction as defined in 40 CFR 60.15. A modification as defined in 40 CFR 60.14(a) is as follows:

*(a) Except as provided under paragraphs (e) and (f) of this section, any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere.*

A reconstruction as defined in 40 CFR 60.15 is as follows:

*(a) An existing facility, upon reconstruction, becomes an affected facility, irrespective of any change in emission rate.*

*(b) "Reconstruction" means the replacement of components of an existing facility to such an extent that:*

*(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and (2) It is technologically and economically feasible to meet the applicable standards set forth in this part.*

*(c) "Fixed capital cost" means the capital needed to provide all the depreciable components.*

Per the above definition, the project does not exceed 50 percent of the fixed capital cost that would be required to construct a comparable, entirely new facility and, as such is not a "reconstruction" per 40 CFR 60.15. Further, the Project would not result in an increase in the hourly emission rate of any pollutant to which a standard under the associated NSPS would apply. Therefore, applicability of NSPS emission standards to Units 1 and 2 is unchanged by the proposed Project.



### 3.4.2 National Emission Standards for Hazardous Air Pollutants

The following NESHAP regulations, also known as the maximum achievable control technology (MACT) rules, were reviewed for their applicability to the Project:

- 40 CFR 63, Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants: Industrial, Commercial, and Institutional Boilers and Process Heaters (Major Source Boiler MACT)
- 40 CFR 63, Subpart UUUUU - National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units

EPA has established MACT standards for industrial/commercial/institutional boilers and process heaters at major sources. [76 Fed. Reg. 28664 (May 18, 2011)]. As noted above, the existing unit is a major source of HAPs. Because original construction occurred before June 4, 2010, and the fixed capital costs associated with the natural gas conversion do not exceed 50 percent of the fixed capital cost that would be required to construct a comparable new source, the unit would be considered an existing source under the Boiler MACT standards (40 C.F.R. §§ 63.2 and 63.7490). Therefore, the standards for *existing* sources under 40 CFR Part 63 Subpart DDDDD would be applicable to the boilers and are reflected in the proposed emission limits for the converted unit.

The Project has potential emissions that are below the major source threshold for hazardous air pollutants (HAP). As such, the Anclote facility would not be subject to regulation under 40 CFR 63, Subpart UUUUU - National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units. Therefore, if Anclote were to accept a federally enforceable limit to only burn natural gas in these boilers (i.e., the purpose of this Project), then 40 CFR 63, Subpart UUUUU would not apply.

Similarly, per 40 CFR 63, Subpart DDDDD, new large (>10 MMBtu/hr) gaseous fuel process heaters would be subject to standards under this subpart, if the facility was a major source of HAPs. Since the converted facility will be a minor source, this requirement will not apply to the fuel gas heaters. However, as shown in Table 3, the proposed CO emissions from the gas heaters will be below the NESHAP standard (i.e., a CO limit of 400 ppmvd, corrected to 3 percent oxygen).

### 3.4.3 Florida Rules

Florida has adopted the new source review (NSR) program requirements, NSPS, and NESHAP by reference. Therefore, the Facility is required to meet the same emissions, performance testing, monitoring, reporting, and recordkeeping requirements as those described in the previous sections, to the extent that they have been adopted by the FDEP and are applicable to the project.

### 3.4.4 Florida Air Permitting Requirements

The FDEP regulations require any new source to obtain an air permit prior to construction. Major new sources must meet the appropriate PSD and nonattainment requirements as discussed previously.



Required permits and approvals for air pollution sources include NSR for nonattainment areas, PSD, NSPS, National Emission Standards for Hazardous Air Pollutants (NESHAP), Permit to Construct, and Permit to Operate. The requirements for construction permits and approvals are contained in Rules 62-4.030, 62-4.050, 62-4.210, 62-210.300(1), and 62-212.400 F.A.C. Specific emission standards are set forth in Chapter 62-296, F.A.C.

### **3.4.5 Local Air Regulations**

Pasco County has no specific ordinances or requirements related to air emissions or impacts from the Project.

## **3.5 Source Applicability**

### **3.5.1 Area Classification**

The project site is located in Pasco County, which has been designated by EPA and DEP as an attainment area for all criteria pollutants. Pasco County and surrounding counties are designated as PSD Class II areas for SO<sub>2</sub>, PM(TSP), and NO<sub>2</sub>. The nearest Class I areas to the site is the Chassahowitzka National Wilderness Area which is about 24 km from the site.

### **3.5.2 PSD Review**

#### **3.5.2.1 Pollutant Applicability**

The project is considered to be a major modification because the emissions of CO and VOC are estimated to exceed the PSD significant emission rates of 100 TPY and 40 TPY, respectively. Because the Project's impacts for these pollutants are predicted to be below the significant impact levels, a modeling analysis incorporating the impacts from other sources is not required. (Note: EPA has promulgated changes to the PSD Rules to eliminate hazardous air pollutants (HAPs) from PSD review. The pollutants, vinyl chloride, mercury, asbestos, and beryllium, are no longer evaluated in PSD review.)

As part of the PSD review, a PSD Class I increment analysis is required if the Project's impacts are greater than the proposed EPA Class I significant impact levels. The nearest Class I area to the plant site is about 42 km from the site. A PSD Class I increment-consumption analysis is not required because there are no applicable Class I significant impact levels for the pollutant CO.

#### **3.5.2.2 Emission Standards**

The Anclote Power Plant does not operate units subject to the NSPS of 40 CFR 60, nor will the modification of the boilers trigger any new NSPS requirements.



### 3.5.2.3 Ambient Monitoring

Based on the estimated pollutant emissions from the proposed plant, a pre-construction ambient air quality monitoring analysis is not required for CO. If the net increase in impact of the pollutant is less than the applicable de minimis monitoring concentration, then an exemption from the pre-construction ambient monitoring requirement is available by Rule 62-212.400(3)(e), FAC. However, if an acceptable ambient monitoring method for the pollutant has not been established by EPA, monitoring is not required. This requirement is addressed in Section 5.0 of this application.

### 3.5.2.4 GEP Stack Height Impact Analysis

The GEP stack height regulations allow any stack to be at least 65 m [213 feet (ft)] high. The boilers' stack for the Project will be 499 ft. This stack height does not exceed the GEP stack height. However, as discussed in Section 6.0, Air Quality Modeling Approach, since the stack height is less than GEP, building downwash effects must be considered in the modeling analysis. As a result, the potential for downwash of the boilers' emissions caused by nearby structures are included in the modeling analysis.

### **3.5.3 Nonattainment Review**

The facility site is located in Pasco County, which is classified as an attainment area for all criteria pollutants. Therefore, nonattainment requirements are not applicable.

## **3.6 Other Clean Air Act Requirements**

### **3.6.1 The Acid Rain Program**

The 1990 Clean Air Act Amendments established the Acid Rain Program to reduce the release of acidic deposition precursors, SO<sub>2</sub> and NO<sub>x</sub>. EPA's final regulations were promulgated on January 11, 1993, and included permit provisions (40 CFR Part 72), allowance system (Part 73), continuous emission monitoring (Part 75), NO<sub>x</sub> provisions (Part 76), excess emission procedures (Part 77), and appeal procedures (Part 78).

The Acid Rain Program applies to all existing and new utility units except those serving a generator less than 25 MW, existing simple cycle CTs, and certain non-utility facilities; units which fall under the program are referred to as "affected units." The Acid Rain Program regulations will continue to be applicable to the Project.

### **3.6.2 Cross-State Air Pollution Rule**

On July 6, 2011, the USEPA finalized a rule that seeks to help states reduce air pollution and attain clean air standards. This rule, known as the Cross-State Air Pollution Rule (CSAPR), requires 27 states to significantly improve air quality by reducing power plant emissions that contribute to ozone and/or fine particle pollution in other states.



This rule was to replace a 2005 rule known as the Clean Air Interstate Rule (CAIR). However, on December 30, 2011, the United States Court of Appeals for the D.C. Circuit issued its ruling to stay CSAPR pending judicial review. As a result, CAIR has been put back into effect. The court set a speedy path to hear the legal arguments in the case, which were presented to the US Court of Appeals in Washington, D.C. on April 13, 2012. However, a final ruling on CSAPR may not come until later this year or possibly in 2013.

Like CAIR, CSAPR is a cap-and-trade program for SO<sub>2</sub> and NO<sub>x</sub> promulgated to help downwind states attain or maintain NAAQS for fine particulate matter and ozone. The program applies to stationary boilers and combustion turbines that fire any amount of fossil fuel at any time and serve a generator with a nameplate capacity of more than 25 MW, producing electricity for sale. Since the nameplate capacity of the boilers for the Project is greater than 25 MW, the CSAPR program would be applicable to the proposed Project.

### **3.6.3 Regional Haze**

The FDEP has requested PEF to submit a revised five-factor BART determination analyses for the Anclote facility BART-eligible emissions units. In the previously submitted 2007 analyses, the two BART-eligible emission units at Anclote were determined to be exempt from BART determination based on the insignificant visibility impairment values predicted at the Class I areas within 300 kilometers of the facility using the CALPUFF air dispersion model. The modeling analyses followed the EPA and Visibility Improvement State and Tribal Association of the Southeast (VISTAS) guidelines. However, the modeling analyses included only particulate matter (PM) emissions from the BART-eligible units based on an agreement between EPA and the Utility Air Regulatory Group. This agreement said that electric generating units (EGUs) subject to CAIR were not required to include nitrogen oxides (NO<sub>x</sub>) and sulfur dioxide (SO<sub>2</sub>) emissions in modeling because regulating NO<sub>x</sub> and SO<sub>2</sub> under the CAIR rule satisfied the BART requirements for these pollutants.

On July 6, 2011, EPA finalized CSAPR, which was to replace CAIR starting in 2012. CSAPR has different emission requirements for NO<sub>x</sub> and SO<sub>2</sub>. Under CSAPR, the understanding under CAIR that compliance with CAIR requirements satisfied BART requirements for EGUs is no longer valid. EPA is developing a rule that would determine whether CSAPR is better than BART using a two-prong test and appropriate air quality modeling. The Federal Register notice for the final rule of CSAPR said that "EPA has not conducted any technical analysis to determine whether compliance with the Transport Rule would satisfy Reasonably Available Control Technology (RACT) requirements for EGUs in any nonattainment areas or Regional Haze BART-related requirements. For that reason, EPA is neither making determinations nor establishing any presumptions that compliance with the Transport Rule satisfies any RACT- or BART-related requirements for EGUs."





It is expected that CSAPR is most likely to be re-instated in principal with the similar provisions as currently promulgated. If CSAPR is determined to be an alternative program that may substitute for source-specific BART, then the same BART determination analyses for the Anclote Power Plant performed in 2007 should still be valid. However, the current version of CSAPR has different requirements for different states. For example, in Florida, it does not regulate SO<sub>2</sub> emissions and only has ozone-season NO<sub>x</sub> emissions requirements. As a result, the BART exemption analyses for Anclote, which was previously based on visibility impacts due to PM emissions only, needs to be re-evaluated including PM, NO<sub>x</sub>, SO<sub>2</sub>, and sulfate emissions. This analysis was completed and submitted to the FDEP on May 30, 2012. Discussions are ongoing with the agency; however, if Anclote fires natural gas exclusively, it will likely be exempted from further consideration under this rule.

### **3.6.4 Greenhouse Gas Rulemaking**

#### **3.6.4.1 Greenhouse Gas Tailoring Rule**

On June 3, 2010, the USEPA published the *Tailoring Rule* extending PSD and Title V (TV) programs to greenhouse gas (GHG) emissions. The GHGs are defined as CO<sub>2</sub>, methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and certain fluorinated gases.

The first step in determining whether PSD applies under the Tailoring Rule is to determine whether the Project's GHG emissions are "subject to regulation." During Tailoring Rule Step 1, sources can only be subject to regulation if they are an "anyway source" or "anyway modification" (*i.e.*, a source or modification, respectively, that is subject to PSD "anyway" due to its emissions of non-GHG pollutants). During Tailoring Rule Step 2 (*i.e.*, on or after July 1, 2011), however, sources and modifications can become subject to PSD based solely on their GHG emissions. These are referred to as non-anyway sources and non-anyway modifications. For a new non-anyway source, GHGs are subject to regulation if the potential to emit (PTE) of the source is at least 100,000 TPY carbon dioxide equivalent (CO<sub>2</sub>e). In the case of non-anyway modifications, GHG emissions are subject to regulation at an existing stationary source (that is not an "anyway source") if the source undertakes a modification that is projected to increase emissions by at least 75,000 TPY CO<sub>2</sub>e.

Assuming that you exceed the threshold in the first step, the second step is to determine whether the source also has a PTE that is at or above the CAA *mass-based* major source threshold (*i.e.*, either 100 or 250 TPY) for GHGs. If it does, then both the source and the modification are treated as "major" for GHGs and must go through PSD review for GHGs. The non-GHG pollutant(s) at the source will also become subject to PSD if the modification results in an emissions increase at or above the significance level for that non-GHG pollutant. Thus, EPA's longstanding "major for one, major for all" PSD policy also applies to GHG-only major sources, but only after GHGs are determined to be subject to regulation for the modification.



Based on the information contained in the Tailoring Rule described above, GHG emissions were estimated for the Project on a mass and an equivalent basis and are detailed in Table 9. The GHG net emission increase due to the modification of the existing boilers is provided in Table 1 and is below the threshold level of 75,000 tons CO<sub>2</sub>e/yr. Therefore, GHG PSD and Title V programs do not apply to the Project.



## 4.0 CONTROL TECHNOLOGY REVIEW

### 4.1 Applicability

Per the PSD regulations, the Project is required to undergo a control technology review for CO and VOC, the pollutants that may potentially be emitted in amounts greater than the PSD SERs that are presented in Table 1.

This section presents the applicable NSPS and the proposed BACT for this pollutant. The approach to the BACT analysis is based on the regulatory definitions of BACT, as well as consideration of EPA's current policy guidelines requiring a top-down approach. A BACT determination requires an analysis of the economic, environmental, and energy impacts of the proposed and alternative control technologies [see 40 CFR 52.21(b)(12)]. The analysis must, by definition, be specific to the project (i.e., case-by-case).

### 4.2 New Source Performance Standards

Anclote does not operate units subject to the New Source Performance Standards (NSPS) of 40 Code of Federal regulations (CFR) 60. Even if the Project were to have triggered NSPS applicability, the associated NSPS has no standards for emissions of CO and VOC. Therefore, there are no applicable NSPS standards for CO and VOC emissions, which is a pollutant addressed by the BACT analyses below.

### 4.3 Best Available Control Technology (BACT)

#### 4.3.1 Carbon Monoxide and Volatile Organic Compounds

There are no applicable NSPS for the control of CO and VOC from utility boilers. CO and VOC emissions result from incomplete combustion of the fuel. CO and VOC emissions are controlled by boiler design features and combustion air feed rates. The boilers will be designed and operated for high-combustion efficiency, which will inherently minimize the production of CO and VOC.

In certain applications, CO and VOC emissions can be reduced by passing the flue gas over an oxidation catalyst at a suitable temperature (900 to 1,000°F). In practice, this technology has several unknowns and disadvantages, including the following:

- No utility fossil fuel-fired boilers are operating with catalytic CO and VOC control systems and it would be difficult to retrofit an oxidation catalyst in the proper temperature zone downstream of the boiler.
- Catalyst converts up to 70 percent of SO<sub>2</sub> to SO<sub>3</sub>.
- There is a lack of experience with large scale operation of this technology using particulate-laden gases from fossil fuel-fired boilers. Catalysts can be easily eroded and fouled by silica and trace metals in the flue gas.



- The temperature profile of the flue gas does not match the temperature requirements of typical catalysts.
- Use of a catalyst technology that has not been commercially demonstrated on this source type would reduce the availability and reliability of the plant (e.g., catalyst plugging).
- The high costs to install and operate the system (additional pressure drop, catalyst replacement and disposal, etc.) are without corresponding demonstrated needs or benefits. Design and operation of the boiler to efficiently combust the fuel will minimize CO and VOC emissions. The additional costs to further lower emissions are not justified.

CO and VOC emission limits established for new units as BACT over the last several years are provided in Tables 15 and 16. Combustion control is the primary method used to control CO and VOC emissions from utility fossil fuel-fired boilers.

#### **4.3.2 Proposed BACT and Rationale**

##### **4.3.2.1 Boilers**

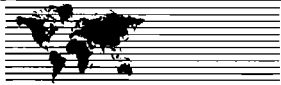
Good combustion practices are the only technically feasible method of controlling CO and VOC emissions from Units 1 and 2. The use of good combustion controls has been identified as BACT for CO and VOC control for every major fossil fuel-fired boiler identified in the US EPA's RACT/BACT/LAER clearinghouse database. This control technology is technically feasible, and is identified as BACT for these boilers. Therefore, design of a boiler and combustion air system to efficiently burn the natural gas represents BACT for control of CO and VOC emissions. There are no other control devices demonstrated that are justified for the Project. The proposed allowable CO emission rate for the Units 1 and 2 boilers of 0.18 lb/MMBtu is within the range of emission rates recently established as BACT for new units. As these are existing units, the emission levels proposed meet the intent of the case-by-case BACT provisions.

Because of lower furnace temperatures at low loads, low boiler loads can result in elevated CO emissions in terms of pounds per million Btu of heat input. However, the overall mass emission rate is relatively constant over the entire boiler operating range from initial ignition at startup to full load. Therefore, the allowable emission limit representing BACT should reflect the constant mass output (lb/hr) equal to a full load emission rate of 990 lb/hr at 5,500 MMBtu/hr per unit.

Therefore, Progress Energy proposes the following as CO and VOC BACT:

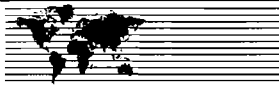
- CO and VOC emissions shall be controlled using good combustion practices.
- The proposed emission limit for CO will serve to demonstrate compliance with emissions of VOCs
- CO emissions shall be limited to the higher of 0.18 pounds per million Btu of heat input or 990 pounds per hour, based on a three-hour test average, whichever is greater.

The limitation is stated in terms of the higher of pounds per million Btu or pounds per hour to address low boiler load operations.



4.3.2.2 Gas Heaters

The proposed BACT for the gas heaters is the use of good combustion practices to limit emissions of CO and VOC. Emissions from the gas heaters will be minimized to an expected CO emission rate of 0.081 lb/MMBtu or 1.33 lb/hr per heater. Emissions from the gas heaters will be minimized to an expected VOC emission rate of 0.005 lb/MMBtu or 0.09 lb/hr per heater. The gas heaters proposed for the Project will have potential CO and VOC emissions of less than 5 TPY, which would classify the heaters as an insignificant activity under FDEP Rule 62-213.430(6)(b), F.A.C.



## 5.0 AMBIENT MONITORING ANALYSIS

In accordance with the requirements of 40 CFR 52.21(m) and Rule 62-212.400(7), FAC, an air quality analysis must be conducted for each criteria and non-criteria pollutant for which the modification would result in a significant net emissions increase. Criteria pollutants are those pollutants for which AAQS have been established. Non-criteria pollutants are those pollutants for which AAQS have not been established, but are regulated by federal NSPS. This analysis must be performed by the use of air quality monitoring data. However, if EPA has not established an acceptable ambient monitoring method for the pollutant, monitoring is not required.

Based on the potential increase in emissions due to the proposed project (see Table 1), preconstruction ambient monitoring analyses for CO may be required as part of the PSD application. However, ambient monitoring analyses are not required if it can be demonstrated that the proposed project's maximum air quality impacts will not exceed the PSD monitoring de minimis concentration levels. Although emissions of VOCs may also be above the SER, no ambient monitoring would be required for this pollutant.

As presented in Section 6, maximum impacts due to the proposed project are predicted to be less than the PSD de minimis concentration levels for CO. As a result, a pre-construction ambient monitoring analysis is not required for CO as part of this application.



## 6.0 AIR QUALITY IMPACT ANALYSIS

The emission impacts resulting from the modification of the existing boilers classify the Project as a major modification; thus, subject to PSD review. The following sections present a summary of the air quality modeling methodologies and results of the air quality impact analyses performed for the Project. Documentation of the air quality impact modeling analysis is provided in Appendix A.

### 6.1 Significant Impact Analysis

#### 6.1.1 Site Vicinity

The general modeling approach for the significant impact analysis followed the EPA and Florida DEP modeling guidelines for determining compliance with NAAQS. For each criteria pollutant that will be emitted in excess of the respective PSD SER due to the proposed project, a significant impact analysis is performed to determine whether the new emission sources associated with the Project, given their stack configuration and other modeling inputs, will result in predicted impacts that are in excess of the EPA significant impact levels (SILs). For the Project, emission increases above the PSD SERs occur only for CO and VOC.

If the project-only impacts are above the SILs in the vicinity of the facility, then two additional and more detailed air modeling analyses are required. The first analysis demonstrates compliance with federal and Florida AAQS, and the second analysis demonstrates compliance with allowable PSD Class II increments. For the pollutant CO, there are no applicable allowable PSD Class II increments. As shown in Table 11, the maximum predicted CO impacts for the Project are below the SILs. Therefore, no additional modeling analyses are required for the Project.

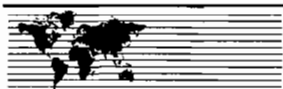
#### 6.1.2 PSD Class I Areas

Generally, if a major new facility or major modification is located within 300 km of a PSD Class I area, then a significant impact analysis is performed to evaluate the impacts of the project alone at the PSD Class I area and to determine the need to perform Class I increment analyses. However, since no standard exists for CO, a significant impact analysis was not performed for the Class I area.

### 6.2 Model Selection

The air modeling analysis was performed using the American Meteorological Society (AMS)/EPA Regulatory Model (AERMOD, Version 11103) to predict concentrations in the vicinity of the Project site location. The modeling analysis is based on predicting impacts within 50 km of the Project. The EPA regulatory default options were used to predict all maximum impacts. These options include:

- Use of elevated terrain algorithms;
- Stack-tip downwash (except for building downwash cases);



- Use of missing data processing routines; and
- Use of calm wind processing routines.

AERMOD calculates hourly concentrations based on hourly meteorological data, which is further detailed in Section 6.3.

### 6.3 Meteorological Data

Meteorological data used in the AERMOD model to determine air quality impacts associated with the Project site consisted of a concurrent 5-year period of hourly surface weather observations and upper air sounding data collected from the nearest National Weather Station (NWS) to the Project Site. The 5-year meteorological data was collected from the stations located at Tampa's International Airport (TPA) and Tampa-Ruskin (TBW) from 2006 through 2010 and was provided to us by the Air Resource Management Division of the FDEP. A listing of AERMOD features is listed below.

- Plume dispersion/growth rates are determined by the profile of vertical and horizontal turbulence, vary with height, and use a continuous growth function.
- In a convective atmosphere, uses three separate algorithms to describe plume behavior as it comes in contact with the mixed layer lid; in a stable atmosphere, uses a mechanically mixed layer near the surface.
- Polar or Cartesian coordinate systems for receptor locations can be included directly or by an external file reference.
- Urban model dispersion is input as a function of city size and population density; sources can also be modeled individually as urban sources.
- Stable plume rise: uses Briggs equations with winds and temperature gradients at stack top up to halfway up to plume rise. Convective plume rise: plume superimposed on random convective velocities.
- Procedures suggested by Briggs (1974) for evaluating stack-tip downwash.
- Has capability of simulating point, volume, area, and multi-sized area sources.
- Accounts for the effects of vertical variations in wind and turbulence (Brower et al., 1998).
- Uses measured and computed boundary layer parameters and similarity relationships to develop vertical profiles of wind, temperature, and turbulence (Brower et al., 1998).
- Concentration estimates for 1-hour to annual average times.
- Creates vertical profiles of wind, temperature, and turbulence using all available measurement levels.
- Terrain features are depicted by use of a controlling hill elevation and a receptor point elevation.
- Modeling domain surface characteristics are determined by selected direction and month/season values of surface roughness length, albedo, and Bowen ratio.
- Contains both a mechanical and convective mixed layer height, the latter based on the hourly accumulation of sensible heat flux.
- The method of Pasquill (1976) to account for buoyancy-induced dispersion.





- A default regulatory option to set various model options and parameters to EPA-recommended values.
- Contains procedures for calm-wind and missing data for the processing of short term averages.

## 6.4 Emission Inventory

A summary of the source locations and parameter data for the Project is presented in Table 12. Per general modeling guidance the boilers and the gas heaters were modeled as point sources. In addition, modeled source emission rates are provided in Table 13.

## 6.5 Building Downwash Effects

All proposed point sources were evaluated for determining compliance with Good Engineering Practice (GEP) regulations and the potential influence of nearby buildings and structures that could cause building downwash. The proposed height for the Project's boiler stack remains unchanged from the existing facility's stack height. For each stack that is below the GEP height, such as the boiler stack, direction-specific building heights and maximum projected widths were determined using the Building Profile Input Program (BPIP, Version 04274), which incorporates the Plume Rise Model Enhancement (PRIME) downwash algorithm developed by the Electric Power Research Institute (EPRI). The direction-specific building information output by BPIP was directly input to AERMOD for processing.

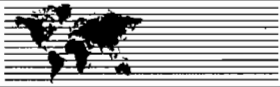
A summary of the proposed facility's solid building structures used in the BPIP analysis are presented in Table 14 and Appendix A.

## 6.6 Receptors

Concentrations were predicted at receptors located in detailed receptor grids centered on the proposed boiler units, the modeling origin, and extended from Ancote's restricted property boundary out 7 kilometers (km). Receptors were placed along Ancote's restricted property boundary (i.e., fence line) and beyond the fence line according to the following receptor spacing.

- Along the property boundary or fence line at 50 meters (m) spacing;
- A 100 m spaced receptor grid extending out to 2 km;
- A 250 m spaced receptor grid extending out to 5 km; and
- A 500 m spaced receptor grid extending out to 7 km.

The receptor grids and elevation data were developed using AERMOD's terrain preprocessing program, AERMAP (Version 11103) and U. S. Geological Survey Digital Elevation Model (DEM) 7.5 minute data files.



## 6.7 Modeling Results

As shown in Table 11, the predicted maximum total modeled air quality impacts from the Project are well below the SILs and therefore in compliance with the national and Florida AAQS. The results of the air modeling analyses demonstrate that the Project will comply with all applicable AAQS, and will not have an adverse effect on human health or welfare.

**TABLES**

Table 1: Summary of Maximum Potential Emissions from the Project

Pollutant	Maximum Potential Annual Emissions (TPY)		Netting Calculations (2006-2010)			Maximum 2-Year Average		Is PSD Triggered?
	Natural Gas Fired Boilers		Maximum 2-Year Average from Existing Units (TPY)	Change (TPY)	Gas Heaters (TPY)	Project Total (TPY)	PSD Significant Emission Rate (TPY)	
VOC	118	<sup>a</sup>	78.3	40	0.35	40.1	40	Y
SO <sub>2</sub>	60	<sup>b</sup>	25,272.9	-25,213	0.18	-25,213	40	N
NO <sub>x</sub>	6,567	<sup>c</sup>	6,540.5	27	6.31	33	40	N
CO	3,940	<sup>c</sup>	506.2	3,434	5.30	3,439	100	Y
PM	547	<sup>d</sup>	804.9	-258	0.48	-257	25	N
PM <sub>10</sub>	410	<sup>d</sup>	571.6	-161	0.48	-161	15	N
PM <sub>2.5</sub>	137	<sup>d</sup>	193.0	-56.2	0.48	-56	10	N
Pb	0.012	<sup>a</sup>	0.721	-0.71	3.2E-05	-0.7	0.6	N
CO <sub>2e</sub>	2,526,351	<sup>e</sup>	2,517,405	8,945	3,790	12,735	75,000	N

## Notes:

- <sup>a</sup> Emissions based on EPA AP-42, Table 14-2.
- <sup>b</sup> Estimated based on mass balance using typical maximum sulfur content for pipeline natural gas.
- <sup>c</sup> Emissions based on vendor data.
- <sup>d</sup> Emission factor based on Golder May 2012 BART Analysis.
- <sup>e</sup> CO<sub>2</sub> emissions based on Tier 1 methodology. Tier 1 uses annual fuel usage, default fuel heat content, and default emission factors to estimate CO<sub>2</sub> emissions.

**Table 2: Performance, Stack Parameters and Emissions for the Boilers**

Parameters	Emission Estimates 100% Load	
	EU001 and EU002	
<b>Performance</b>		
Fuel	Natural gas	
Heat Content (HHV-Btu/scf)	1,040	
Fuel Usage (scf/hr-boiler)	5,288,462	
Rating (lb steam/hr-boiler)	86,250	
Heat Input (mmBtu/hr-HHV)	5,500	
Maximum Hours per Year (hrs/yr-boiler)	3,980	
Maximum Fuel Usage (MMscf/yr-boiler)	21,048	
Maximum Fuel Usage (MMscf/hr-boiler)	5.3	
<b>Stack Parameters</b>		
Diameter (ft)	24	
Height (ft)	499	
Temperature ( °F)	349	
Velocity (ft/sec)	126.6	
Flow (acfm)	3,440,279	
<b>Emissions</b>		
SO <sub>2</sub> -Basis (grains S/100 scf-gas) <sup>a</sup>	2.0	
(lb/hr)	15.1	
(tpy) - per unit	30.1	
NO <sub>x</sub> - (lb/MMBtu) <sup>b</sup>	0.3	
(lb/hr)	1,650	
(tpy) - per unit	3,284	
CO - (lb/MMBtu) <sup>b</sup>	0.18	
(lb/hr)	990	
(tpy) - per unit	1,970	
VOC - (lb/mmBtu) <sup>c</sup>	0.005	
(lb/hr)	30	
(tpy) - per unit	59	
PM - (lb/mmBtu) <sup>d</sup>	0.025	
(lb/hr)	138	
(tpy) - per unit	274	
PM <sub>10</sub> - (lb/mmBtu) <sup>d</sup>	0.019	
(lb/hr)	103	
(tpy) - per unit	205	
PM <sub>2.5</sub> - (lb/mmBtu) <sup>d</sup>	0.006	
(lb/hr)	34	
(tpy) - per unit	68	
Lead - (lb/mmBtu) <sup>c</sup>	5.4E-07	
(lb/hr)	0.003	
(tpy) - per unit	0.006	

**Notes:**<sup>a</sup> Typical maximum sulfur content for pipeline natural gas.<sup>b</sup> Emissions based on vendor data.<sup>c</sup> Emissions based on EPA AP-42 (7/98), Tables 1.4-1 and 1.4-2.<sup>d</sup> PM emission factor based on Golder May 2012 BART Analysis.

Table 3: Performance, Stack Parameters, and Emissions for Two Natural Gas Fuel Heaters

Parameters	Natural Gas Heater
<b>Performance<sup>a</sup></b>	
Fuel Usage (scf/hr-gas)	15,865
Heat Input (MMBtu/hr-HHV)/each	16.5
Hours per Year	3,980
Hourly Maximum Fuel Usage (MMscf/hr)	0.0159
Annual Maximum Fuel Usage (MMscf/yr)	63.1
Heating Value (MMBtu/MMscf)	1040
Number of Units	2
<b>Stack Parameters<sup>a</sup></b>	
Diameter (ft)	2.5
Height (ft)	20
Temperature (°F)	945
Velocity (ft/sec)	8.36
Flow (acfm)	2,380
<b>Emissions</b>	
SO <sub>2</sub> -Basis (grains S/100 scf-gas) <sup>b</sup>	2
(lb/hr)	0.045
(lb/MMBtu)	0.003
(tpy) - one unit	0.09
(tpy) - two units	0.18
NO <sub>x</sub> - (lb/MMscf) <sup>c</sup>	100
(lb/hr)	1.59
(lb/MMBtu)	0.096
(tpy) - one unit	3.16
(tpy) - two units	6.31
CO - (lb/MMscf) <sup>c</sup>	84
(lb/hr)	1.33
(lb/MMBtu)	0.081
(tpy) - one unit	2.7
(tpy) - two units	5.30
VOC - (lb/MMscf) <sup>c</sup>	5.5
(lb/hr)	0.09
(lb/MMBtu)	0.005
(tpy) - one unit	0.17
(tpy) - two units	0.35
PM/PM <sub>10</sub> - (lb/MMscf) <sup>d</sup>	7.6
(lb/hr)	0.12
(lb/MMBtu)	0.007
(tpy) - one unit	0.24
(tpy) - two units	0.48
Lead - (lb/MMscf) <sup>d</sup>	0.0005
(lb/hr)	7.9E-06
(lb/MMBtu)	4.8E-07
(tpy) - one unit	1.6E-05
(tpy) - two units	3.2E-05

<sup>a</sup> Based on vendor data.

<sup>b</sup> Typical maximum for natural gas.

<sup>c</sup> EPA, AP-42 Table 1.4-1 using small boilers < 100 MMBtu.hr and Table 1.4-2.

<sup>d</sup> EPA, AP-42 Table 1.4-2.

**Table 4: Maximum Trace Metal HAP Emission Estimates for the Boilers**

Metal Compound <sup>a</sup>	Emission Factor <sup>b</sup>		Metal Trace HAP Emissions			
	(lb/10 <sup>b</sup> scf)	Rating <sup>c</sup>	EU001		EU002	
			(lb/hr)	(TPY)	(lb/hr)	(TPY)
Arsenic	2.0E-04	E	1.1E-03	2.1E-03	1.1E-03	2.1E-03
Beryllium	1.2E-05	E	6.3E-05	1.3E-04	6.3E-05	1.3E-04
Cadmium	1.1E-03	D	5.8E-03	1.2E-02	5.8E-03	1.2E-02
Chromium, total	1.4E-03	D	7.4E-03	1.5E-02	7.4E-03	1.5E-02
Cobalt	8.4E-05	D	4.4E-04	8.8E-04	4.4E-04	8.8E-04
Manganese	3.8E-04	D	2.0E-03	4.0E-03	2.0E-03	4.0E-03
Mercury	2.6E-04	D	1.4E-03	2.7E-03	1.4E-03	2.7E-03
Nickel	2.1E-03	C	1.1E-02	2.2E-02	1.1E-02	2.2E-02
Selenium	2.4E-05	E	1.3E-04	2.5E-04	1.3E-04	2.5E-04
<b>Total HAP Emissions</b>			2.9E-02	0.059	2.9E-02	0.059
<b>Individual HAP Emissions</b>			1.1E-02	0.022	1.1E-02	0.022
<b>Emissions based on:</b>			<u>EU001</u>	<u>EU002</u>		
<b>Heat Input (MMscf/hr)</b>			5.3	5.3		
<b>Heat Input (MMscf/yr)</b>			21,048	21,048		

**Notes:**

<sup>a</sup> Hazardous Air Pollutant as defined by Section 112(b) of the Clean Air Act.

<sup>b</sup> Emission factors based on USEPA AP-42 Table 1.4-4.

<sup>c</sup> EPA Emission Factor Ratings: A-Excellent; B-Above Average; C-Average; D-Below Average; E-Poor.

Source: Golder, 2012.

**Table 5: Maximum Organic HAP Emission Estimates for the Boilers**

Organic Compound	Emission Factor <sup>a</sup>		Organic HAP Emissions			
	(lb/10 <sup>6</sup> scf)	Rating	EU001		EU002	
			(lb/hr)	(TPY)	(lb/hr)	(TPY)
2-Methylnaphthalene <sup>b,c</sup>	2.4E-05	D	1.3E-04	2.5E-04	1.3E-04	2.5E-04
3-Methylchloranthrene <sup>b,c</sup>	1.8E-06	E	9.5E-06	1.9E-05	9.5E-06	1.9E-05
7,12-Dimethylbenz(a)anthracene <sup>b,c</sup>	1.6E-05	E	8.5E-05	1.7E-04	8.5E-05	1.7E-04
Acenaphthene <sup>b,c</sup>	1.8E-06	E	9.5E-06	1.9E-05	9.5E-06	1.9E-05
Acenaphthylene <sup>b,c</sup>	1.8E-06	E	9.5E-06	1.9E-05	9.5E-06	1.9E-05
Anthracene <sup>b,c</sup>	2.4E-06	E	1.3E-05	2.5E-05	1.3E-05	2.5E-05
Benz(a)anthracene <sup>b,c</sup>	1.8E-06	E	9.5E-06	1.9E-05	9.5E-06	1.9E-05
Benzene <sup>d</sup>	2.1E-03	B	1.1E-02	2.2E-02	1.1E-02	2.2E-02
Benzo(a)pyrene <sup>b,c</sup>	1.2E-06	E	6.3E-06	1.3E-05	6.3E-06	1.3E-05
Benzo(b)fluoranthene <sup>b,c</sup>	1.8E-06	E	9.5E-06	1.9E-05	9.5E-06	1.9E-05
Benzo(g,h,i)perylene <sup>b,c</sup>	1.2E-06	E	6.3E-06	1.3E-05	6.3E-06	1.3E-05
Benzo(k)fluoranthene <sup>b,c</sup>	1.8E-06	E	9.5E-06	1.9E-05	9.5E-06	1.9E-05
Chrysene <sup>b,c</sup>	1.8E-06	E	9.5E-06	1.9E-05	9.5E-06	1.9E-05
Dibenzo(a,h)anthracene <sup>b,c</sup>	1.2E-06	E	6.3E-06	1.3E-05	6.3E-06	1.3E-05
Dichlorobenzene <sup>b</sup>	1.2E-03	E	6.3E-03	1.3E-02	6.3E-03	1.3E-02
Fluoranthene <sup>b,c</sup>	3.0E-06	E	1.6E-05	3.2E-05	1.6E-05	3.2E-05
Fluorene <sup>b,c</sup>	2.8E-06	E	1.5E-05	2.9E-05	1.5E-05	2.9E-05
Formaldehyde <sup>b</sup>	7.5E-02	B	4.0E-01	7.9E-01	4.0E-01	7.9E-01
Hexane <sup>d</sup>	1.3E-03	E	6.9E-03	1.4E-02	6.9E-03	1.4E-02
Indeno(1,2,3-cd)pyrene <sup>b,c</sup>	1.8E-06	E	9.5E-06	1.9E-05	9.5E-06	1.9E-05
Naphthalene <sup>d</sup>	6.1E-04	E	3.2E-03	6.4E-03	3.2E-03	6.4E-03
Phenanthrene <sup>b,c</sup>	1.7E-05	D	9.0E-05	1.8E-04	9.0E-05	1.8E-04
Pyrene <sup>b,c</sup>	5.0E-06	E	2.6E-05	5.3E-05	2.6E-05	5.3E-05
Toluene <sup>d</sup>	3.4E-03	C	1.8E-02	3.6E-02	1.8E-02	3.6E-02
<b>Total HAP Emissions</b>			<b>0.4</b>	<b>0.88</b>	<b>0.4</b>	<b>0.9</b>
<b>Individual HAP Emissions</b>			<b>0.4</b>	<b>0.8</b>	<b>0.4</b>	<b>0.8</b>
<b>Emissions based on:</b>			<u><b>EU001</b></u>	<u><b>EU002</b></u>		
Heat Input (MMscf/hr)			<b>5.3</b>	<b>5.3</b>		
Heat Input (MMscf/yr)			<b>21,048</b>	<b>21,048</b>		

Notes:

<sup>a</sup> Emission factors based on USEPA AP-42 Table 1.4-3.

<sup>b</sup> Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act.

<sup>c</sup> HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.

<sup>d</sup> Emission factor from "AB 2588 Combustion Emission Factors", Ventura County Air Pollution Control District, Ventura, CA 2001.

Source: Golder, 2012.



**Table 6: Hazardous Air Pollutants Emission Factors and Emissions for the Two Natural Gas Heaters**

		Emission Factor		Gas Heaters	
		Factor	Units	lb/yr	TPY
HAPs as defined by Section 112(b) of the CAA.		Emissions based on natural gas usage (MMCF/yr):			126
91-57-6	2-Methylnaphthalene	2.40E-05	lb/10 <sup>6</sup> scf	3.0E-03	1.5E-06
56-49-5	3-Methylchloranthrene	1.80E-06	lb/10 <sup>6</sup> scf	2.3E-04	1.1E-07
	7,12-Dimethylbenz(a)anthracene	1.60E-05	lb/10 <sup>6</sup> scf	2.0E-03	1.0E-06
83-32-9	Acenaphthene	1.80E-06	lb/10 <sup>6</sup> scf	2.3E-04	1.1E-07
203-96-8	Acenaphthylene	1.80E-06	lb/10 <sup>6</sup> scf	2.3E-04	1.1E-07
120-12-7	Anthracene	2.40E-06	lb/10 <sup>6</sup> scf	3.0E-04	1.5E-07
56-55-3	Benz(a)anthracene	1.80E-06	lb/10 <sup>6</sup> scf	2.3E-04	1.1E-07
71-43-2	Benzene	2.10E-03	lb/10 <sup>6</sup> scf	2.7E-01	1.3E-04
50-32-8	Benzo(a)pyrene	1.20E-06	lb/10 <sup>6</sup> scf	1.5E-04	7.6E-08
205-99-2	Benzo(b)fluoranthene	1.80E-06	lb/10 <sup>6</sup> scf	2.3E-04	1.1E-07
191-24-2	Benzo(g,h,i)perylene	1.20E-06	lb/10 <sup>6</sup> scf	1.5E-04	7.6E-08
205-82-3	Benzo(k)fluoranthene	1.80E-06	lb/10 <sup>6</sup> scf	2.3E-04	1.1E-07
218-01-9	Chrysene	1.80E-06	lb/10 <sup>6</sup> scf	2.3E-04	1.1E-07
53-70-3	Dibenzo(a,h)anthracene	1.20E-06	lb/10 <sup>6</sup> scf	1.5E-04	7.6E-08
25321-22-6	Dichlorobenzene	1.20E-03	lb/10 <sup>6</sup> scf	1.5E-01	7.6E-05
206-44-0	Fluoranthene	3.00E-06	lb/10 <sup>6</sup> scf	3.8E-04	1.9E-07
86-73-7	Fluorene	2.80E-06	lb/10 <sup>6</sup> scf	3.5E-04	1.8E-07
50-00-0	Formaldehyde	7.50E-02	lb/10 <sup>6</sup> scf	9.5E+00	4.7E-03
110-54-3	Hexane	1.80E+00	lb/10 <sup>6</sup> scf	2.3E+02	1.1E-01
193-39-5	Indeno(1,2,3-cd)pyrene	1.80E-06	lb/10 <sup>6</sup> scf	2.3E-04	1.1E-07
91-20-3	Naphthalene	6.10E-04	lb/10 <sup>6</sup> scf	7.7E-02	3.9E-05
85-01-8	Phenanathrene	1.70E-05	lb/10 <sup>6</sup> scf	2.1E-03	1.1E-06
129-00-0	Pyrene	5.00E-06	lb/10 <sup>6</sup> scf	6.3E-04	3.2E-07
108-88-3	Toluene	3.40E-03	lb/10 <sup>6</sup> scf	4.3E-01	2.1E-04
7440-38-2	Arsenic	2.00E-04	lb/10 <sup>6</sup> scf	2.5E-02	1.3E-05
7440-41-7	Beryllium	1.20E-05	lb/10 <sup>6</sup> scf	1.5E-03	7.6E-07
7440-43-9	Cadmium	1.10E-03	lb/10 <sup>6</sup> scf	1.4E-01	6.9E-05
7440-47-3	Chromium	1.40E-03	lb/10 <sup>6</sup> scf	1.8E-01	8.8E-05
7440-48-4	Cobalt	8.40E-05	lb/10 <sup>6</sup> scf	1.1E-02	5.3E-06
7439-96-5	Manganese	3.80E-04	lb/10 <sup>6</sup> scf	4.8E-02	2.4E-05
7439-97-6	Mercury	2.60E-04	lb/10 <sup>6</sup> scf	3.3E-02	1.6E-05
7440-02-0	Nickel	2.10E-03	lb/10 <sup>6</sup> scf	2.7E-01	1.3E-04
7782-49-2	Selenium	2.40E-05	lb/10 <sup>6</sup> scf	3.0E-03	1.5E-06
<b>HAPs (Total)</b>					0.12
<b>Maximum Individual HAP</b>					0.11

**Note:** Emissions are based on two natural gas heaters at 16.5 MMBtu/hr per unit.

**Table 7: National and Florida Ambient Air Quality Standards (AAQS)**

Pollutant	Averaging Period	NAAQS ( $\mu\text{g}/\text{m}^3$ )		Florida AAQS ( $\mu\text{g}/\text{m}^3$ )
		Primary Standard	Secondary Standard	
CO	1-Hour	40,000	40,000	40,000
	8-Hour	10,000	10,000	10,000
PM <sub>2.5</sub>	24-Hour	35 <sup>a</sup>	35	35
	Annual	15	15	15
PM <sub>10</sub>	24-Hour	150	150	150
	Annual	NA	NA	50
SO <sub>2</sub>	1-Hour	196 <sup>b</sup>	NA	NA
	3-Hour	NA	1,300	1,300
	24-Hour	365	NA	260
	Annual	80	NA	60
NO <sub>2</sub>	1-Hour <sup>c</sup>	189 <sup>d</sup>	NA	NA
	Annual	100	100	100

**Notes:**

<sup>a</sup> The 24-hour PM<sub>2.5</sub> standard is met when the 3-year average of 98th percentile of the 24-hour concentrations are less than 35  $\mu\text{g}/\text{m}^3$ .

<sup>b</sup> The final rule signed June 2, 2010. To attain this standard, the 3-year average of 99th percentile of daily 1-hour average at each monitor within an area must not exceed 196  $\mu\text{g}/\text{m}^3$ .

<sup>c</sup> Assumes NO<sub>x</sub> to NO<sub>2</sub> ratio of 0.80 for the 1-hour standard under Tier 2.

<sup>d</sup> The 1-hour NO<sub>2</sub> standard is met when the 3-year average of 98th percentile of daily 1-hour maximum values is less than 188  $\mu\text{g}/\text{m}^3$ .

NA = not applicable, i.e. no standard exists. NAAQS = National Ambient Air Quality Standards.

**Table 8: PSD Significant Emission Rates and De Minimis Monitoring Concentrations**

Pollutant	Regulated Under	Significant Emission Rate (TPY)	De Minimis Monitoring Concentration <sup>a</sup> (ug/m <sup>3</sup> )
Sulfur Dioxide	NAAQS, NSPS	40	13, 24-hour
Particulate Matter (PM)	NSPS	25	10, 24-hour
Particulate Matter (PM10)	NAAQS	15	10, 24-hour
Particulate Matter (PM2.5)	NSPS	10	2.3, 24-hour
Nitrogen Dioxide	NAAQS, NSPS	40	14 annual
Carbon Monoxide	NAAQS, NSPS	100	575, 8-hour
Volatile Organic Compounds (Ozone)	NAAQS, NSPS	40	100 TPY <sup>b</sup>
Lead	NAAQS	1	0.1, 3-month <sup>3</sup> , 24-hour
Sulfuric Acid Mist	NSPS	7	NM
Total Fluorides	NSPS	3	0.25, 24-hour
Total Reduced Sulfur	NSPS	10	10, 1-hour
Reduced Sulfur Compounds	NSPS	10	10, 1-hour
Hydrogen Sulfide	NSPS	10	0.2, 1-hour
Mercury	NESHAP	0.1	0.25, 24-hour

**Note:**

Ambient monitoring requirements for any pollutant may be exempted if the impact of the increase in emissions is below de minimis monitoring concentrations.

NAAQS = National Ambient Air Quality Standards.

NM = No ambient measurement method established; therefore, no de minimis concentration has been established.

NSPS = New Source Performance Standards.

NESHAP = National Emission Standards for Hazardous Air Pollutants.

ug/m<sup>3</sup> = micrograms per cubic meter.

<sup>a</sup> Short-term concentrations are not to be exceeded.

<sup>b</sup> No de minimis concentration; an increase in VOC emissions of 100 TPY or more will require monitoring analysis for ozone.

Sources: 40 CFR 52.21; Rule 62-212.400.

**Table 9: Potential Greenhouse Gas (GHG) Emissions from the Project**

Fuel Type	Table C-1		Table C1 & C2 Default Emission Factors (kg/MMBtu)		
	Default HHV	Units	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
Natural Gas	1.03E-03	MMBtu/scf	53.02	1.0E-03	1.0E-04

**Annual Fuel Usage**

Emission Units/Operating Modes	Annual Operating Hours <sup>(1)</sup> (hrs/yr)	Natural Gas Fuel Usage		
		(scf/hr)	(scf/yr)	(MMBtu/yr)
EU001	3,980	5,288,462	21,048,076,923	21,637,423
EU002	3,980	5,288,462	21,048,076,923	21,637,423
Gas Heaters	3,980	15,865	63,144,231	64,912

GHG Annual Emissions	GHG (metric ton)	EU001	EU002	Gas Heaters	Total
Natural Gas	CO <sub>2</sub>	1,147,216	1,147,216	3,442	2,297,874
	CH <sub>4</sub>	22	22	0.06	43
	N <sub>2</sub> O	2	2	0	4
	Total GHG (metric tons):	1,147,240.0	1,147,240.0	3,441.7	2,297,922
	Total CO <sub>2</sub> e (metric tons):	1,148,341.3	1,148,341.3	3,445.0	2,300,128
	<b>Total CO<sub>2</sub>e (TPY):</b>	<b>1,263,175</b>	<b>1,263,175</b>	<b>3,790</b>	<b>2,530,140</b>
	Total GHG Emissions (TPY):	1,261,964.0	1,261,964.0	3,785.9	2,527,714

Step 1: Tailoring Rule Threshold 75,000 TPY CO<sub>2</sub>e  
 Step 2: Tailoring Rule Threshold 250 TPY (mass-based)

**Notes:**

Example NG Equation: Fuel Use in MMBtu/yr: Fuel Use (10<sup>6</sup>cf/yr) x HHV (Default high heat value from 40 CFR 98, Table C-1) in MMBtu/scf.  
 tonne = metric ton; 1 metric ton = 1000 kg; 1 tonne = 1.1 short ton.

<sup>(1)</sup> Maximum operating hours in order to be below 75,000 threshold.

**Table 10: Physical, Performance, and Emissions Data for the Mechanical Draft Cooling Towers**

Parameter	Mechanical Draft Cooling Tower
<b><u>Physical Data</u></b>	
Number of Cells per tower	12
Number of Cooling Towers	2
Stack Dimensions	
Height, ft	60.0
Stack Top Effective Inner Diameter, per cell, ft	32.0
Effective Diameter, all cells, ft	TBD
<b><u>Performance Data (per cell)</u></b>	
Discharge Velocity, ft/min	1,690
Circulating Water Flow Rate (CWFR), gal/min (both towers combined)	660,000
Design hot water temperature, °F	113.7
Design Air Flow Rate per cell, acfm, (estimated)	36,000,000
Hours of operation	4,500
<b><u>Emission Data</u></b>	
Drift Rate <sup>a</sup> (DR), percent	0.0005
Total Dissolved Solids (TDS) Concentration <sup>b</sup> , average ppm	29,000
Solution Drift <sup>c</sup> (SD), lb/hr	1,643.4
PM Drift <sup>d</sup> , lb/hr	47.7
tons/year	107.2
PM <sub>10</sub> Drift	
PM <sub>10</sub> Emissions, lb/hr	0.39
tons/year	0.9

## Notes:

<sup>a</sup> Drift rate is the percent of circulating water.

<sup>b</sup> The TDS values assumed are conservative and include cycling.

<sup>c</sup> Includes water and based on circulating water flow rate and drift rate  
(CWFR x DR x 8.3 lb/gal x 60 min/hr).

<sup>d</sup> PM calculated based on total dissolved solids and solution drift (TDS x SD).

**Table 11: Maximum Predicted CO Impacts Compared to the SILs**

Pollutant	Averaging Period	Concentration ( $\mu\text{g}/\text{m}^3$ )	
		Modeled	SIL
CO	1-Hour	165	2,000
	8-Hour	33	500

SIL = Significant Impact Level

 $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter

Table 12: Modeled Source Parameters

Point Sources	MODEL ID	UTM Coordinates <sup>a</sup>		Physical				Operating			
		East (m)	North (m)	Height (ft)	Height (m)	Diameter (ft)	Diameter (m)	Temperature (°F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)
<u>Project Sources</u>											
Boiler Stack	BOILERS	324,430	3,118,933	499	152.1	24	7.32	349.0	449.1	126.6	38.6
Gas Heater	HEATER1	324,563	3,119,018	20	6.1	2.5	0.75	945.0	780.2	8.4	2.5
Gas Heater	HEATER2	324,565	3,119,018	20	6.1	2.5	0.75	945.0	780.2	8.4	2.5

Notes:

<sup>a</sup> UTM Zone 17, North American Datum 83.

Table 13: Modeled Source Emission Rates

Sources	MODEL ID	NO <sub>x</sub>		CO	
		(lb/hr)	(g/s)	(lb/hr)	(g/s)
<u>Project Sources</u>					
Boilers Stack	BOILERS	3300	415.8	1980	249.5
Gas Heater	HEATER1	1.59	0.20	1.33	0.17
Gas Heater	HEATER2	1.59	0.20	1.33	0.17

Notes:

Emission rate is for both EU001 and EU002.

EU001 and EU002 share a common stack.

Table 14: Modeled Solid Structure Dimensions

Structure Type	Label	Height		Length		Width	
		(ft)	(m)	(ft)	(m)	(ft)	(m)
Boiler Building	BB	282	86	295	90	115	35
Turbine Building	TB	177	54	360	110	108	33

Source: Progress Energy Florida.

Table 15: Summary of Best Available Control Technology (BACT) Determinations for CO for Boilers

RBLCD	FACILITY_NAME	FACILITY_STATE	PERMIT_NUM	PERMIT_ISSUANCE_DATE	PROCESS_NAME	PRIMARY_FUEL	THROUGHPUT	THROUGHPUT_UNIT	POLLUTANT	CONTROL_METHOD_DESCRIPTION	EMISSION_LIMIT_1	EMISSION_LIMIT_1_UNIT	EMISSION_LIMIT_1_AVERAGE_CONDITION	CASE-BY-CASE_BASIS	PERCENT_EFFICIENCY	EMISSION_LIMIT_1_T3	EMISSION_LIMIT_2_AVERAGE_CONDITION	STANDARD_EMISSION_LIMIT	STANDARD_EMISSION_LIMIT_UNIT	
AL-0100	WEYERHAEUSER COMPANY	AL	100-0001-X017, X018, X019	11/15/2002	BOILER, 300 MMBTU/H, NATURAL GAS	NATURAL GAS	300	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION PRACTICES	0.1	LB/MBTU	3-HR AVERAGE	BACT-PSD	0	30	LB/H	0.01	LB/MBTU	
AR-0081	MUDOR-YAMATO STEEL COMPANY	AR	0803QAP-06	4/9/2008	CASTRIP VTD BOKER	NATURAL GAS			Carbon Monoxide	GOOD COMBUSTION PRACTICES	0.7	LB/H		BACT-PSD	0	3	TYR	0.01	LB/MBTU	
AZ-0040	ARIZONA CLEAR FUELS YUMA	AZ	1061705	4/14/2006	STEAM BOILERS NOS 1 AND 2	NATURAL GAS	419	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION PRACTICES	0.016	LB/MBTU	3-HR AVERAGE	BACT-PSD	0	0		0.018	LB/MBTU	
CA-0156	MONTVILLE FLOWN LLC	CA	107-0058	4/29/2010	EZ LOW VELOCITY BOKER	Natural Gas	996	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION PRACTICES	0.084	LB/MBTU	30-DAY ROLLING AVERAGE/EXCEPT 33M	BACT-PSD	0	0		0		
IA-0088	ADM CORN PROCESSING - CEDAR RAPIDS	IA	87-01-080	6/29/2007	NATURAL GAS BOKER (292.5 MMBTU/H)	NATURAL GAS	292.5	MMBTU/H	Carbon Monoxide	ADVANCED ULTRA LOW NOX BURNERS WITH FUEL GAS RECYCLATION AND GOOD COMBUSTION PRACTICES	0.072	LB/MBTU	30-DAY ROLLING AVERAGE/EXCEPT 33M	BACT-PSD	0	0.274	TYR	12-MONTH ROLLING TOTAL FOR ALL TIMES	0	
LA-0140	OAYLORD CONTAINER CORPORATION	LA	PSD-LA-657	9/16/2001	BOILER NO 100	NATURAL GAS	797.8	MMBTU/H	Carbon Monoxide	GOOD EQUIPMENT DESIGN & PROPER COMBUSTION TECHNIQUES	888.31	LB/H		BACT-PSD	0	3034.6	TYR	1.13	LB/MBTU	
LA-0174	GEORGIA PACIFIC CORPORATION PORT HUDSON OPERATIONS	LA	PSD-LA-481 (M-2)	1/25/2002	POWER BOKER NO 5	NATURAL GAS	987	MMBTU/H	Carbon Monoxide	GOOD EQUIPMENT DESIGN AND PROPER COMBUSTION TECHNIQUES	78.31	LB/H		BACT-PSD	0	138.14	TYR	0.07	LB/MBTU	
LA-0227	CLECO RODEMACHE POWER STATION	LA	PSD-LA-728	5/8/2008	UNIT 2 BOKER (1-74)	NATURAL GAS	5446	MMBTU/H	Carbon Monoxide	LOW NOX BURNERS, OVERFIRE AIR, GOOD COMBUSTION PRACTICES	3000	LB/H	HOURLY	Other Case-by-Case	0	0.15	LB/MBTU	ANNUAL AVERAGE	0	
LA-0233	LAKE CHARLES COMPLEX	LA	PSD-LA-671(H-1)	1/20/2006	3X-69 POWERHOUSE BOKER B-6A	NATURAL GAS	337.6	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION CONTROL, VELOCITY GUARANTEE OF 78 FPM OR LESS	41.04	LB/H		BACT-PSD	0	0		0		
LA-0233	LAKE CHARLES COMPLEX	LA	PSD-LA-671(H-1)	1/20/2006	3X-69 POWERHOUSE BOKER B-6	NATURAL GAS	337.6	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION CONTROL, VELOCITY GUARANTEE OF 78 FPM OR LESS	41.04	LB/H		BACT-PSD	0	0		0		
LA-0238	ALLIANCE REFINERY	LA	PSD-LA-76(M3)	7/10/2006	CO BOKERS (2)	REFINERY GAS	831.3	MMBTU/H EACH	Carbon Monoxide	EQUIPPED WITH CONTINUOUS HIGH INTENSITY COMBUSTION UNITS	379.1	LB/H	HOURLY MAXIMUM	BACT-PSD	0	0		0		
MS-0076	GEORGIA PACIFIC CORPORATION, MONTICELLO MILLS	MS	1500-00007	7/9/2003	POWER BOKER - HG	NATURAL GAS	756	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION PRACTICES	30.4	LB/H		BACT-PSD	0	130.3	TYR	0.04	LB/MBTU	
MT-0028	AGRI TECHNOLOGY MONTANA LLC	MT	2836-03	11/6/2001	BOILER, NATURAL GAS	NATURAL GAS	356	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION PRACTICES	17.9	LB/H		Other Case-by-Case	0	0.06	LB/MBTU	0.05	LB/MBTU	
ND-0025	CASSELLTON PLANT	ND	PTC 01030	12/20/2007	BOILER, NATURAL GAS, FREQ	NATURAL GAS	450	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION PRACTICES	43.34	LB/H	3-HR	BACT-PSD	0	0		0		
NE-0024	CARROLL BLAIR PLANT	NE	57602C-60	6/22/2004	BOILER Q (NO 21)	NATURAL GAS	278.67	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION PRACTICES	0.14	LB/MBTU		Other Case-by-Case	0	0		0.14	LB/MBTU	
PA-0186	FPL ENERGY MARIUS HOOK PLANT	PA	PA-23-0089	6/4/2001	BOILER, (4)	NATURAL GAS	1575	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION PRACTICE	0.075	LB/MBTU		Other Case-by-Case	0	516	TYR	0.075	LB/MBTU	
PA-0253	CONOCOPHILLIPS TRAINER REFINERY	PA	23-0003	2/6/2007	BOILER 9 BOILER 10	NAT. GAS	349600	CFM	Carbon Monoxide	CO CATALYST	6.65	LB/H		BACT-PSD	0	30	TYR	12 CONSECUTIVE MONTHS 12 MONTH ROLLING AVE	0	
SC-0061	COLUMBIA ENERGY LLC	SC	0480-0024-CA THRU CD	4/9/2001	BOILERS, NATURAL GAS (2)	NATURAL GAS	360	MMBTU/H EACH	Carbon Monoxide	GOOD COMBUSTION PRACTICES	21	LB/H		BACT-PSD	0	0		0.08	LB/MBTU	
SC-0061	COLUMBIA ENERGY CENTER	SC	0480-0024-CE	7/2/2003	BOILER, NATURAL GAS	NATURAL GAS	560	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION PRACTICES, CLEAN FUEL	0.06	LB/MBTU		BACT-PSD	0	0		0.06	LB/MBTU	
TX-0373	ODESSA PETRO-CHEMICAL PLANT	TX	PSD-TX-467	10/24/2002	F BOKER STACK, EYF6RST C BOKER STACK, EY663ST	NAT GAS	370	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION PRACTICES	23.9	LB/H		Other Case-by-Case	0	88.9	TYR	0.066	LB/MBTU	
TX-0479	DOW TEXAS OPERATIONS FREEPORT	TX	PSD-TX-666H1 / 46306	12/2/2004	COMBUSTION VIA FOUR GAS-FIRED STEAM BOILERS	NATURAL GAS, OFFGAS, SYNGAS, CELL HYDROG	410	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION PRACTICES	27.89	LB/H		BACT-PSD	0	488.6	TYR	0		
TX-0511	BAF ETHYLENE/PROPYLENE CRACKER	TX	PSD-TX 00361 N, 00741 AND 36844	2/2/2006	BOILER (2)	NATURAL GAS	426.4		Carbon Monoxide	GOOD COMBUSTION PRACTICES	29.88	LB/H		BACT-PSD	0	130.42	TYR	0		
TX-0544	LEWIS CREEK PLANT	TX	N73	5/19/2008	ELECTRICAL GENERATION	NATURAL GAS	513	MW (1717.8 MMBTU/hr)	Carbon Monoxide	GOOD COMBUSTION PRACTICES WILL CONTROL CO EMISSIONS FROM EACH COMBUSTION TURBINE TO A LEVEL OF 12.0 PPM @ 15% OXYGEN OR A 3-HR ROLLING AVERAGE WILL OPERATING IN COMBINED CYCLE MODE WITH OR WITHOUT DUCT FIRING	12	PPM	@ 15% O2, 3-HR ROLLING AVE	BACT-PSD	0	0		0		
TX-0546	LEWIS CREEK PLANT	TX	N73	5/19/2008	ELECTRICAL GENERATION	NATURAL GAS	513	MW	Carbon Monoxide	RECENT PERMITS FOR COMBUSTIBLE TURBINES HAVE BEEN ISSUED BY TCEQ AT 15 PPM @ 15% OXYGEN. GOOD COMBUSTION PRACTICES WILL CONTROL CO EMISSIONS FROM EACH COMBUSTION TURBINE TO 12.0 PPM @ 15% OXYGEN OR A 3-HR ROLLING AVE	15	PPM @ 15% O2	@ 15% O2, 3-HR ROLLING AVE	Other Case-by-Case	0	0		0		
VA-0256	VA POWER - POSSUM POINT	VA	70226	11/18/2002	BOILER, TANGENTIALLY-FIRED UNIT 4 BOILER, TANGENTIALLY-FIRED UNIT 3	NATURAL GAS	2350	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION PRACTICES	56.7	LB/H		BACT-PSD	0	363	TYR	0.024	LB/MBTU	
WA-0303	LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	PSD-01-03, AMENOMENT 2 (ADMIN)	1/11/2008	COGEN 23	NATURAL GAS	666	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION PRACTICES	12	PPM @ 15% O2	11-HR, EXCEPT DURING STARTUP/SHUTDOWN	Other Case-by-Case	0	461	LB/D	EXCEPT DURING STARTUP/SHUTDOWN	0.028	LB/MBTU
WA-0301	BP CHERRY POINT REFINERY	WA	PSD-02-04	4/20/2006	BOILER, NATURAL GAS	NATURAL GAS	363	MMBTU/H	Carbon Monoxide	GOOD COMBUSTION PRACTICES	18.1	LB/H	24-HR AVE	BACT-PSD	0	0		0.06	LB/MBTU	
WI-0244	APPLETON COATED COMBINED LOCKS MILL	WI	06-DCF-770	6/19/2007	BOILER B05 (F11) NATURAL GAS / DISTILLATE OIL FIEB BOKER	NATURAL GAS, DISTILLATE OIL	286	MMBTU/H	Carbon Monoxide	BACT IS DEFINED TO BE USE OF NATURAL GAS, LIMITED DISTILLATE FUEL OIL, GOOD COMBUSTION CONTROL AND USE OF A LOW INPUT CENTER FIRE GAS GUN	0.12	LB/MBTU		BACT-PSD	0	0		0		

Note: Typical heating value of natural gas is 1,020 Btu/Gal. 1 MW = 3,413.119 Btu/hr.  
Source: EPA's BACT/AAER Clearinghouse (RBLCD) (<http://club.epa.gov/RBLCD/>); Golder 2011.



Table 18: Summary of Best Available Control Technology (BACT) Determinations for VOC for Boilers

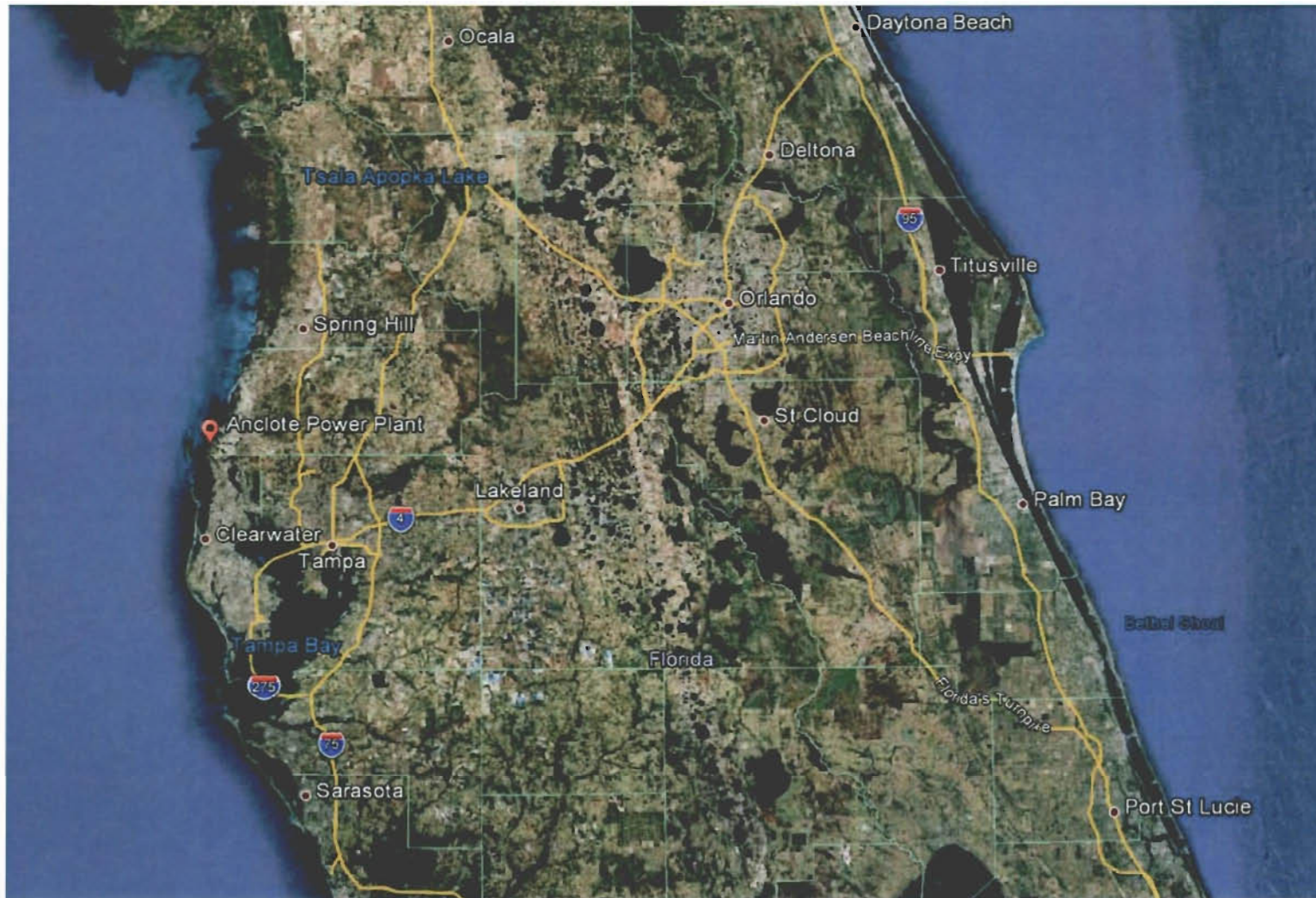
BLDID	FACILITY_NAME	FACILITY_STATE	PERMIT_NUM	PERMIT_ISSUANCE_DATE	PROCESS_NAME	PRIMARY_FUEL	THROUGHPUT	THROUGHPUT_UNIT	POLLUTANT	CONTROL_METHOD_DESCRIPTION	EMISSION_LIMIT_1	EMISSION_LIMIT_1_UNIT	EMISSION_LIMIT_2_AVERAGE_CONDITION	EMISSION_LIMIT_2_UNIT	CASE-BY-CASE_BASIS	PERCENT_EFFICIENCY	EMISSION_LIMIT_1_T	EMISSION_LIMIT_2_T	EMISSION_LIMIT_2_AVERAGE_TIME_CONDITION	STANDARD_EMISSION_LIMIT	STANDARD_EMISSION_LIMIT_UNIT
AL-0199	WYERHAEUSER COMPANY	AL	109-0001-0017, 1018, 1019	11/15/2002	BOILER, 300 MMBTU/H, NATURAL GAS	NATURAL GAS	300	MMBTU/H	Volatile Organic Compounds (VOC)		0.01	LB/MMBTU			BACT-PSD	0	3	LB/H	0.01	LB/MMBTU	
AR-0094	JOHN W. TURK JR. POWER PLANT	AR	7123-ADP-00	11/5/2008	AUXILIARY BOILER	NATURAL GAS	555	MMBTU/H	Volatile Organic Compounds (VOC)		0.0055	LB/MMBTU	3 HOUR AVERAGE		BACT-PSD	0	0			0	
CT-0156	MONTEVILLE POWER LLC	CT	107-0056	4/8/2010	82 MW Utility Boiler	Natural Gas	995	MMBTU/H	Volatile Organic Compounds (VOC)	Oxidation Catalyst	5.5	LB/H			BACT-PSD	0	0			0	
IA-0088	ADM CORN PROCESSING - CEDAR RAPIDS	IA	57-01-080	6/29/2007	NATURAL GAS BOILER (292.5 MMBTU/H)	NATURAL GAS	292.5	MMBTU/H	Volatile Organic Compounds (VOC)	GOOD COMBUSTION PRACTICES	0.0054	LB/MMBTU	AVERAGE OF 3 TEST RUNS		BACT-PSD	0	0			0	
LA-0140	GATLORD CONTAINER CORPORATION	LA	PSD-LA-657	9/18/2001	BOILER NO. 10C	NATURAL GAS	797.6	MMBTU/H	Volatile Organic Compounds (VOC)	GOOD EQUIPMENT DESIGN, PROPER COMBUSTION TECHNIQUES	14.24	LB/H			BACT-PSD	0	62.4	T/YR		0	
PA-0186	FPL ENERGY MARCUS HOOK, L.P.	PA	PA-23-0089	5/4/2001	BOILER, (4)	NATURAL GAS	15.75	MMBTU/H	Volatile Organic Compounds (VOC)		0.004	LB/MMBTU			Other Case-by-Case	0	28	T/YR		0	
PA-0253	CONOCO PHILLIPS TRAINER REFINERY	PA	23-00031	2/6/2007	BOILER 9 BOILER 10	NAT. GAS NATURAL GAS	349600 349600	CF/H CF/H	Volatile Organic Compounds (VOC) Volatile Organic Compounds (VOC)	CO CATALYST CO CATALYST	0.46 0.46	LB/H LB/H			BACT-PSD BACT-PSD	0 0	2 2	T/YR T/YR	12 CONSECUTIVE MONTHS 12 CONSECUTIVE MONTHS	0 0	
SC-0061	COLUMBIA ENERGY LLC	SC	D460-0024-CA THRU CD	4/9/2001	BOILERS, NATURAL GAS (2)	NATURAL GAS	350	MMBTU/H (EACH)	Volatile Organic Compounds (VOC)	GOOD COMBUSTION CONTROLS, CLEAN BURNING FUELS	1.75	LB/H			BACT-PSD	0	0			0	
SC-0091	COLUMBIA ENERGY CENTER	SC	D460-0024-CE	7/3/2003	BOILER, NATURAL GAS	NATURAL GAS	550	MMBTU/H	Volatile Organic Compounds (VOC)	GOOD COMBUSTION PRACTICE	0.004	LB/MMBTU			BACT-PSD	0	0			0	
TX-0373	ODESSA PETROCHEMICAL PLANT	TX	PSD-TX-967	10/24/2002	F BOILER STACK, EYH035T C BOILER STACK, EY0035T	NAT GAS NAT GAS	370 370	MMBTU/H MMBTU/H	Volatile Organic Compounds (VOC) Volatile Organic Compounds (VOC)	GOOD COMBUSTION PRACTICES NONE INDICATED	1.64 2.2	LB/H LB/H			Other Case-by-Case Other Case-by-Case	0 0	6 9.54	T/YR T/YR		0 0	
TX-0479	DOW TEXAS OPERATIONS FREEPORT	TX	PSD-TX-986M1 / 46306	1/27/2004	COMBUSTION VIA FOUR GAS-FIRED STEAM BOILERS	NATURAL GAS, OFFGAS, SYNGAS, CELL HYDROGEN	410	MMBTU/H	Volatile Organic Compounds (VOC)	GOOD COMBUSTION PRACTICES	2.06	LB/H			LAER	0	36.1	T/YR		0	
TX-0511	BASF ETHYLENE/PROPYLENE CRACKER	TX	PSD-TX 903M LK-007M1 AND 36644	2/3/2008	BOILER (2)		425.4 425.4	MMBTU/H MMBTU/H	Volatile Organic Compounds (VOC) Carbon Monoxide		1.2 29.88	LB/H LB/H			BACT-PSD BACT-PSD	0 0	39.34 130.42	T/YR T/YR		0 0	
TX-0544	LEWIS CREEK PLANT	TX	N73	5/19/2009	ELECTRICAL GENERATION	NATURAL GAS	513	MW (1717.8 MMBtu/Hr)	Volatile Organic Compounds (VOC)	ENTERY PROPOSES OXIDATION CATALYST TECHNOLOGY TO CONTROL VOC EMISSIONS FROM EACH COMBUSTION TURBINE TO A LEVEL OF 1.7 PPMVD @ 15% OXYGEN WHILE OPERATING IN COMBINED CYCLE MODE.	1.7	PPMVD	@ 15% O2		LAER	0	0			0	
TX-0545	LEWIS CREEK PLANT	TX	N73	5/19/2009	ELECTRICAL GENERATION	NATURAL GAS	513	MW	Volatile Organic Compounds (VOC)	THESE PERMITS USE VOC EMISSIONS AS 1.7 PPMVD @ 15% OXYGEN. THESE EMISSION LIMITS HAVE BEEN ACHIEVED IN PRACTICE AS DEFINED BY LAER.	1.7	PPMVD	@ 15% O2		LAER	0	0			0	
VA-0255	VA POWER - POSSUM POINT	VA	70225	11/18/2002	BOILER, TANGENTIALLY FIRED, UNIT 4 BOILER, TANGENTIALLY FIRED, UNIT 3	NATURAL GAS NATURAL GAS	2350 1150	MMBTU/H MMBTU/H	Volatile Organic Compounds (VOC) Volatile Organic Compounds (VOC)	GOOD COMBUSTION PRACTICES. GOOD COMBUSTION PRACTICES.	83 83	T/YR T/YR			BACT-PSD BACT-PSD	0 0	0.0054 0.0054	LB/MMBTU LB/MMBTU	0.0054 0.0054	LB/MMBTU LB/MMBTU	
WA-0303	LONGVIEW FIBRE PAPER AND PACKAGING, INC	WA	PSD-01-03, AMENDMENT 2 (ADVIS)	11/1/2006	COGEN 23	NATURAL GAS	695	MMBTU/H	Volatile Organic Compounds (VOC)		168	LB/D			Other Case-by-Case	0	0			0	

Note: Typical heating value of natural gas is 1,020 Btu/Gal. 1 MW = 3,415,179 Btu/Hr.  
Source: EPA's BACT/LAER Clearinghouse (B&C) (<http://dpub.epa.gov/B&C/>), October 2011.

**FIGURES**

**FIGURE 1: SITE LOCATION**

**FIGURE 2: SITE LAYOUT**



SOURCE: 2012 Google Earth Aerial

CLIENT/PROJECT <b>Progress Energy Florida</b>		TAMPA, FLORIDA 		TITLE: <b>Figure 1 Site Location</b>	
DRAWN BY: PP	REVIEWED BY:	DATE: June 2012	NOT TO SCALE	FILE NO.:	JOB NO.: 11389602
					Anclote Power Plant




**LEGEND**

1 – Approximate Location of Gas Heater Stacks

2 – Boilers Stack

SOURCE: 2012 Google Earth Aerial

CLIENT/PROJECT <b>Progress Energy Florida</b>		TAMPA, FLORIDA 		TITLE: <b>Figure 2 Site Layout</b>	
DRAWN BY: PP	REVIEWED BY:	DATE: June 2012	NOT TO SCALE	FILE NO.:	JOB NO.: 11389602
					Anclote Power Plant

**APPENDIX A**  
**DISPERSION MODELING DOCUMENTATION**

**DESCRIPTION OF AIR MODELING  
FILES PROVIDED IN CD FOR:**

**AIR CONSTRUCTION PERMIT APPLICATION  
Progress Energy Florida – Anclote Power Plant**

Submitted to:

Florida Department of Environmental Protection  
2600 Blair Stone Rd.  
Tallahassee, FL 32399-2400

Submitted on behalf of:

Florida Power Corporation dba Progress Energy Florida, Inc  
299 First Avenue North, PEF-903  
St. Petersburg, FL 33701-3308

Submitted by:

Golder Associates Inc.  
5100 W. Lemon Street, Suite 208  
Tampa, FL 33609 USA

April 2012

Project No. 113-89602

FILE CONTENT  
BPIP MODELING FILES  
METDATA/AERMET FILES  
AERMOD MODELING FILES

**1. BPIP DIRECTORY- INPUT/OUTPUT FILES**

<u>FILE DESCRIPTION</u>	<u>MODEL FILENAME</u>
INPUT	Anclote.BPI
OUTPUT	Anclote.PRO

**2. AERMAP DIRECTORY**

<u>FILE DESCRIPTION</u>	<u>MODEL FILENAME</u>
AERMAP INPUT/OUTPUT	Anclote.API/ AST
AERMAP- RECEPTORS	Ancl7km.ROU
AERMAP- SOURCES	Anclote.SOU

**3. METDATA DIRECTORY**

<u>FILE DESCRIPTION</u>	<u>MODEL FILENAME</u>
SURFACE METEOROLOGICAL DATA	TPA5yr.SFC
PROFILE DATA	TPA5yr.PFL

**4. AERMOD DIRECTORY- MODEL INPUT/OUTPUT FILES**

<u>FILE DESCRIPTION</u>	<u>MODEL FILENAME</u>
INPUT/OUTPUT	CO18HR.INP
	CO18HR.OUT

**FDEP FORM NO. 62 210.900(1)**  
**APPLICATION FOR AIR PERMIT — LONG FORM**



RECEIVED



Department of Environmental Protection

JUN 18 2012

Division of Air Resource Management

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: Florida Power Corporation dba Progress Energy Florida, Inc.
2. Site Name: Anclote Power Plant
3. Facility Identification Number: 1010017
4. Facility Location... Street Address or Other Locator: 1729 Baillies Bluff Road
City: Holiday County: Pasco Zip Code: 34691-9753
5. Relocatable Facility? [ ] Yes [X] No
6. Existing Title V Permitted Facility? [X] Yes [ ] No

Application Contact

1. Application Contact Name: Chris Bradley, Senior Environmental Specialist
2. Application Contact Mailing Address... Organization/Firm: Florida Power Corporation dba Progress Energy Florida, Inc.
Street Address: 299 First Avenue North, PEF-903
City: St. Petersburg State: Florida Zip Code: 33701-3308
3. Application Contact Telephone Numbers... Telephone: (727) 820 - 5962 ext. Fax: (727) 820 - 5292
4. Application Contact E-mail Address: Chris.Bradley@pgnmail.com

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 6-18-12
2. Project Number(s): 1010017-013-AC-
3. PSD Number (if applicable):
4. Siting Number (if applicable):

PSD 379A

## APPLICATION INFORMATION

### Purpose of Application

**This application for air permit is being submitted to obtain: (Check one)**

#### **Air Construction Permit**

- 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 air construction permit application is to convert Anclote's existing Units 1 and 2 and associated equipment from present use of heavy fuel oil and natural gas to exclusive use of natural gas only. The change in fuels is needed to exempt the units from the new Mercury and Air Toxics Standard (MATS) limits imposed by the U.S. EPA.**

**In addition, PEF is requesting changes, provided as Attachment C, to the cooling tower language in the current Title V operating Permit No. 1010017-012-AV.**

**APPLICATION INFORMATION**

**Scope of Application**

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
001	Fossil Fuel Fired Steam Generator Unit No. 1	NA	NA
002	Fossil Fuel Fired Steam Generator Unit No. 2	NA	NA
TBD	Two Gas Heaters	NA	NA
007	Two, 12-cell Mechanical Draft Helper Cooling Towers	NA	NA

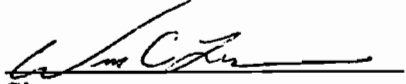
**Application Processing Fee**

Check one:  Attached - Amount: \$ 7,500  Not Applicable

**APPLICATION INFORMATION**

**Owner/Authorized Representative Statement**

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

1. Owner/Authorized Representative Name : <b>William Luke, Plant Manager</b>
2. Owner/Authorized Representative Mailing Address... Organization/Firm: <b>Florida Power Corporation dba Progress Energy Florida, Inc.</b> Street Address: <b>1729 Bailles Bluff Road</b> City: <b>Holiday</b> State: <b>Florida</b> Zip Code: <b>34691-9753</b>
3. Owner/Authorized Representative Telephone Numbers... Telephone: <b>(727) 943 - 3006</b> Fax: <b>(727) 943 - 3050</b>
4. Owner/Authorized Representative E-mail Address: <b><u>William.Luke@pgnmail.com</u></b>
5. Owner/Authorized Representative Statement:  <i>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.</i>   Signature  <u>12 June 2012</u> Date

## APPLICATION INFORMATION

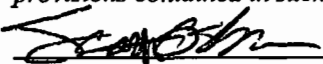
### Application Responsible Official Certification - NA

**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."**

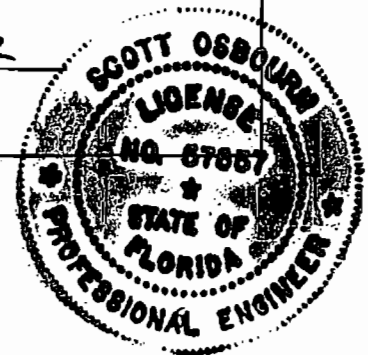
1. Application Responsible Official Name:
2. Application Responsible Official Qualification (Check one or more of the following options, as applicable): <input type="checkbox"/> For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business 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. <input type="checkbox"/> For a partnership or sole proprietorship, a general partner or the proprietor, respectively. <input type="checkbox"/> For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official. <input type="checkbox"/> The designated representative at an Acid Rain source or CAIR source.
3. Application Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
4. Application Responsible Official Telephone Numbers... Telephone: ext. Fax:
5. Application Responsible Official E-mail Address:
6. Application Responsible Official Certification: <p>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.</p> <p>_____ Signature</p> <p>_____ Date</p>

**APPLICATION INFORMATION**

**Professional Engineer Certification**

1. Professional Engineer Name: <b>Scott Osbourn</b> Registration Number: <b>57557</b>
2. Professional Engineer Mailing Address... Organization/Firm: <b>Golder Associates, Inc.*</b> Street Address: <b>5100 Lemon Street, Suite 208</b> City: <b>Tampa</b> State: <b>FL</b> Zip Code: <b>33609</b>
3. Professional Engineer Telephone Numbers... Telephone: <b>(813) 287 - 1717</b> ext. <b>53304</b> Fax: <b>(813) 287 - 1716</b>
4. Professional Engineer E-mail Address: <b>sosbourn@golder.com</b>
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(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</i> <i>(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.</i> <i>(3) If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/>, 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.</i> <i>(4) If the purpose of this application is to obtain an air construction permit (check here <input checked="" type="checkbox"/>, 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 <input type="checkbox"/>, 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.</i> <i>(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 <input type="checkbox"/>, 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.</i>  Signature <u></u> Date <u>6/14/12</u> (seal)

\* Attach any exception to certification statement.



## II. FACILITY INFORMATION

### A. GENERAL FACILITY INFORMATION

#### Facility Location and Type

1. Facility UTM Coordinates... Zone 17 East (km) 324.434 North (km) 3,118.928		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) 28°11'4" Longitude (DD/MM/SS) 82°47'18.6"	
3. Governmental Facility Code: 0	4. Facility Status Code: A	5. Facility Major Group SIC Code: 49	6. Facility SIC(s): 4911
7. Facility Comment :			

#### Facility Contact

1. Facility Contact Name: <b>Suzanne Hamilton</b>
2. Facility Contact Mailing Address... Organization/Firm: <b>Florida Power Corporation dba Progress Energy Florida, Inc.</b> Street Address: <b>1729 Baillies Bluff Road</b> City: <b>Holiday</b> State: <b>Florida</b> Zip Code: <b>34691-9753</b>
3. Facility Contact Telephone Numbers: Telephone: <b>(727) 943 - 3001</b> ext. Fax: <b>(727) 943 - 3050</b>
4. Facility Contact E-mail Address: <b><u>Suzanne.Hamilton@pgnmail.com</u></b>

#### Facility Primary Responsible Official – N/A

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:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official E-mail Address:

**FACILITY INFORMATION**

**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.	<input type="checkbox"/> Small Business Stationary Source	<input type="checkbox"/> Unknown
2.	<input type="checkbox"/> Synthetic Non-Title V Source	
3.	<input checked="" type="checkbox"/> Title V Source	
4.	<input checked="" type="checkbox"/> Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5.	<input type="checkbox"/> Synthetic Minor Source of Air Pollutants, Other than HAPs	
6.	<input type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)	
7.	<input type="checkbox"/> Synthetic Minor Source of HAPs	
8.	<input type="checkbox"/> One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9.	<input type="checkbox"/> One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10.	<input type="checkbox"/> One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11.	<input type="checkbox"/> Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12.	Facility Regulatory Classifications Comment:	



## FACILITY INFORMATION

### List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
CO	A	N
NO <sub>x</sub>	A	N
Pb	A	N
PM	A	N
PM <sub>10</sub>	A	N
PM <sub>2.5</sub>	A	N
SO <sub>2</sub>	A	N
VOC	A	N
HAPS (Total)	A	N
CO <sub>2e</sub>	A	N

**FACILITY INFORMATION**

**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

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

**FACILITY INFORMATION**

**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)
	<input checked="" type="checkbox"/> Attached, Document ID: <b>See Report</b> <input type="checkbox"/> 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)
	<input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <b>May 2009</b>
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)
	<input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <b>May 2009</b>

**Additional Requirements for Air Construction Permit Applications**

1.	Area Map Showing Facility Location:
	<input checked="" type="checkbox"/> Attached, Document ID: <b>See Report</b> <input type="checkbox"/> Not Applicable (existing permitted facility)
2.	Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL):
	<input checked="" type="checkbox"/> Attached, Document ID: <b>See Report</b>
3.	Rule Applicability Analysis:
	<input checked="" type="checkbox"/> Attached, Document ID: <b>See Report</b>
4.	List of Exempt Emissions Units:
	<input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (no exempt units at facility)
5.	Fugitive Emissions Identification:
	<input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
6.	Air Quality Analysis (Rule 62-212.400(7), F.A.C.):
	<input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
7.	Source Impact Analysis (Rule 62-212.400(5), F.A.C.):
	<input checked="" type="checkbox"/> Attached, Document ID: <b>See Report</b> <input type="checkbox"/> Not Applicable
8.	Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.):
	<input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
9.	Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.):
	<input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
10.	Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.):
	<input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**FACILITY INFORMATION**

**C. FACILITY ADDITIONAL INFORMATION (CONTINUED)**

**Additional Requirements for FESOP Applications – N/A**

1. List of Exempt Emissions Units: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (no exempt units at facility)
--

**Additional Requirements for Title V Air Operation Permit Applications – N/A**

1. List of Insignificant Activities: (Required for initial/renewal applications only) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> 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) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable (revision application with no change in applicable requirements)
3. Compliance Report and Plan: (Required for all initial/revision/renewal applications) <input type="checkbox"/> 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) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Equipment/Activities Onsite but Not Required to be Individually Listed <input type="checkbox"/> Not Applicable
5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
6. Requested Changes to Current Title V Air Operation Permit: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable

## FACILITY INFORMATION

### 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: \_\_\_\_\_  Previously Submitted, Date: May 2009

Not Applicable (not an Acid Rain source)

Phase II NO<sub>x</sub> 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: May 2009

Not Applicable

2. CAIR Part (DEP Form No. 62-210.900(1)(b)):

Attached, Document ID: \_\_\_\_\_  Previously Submitted, Date: May 2009

Not Applicable (not a CAIR source)

#### Additional Requirements Comment

## **EMISSIONS UNIT INFORMATION**

**Section [1] of [4]  
Fossil Fuel Fired Steam Generator No. 1**

### **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] of [4]  
Fossil Fuel Fired Steam Generator No. 1

**A. GENERAL EMISSIONS UNIT INFORMATION**

**Title V Air Operation Permit Emissions Unit Classification**

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

- The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
- The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

**Emissions Unit Description and Status**

1. Type of Emissions Unit Addressed in this Section: (Check one)

- This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
- This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
- This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:

**Fossil Fuel Fired Steam Generator No. 1**

3. Emissions Unit Identification Number: **001**

4. Emissions Unit Status Code: <b>A</b>	5. Commence Construction Date: <b>N/A</b>	6. Initial Startup Date: <b>OCT 16, 1974</b>	7. Emissions Unit Major Group SIC Code: <b>49</b>
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8. Federal Program Applicability: (Check all that apply)

- Acid Rain Unit
- CAIR Unit

9. Package Unit: **N/A**

Manufacturer:

Model Number:

10. Generator Nameplate Rating: **535 MW (summer)/540 MW (nominal winter)**

11. Emissions Unit Comment:

**EMISSIONS UNIT INFORMATION**

Section [1] of [4]  
Fossil Fuel Fired Steam Generator No. 1

**Emissions Unit Control Equipment/Method: – N/A**

1. Control Equipment/Method Description:
2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method: Control \_\_\_ of \_\_\_**

1. Control Equipment/Method Description:
2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method: Control \_\_\_ of \_\_\_**

1. Control Equipment/Method Description:
2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method: Control \_\_\_ of \_\_\_**

1. Control Equipment/Method Description:
2. Control Device or Method Code:



**EMISSIONS UNIT INFORMATION**

Section [1] of [4]  
Fossil Fuel Fired Steam Generator No. 1

**B. EMISSIONS UNIT CAPACITY INFORMATION**

(Optional for unregulated emissions units.)

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Process or Throughput Rate:		
2. Maximum Production Rate:		
3. Maximum Heat Input Rate: <b>5,500</b> million Btu/hr		
4. Maximum Incineration Rate: pounds/hr tons/day		
5. Requested Maximum Operating Schedule:		
<b>24</b> hours/day		<b>7</b> days/week
<b>52</b> weeks/year		<b>8,760</b> hours/year
6. Operating Capacity/Schedule Comment:		
<b>Based upon projected allowable emission rates, each unit could operate the equivalent of 3,980 hrs/yr at a heat input rate of 5,500 MMBtu/hr without triggering PSD. However, depending on actual emission rates and system wide demand growth, operation could be unlimited.</b>		

**EMISSIONS UNIT INFORMATION**

Section [1] of [4]

Fossil Fuel Fired Steam Generator No. 1

**C. EMISSION POINT (STACK/VENT) INFORMATION**

(Optional for unregulated emissions units.)

**Emission Point Description and Type**

1. Identification of Point on Plot Plan or Flow Diagram:		2. Emission Point Type Code:	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: <b>Emission units 001 and 002 exhaust from a common stack.</b>			
5. Discharge Type Code: <b>V</b>	6. Stack Height: <b>499 feet</b>	7. Exit Diameter: <b>24 feet</b>	
8. Exit Temperature: <b>349 °F</b>	9. Actual Volumetric Flow Rate: <b>3,440,279 acfm</b>	10. Water Vapor: <b>%</b>	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: <b>17</b> East (km): <b>324.434</b> North (km): <b>3,188.928</b>		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) <b>28°11'4"</b> Longitude (DD/MM/SS) <b>82°47'18.6"</b>	
15. Emission Point Comment:			

**EMISSIONS UNIT INFORMATION**

Section [1] of [4]  
 Fossil Fuel Fired Steam Generator No. 1

**D. SEGMENT (PROCESS/FUEL) INFORMATION**

**Segment Description and Rate:** Segment 1 of 1

1. Segment Description (Process/Fuel Type): <b>External Combustion Boilers, Electric Generation, Natural Gas, Tangentially Fired Units</b>		
2. Source Classification Code (SCC): <b>1-01-006-04</b>		3. SCC Units: <b>Million cubic feet burned</b>
4. Maximum Hourly Rate: <b>5.3</b>	5. Maximum Annual Rate: <b>21,048</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: <b>1,040</b>
10. Segment Comment: <b>Maximum hourly and annual rates are based on 5,500 MMBtu/hr (HHV), natural gas heat content of 1,040 Btu/ft<sup>3</sup>, an allowable NOx emission rate of 0.3 lb/MMBtu and 3,980 hours per year.</b>		

**Segment Description and Rate:** Segment    of   

1. Segment Description (Process/Fuel Type):		
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 [1] of [4]

Fossil Fuel Fired Steam Generator No. 1

**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
CO			
NOx			
PM			
PM <sub>10</sub>			
PM <sub>2.5</sub>			
SO <sub>2</sub>			
VOC			
HAPs			
CO <sub>2e</sub>			

**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: <b>CO</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>990 lb/hour                      1,970 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>0.18 lb/MMBtu</b>  Reference: <b>Vendor Data - based on 200 parts per million, dry volume @ 3% O<sub>2</sub></b>		7. Emissions Method Code: <b>5</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Table 2 of Report.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>TPY is based on projected operation of 3,980 hr/yr/unit at a heat input rate of 5,500 MMBtu/hr. Depending on actual emission rates and system wide demand, operation could be unlimited.</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.18 lb/MMBtu</b>	4. Equivalent Allowable Emissions: <b>990 lb/hour            1,970 tons/year</b>
5. Method of Compliance: <b>Annual stack testing</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	

**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: <b>NOx</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 1,650 lb/hour      3,284 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>0.3 lb/MMBtu</b> Reference: <b>Vendor Data</b>		7. Emissions Method Code: <b>5</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Table 2 of Report.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>TPY is based on projected operation of 3,980 hr/yr/unit at a heat input rate of 5,500 MMBtu/hr. Depending on actual NOx emission rates and system wide demand, operation could be unlimited.</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.3 lb/MMBtu</b>	4. Equivalent Allowable Emissions: <b>1,650 lb/hour      3,284 tons/year</b>
5. Method of Compliance: <b>NOx CEMS</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	



**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: <b>PM</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>138 lb/hour                      274 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>0.025 lb/MMBtu</b>  Reference: <b>2012 BART Analysis</b>		7. Emissions Method Code: <b>5</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Table 2 of Report.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>TPY is based on projected operation of 3,980 hr/yr/unit at a heat input rate of 5,500 MMBtu/hr. Depending on actual emission rates and system wide demand, operation could be unlimited.</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.025 lb/MMBtu</b>	4. Equivalent Allowable Emissions: <b>138 lb/hour      274 tons/year</b>
5. Method of Compliance: <b>Initial stack test.</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	

**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: <b>PM<sub>10</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>103 lb/hour                      205 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>0.019 lb/MMBtu</b> Reference: <b>2012 BART Analysis</b>		7. Emissions Method Code: <b>5</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Table 2 of Report.</b>  <b>Assumed emission factor of PM<sub>10</sub> to be 75% of PM.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>TPY is based on projected operation of 3,980 hr/yr/unit at a heat input rate of 5,500 MMBtu/hr. Depending on actual emission rates and system wide demand, operation could be unlimited.</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.019 lb/MMBtu</b>	4. Equivalent Allowable Emissions: <b>103 lb/hour                      205 tons/year</b>
5. Method of Compliance: <b>Initial Stack Test.</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	

**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: <b>PM<sub>2.5</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>34 lb/hour                      68 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>0.006 lb/MMBtu</b>  Reference: <b>2012 BART Analysis</b>		7. Emissions Method Code: <b>5</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Table 2 of Report.</b>  <b>Assumed emission factor of PM<sub>2.5</sub> to be 25% of PM.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>TPY is based on projected operation of 3,980 hr/yr/unit at a heat input rate of 5,500 MMBtu/hr. Depending on actual emission rates and system wide demand, operation could be unlimited.</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.006 lb/MMBtu</b>	4. Equivalent Allowable Emissions: <b>34 lb/hour                  68 tons/year</b>
5. Method of Compliance: <b>Initial Stack Test.</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	

**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: <b>SO<sub>2</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>15 lb/hour                      30 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>2.0 gr/100 scf</b> Reference: <b>Estimated Maximum Fuel Sulfur</b>		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Table 2 of Report.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>TPY is based on projected operation of 3,980 hr/yr/unit at a heat input rate of 5,500 MMBtu/hr. Depending on actual emission rates and system wide demand, operation could be unlimited.</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>2.0 gr/100 scf</b>	4. Equivalent Allowable Emissions: <b>15 lb/hour                      30 tons/year</b>
5. Method of Compliance: <b>Fuel Sampling and Analysis</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	



**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: <b>VOC</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>30 lb/hour</b> <b>59 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>0.005 lb/MMBtu</b>  Reference: <b>AP-42 Factor</b>		7. Emissions Method Code: <b>3</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Table 2 of Report.</b> <b>VOC emission factor of 0.005 lb/MMBtu derived from 5.5 lb/10<sup>6</sup> scf VOC emission factor from AP-42 Table 1.4-2.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>TPY is based on projected operation of 3,980 hr/yr/unit at a heat input rate of 5,500 MMBtu/hr. Depending on actual emission rates and system wide demand, operation could be unlimited.</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.005 lb/MMBtu</b>	4. Equivalent Allowable Emissions: <b>30 lb/hour                      59 tons/year</b>
5. Method of Compliance: <b>Initial Stack Test</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	

**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: <b>HAPs</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour <b>0.94 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: Reference: <b>AP-42 Factors</b>		7. Emissions Method Code: <b>3</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <p><b>Potential annual HAP emissions based on sum of metal HAP emissions and organic HAP emissions.</b></p> <p><b>Annual HAPs = 0.059 TPY (metal HAPs) + 0.88 TPY (organic HAPs) = 0.939 TPY</b></p> <p><b>Emission estimates for the metal and organic HAPs are provided in Tables 4 and 5, respectively.</b></p>			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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:	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):	

**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):	

**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):	

**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: <b>CO<sub>2</sub>e</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour		tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor:  Reference: <b>EPA GHG Rule</b>		7. Emissions Method Code: <b>5</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Tables 9 and 1 of Report.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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:	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):	

**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):	

**Allowable Emissions** Allowable Emissions \_\_ of \_\_

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**EMISSIONS UNIT INFORMATION**

Section [1] of [4]  
Fossil Fuel Fired Steam Generator No. 1

**G. VISIBLE EMISSIONS INFORMATION**

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

**Visible Emissions Limitation:** Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: <b>VE10</b>	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: <b>10 %</b> Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: <b>EPA Reference Method 9</b>	
5. Visible Emissions Comment:	

**Visible Emissions Limitation:** Visible Emissions Limitation    of   

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

**EMISSIONS UNIT INFORMATION**Section [1] of [4]  
Fossil Fuel Fired Steam Generator No. 1**H. CONTINUOUS MONITOR INFORMATION****Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.****Continuous Monitoring System:** Continuous Monitor 1 of 3

1. Parameter Code: <b>NO<sub>x</sub></b>	2. Pollutant(s):
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:  <b>Required by CAIR Program</b>	

**Continuous Monitoring System:** Continuous Monitor 2 of 3

1. Parameter Code: <b>CO<sub>2</sub></b>	2. Pollutant(s):
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:  <b>Required by CAIR Program</b>	



**EMISSIONS UNIT INFORMATION**

Section [1] of [4]

Fossil Fuel Fired Steam Generator No. 1

**H. CONTINUOUS MONITOR INFORMATION (CONTINUED)**

**Continuous Monitoring System:** Continuous Monitor 3 of 3

1. Parameter Code: <b>VE</b>	2. Pollutant(s):
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:  <b>Required by 40 CFR Part 75 (Acid Rain Program).</b>	

**Continuous Monitoring System:** Continuous Monitor \_\_\_ of \_\_\_

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

**EMISSIONS UNIT INFORMATION**

**Section [1] of [4]  
Fossil Fuel Fired Steam Generator No. 1**

**I. EMISSIONS UNIT ADDITIONAL INFORMATION**

**Additional Requirements for All Applications, Except as Otherwise Stated**

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>May 2009</u>
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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>May 2009</u>
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) <input type="checkbox"/> Attached, Document ID: <u>N/A</u> <input type="checkbox"/> 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) <input checked="" type="checkbox"/> Attached, Document ID: <u>Attachment A</u> <input type="checkbox"/> Previously Submitted, Date _____ <input type="checkbox"/> 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) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> 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: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable



## **EMISSIONS UNIT INFORMATION**

**Section [2] of [4]  
Fossil Fuel Fired Steam Generator No. 2**

### **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] of [4]  
Fossil Fuel Fired Steam Generator No. 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)

- 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:

**Fossil Fuel Fired Steam Generator No. 2**

3. Emissions Unit Identification Number: **002**

4. Emissions Unit Status Code: <b>A</b>	5. Commence Construction Date: <b>N/A</b>	6. Initial Startup Date: <b>OCT 31, 1978</b>	7. Emissions Unit Major Group SIC Code: <b>49</b>
--	--	---	--

8. Federal Program Applicability: (Check all that apply)

- Acid Rain Unit
- CAIR Unit

9. Package Unit: **N/A**

Manufacturer:

Model Number:

10. Generator Nameplate Rating: **525 MW (summer)/530 MW (nominal winter)**

11. Emissions Unit Comment:

**EMISSIONS UNIT INFORMATION**

Section [2] of [4]  
Fossil Fuel Fired Steam Generator No. 2

**Emissions Unit Control Equipment/Method: – N/A**

1. Control Equipment/Method Description:
2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method: Control \_\_ of \_\_**

1. Control Equipment/Method Description:
2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method: Control \_\_ of \_\_**

1. Control Equipment/Method Description:
2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method: Control \_\_ of \_\_**

1. Control Equipment/Method Description:
2. Control Device or Method Code:

**EMISSIONS UNIT INFORMATION**  
 Section [2] of [4]  
 Fossil Fuel Fired Steam Generator No. 2

**B. EMISSIONS UNIT CAPACITY INFORMATION**  
 (Optional for unregulated emissions units.)

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Process or Throughput Rate:		
2. Maximum Production Rate:		
3. Maximum Heat Input Rate: <b>5,500</b> million Btu/hr		
4. Maximum Incineration Rate: pounds/hr tons/day		
5. Requested Maximum Operating Schedule:		
<b>24</b> hours/day	<b>7</b> days/week	
<b>52</b> weeks/year	<b>8,760</b> hours/year	
6. Operating Capacity/Schedule Comment:		
<p><b>Based upon projected allowable emission rates, each unit could operate the equivalent of 3,980 hrs/yr at a heat input rate of 5,500 MMBtu/hr without triggering PSD. However, depending on actual emission rates and system wide demand growth, operation could be unlimited.</b></p>		

**EMISSIONS UNIT INFORMATION**

Section [2] of [4]  
 Fossil Fuel Fired Steam Generator No. 2

**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:	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: <b>Emission units 001 and 002 exhaust from a common stack.</b>			
5. Discharge Type Code: <b>V</b>	6. Stack Height: <b>499 feet</b>	7. Exit Diameter: <b>24 feet</b>	
8. Exit Temperature: <b>349 °F</b>	9. Actual Volumetric Flow Rate: <b>3,440,279 acfm</b>	10. Water Vapor: <b>%</b>	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: Feet	
13. Emission Point UTM Coordinates... Zone: <b>17</b> East (km): <b>324.434</b> North (km): <b>3,188.928</b>		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) <b>28°11'4"</b> Longitude (DD/MM/SS) <b>82°47'18.6"</b>	
15. Emission Point Comment:			



**EMISSIONS UNIT INFORMATION**

Section [2] of [4]  
 Fossil Fuel Fired Steam Generator No. 2

**D. SEGMENT (PROCESS/FUEL) INFORMATION**

**Segment Description and Rate:** Segment **1** of **1**

1. Segment Description (Process/Fuel Type): <b>External Combustion Boilers, Electric Generation, Natural Gas, Tangentially Fired Units</b>		
2. Source Classification Code (SCC): <b>1-01-006-04</b>		3. SCC Units: <b>Million cubic feet burned</b>
4. Maximum Hourly Rate: <b>5.3</b>	5. Maximum Annual Rate: <b>21,048</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: <b>1,040</b>
10. Segment Comment: <b>Maximum hourly and annual rates are based on 5,500 MMBtu/hr (HHV), natural gas heat content of 1,040 Btu/ft<sup>3</sup>, an allowable NOx emission rate of 0.3 lb/MMBtu, and 3,980 hours per year.</b>		

**Segment Description and Rate:** Segment \_\_ of \_\_

1. Segment Description (Process/Fuel Type):		
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] of [4]

Fossil Fuel Fired Steam Generator No. 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
CO			
NOx			
PM			
PM <sub>10</sub>			
PM <sub>2.5</sub>			
SO <sub>2</sub>			
VOC			
HAPs			
CO <sub>2e</sub>			

**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: <b>CO</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>990 lb/hour</b> <b>1,970 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>0.18 lb/MMBtu</b>  Reference: <b>Vendor Data - based on 200 parts per million, dry volume @ 3% O<sub>2</sub></b>		7. Emissions Method Code: <b>5</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Table 2 of Report.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>TPY is based on projected operation of 3,980 hr/yr/unit at a heat input rate of 5,500 MMBtu/hr. Depending on actual emission rates and system wide demand, operation could be unlimited.</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.18 lb/MMBtu</b>	4. Equivalent Allowable Emissions: <b>990 lb/hour            1,970 tons/year</b>
5. Method of Compliance: <b>Annual Stack Test</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	

**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: <b>NOx</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>1,650 lb/hour                      3,284 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>0.3 lb/MMBtu</b>  Reference: <b>Vendor Data</b>		7. Emissions Method Code: <b>5</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Table 2 of Report.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>TPY is based on projected operation of 3,980 hr/yr/unit at a heat input rate of 5,500 MMBtu/hr . Depending on actual NOx emission rates and system wide demand, operation could be unlimited.</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.3 lb/MMBtu</b>	4. Equivalent Allowable Emissions: <b>1,650 lb/hour      3,284 tons/year</b>
5. Method of Compliance: <b>NOx CEMS</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	

**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: <b>PM</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>138 lb/hour                      274 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>0.025 lb/MMBtu</b>  Reference: <b>2012 BART Analysis</b>		7. Emissions Method Code: <b>5</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Table 2 of Report.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>TPY is based on projected operation of 3,980 hr/yr/unit at a heat input rate of 5,500 MMBtu/hr. Depending on actual emission rates and system wide demand, operation could be unlimited.</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.025 lb/MMBtu</b>	4. Equivalent Allowable Emissions: <b>138 lb/hour      274 tons/year</b>
5. Method of Compliance: <b>Initial Stack Test.</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	



**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: <b>PM<sub>10</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>103 lb/hour                      205 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>0.019 lb/MMBtu</b>  Reference: <b>2012 BART Data</b>		7. Emissions Method Code: <b>5</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Table 2 of Report.</b>  <b>Assumed emission factor of PM<sub>10</sub> to be 75% of PM.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>TPY is based on projected operation of 3,980 hr/yr/unit at a heat input rate of 5,500 MMBtu/hr. Depending on actual emission rates and system wide demand, operation could be unlimited.</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.019 lb/MMBtu</b>	4. Equivalent Allowable Emissions: <b>103 lb/hour            205 tons/year</b>
5. Method of Compliance: <b>Initial Stack Test.</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	

**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: <b>PM<sub>2.5</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>34 lb/hour                      68 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>0.006 lb/MMBtu</b> Reference: <b>2012 BART Data</b>		7. Emissions Method Code: <b>5</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Table 2 of Report.</b>  <b>Assumed emission factor of PM<sub>2.5</sub> to be 25% of PM.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>TPY is based on projected operation of 3,980 hr/yr/unit at a heat input rate of 5,500 MMBtu/hr. Depending on actual emission rates and system wide demand, operation could be unlimited.</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.006 lb/MMBtu</b>	4. Equivalent Allowable Emissions: <b>34 lb/hour                  68 tons/year</b>
5. Method of Compliance: <b>Initial Stack Test.</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	

**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: <b>SO<sub>2</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 15 lb/hour                      30 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>2.0 gr/100 scf</b> Reference: <b>Maximum Fuel Sulfur Content</b>		7. Emissions Method Code: <b>5</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Table 2 of Report.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>TPY is based on projected operation of 3,980 hr/yr/unit at a heat input rate of 5,500 MMBtu/hr . Depending on actual emission rates and system wide demand, operation could be unlimited.</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>2.0 gr/100 scf</b>	4. Equivalent Allowable Emissions: <b>15 lb/hour                      30 tons/year</b>
5. Method of Compliance: <b>Fuel Sampling and Analysis</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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: <b>lb/hour                      tons/year</b>
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**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: <b>lb/hour                      tons/year</b>
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**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: <b>VOC</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>30 lb/hour</b> <b>59 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>0.005 lb/MMBtu</b>  Reference: <b>AP-42 Factor</b>		7. Emissions Method Code: <b>3</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Table 2 of Report.</b>  <b>VOC emission factor of 0.005 lb/MMBtu derived from 5.5 lb/10<sup>6</sup> scf VOC emission factor from AP-42 Table 1.4-2.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>TPY is based on projected operation of 3,980 hr/yr/unit at a heat input rate of 5,500 MMBtu/hr. Depending on actual emission rates and system wide demand, operation could be unlimited.</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.005 lb/MMBtu</b>	4. Equivalent Allowable Emissions: <b>30 lb/hour                      59 tons/year</b>
5. Method of Compliance: <b>Initial Stack Test</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	



**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: <b>HAPs</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour <b>0.94 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: Reference: <b>AP-42 Factors</b>		7. Emissions Method Code: <b>3</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>Potential annual HAP emissions based on sum of metal HAP emissions and organic HAP emissions.</b>  <b>Annual HAPs = 0.059 TPY (metal HAPs) + 0.88 TPY (organic HAPs) = 0.939 TPY</b>  <b>Emission estimates for the metal and organic HAPs are provided in Tables 4 and 5, respectively.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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:	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):	

**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):	

**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):	

**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: <b>CO<sub>2</sub>e</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour		tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor:  Reference: <b>EPA GHG Rule</b>		7. Emissions Method Code: <b>5</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Tables 9 and 1 of Report.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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:	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):	

**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):	

**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 [4]  
Fossil Fuel Fired Steam Generator No. 2

**G. VISIBLE EMISSIONS INFORMATION**

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

**Visible Emissions Limitation:** Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: <b>VE10</b>	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: <b>10 %</b> Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: <b>EPA Reference Method 9</b>	
5. Visible Emissions Comment:	

**Visible Emissions Limitation:** Visible Emissions Limitation    of   

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

**EMISSIONS UNIT INFORMATION**

Section [2] of [4]

Fossil Fuel Fired Steam Generator No. 2

**H. CONTINUOUS MONITOR INFORMATION****Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.****Continuous Monitoring System: Continuous Monitor 1 of 3**

1. Parameter Code: <b>NOx</b>	2. Pollutant(s):
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:  <b>Required by CAIR Program</b>	

**Continuous Monitoring System: Continuous Monitor 2 of 3**

1. Parameter Code: <b>CO2</b>	2. Pollutant(s):
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:  <b>Required by CAIR Program</b>	

**EMISSIONS UNIT INFORMATION**

Section [2] of [4]

Fossil Fuel Fired Steam Generator No. 2

**H. CONTINUOUS MONITOR INFORMATION (CONTINUED)**

**Continuous Monitoring System:** Continuous Monitor **3** of **3**

1. Parameter Code: <b>VE</b>	2. Pollutant(s):
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:  <b>Required by 40 CFR Part 75 (Acid Rain Program).</b>	

**Continuous Monitoring System:** Continuous Monitor \_\_\_ of \_\_\_

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

**EMISSIONS UNIT INFORMATION**

Section [2] of [4]  
Fossil Fuel Fired Steam Generator No. 2

**I. EMISSIONS UNIT ADDITIONAL INFORMATION**

**Additional Requirements for All Applications, Except as Otherwise Stated**

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>May 2009</u>
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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>May 2009</u>
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) <input type="checkbox"/> Attached, Document ID: <u>N/A</u> <input type="checkbox"/> 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) <input checked="" type="checkbox"/> Attached, Document ID: <u>Attachment A</u> <input type="checkbox"/> Previously Submitted, Date _____ <input type="checkbox"/> 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) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> 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: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable



**EMISSIONS UNIT INFORMATION**

Section [2] of [4]  
Fossil Fuel Fired Steam Generator No. 2

**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)): <input checked="" type="checkbox"/> Attached, Document ID: <b>See Report</b> <input type="checkbox"/> Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): <input checked="" type="checkbox"/> Attached, Document ID: <b>See Report</b> <input type="checkbox"/> Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**Additional Requirements for Title V Air Operation Permit Applications – N/A**

1. Identification of Applicable Requirements: <input type="checkbox"/> Attached, Document ID: <b>N/A</b>
2. Compliance Assurance Monitoring: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
3. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
4. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**Additional Requirements Comment**

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## **EMISSIONS UNIT INFORMATION**

**Section [3] of [4]  
Two Natural Gas Heaters**

### **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] of [4]  
Two Natural Gas Heaters

**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:  
**Two Natural Gas Fuel Heaters**

3. Emissions Unit Identification Number: **TBD**

4. Emissions Unit Status Code: <b>C</b>	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: <b>49</b>
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8. Federal Program Applicability: (Check all that apply)

Acid Rain Unit

CAIR Unit

9. Package Unit:  
Manufacturer: \_\_\_\_\_ Model Number: \_\_\_\_\_

10. Generator Nameplate Rating:

11. Emissions Unit Comment:

**EMISSIONS UNIT INFORMATION**

Section [3] of [4]

Two Natural Gas Heaters

**Emissions Unit Control Equipment/Method: – N/A**

1. Control Equipment/Method Description:

2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method: Control \_\_ of \_\_**

1. Control Equipment/Method Description:

2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method: Control \_\_ of \_\_**

1. Control Equipment/Method Description:

2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method: Control \_\_ of \_\_**

1. Control Equipment/Method Description:

2. Control Device or Method Code:

**EMISSIONS UNIT INFORMATION**

Section [3] of [4]  
Two Natural Gas Heaters

**B. EMISSIONS UNIT CAPACITY INFORMATION**

(Optional for unregulated emissions units.)

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Process or Throughput Rate:					
2. Maximum Production Rate:					
3. Maximum Heat Input Rate:	<b>16.5 million Btu/hr – each gas heater</b>				
4. Maximum Incineration Rate:	pounds/hr tons/day				
5. Requested Maximum Operating Schedule:	<table><tr><td><b>24 hours/day</b></td><td><b>7 days/week</b></td></tr><tr><td><b>52 weeks/year</b></td><td><b>3,980 hours/year</b></td></tr></table>	<b>24 hours/day</b>	<b>7 days/week</b>	<b>52 weeks/year</b>	<b>3,980 hours/year</b>
<b>24 hours/day</b>	<b>7 days/week</b>				
<b>52 weeks/year</b>	<b>3,980 hours/year</b>				
6. Operating Capacity/Schedule Comment:	<p><b>Maximum heat input rate of 16.5 MMBtu/hr is for each unit.</b></p>				

**EMISSIONS UNIT INFORMATION**

Section [3] of [4]  
 Two Natural Gas Heaters

**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:	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code: <b>V</b>	6. Stack Height: <b>20 feet</b>	7. Exit Diameter: <b>2.5 feet</b>	
8. Exit Temperature: <b>945°F</b>	9. Actual Volumetric Flow Rate: <b>2380 acfm</b>	10. Water Vapor: <b>%</b>	
11. Maximum Dry Standard Flow Rate: <b>dscfm</b>		12. Nonstack Emission Point Height: <b>feet</b>	
13. Emission Point UTM Coordinates... Zone: <b>17</b> East (km): <b>324.588</b> North (km): <b>3,188.988</b>		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS): <b>28° 11' 6"</b> Longitude (DD/MM/SS): <b>82° 47' 13"</b>	
15. Emission Point Comment:  <b>Information on performance, stack parameters, and emissions is presented in Table 3 of Report.</b>			

**EMISSIONS UNIT INFORMATION**

Section [3] of [4]  
 Two Natural Gas Heaters

**D. SEGMENT (PROCESS/FUEL) INFORMATION****Segment Description and Rate:** Segment **1** of **1**

1. Segment Description (Process/Fuel Type): <b>Natural Gas</b>		
2. Source Classification Code (SCC): <b>1-01-006-02</b>		3. SCC Units: <b>Million cubic feet burned</b>
4. Maximum Hourly Rate: <b>0.016</b>	5. Maximum Annual Rate: <b>63.1</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: <b>1,040</b>
10. Segment Comment: <b>See Table 3 of Report.</b>		

**Segment Description and Rate:** Segment **\_** of **\_**

1. Segment Description (Process/Fuel Type):		
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 [3] of [4]

Two Natural Gas Heaters

**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
CO			EL
NOx			NS
PM/PM <sub>10</sub>			NS
SO <sub>2</sub>			NS
VOC			NS
HAPs			NS
CO <sub>2e</sub>			NS



**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**  
 (Optional for unregulated emissions units.)

**Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.**

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: <b>CO</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 1.3 lb/hour                      2.7 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>84 lb/MMscf</b>  Reference: <b>AP-42 Factor</b>		7. Emissions Method Code: <b>3</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>Potential emissions estimated above are based on one gas heater. See Table 3 of Report for emission estimates for the two gas heaters.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>84 lb/MMscf</b>	4. Equivalent Allowable Emissions: <b>1.3 lb/hour      2.7 tons/year</b>
5. Method of Compliance: <b>Natural gas combustion</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	

**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: <b>NOx</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 1.6 lb/hour                      3.2 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>100 lb/MMscf</b>  Reference: <b>AP-42 Factor</b>		7. Emissions Method Code: <b>3</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>Potential emissions estimated above are based on one gas heater. See Table 3 of Report for emission estimates for the two gas heaters.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>100 lb/MMscf</b>	4. Equivalent Allowable Emissions: <b>1.6 lb/hour      3.2 tons/year</b>
5. Method of Compliance: <b>Natural gas combustion</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	

**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: <b>PM/PM<sub>10</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.12 lb/hour                      0.24 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>7.6 lb/MMscf</b>  Reference: <b>AP-42 Factor</b>		7. Emissions Method Code: <b>3</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>Potential emissions estimated above are based on one gas heater. See Table 3 of Report for emission estimates for the two gas heaters.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>7.6 lb/MMscf</b>	4. Equivalent Allowable Emissions: <b>0.12 lb/hour      0.24 tons/year</b>
5. Method of Compliance: <b>Natural gas combustion</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	

**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: <b>SO<sub>2</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>0.045 lb/hour                      0.09 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>2 gr S/100 scf natural gas</b> Reference: <b>typical maximum for natural gas</b>		7. Emissions Method Code: <b>2</b>	
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From:                      To:		
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years		
10. Calculation of Emissions:  <b>Potential emissions estimated above are based on one gas heater. See Table 3 of Report for emission estimates for the two gas heaters.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>2 grains/100 cf</b>	4. Equivalent Allowable Emissions: <b>0.045 lb/hour      0.09 tons/year</b>
5. Method of Compliance: <b>3,980 hours per year operation per unit.</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	



**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: <b>VOC</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>0.09 lb/hour                      0.17 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>5.5 lb/MMscf</b>  Reference: <b>AP-42 Factor</b>		7. Emissions Method Code: <b>3</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>Potential emissions estimated above are based on one gas heater. See Table 3 of Report for emission estimates for the two gas heaters.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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: <b>RULE</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>10% opacity</b>	4. Equivalent Allowable Emissions: <b>0.09 lb/hour      0.17 tons/year</b>
5. Method of Compliance: <b>EPA Method 9</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	

**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: <b>HAPs</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour <b>0.12 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor:  Reference: <b>AP-42 Factors</b>		7. Emissions Method Code: <b>3</b>	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <p><b>Potential annual HAP emissions above are based on two natural gas heaters each with a heat input rating of 16.5 MMBtu/hr.</b></p> <p><b>Emission estimates are provided in Table 6 of Report.</b></p>			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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: <b>RULE</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour <b>0.12 tons/year</b>
5. Method of Compliance: <b>Initial test for CO (EPA Reference Method 10, 10A or 10B)</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**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):	

**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):	

**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: <b>CO<sub>2</sub>e</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour		tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: Reference: <b>EPA GHG Rule</b>			7. Emissions Method Code: <b>5</b>
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>See Tables 9 and 1 of Report.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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:	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):	

**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):	

**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 [3] of [4]  
Two Natural Gas Heaters

**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 2

1. Visible Emissions Subtype: <b>VE10</b>	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input checked="" type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: <b>10 %</b> Exceptional Conditions: <b>100 %</b> Maximum Period of Excess Opacity Allowed: <b>60 min/hour</b>	
4. Method of Compliance: <b>EPA Reference Method 9</b>	
5. Visible Emissions Comment:	

**Visible Emissions Limitation:** Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: <b>VE99</b>	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: <b>100 %</b> Maximum Period of Excess Opacity Allowed: <b>60 min/hour</b>	
4. Method of Compliance:	
5. Visible Emissions Comment:  <b>FDEP Rule 62-201.700(1), allowed for 2 hours (120 minutes) per 24 hours for startup, shutdown and malfunctions.</b>	

**EMISSIONS UNIT INFORMATION**

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Two Natural Gas Heaters

**H. CONTINUOUS MONITOR INFORMATION – N/A****Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.****Continuous Monitoring System:** Continuous Monitor \_\_\_ of \_\_\_

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer:	Serial Number:
Model Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

**Continuous Monitoring System:** Continuous Monitor \_\_\_ of \_\_\_

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer:	Serial Number:
Model Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	



**EMISSIONS UNIT INFORMATION**

Section [3] of [4]  
Two Natural Gas Heaters

**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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <b>May 2009</b>
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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <b>May 2009</b>
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) <input type="checkbox"/> Attached, Document ID: <b>N/A</b> _____ <input type="checkbox"/> 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) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input checked="" type="checkbox"/> 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) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> 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: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**EMISSIONS UNIT INFORMATION**  
**Section [3] of [4]**  
**Two Natural Gas Heaters**

**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)): <input checked="" type="checkbox"/> Attached, Document ID: <u>See Report</u> <input type="checkbox"/> Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): <input checked="" type="checkbox"/> Attached, Document ID: <u>See Report</u> <input type="checkbox"/> Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**Additional Requirements for Title V Air Operation Permit Applications – N/A**

1. Identification of Applicable Requirements: <input type="checkbox"/> Attached, Document ID: <u>N/A</u>
2. Compliance Assurance Monitoring: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
3. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
4. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**Additional Requirements Comment**

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## **EMISSIONS UNIT INFORMATION**

**Section [4] of [4]  
Cooling Towers**

### **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 [4]  
Cooling Towers**

**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:  
**Two, 12-cell mechanical draft helper cooling towers**

3. Emissions Unit Identification Number: **007**

4. Emissions Unit Status Code: <b>A</b>	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: <b>49</b>
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8. Federal Program Applicability: (Check all that apply)

Acid Rain Unit

CAIR Unit

9. Package Unit:  
Manufacturer: \_\_\_\_\_ Model Number: \_\_\_\_\_

10. Generator Nameplate Rating:

11. Emissions Unit Comment:

**EMISSIONS UNIT INFORMATION**

Section [4] of [4]  
Cooling Towers

**Emissions Unit Control Equipment/Method:** Control 1 of 1

1. Control Equipment/Method Description: <b>Towers Mist (Drift) Eliminators – Low velocity (V&lt;250 ft/min)</b>
2. Control Device or Method Code: <b>015</b>

**Emissions Unit Control Equipment/Method:** Control \_\_\_ of \_\_\_

1. Control Equipment/Method Description:
2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method:** Control \_\_\_ of \_\_\_

1. Control Equipment/Method Description:
2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method:** Control \_\_\_ of \_\_\_

1. Control Equipment/Method Description:
2. Control Device or Method Code:

**EMISSIONS UNIT INFORMATION**

Section [4] of [4]  
Cooling Towers

**B. EMISSIONS UNIT CAPACITY INFORMATION**

(Optional for unregulated emissions units.)

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Process or Throughput Rate: <b>660,000 gal/min for both towers combined</b>
2. Maximum Production Rate:
3. Maximum Heat Input Rate: million Btu/hr
4. Maximum Incineration Rate: pounds/hr tons/day
5. Requested Maximum Operating Schedule: hours/day days/week weeks/year <b>4,500 hours/year</b>
6. Operating Capacity/Schedule Comment:  <b>Each cooling tower consists of 12 cells. Maximum operating schedule of 4,500 hrs/yr applies to each 12-cell tower</b>

**EMISSIONS UNIT INFORMATION**

Section [4] of [4]  
Cooling Towers

**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: <b>3</b>	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code: <b>V</b>	6. Stack Height: <b>60 feet</b>	7. Exit Diameter: <b>32 feet</b>	
8. Exit Temperature: <b>varies °F</b>	9. Actual Volumetric Flow Rate: <b>36,000,000 acfm</b>	10. Water Vapor: <b>%</b>	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: <b>17</b> East (km): <b>324.495</b> North (km): <b>3,189.174</b>		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) <b>28°11'12"</b> Longitude (DD/MM/SS) <b>82°47'16.5"</b>	
15. Emission Point Comment:  <b>Each cooling tower consists of 12 cells. Stack height and exit diameter applies to each cooling tower cell. Actual volumetric flow rate data applies to both 12-cell towers combined.</b>			

**EMISSIONS UNIT INFORMATION**

Section [4] of [4]

Cooling Towers

**D. SEGMENT (PROCESS/FUEL) INFORMATION****Segment Description and Rate:** Segment **1** of **1**

1. Segment Description (Process/Fuel Type): <b>Cooling Tower, Process Cooling, Mechanical Draft. Cooling tower water recirculation rate</b>		
2. Source Classification Code (SCC): <b>3-85-001-01</b>		3. SCC Units: <b>Million gallons</b>
4. Maximum Hourly Rate: <b>39.6</b>	5. Maximum Annual Rate: <b>178,200</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: <b>Each cooling tower consists of 12 cells. Data applies to both 12-cell towers combined.</b>		

**Segment Description and Rate:** Segment \_\_ of \_\_

1. Segment Description (Process/Fuel Type):		
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 [4] of [4]  
Cooling Towers

**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
<b>PM</b>	<b>015</b>		<b>WP</b>
<b>PM<sub>10</sub></b>	<b>015</b>		<b>WP</b>

**EMISSIONS UNIT INFORMATION**

Section [4] of [4]  
Cooling Towers

**POLLUTANT DETAIL INFORMATION**

Page [1] of [2]

**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: <b>PM</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>47.7 lb/hour                      107.2 tons/year</b>		4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>0.0005% Drift Rate</b> Reference: <b>Permit No. 1010017-007-AC</b>		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>Each cooling tower consists of 12 cells. Data provided above applies to both 12-cell towers combined.</b>  <b>Potential annual emission rate based on 4,500 hours per year operation per tower.</b>  <b>See Table 10 of report for physical, performance, and emission data for the mechanical cooling towers.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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:	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):	

**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):	

**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):	

**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: <b>PM<sub>10</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>0.39 lb/hour                      0.9 tons/year</b>		4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: <b>0.82% of PM</b> Reference: <b>"Calculating Realistic PM10 Emissions from Cooling Towers" by J. Reisman and G. Frisbie.</b>		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From:                      To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  Each cooling tower consists of 12 cells. Data provided above applies to both 12-cell towers combined.  Potential annual emission rate based on 4,500 hours per year operation per tower.  See Table 10 of report for physical, performance, and emission data for the mechanical cooling towers.  Estimated that 0.82% total PM is PM <sub>10</sub> emissions per "Calculating Realistic PM10 Emissions from Cooling Towers" by J. Reisman and G. Frisbie.			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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:	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):	

**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):	

**Allowable Emissions** Allowable Emissions \_\_\_ of \_\_\_

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**EMISSIONS UNIT INFORMATION**

Section [4] of [4]

Cooling Towers

**G. VISIBLE EMISSIONS INFORMATION – N/A**

**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:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions:                          %          Exceptional Conditions:                          % Maximum Period of Excess Opacity Allowed:                          min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

**Visible Emissions Limitation:** Visible Emissions Limitation \_\_ of \_\_\_\_

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions:                          %          Exceptional Conditions:                          % Maximum Period of Excess Opacity Allowed:                          min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

**EMISSIONS UNIT INFORMATION**Section [4] of [4]  
Cooling Towers**H. CONTINUOUS MONITOR INFORMATION – N/A**

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

**Continuous Monitoring System:** Continuous Monitor \_\_\_ of \_\_\_

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

**Continuous Monitoring System:** Continuous Monitor \_\_\_ of \_\_\_

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

**EMISSIONS UNIT INFORMATION**

Section [4] of [4]  
Cooling Towers

**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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <b>May 2009</b>
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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <b>May 2009</b>
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) <input checked="" type="checkbox"/> Attached, Document ID: <b>Attachment B</b> <input type="checkbox"/> 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) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> 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) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> 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: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable



**EMISSIONS UNIT INFORMATION**

Section **[4]** of **[4]**  
Cooling Towers

**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)): <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable

**Additional Requirements for Title V Air Operation Permit Applications – N/A**

1. Identification of Applicable Requirements: <input type="checkbox"/> Attached, Document ID: <b>N/A</b> _____
2. Compliance Assurance Monitoring: <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable
3. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable
4. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable

**Additional Requirements Comment**

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**ATTACHMENT A**  
**PROCEDURES FOR STARTUP AND SHUTDOWN**

## ATTACHMENT A

---

### ANCLOTE POWER PLANT PROCEDURES FOR STARTUP AND SHUTDOWN

#### GENERATING UNIT STARTUP

- Ensure equipment is ready for operation.
- Ensure natural gas available.
- Ensure boiler ready for startup.
- Establish natural gas fire in boiler and verify proper combustion.
- Regulate firing rate to increase steam pressure and temperatures within established limits.
- At acceptable steam temperature and pressure, begin steam admission to turbine.
- Increase boiler firing rate and turbine speed in accordance with established operating limits.
- Synchronize generator to power grid and increase generator load within established operating limits.
- Ensure all required systems are in service and operable.
- Ensure CEMS is in service and calibrated in accordance with the air permit and applicable requirements.
- Increase generator load to desired operating level.

#### GENERATING UNIT SHUTDOWN

- Reduce generator load, steam pressure and temperature to established levels.
- Reduce natural gas flow to minimum and remove natural gas from service.
- Remove generator from service.

**ATTACHMENT B**  
**COOLING TOWERS CONTROL EQUIPMENT**

**Attachment AR1**

**PSD Report  
Anclote Power Plant  
EU -007, HELPER COOLING TOWERS**

**1. INTRODUCTION**

Florida Power Corporation dba Progress Energy Florida, Inc. ("PEF") is proposing a project at the Anclote Power Plant (Facility ID 1010017) for the replacement of two (2) existing circular cooling towers (Emissions Unit ID -007, Helper Cooling Towers) with two (2) new fiberglass circular or rectangular once-through, counterflow, mechanical draft cooling towers. The existing towers are used to cool the water discharged from the plant in order to meet the temperature limitations of its NPDES permit. The replacement towers will be used for the same purpose.

This permit application contains the information developed to meet the Florida Department of Environmental Protection's ("FDEP") Prevention of Significant Deterioration ("PSD") requirements, including evaluation of the PSD pollutants as well as the Best Available Control Technology ("BACT") analysis. PEF is requesting an air construction permit and PSD approval as well as Title V Permit revision for this cooling tower replacement project.

**1.1 Prevention of Significant Deterioration (PSD) Requirements**

Though the helper cooling towers, Emissions Unit ID -007, are currently an unregulated emissions unit, this project to replace them requires an air construction permit as well as approval under PSD requirements. If PSD pollutant emissions from a new emissions source or an existing source that is to be modified increases more than a specific threshold, the US Environmental Protection Agency ("EPA") requirements, 40 CFR 52, as well as the FDEP regulations, Chapter 62-212, F.A.C., require the project to go through PSD review.

This cooling tower replacement project's PSD applicability analysis is summarized in Table 1.1 below. PSD review was triggered for particulate matter ("PM") only.

**Table 1.1 PSD Applicability Analysis.**

PSD Pollutant	Past Actual Emissions (TPY) <sup>a</sup>	Future Potential Emissions (TPY)	Change in Emissions (TPY)	Significant Emissions Rate Threshold (TPY)	PSD Review Required?
Particulate Matter (PM)	37	108	71	25	Yes
Particulate Matter – less than 10 µm (PM <sub>10</sub> ) <sup>b</sup>	37	0.9	-36	15	No

<sup>a</sup> Past actual emissions based on AOR emissions reported for years 2004 and 2005;

<sup>b</sup> Per the Reisman – Frisbie method, the past actual for PM<sub>10</sub> is 0.3 TPY, with a change in emissions of 0.6 TPY increase. This is still below the significant emissions rate threshold. Therefore, the project only triggers PSD for PM.

### **1.2 Best Achievable Control Technology (BACT) Analysis**

A Best Achievable Control Technology (“BACT”) analysis was performed for particulate matter (“PM”) as it was the only PSD pollutant to exceed the significant emissions rate threshold. The resulting proposed BACT limitation is a design drift rate of 0.0005% based on an annual water throughput rate of 178 E9 gallons per year (total for both towers) and 4500 hours per year operation.

### **1.3 Air Quality Analysis**

A Class II air quality impact analysis as well as additional analysis of impacts due to the proposed project on soils, vegetation, visibility, growth, and air quality related values (AQRV) in the nearest Class I areas were not performed because PM was the only pollutant to trigger PSD review.

## **2. PROPOSED PROJECT DESCRIPTION**

### **2.1 Site Description**

The Florida Power Corporation dba Progress Energy Florida, Inc. (“PEF”) Anclote Power Plant (Facility ID 1010017) consists of two oil/natural gas fired fossil fuel steam generating (“FFSG”) units with two mechanical draft helper cooling towers.

### **2.2 Proposed Project**

The proposed project involves the replacement of the two (2) existing circular cooling towers, which had been installed in the early 1980’s, with new fiberglass circular or rectangular once-through, counterflow, mechanical draft cooling towers. These towers are primarily operated in the summer months (April through September), in order to reduce the discharge water canal temperature to meet current water permit requirements. This will enable PEF to reduce the number and extent of de-rates and thereby reduce replacement fuel and purchase power costs.

The reason for this replacement is the degraded structural condition of the existing reinforced concrete towers and the potential safety hazards to employees that it causes. The new towers will use the existing circulating water pumps, thus maintaining the same flow characteristics of the existing cooling tower system. There are two (2) potential cooling tower vendors, SPX Marley and GEA, being considered at the date of this air construction permit application.

Cooling towers provide direct contact between cooling water and air passing through the tower (see Figure 2.2). Cooling tower drift is created when a small amount of the cooling water becomes entrained in the air stream and carried out of the tower.

The PM and PM<sub>10</sub> emissions from cooling towers are related to the total dissolved solids (“TDS”) in the water and amount of drift through the cooling tower. Drift eliminators are the control technology used to reduce the amount of drift, therefore reduce the amount of PM emissions.

### 2.3 Site Layout and Structures

An aerial photo showing proposed cooling tower locations follows (see Figure 2.3). If new rectangular towers are selected in lieu of replacement circular towers, they will be located near the existing towers and will utilize the existing intake and discharge points.

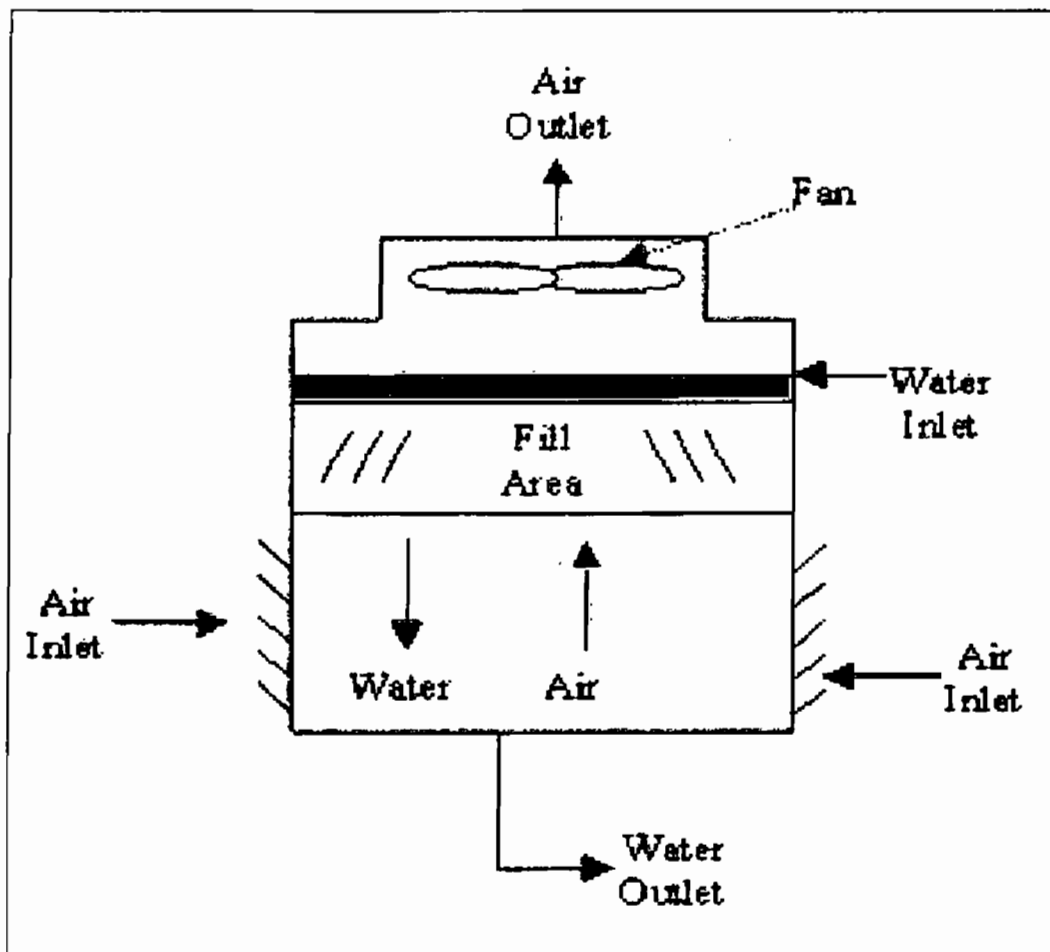
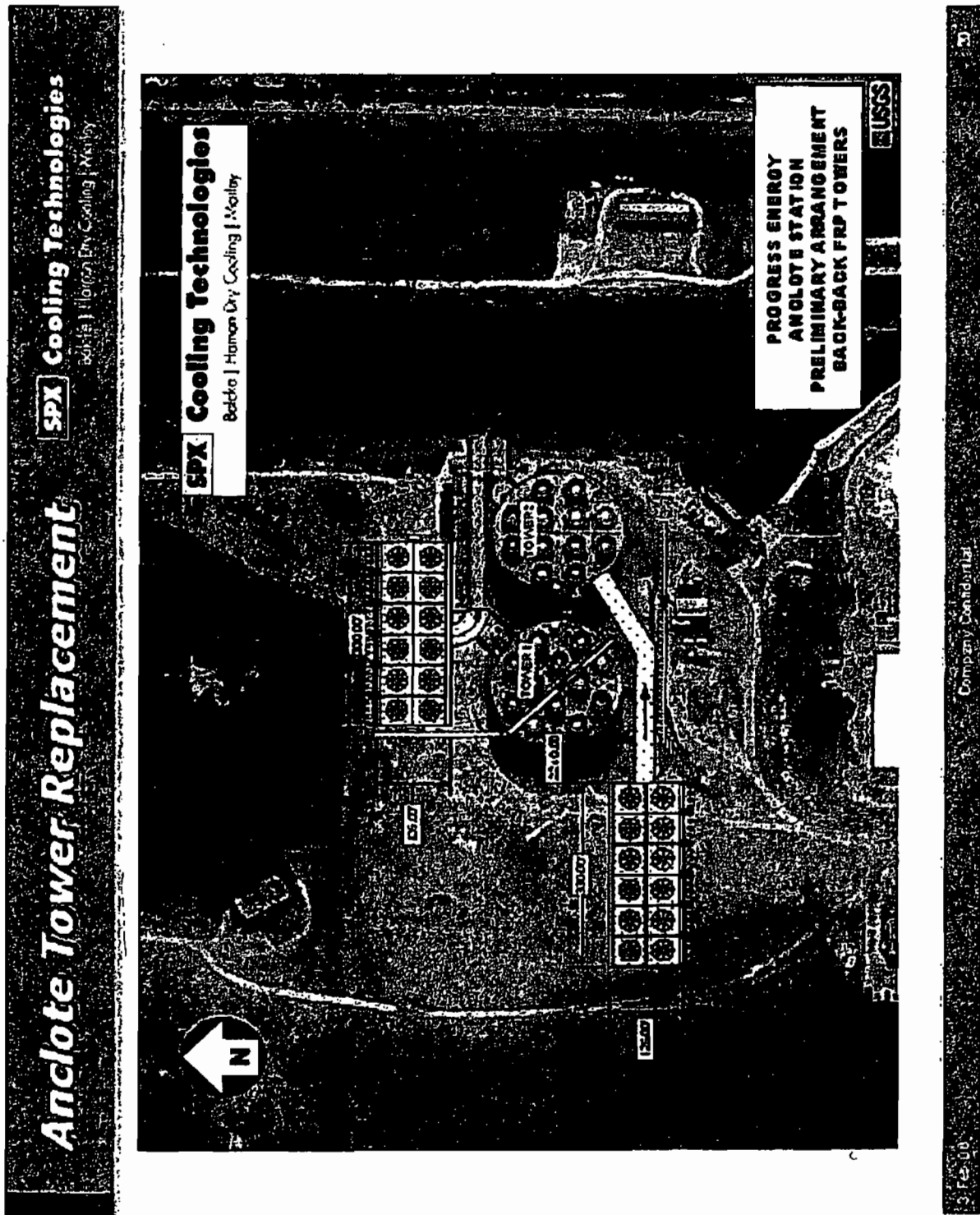


Figure 2.2  
Diagram of Typical Counterflow Mechanical Draft Cooling Tower  
(See <http://www.cheresources.com/ctowerszz.shtml>)





**Figure 2.3**  
Preliminary Cooling Tower Arrangement

**2.4 Stack Parameters**

The new replacement cooling towers will have the same number of cells as the old towers, 12 cells per unit or 24 cells total. The cooling tower cell height is expected to be 50 - 59 feet, with the stack height estimated to be 10 - 14 feet.

**3. AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY**

**3.1 National and State Ambient Air Quality Standards**

EPA promulgated primary national ambient air quality standards ("NAAQS") to protect public health and secondary NAAQS to protect public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Attainment areas, which Florida is one, are locations of the country which meet these NAAQS.

Florida's ambient air quality standards are identical to the NAAQS (see Rule 62-204.240, F.A.C.) with the exception of sulfur dioxide which includes the 24-hour secondary standard. The NAAQS for particulate matter is as follows:

**Table 3.1. National and State AAQS, Allowable PSD Increments, and Significant Impact Levels – Particulate Matter**

Pollutant	Averaging Time	AAQS ( $\mu\text{g}/\text{m}^3$ ) <sup>a</sup>			PSD Increments ( $\mu\text{g}/\text{m}^3$ ) <sup>a</sup>		PSD Class II Significant Impact Levels ( $\mu\text{g}/\text{m}^3$ ) <sup>b</sup>
		Primary Standard	Secondary Standard	Florida	Class I	Class II	
Particulate Matter <sup>c</sup> (PM <sub>10</sub> )	Annual Arithmetic Mean	50	50	50	4	17	1
	24-Hour Maximum	150	150	150	8	30	5

Note: Particulate matter (PM<sub>10</sub>) = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.

<sup>a</sup> Short-term maximum concentrations are not to be exceeded more than once per year except for the PM<sub>10</sub> AAQS. The 24-hour PM<sub>10</sub> AAQS is attained when the expected number of days per year with a 24-hour concentration above 150  $\mu\text{g}/\text{m}^3$  is equal to or less than 1. For modeling purposes, compliance is based on the sixth highest 24-hour concentration over a 5-year period.

<sup>b</sup> Maximum concentrations are not to be exceeded.

<sup>c</sup> On July 18, 1997, EPA promulgated revised AAQS for particulate matter and ozone. For particulate matter, PM<sub>2.5</sub> standards were introduced with a 24-hour standard of 65  $\mu\text{g}/\text{m}^3$  (3-year average of 98th percentile) and an annual standard of 15  $\mu\text{g}/\text{m}^3$  (3-year average at community monitors).

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978; 40 CFR 50; 40 CFR 52.21; Chapter 62-204, F.A.C.

**3.2 Prevention of Significant Deterioration (PSD) Requirements**

Per federal and Florida Prevention of Significant Deterioration ("PSD") review requirements, major new or modified emission sources regulated by the Clean Air Act ("CAA") must undergo review as well as obtain a pre-construction

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permit. As Florida's EPA approved State Implementation Plan ("SIP") includes Florida's PSD requirements, the FDEP has PSD approval authority.

A "major facility" is any 1 of 28 named source categories that have the potential to emit 100 TPY or more or any other stationary facility that has the potential to emit 250 TPY or more of a PSD pollutant. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. For an existing source that is to be modified or a new source at a major facility, the proposed project would be subject to PSD review if the resulting net emissions increase (i.e. proposed future potential versus past actual emissions) is greater than the PSD significant emissions rates. Particulate matter PSD significant emission rates are 25 TPY for PM and 15 TPY for PM<sub>10</sub>. See Rule 62-210.200, F.A.C. Also, EPA has promulgated regulations providing that impacts from PSD review projects above an air quality baseline concentration level of criteria pollutants such as PM<sub>10</sub> would constitute significant deterioration of air quality. Florida has adopted the EPA class designations and allowable PSD increments (See Table 3.1 for particulate matter).

PSD review is used to determine whether significant air quality deterioration will result from the new or modified facility (see 40 CFR 51.166, Prevention of Significant Deterioration of Air Quality and Rule 62-212.400, F.A.C.). Major facilities subject to review are required to undergo the following for each PSD pollutant emitted in significant amounts:

1. Control technology review,
2. Source impact analysis,
3. Air quality analysis (monitoring),
4. Source information, and
5. Additional impact analyses.

In addition to these analyses, review with respect to good engineering practice ("GEP") stack height regulations may also be required.

Control Technology Review. Per the PSD control technology review requirements, all applicable federal and state emission-limiting standards must be met and the Best Achievable Control Technology ("BACT") applied to control emissions from the source. The BACT requirements are applicable to all regulated pollutants for which the increase in emissions from the new source or existing source modification exceeds the significant emissions rate.

Per Rule 62-210.200(38), F.A.C., Best Achievable Control Technology is defined as follows:

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*(a) An emission limitation, including a visible emissions standard, based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account:*

- 1. Energy, environmental and economic impacts, and other costs;*
- 2. All scientific, engineering, and technical material and other information available to the Department; and*
- 3. The emission limiting standards or BACT determinations of Florida and any other state; determines is achievable through application of production processes and available methods, systems and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant.*

*(b) if the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of an emissions unit or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation.*

*(c) Each BACT determination shall include applicable test methods or shall provide for determining compliance with the standard(s) by means which achieve equivalent results.*

*(d) In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60, 61, and 63.*

BACT requirements were promulgated within the PSD provisions in the 1977 Clean Air Act amendments [Public Law 95-95; Part C, Section 165(a)(4)]. The primary purpose of BACT is to optimize consumption of PSD air quality increments and thereby enlarge the potential for future economic growth without significantly degrading air quality (EPA, 1978; 1980). Guidelines for the evaluation of BACT can be found in *Guidelines for Determining Best Available Control Technology (BACT)* (EPA, 1978) and in the *PSD Workshop Manual* (EPA, 1980). These EPA guidelines were issued to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. However, BACT in one area may not be identical to BACT in another area. According to EPA (1980), "BACT analyses for the same types of emissions unit and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site-specific factors. Therefore, BACT analyses must be conducted on a case-by-case basis."

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The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed project reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the facility. BACT must, at a minimum, demonstrate compliance with applicable New Source Performance Standards ("NSPS") for a source. An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emissions reduction than the proposed control technology, is required. The cost-benefit analysis requires the documentation of the materials, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A BACT decision is to be based on sound judgment, balancing environmental benefits with energy, economic, and other impacts (EPA, 1978).

Historically, a "bottom-up" approach consistent with the BACT Guidelines and the PSD Workshop Manual has been used. With this approach, an initial control level, which is usually NSPS, is evaluated against successively more stringent controls until a BACT level is selected. Later, EPA decided that the bottom-up approach was not providing the level of BACT originally intended by the rule. As a result, in December 1987, the EPA Assistant Administrator for the Office of Air and Radiation mandated changes in the implementation of the PSD program, including a new "top-down" approach to BACT decision making.

The top-down approach begins with the most stringent (or top) technology and emission limits that have been applied elsewhere to the same or similar source category. The applicant must then provide a basis for rejecting this technology in favor of the next most stringent technology or basis for using it. Rejection of control alternatives may be based on technical or economic infeasibility. Such decisions are made on the basis of physical (e.g., fuel type), locational (e.g., availability of water), or significant differences that may exist in environmental, economic, or energy impacts. The differences between the proposed facility and the facility, for which the control technique was applied previously, must be justified. EPA has issued a draft guidance document on the top-down approach entitled *Top-Down Best Available Control Technology Guidance Document* (EPA, 1990). FDEP utilizes this "top-down" BACT approach.

Additional Impact Analysis. In addition to air quality impact analyses, PSD regulations require analysis of visibility impairment and the impacts on soils and vegetation that would occur as a result of the proposed source (see Rule 62-212.400(8), F.A.C.). Impacts as a result of general commercial, residential, industrial, and other growth associated with the source also must be addressed for each PSD pollutant emitted in significant amounts. However since PM was the only pollutant to trigger PSD review for the helper cooling tower replacement project, no additional impact analysis was conducted.

PSD Applicability for Proposed Project.

*Area Classification.* This cooling tower replacement project at the PEF Anclote Power Plant is located in Pasco County, which is considered an attainment or maintenance area for all criteria pollutants.

*Pollutant Applicability.* The Anclote Power Plant is considered a "major existing facility" because it is 1 of the 28 named source categories and the annual emissions of several regulated pollutants are greater than 100 TPY (i.e. PM). Therefore, PSD review is required for any modification which results in a net increase greater than the PSD significant emissions rates.

As shown in Table 1.1, the comparison of the future potential-to-emit to the past actual annual emissions for the cooling tower replacement project results in a significant increase in PM emissions, but a decrease of PM<sub>10</sub> emissions. Therefore, PSD review is required for only PM.

**3.3 Nonattainment Requirements**

Florida is considered to be in attainment with all federal and state AAQS. Therefore, there are no non-attainment areas. Hence, non-attainment new source review is not required.

**3.4 Emission Standards**

There are no New Source Performance Standards ("NSPS") or National Emissions Standards for Hazardous Air Pollutants ("NESHAP" and "MACT") which apply to this cooling tower replacement project.

**4. AMBIENT MONITORING ANALYSIS**

Per Rule 62-212.400(7), F.A.C., ambient monitoring analysis may be required as in 40 CFR 52.21(m) for a project under PSD review. A project can be exempted from monitoring if the predicted increase in ambient concentrations is less than a specific de minimis concentration for the PSD pollutant under review. Also, if PSD review is only triggered for PM, as with this cooling tower replacement project, no ambient monitoring is required.

**5. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS**

**5.1 Requirements and BACT Summary**

As previously discussed (see Section 3), Best Available Control Technology ("BACT") must be applied for each pollutant under PSD review and BACT determinations must be made on a case-by-case basis considering technical, economic, energy, and environmental impacts for various BACT alternatives using a top-down approach.

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For the Anclote Power Plant helper cooling tower replacement project, the proposed BACT for PM emissions is as follows:

**Table 5.1 Proposed BACT for Cooling Tower Replacement**

PSD/Pollutant	BACT
PM	0.0005% Drift Rate <sup>a</sup>

<sup>a</sup>Based on 660,000 gpm throughput and 4500 hours per year.

**5.2 Cooling Tower BACT Analysis – Particulate Matter (PM)**

Previous BACT Determinations. As part of the BACT analysis, a review of previous PM BACT determinations for cooling towers listed in the RACT/BACT/LAER Clearinghouse on EPA's web site was performed. See Table 5.2 below. The pollution control technology was drift elimination for these determinations.

**Table 5.2: RACT/BACT/LAER Clearinghouse, Cooling Towers Permitted 6/2003 through 6/2006<sup>a</sup>**

Facility	Drift Rate (%)	Pollution Control Technology	State	Basis	Permit Date
Auburn Nugget	0.0050	(N)	IN	BACT-PSD	5/31/2005
Newmount Nevada Energy Investment, LLC	0.0005	Drift Eliminators	NV	BACT-PSD	5/5/2005
Trigen-Nassau Energy Corporation	0.0005	(N)	NY	BACT-PSD	3/31/2005
Mirant Mid-Atlantic, LLC	0.0010	Mist Eliminators	MD	BACT-PSD	11/5/2004
Longview Power, LLC	0.0002	Drift Eliminators	WV	BACT-PSD	3/2/2004
Midamerican Energy Company	0.0005	Mist Eliminators	IA	BACT-PSD	6/17/2003

<sup>a</sup> RACT/BACT/LAER Clearinghouse is on EPA's website: <http://cfpub.epa.gov/rblc/html/b102.cfm>.

Control Technology Feasibility. For cooling towers, drift eliminators are usually a part of the tower design in order to remove as many droplets as possible from the air stream before it exits the tower. Such drift eliminators depend on the inertial separation caused by the directional changes when passing through the eliminators.

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Common drift eliminator designs include herringbone (blade-type), wave form, and cellular (or honeycomb) configurations, with cellular units being the most efficient. Various materials can be used, including ceramics, fiber reinforced cement, fiberglass, metal, plastic, and wood installed or formed into closely spaced slats, sheets, honeycomb assemblies, or tiles. The materials may include additional features, such as corrugations and water removal channels, to enhance the removal performance. (EPA, AP42 Section 13.4, January 1995)

PM BACT Selection. For this Anclote Power Plant helper cooling tower replacement project, PEF proposes the use of drift eliminators with a design 0.0005% drift rate as the BACT limit. Note that at 660,000 gpm, 4500 hours per year, the potential-to-emit is estimated to be 108 TPY PM and 0.9 TPY PM<sub>10</sub>. Per Table 5.2, this proposed drift rate meets the current BACT for cooling towers.

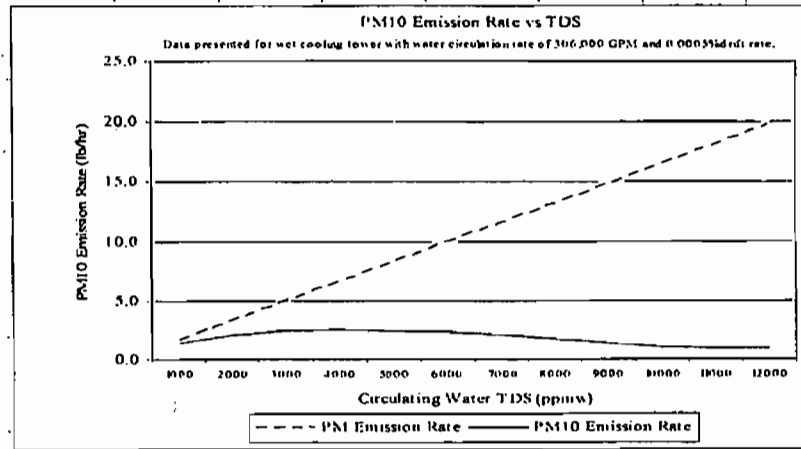
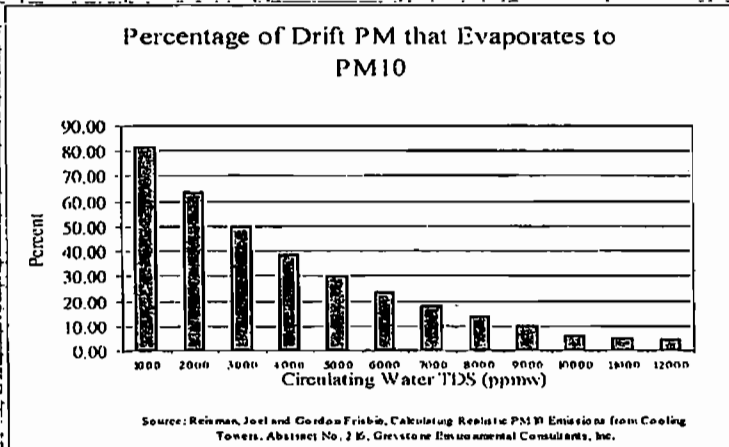


**Attachment EC1**

**Emission Calculation Information**  
**EU -007, HELPER COOLING TOWERS**

Attachment EC1 – Emission Calculation Information  
 Florida Power Corporation dba Progress Energy Florida, Inc., EU -007 Helper Cooling Towers  
 Estimate of PM10 Fraction of Cooling Tower Drift

TDS (ppmw)	PM Emission Rate (lb/hr)	Percent of Emissions		Tower Circulation Rate (GPM)	Drift Rate %	Calculated PM10 %	
		< or = PM10 %	PM10 Emissions (lb/hr)			< or = PM10 %	
1000	1.65	82.04	1.355	660,000 Salt water density (lb/gal) 8.34	0.0005	82.04	
2000	3.30	63.50	2.097			63.50	
3000	4.95	50.00	2.477			50.00	
4000	6.61	38.33	2.532			38.33	
5000	8.26	29.97	2.475			29.97	
6000	9.91	23.59	2.337			23.59	
7000	11.56	18.20	2.104			18.20	
8000	13.21	13.57	1.793			13.57	
9000	14.86	9.65	1.434			9.65	
10000	16.51	6.28	1.037			6.28	
11000	18.16	5.11	0.928			5.11	
12000	19.82	4.46	0.884			4.46	
17500	28.90	1.83	0.529			1.83	
29000	47.89	0.82	0.393			0.82	
89600	147.96	0.22	0.326			0.22	



Reisman, Joel and Gordon Frisbie, *Calculating Realistic PM10 Emissions from Cooling Towers*, Abstract No. 216, Greystone Environmental Consultants, Inc.

# Calculating Realistic PM<sub>10</sub> Emissions from Cooling Towers

Abstract No. 216    Session No. AM-1b

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## ABSTRACT

Particulate matter less than 10 micrometers in diameter (PM<sub>10</sub>) emissions from wet cooling towers may be calculated using the methodology presented in EPA's AP-42<sup>1</sup>, which assumes that all total dissolved solids (TDS) emitted in "drift" particles (liquid water entrained in the air stream and carried out of the tower through the induced draft fan stack.) are PM<sub>10</sub>. However, for wet cooling towers with medium to high TDS levels, this method is overly conservative, and predicts significantly higher PM<sub>10</sub> emissions than would actually occur, even for towers equipped with very high efficiency drift eliminators (e.g., 0.0006% drift rate). Such over-prediction may result in unrealistically high PM<sub>10</sub> modeled concentrations and/or the need to purchase expensive Emission Reduction Credits (ERCs) in PM<sub>10</sub> non-attainment areas. Since these towers have fairly low emission points (10 to 15 m above ground), over-predicting PM<sub>10</sub> emission rates can easily result in exceeding federal Prevention of Significant Deterioration (PSD) significance levels at a project's fence line. This paper presents a method for computing realistic PM<sub>10</sub> emissions from cooling towers with medium to high TDS levels.

## INTRODUCTION

Cooling towers are heat exchangers that are used to dissipate large heat loads to the atmosphere. Wet, or evaporative, cooling towers rely on the latent heat of water evaporation to exchange heat between the process and the air passing through the cooling tower. The cooling water may be an integral part of the process or may provide cooling via heat exchangers, for example, steam condensers. Wet cooling towers provide direct contact between the cooling water and air passing through the tower, and as part of normal operation, a very small amount of the circulating water may be entrained in the air stream and be carried out of the tower as "drift" droplets. Because the drift droplets contain the same chemical impurities as the water circulating through the tower, the particulate matter constituent of the drift droplets may be classified as an emission. The magnitude of the drift loss is influenced by the number and size of droplets produced within the tower, which are determined by the tower fill design, tower design, the air and water patterns, and design of the drift eliminators.

## AP-42 METHOD OF CALCULATING DRIFT PARTICULATE

EPA's AP-42<sup>1</sup> provides available particulate emission factors for wet cooling towers, however, these values only have an emission factor rating of "E" (the lowest level of confidence acceptable). They are also rather high, compared to typical present-day manufacturers' guaranteed drift rates, which are on the order of 0.0006%. (Drift emissions are typically

expressed as a percentage of the cooling tower water circulation rate). AP-42 states that “a *conservatively high* PM<sub>10</sub> emission factor can be obtained by (a) multiplying the total liquid drift factor by the TDS fraction in the circulating water, and (b) assuming that once the water evaporates, all remaining solid particles are within the PM<sub>10</sub> range.” (Italics per EPA).

If TDS data for the cooling tower are not available, a source-specific TDS content can be estimated by obtaining the TDS for the make-up water and multiplying it by the cooling tower cycles of concentration. [The cycles of concentration is the ratio of a measured parameter for the cooling tower water (such as conductivity, calcium, chlorides, or phosphate) to that parameter for the make-up water.]

Using AP-42 guidance, the total particulate emissions (PM) (after the pure water has evaporated) can be expressed as:

$$PM = \text{Water Circulation Rate} \times \text{Drift Rate} \times \text{TDS} \quad [1]$$

For example, for a typical power plant wet cooling tower with a water circulation rate of 146,000 gallons per minute (gpm), drift rate of 0.0006%, and TDS of 7,700 parts per million by weight (ppmw):

$$PM = 146,000 \text{ gpm} \times 8.34 \text{ lb water/gal} \times 0.0006/100 \times 7,700 \text{ lb solids}/10^6 \text{ lb water} \times 60 \text{ min/hr} = \underline{3.38 \text{ lb/hr}}$$

On an annual basis, this is equivalent to almost 15 tons per year (tpy). Even for a state-of-the-art drift eliminator system, this is not a small number, especially if assumed to all be equal to PM<sub>10</sub>, a regulated criteria pollutant. However, as the following analysis demonstrates, only a very small fraction is actually PM<sub>10</sub>.

## COMPUTING THE PM<sub>10</sub> FRACTION

Based on a representative drift droplet size distribution and TDS in the water, the amount of solid mass in each drop size can be calculated. That is, for a given initial droplet size, assuming that the mass of dissolved solids condenses to a spherical particle after all the water evaporates, and assuming the density of the TDS is equivalent to a representative salt (e.g., sodium chloride), the diameter of the final solid particle can be calculated. Thus, using the drift droplet size distribution, the percentage of drift mass containing particles small enough to produce PM<sub>10</sub> can be calculated. This method is conservative as the final particle is assumed to be perfectly spherical; hence as small a particle as can exist.

The droplet size distribution of the drift emitted from the tower is critical to performing the analysis. Brentwood Industries, a drift eliminator manufacturer, was contacted and agreed to provide drift eliminator test data from a test conducted by Environmental Systems Corporation (ESC) at the Electric Power Research Institute (EPRI) test facility in Houston, Texas in 1988 (Aull<sup>2</sup>, 1999). The data consist of water droplet size distributions for a drift eliminator that achieved a tested drift rate of 0.0003 percent. As we are using a 0.0006 percent drift rate, it is reasonable to expect that the 0.0003 percent drift rate would produce smaller droplets, therefore,

this size distribution data can be assumed to be conservative for predicting the fraction of PM<sub>10</sub> in the total cooling tower PM emissions.

In calculating PM<sub>10</sub> emissions the following assumptions were made:

- Each water droplet was assumed to evaporate shortly after being emitted into ambient air, into a single, solid, spherical particle.
- Drift water droplets have a density ( $\rho_w$ ) of water; 1.0 g/cm<sup>3</sup> or 1.0 \* 10<sup>-6</sup>  $\mu\text{g} / \mu\text{m}^3$ .
- The solid particles were assumed to have the same density ( $\rho_{\text{TDS}}$ ) as sodium chloride, (i.e., 2.2 g/cm<sup>3</sup>).

Using the formula for the volume of a sphere,  $V = 4\pi r^3 / 3$ , and the density of pure water,  $\rho_w = 1.0 \text{ g/cm}^3$ , the following equations can be used to derive the solid particulate diameter,  $D_p$ , as a function of the TDS, the density of the solids, and the initial drift droplet diameter,  $D_d$  :

$$\text{Volume of drift droplet} = (4/3)\pi(D_d/2)^3 \quad [2]$$

$$\text{Mass of solids in drift droplet} = (\text{TDS})(\rho_w)(\text{Volume of drift droplet}) \quad [3]$$

substituting,

$$\text{Mass of solids in drift} = (\text{TDS})(\rho_w)(4/3)\pi(D_d/2)^3 \quad [4]$$

Assuming the solids remain and coalesce after the water evaporates, the mass of solids can also be expressed as:

$$\text{Mass of solids} = (\rho_{\text{TDS}})(\text{solid particle volume}) = (\rho_{\text{TDS}})(4/3)\pi(D_p/2)^3 \quad [5]$$

Equations [4] and [5] are equivalent:

$$(\rho_{\text{TDS}})(4/3)\pi(D_p/2)^3 = (\text{TDS})(\rho_w)(4/3)\pi(D_d/2)^3 \quad [6]$$

Solving for  $D_p$ :

$$D_p = D_d [(\text{TDS})(\rho_w / \rho_{\text{TDS}})]^{1/3} \quad [7]$$

Where,

TDS is in units of ppmw

$D_p$  = diameter of solid particle, micrometers ( $\mu\text{m}$ )

$D_d$  = diameter of drift droplet,  $\mu\text{m}$

Using formulas [2] – [7] and the particle size distribution test data, Table 1 can be constructed for drift from a wet cooling tower having the same characteristics as our example; 7,700 ppmw TDS and a 0.0006% drift rate. The first and last columns of this table are the particle size distribution derived from test results provided by Brentwood Industries. Using straight-line interpolation for a solid particle size 10  $\mu\text{m}$  in diameter, we conclude that approximately 14.9 percent of the mass emissions are equal to or smaller than PM<sub>10</sub>. The balance of the solid

particulate are particulate greater than 10  $\mu\text{m}$ . Hence,  $\text{PM}_{10}$  emissions from this tower would be equal to PM emissions x 0.149, or 3.38 lb/hr x 0.149 = 0.50 lb/hr. The process is repeated in Table 2, with all parameters equal except that the TDS is 11,000 ppmw. The result is that approximately 5.11 percent are smaller at 11,000 ppm. Thus, while total PM emissions are larger by virtue of a higher TDS, overall  $\text{PM}_{10}$  emissions are actually lower, because more of the solid particles are larger than 10  $\mu\text{m}$ .

**Table 1. Resultant Solid Particulate Size Distribution (TDS = 7700 ppmw)**

EPRI Droplet Diameter ( $\mu\text{m}$ )	Droplet Volume ( $\mu\text{m}^3$ ) [2] <sup>1</sup>	Droplet Mass ( $\mu\text{g}$ ) [3]	Particle Mass (Solids) ( $\mu\text{g}$ ) [4]	Solid Particle Volume ( $\mu\text{m}^3$ )	Solid Particle Diameter ( $\mu\text{m}$ ) [7]	EPRI % Mass Smaller
10	524	5.24E-04	4.03E-06	1.83	1.518	0.000
20	4189	4.19E-03	3.23E-05	14.66	3.037	0.196
30	14137	1.41E-02	1.09E-04	49.48	4.555	0.226
40	33510	3.35E-02	2.58E-04	117.29	6.073	0.514
50	65450	6.54E-02	5.04E-04	229.07	7.591	1.816
60	113097	1.13E-01	8.71E-04	395.84	9.110	5.702
70	179594	1.80E-01	1.38E-03	628.58	10.628	21.348
90	381704	3.82E-01	2.94E-03	1335.98	13.665	49.812
110	696910	6.97E-01	5.37E-03	2439.18	16.701	70.509
130	1150347	1.15E+00	8.86E-03	4026.21	19.738	82.023
150	1767146	1.77E+00	1.36E-02	6185.01	22.774	88.012
180	3053628	3.05E+00	2.35E-02	10687.70	27.329	91.032
210	4849048	4.85E+00	3.73E-02	16971.67	31.884	92.468
240	7238229	7.24E+00	5.57E-02	25333.80	36.439	94.091
270	10305995	1.03E+01	7.94E-02	36070.98	40.994	94.689
300	14137167	1.41E+01	1.09E-01	49480.08	45.549	96.288
350	22449298	2.24E+01	1.73E-01	78572.54	53.140	97.011
400	33510322	3.35E+01	2.58E-01	117286.13	60.732	98.340
450	47712938	4.77E+01	3.67E-01	166995.28	68.323	99.071
500	65449847	6.54E+01	5.04E-01	229074.46	75.915	99.071
600	113097336	1.13E+02	8.71E-01	395840.67	91.098	100.000

<sup>1</sup> Bracketed numbers refer to equation number in text.

The percentage of  $\text{PM}_{10}/\text{PM}$  was calculated for cooling tower TDS values from 1000 to 12000 ppmw and the results are plotted in Figure 1. Using these data, Figure 2 presents predicted  $\text{PM}_{10}$  emission rates for the 146,000 gpm example tower. As shown in this figure, the PM emission rate increases in a straight line as TDS increases, however, the  $\text{PM}_{10}$  emission rate increases to a maximum at around a TDS of 4000 ppmw, and then begins to decline. The reason is that at higher TDS, the drift droplets contain more solids and therefore, upon evaporation, result in larger solid particles for any given initial droplet size.

## CONCLUSION

The emission factors and methodology given in EPA's AP-42<sup>1</sup> Chapter 13.4 *Wet Cooling Towers*, do not account for the droplet size distribution of the drift exiting the tower. This is a critical factor, as more than 85% of the mass of particulate in the drift from most cooling towers will result in solid particles larger than  $\text{PM}_{10}$  once the water has evaporated. Particles larger than  $\text{PM}_{10}$  are no longer a regulated air pollutant, because their impact on human health has been shown to be insignificant. Using reasonable, conservative assumptions and a realistic drift

droplet size distribution, a method is now available for calculating realistic PM<sub>10</sub> emission rates from wet mechanical draft cooling towers equipped with modern, high-efficiency drift eliminators and operating at medium to high levels of TDS in the circulating water.

**Table 2. Resultant Solid Particulate Size Distribution (TDS = 11000 ppmw)**

EPRI Droplet Diameter (μm)	Droplet Volume (μm <sup>3</sup> ) [2] <sup>1</sup>	Droplet Mass (μg) [3]	Particle Mass (Solids) (μg) [4]	Solid Particle Volume (μm <sup>3</sup> )	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	5.76E-06	2.62	1.710	0.000
20	4189	4.19E-03	4.81E-05	20.94	3.420	0.196
30	14137	1.41E-02	1.56E-04	70.89	5.130	0.226
40	33510	3.35E-02	3.69E-04	167.55	6.840	0.514
50	65450	6.54E-02	7.20E-04	327.25	8.550	1.816
60	113097	1.13E-01	1.24E-03	565.49	10.260	5.702
70	179594	1.80E-01	1.98E-03	897.97	11.970	21.348
90	381704	3.82E-01	4.20E-03	1908.52	15.390	49.812
110	696910	6.97E-01	7.67E-03	3484.55	18.810	70.509
130	1150347	1.15E+00	1.27E-02	5751.73	22.230	82.023
150	1767146	1.77E+00	1.94E-02	8835.73	25.650	88.012
180	3053628	3.05E+00	3.36E-02	15268.14	30.780	91.032
210	4849048	4.85E+00	5.33E-02	24245.24	35.909	92.468
240	7238229	7.24E+00	7.86E-02	36191.15	41.039	94.091
270	10305995	1.03E+01	1.13E-01	51529.97	46.169	94.689
300	14137167	1.41E+01	1.56E-01	70885.83	51.299	96.288
350	22449298	2.24E+01	2.47E-01	112246.49	59.849	97.011
400	33510322	3.35E+01	3.69E-01	167551.61	68.399	98.340
450	47712938	4.77E+01	5.25E-01	238564.69	76.949	99.071
500	65449847	6.54E+01	7.20E-01	327249.23	85.499	99.071
800	113097336	1.13E+02	1.24E+00	565486.68	102.599	100.000

**Figure 1: Percentage of Drift PM that Evaporates to PM10**

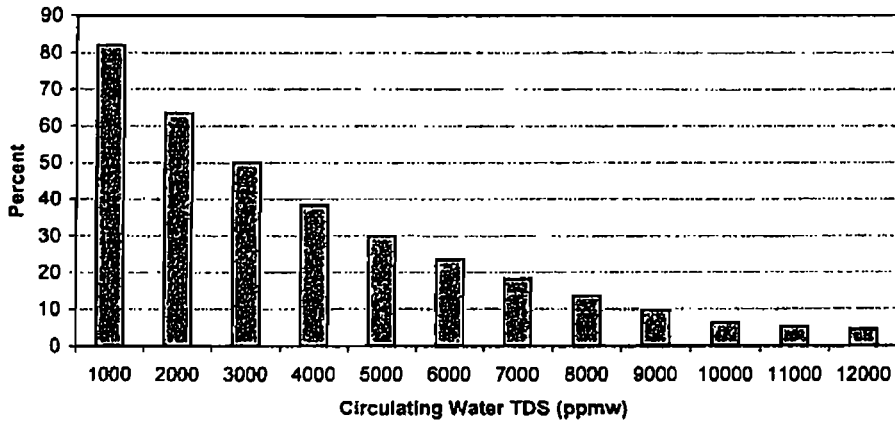
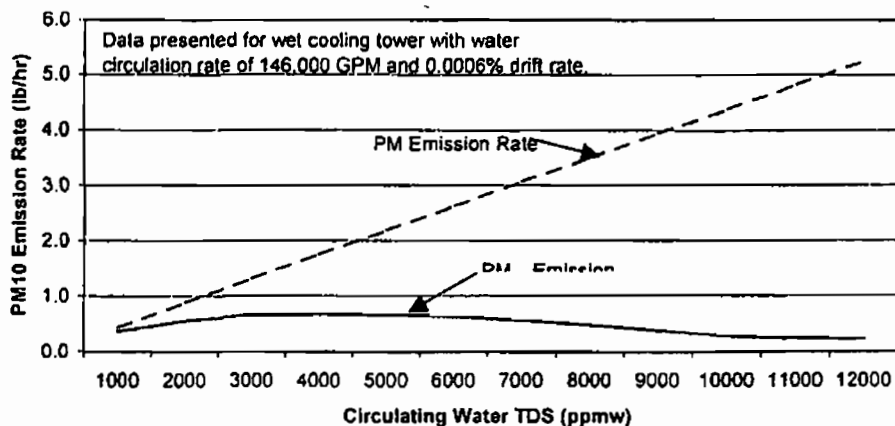


Figure 2: PM<sub>10</sub> Emission Rate vs. TDS



## REFERENCES

1. EPA, 1995. Compilation of Air pollutant Emission Factors, AP-42 Fifth edition, Volume I: *Stationary Point and Area Sources*, Chapter 13.4 Wet Cooling Towers, <http://www.epa.gov/ttn/chiefl/ap42/>, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, January.
2. Aull, 1999. Memorandum from R. Aull, Brentwood Industries to J. Reisman, Greystone, December 7, 1999.

## KEY WORDS

Drift  
Drift eliminators  
Cooling tower  
PM<sub>10</sub> emissions  
TDS



**ATTACHMENT C**  
**REQUESTED CHANGES TO CURRENT TITLE V AIR OPERATING**  
**PERMIT NO. 1010017-012-AV**

**SECTION III. EMISSIONS UNITS AND SPECIFIC CONDITIONS.**

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**Subsection C. Emissions Unit(s) - 007**

**Essential Potential to Emit (PTE) Parameters**

**C.1. Hours of Operation.** ~~Each~~ Both cooling towers shall not operate more than ~~4500~~ 9,000 hours in total per calendar year. This equates to an average of 4,500 hours/year/cooling tower. [Rule 62-210.200 (Definitions – Potential to Emit (PTE), F.A.C.; and, PSD-FL-379/Air Construction Permit No. 1010017-007-AC.)]

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