# POLK POWER STATION

# HIGH-TEMPERATURE SYNGAS CLEANUP CARBON CAPTURE AND SEQUESTRATION DEMONSTRATION PROJECT

# AIR CONSTRUCTION PERMIT APPLICATION

Original

**Prepared for:**

TECO®
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**August 2011**

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TAMPA ELECTRIC

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DIVISION OF AIR
RESOURCE MANAGEMENT

August 11, 2011

Mr. Jeff Koerner, P.E.
Air Permitting and Compliance Section
Florida Department of Environmental Protection
Division of Air Resource Management
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32301

**Via FedEx**
**Airbill No. 7974 0317 5941**

Project No: 1050233-027-AC

**Re: Tampa Electric Company (TEC) - Polk Power Station**
**High-Temperature Syngas Cleanup/Carbon Capture**
**And Sequestration Demonstration Project**
**Air Construction Permit Application**

Dear Mr. Koerner:

Tampa Electric Company plans to modify its Polk Power Station Integrated Gasification Combined Cycle facility by installing and operating a pre-commercial scale demonstration high temperature syngas cleanup (HTSC) system. The demonstration project, which will receive Department of Energy funding, will also include an integrated carbon dioxide capture and sequestration system (CCS).

Construction of the HTSC/CCS demonstration project is planned to commence in March 2012 and be completed by April 2013. Following an initial shakedown period, normal operation of the HTSC/CCS demonstration project it expected to commence by the third quarter of 2013 and end by the third quarter of 2015.

Emission sources associated with the HTSC/CCS demonstration project include two small heaters, one sorbent storage hopper, one regenerator fines storage bin, and one amine surge drum. Four copies of a minor modification air construction permit application for the HTSC/CCS demonstration project are enclosed for your review pursuant to the permitting requirements of Chapter 62-210.300(1), F.A.C.

Tampa Electric Company requests the opportunity to review a pre-Draft of the air construction permit due to the nature of the project. Please contact me at (813) 228-1282 or by email at BTBurrows@TECOEnergy.com if there are any questions regarding this application.

Sincerely,

Byron T. Burrows, P.E., BCEE
Manager, Air Programs
Environmental, Health & Safety

EHS/rlk/JMW284

Enclosures

c/enc: Cindy Mulkey, FDEP

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# 1.0 INTRODUCTION

The Tampa Electric Company (TEC) Polk Power Station (PPS) is an existing electric generation facility located near Mulberry, Polk County, Florida. PPS is situated approximately 17 miles south of the city of Lakeland, approximately 11 miles south of the city of Mulberry, and approximately 13 miles southwest of the city of Bartow in southwest Polk County.

PPS includes solid fuel-handling facilities, a solid fuel gasification system, one nominal 260-megawatt (MW) combined-cycle combustion turbine (designated as Unit 1) fired with syngas or distillate fuel oil, an auxiliary boiler, a sulfuric acid ($H_2SO_4$) plant, slag handling systems, four nominal 165-MW simple-cycle combustion turbine generators (designated as Units 2, 3, 4 and 5), and ancillary support equipment.

The nominal 260-MW Polk Unit 1 integrated gasification combined-cycle (IGCC) plant began commercial operation in 1996 and is fired with syngas produced by gasifying coal and petroleum coke. Unit 1 consists of a nominal 190-MW combustion turbine and a nominal 70-MW heat recovery steam generator and steam turbine.

TEC plans to modify the PPS IGCC plant by installing and operating a precommercial scale demonstration high-temperature syngas cleanup (HTSC) system. The demonstration project, which will receive U.S. Department of Energy (DOE) funding, will also include an integrated carbon dioxide ($CO_2$) capture and sequestration (CCS) system. The HTSC/CCS demonstration project will include the following major processes and systems:

- High-temperature desulfurization process (HTDP).
- Trace contaminant removal process (TCRP).
- Direct sulfur recovery process (DSRP).
- Water gas shift reactor system.
- Low temperature gas cooling.

- Activated amine $CO_2$ capture system.
- $CO_2$ compression and drying system.

A pressurized pipeline will transfer the compressed $CO_2$ to an onsite injection well for injection and sequestration in a deep saline aquifer geologic formation.

Emissions sources associated with the HTSC/CCS demonstration project include two small heaters, one sorbent storage hopper, one regenerator fines storage bin, and one amine surge drum. The heaters emit the products of fuel (propane/natural gas and ultra-low sulfur diesel [ULSD] fuel oil) combustion including nitrogen oxides ($NO_x$), sulfur dioxide ($SO_2$), carbon monoxide (CO), particulate matter ($PM/PM_{10}/PM_{2.5}$), and volatile organic compounds (VOCs). The sorbent storage hopper and regenerator fines storage bin are intermittent sources of $PM/PM_{10}/PM_{2.5}$. The amine surge drum is an intermittent source of VOCs. In addition to these new emissions sources, the existing PPS flare will be used to oxidize intermittent emissions associated with startup and shutdown of the HTSC/CCS demonstration project equipment.

Construction of the HTSC/CCS demonstration project is planned to commence in March 2012 and be completed by April 2013. Following an initial shakedown period, normal operation of the HTSC/CCS demonstration project it expected to commence by the third quarter of 2013 and end by the third quarter of 2015. The goal for the operation phase is to achieve at least 8,000 hours of operation. Following completion of the demonstration period, TEC may decide to continue operating some or all of the demonstration project equipment.

The existing PPS is a major source with respect to both the Prevention of Significant Deterioration (PSD) New Source Review (NSR) and Title V air operation permitting programs. The PPS is a minor (i.e., area) source of hazardous air pollutants (HAPs). Operation of the PPS emissions sources is currently authorized by Florida Department of Environmental Protection (FDEP) Title V Final Permit No. 1050233-026-AV issued with an effective date of January 1, 2010, and an expiration date of December 31, 2014.

Operation of the HTSC/CCS demonstration project will result in temporary air emissions during the approximate 18-month demonstration period. These emissions will be well below the PSD significant emissions rate thresholds specified in Rule 62-210.200(274), Florida Administrative Code (F.A.C.). Accordingly, the HTSC/CCS demonstration project qualifies as a minor modification to the PPS.

FDEP air permitting requirements are codified in Chapter 62-210, F.A.C., Stationary Sources – General Requirements. As required by Rule 62-210.300(1)(a), F.A.C., an air construction permit is required for any modified facility prior to the beginning of construction unless otherwise exempt from permitting.

This application package constitutes TEC's minor modification air construction permit application for the HTSC/CCS demonstration project and is submitted to satisfy the requirements of Rule 62-210.300(1), F.A.C.

Following this introduction, a description of the HTSC/CCS demonstration project is provided in Section 2.0. Sections 3.0 and 4.0 provide the emissions rate estimates and a regulatory applicability analysis, respectively. The Appendix contains FDEP's Application for Air Permit – Long Form No. 62-210.900(1), Effective March 11, 2010, and the required supplemental facility and emissions unit information.

# 2.0 PROJECT DESCRIPTION

The HTSC/CCS project will demonstrate the HTDP, TCRP, and DSRP syngas cleanup technologies at a precommercial scale. These cleanup systems will be integrated with the existing PPS Unit 1 IGCC facilities as shown in Figure 2-1. This figure provides a simplified block flow diagram of the syngas cleanup systems and key tie-ins with the existing PPS IGCC facilities.

Figure 2-2 shows the general arrangement of the HTSC systems on an approximately 2.4-acre area within the PPS site.

A slipstream of syngas from the PPS IGCC plant will be treated in the cleanup systems to mimic commercial operations. The HTDP will remove more than 99.9 percent of the sulfur in the syngas; the TCRP will reduce arsenic, selenium, and mercury concentrations in the syngas; and the DSRP will convert $SO_2$ to commercial-grade elemental sulfur. The high level of sulfur removal in the HTDP will provide a syngas stream from which activated methyldiethanolamine (aMDEA) will be used to capture up to 90 percent of the $CO_2$ in the cleaned syngas, which has suitable quality for geologic sequestration.

The following subsections provide descriptions of the HTSC/CCS systems.

## 2.1 HIGH-TEMPERATURE DESULFURIZATION PROCESS

A slipstream of untreated syngas from the PPS IGCC plant with a flow rate of up to 2 million standard cubic feet per hour will be treated in the HTDP system. The untreated syngas contains a hydrogen sulfide ($H_2S$) concentration of approximately 7,200 parts per million by volume (ppmv). The HTDP system consists of two coupled transport reactors, the first serving as the sulfur absorber and the second as the sorbent regenerator. The sulfur absorber utilizes chemical reactions with a RTI International (RTI) proprietary sorbent to remove $H_2S$ and carbonyl sulfide (COS) from the syngas to produce a syngas with a total sulfur concentration of less than 10 ppmv.

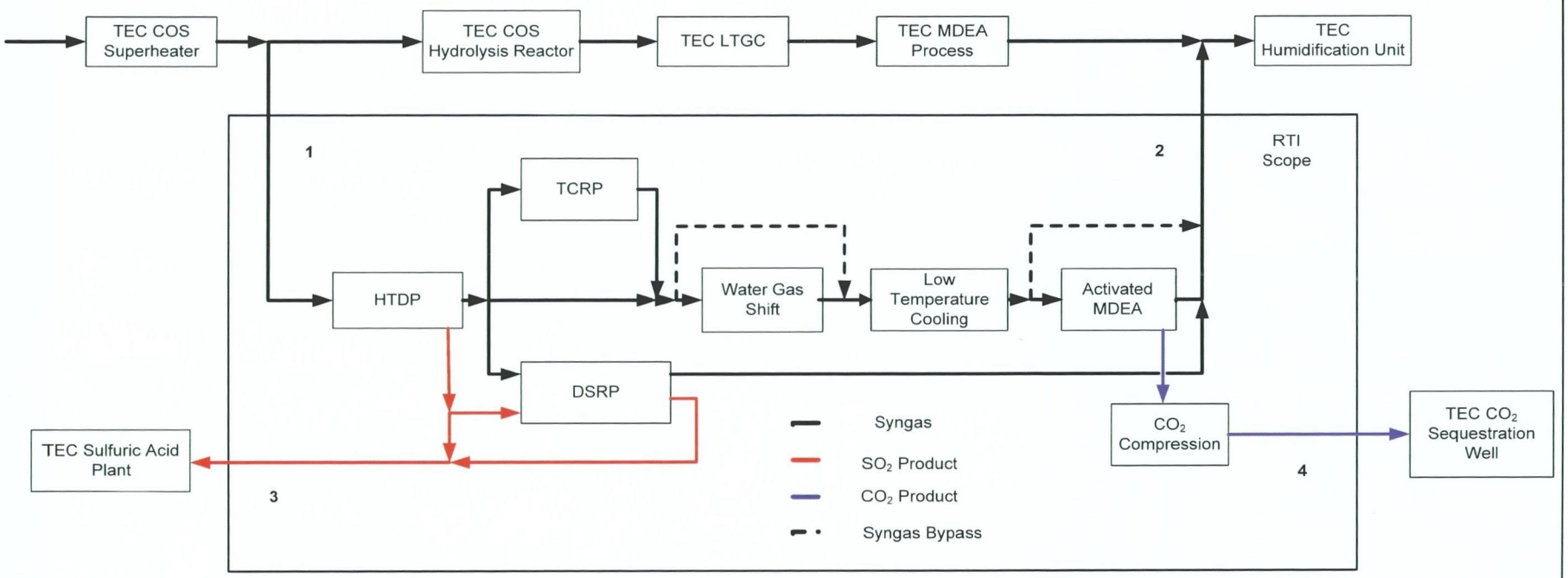


FIGURE 2-2.

SIMPLIFIED BLOCK FLOW DIAGRAM OF SYNGAS CLEANUP SYSTEMS AND INTEGRATION WITH TAMPA ELECTRIC'S IGCC UNIT

Source: RTI, 2011.

TECO TAMPA ELECTRIC

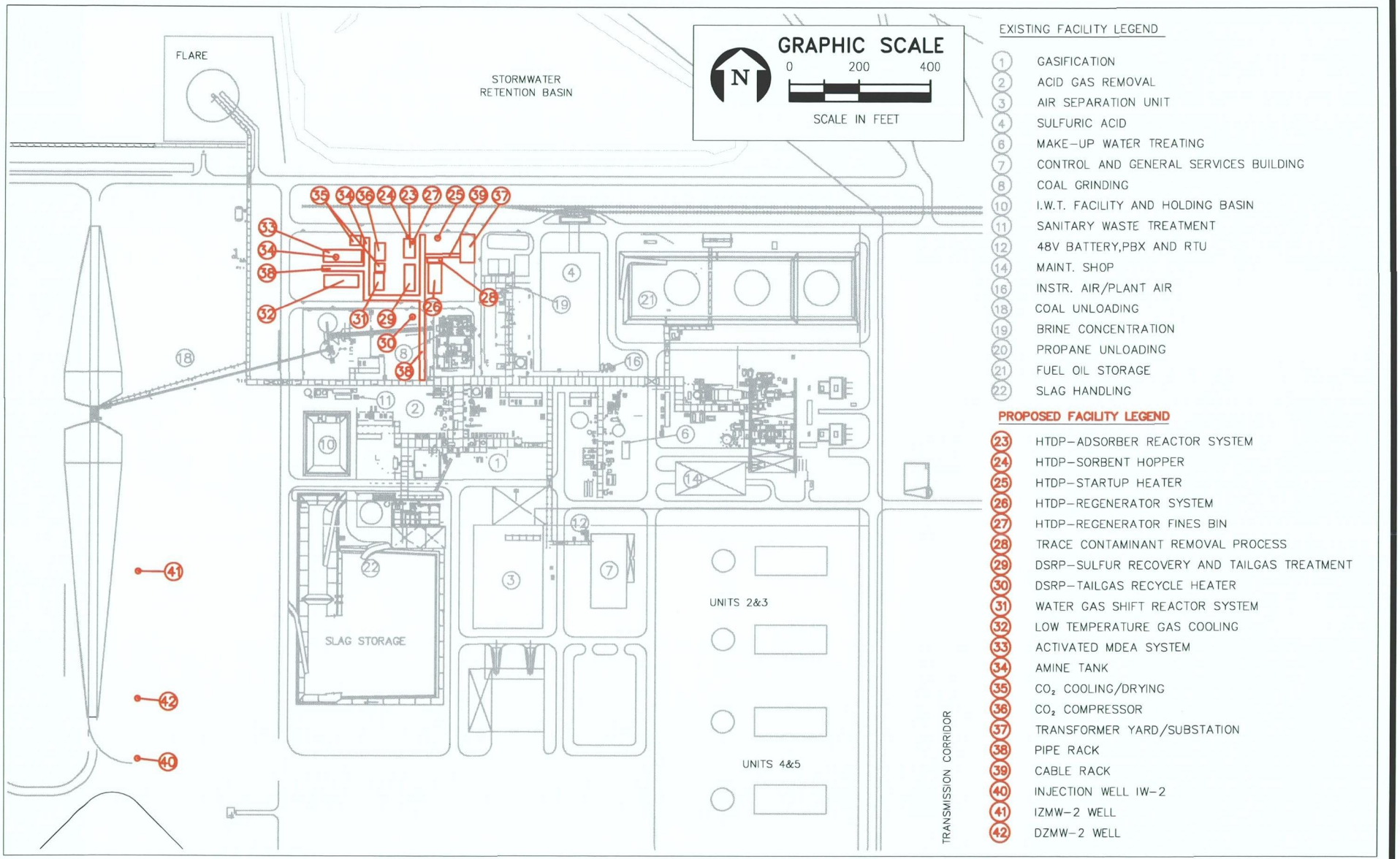


FIGURE 2-2.
GENERAL ARRANGEMENT OF RTI's PROPOSED PROJECT FACILITIES WITHIN TAMPA ELECTRIC EXISTING FACILITY LAYOUT

Sources: RTI, 2011; TECO, 2011; ECT, 2011

In the sorbent regenerator reactor, the sorbent is regenerated by oxidizing the sulfur compounds to produce a flue gas stream containing $SO_2$. Most of this stream is directed to the existing PPS $H_2SO_4$ plant, where the $SO_2$ is converted to $H_2SO_4$. As part of the proposed project, a small portion of this $SO_2$ stream is routed to the DSRP system.

The HTDP system involves several intermittent sources of air emissions. During startup of the system, a dual-fuel (i.e., propane/natural gas and ULSD fuel oil) heater is used to heat the absorber and regenerator systems. During startups, the regenerator is further preheated by the direct injection of ULSD fuel oil into the regenerator above its auto-ignition temperature to preheat the regenerator. The untreated syngas initially introduced into the absorber and regenerator gases is sent to the existing PPS flare until the absorber is online. Also, the vented sorbent storage hopper and regenerator fines bin results in intermittent emissions of PM.

## 2.2 TRACE CONTAMINANT REMOVAL PROCESS

A slipstream of the desulfurized syngas from the HTDP system is further treated by the TCRP system. The TCRP system consists of three fixed-bed reactors for removing arsenic, selenium, and mercury contaminant from the syngas. The mercury reactor is protected by a sulfur guard bed. The treated syngas is then recombined with the main desulfurized syngas stream.

## 2.3 DIRECT SULFUR RECOVERY PROCESS

In the DSRP system, $SO_2$ in the small slipstream of $SO_2$-rich gas from the HTDP regenerator is converted into approximately 5 tons per day (tpd) of commercial-grade, elemental sulfur. The $SO_2$ in the slipstream is converted by reducing it with hydrogen and CO with the sulfur product then condensed out of the slipstream. After analyzing the quality of the elemental sulfur, the sulfur product is oxidized using air to create an $SO_2$ stream, which is sent to the existing PPS $H_2SO_4$ plant.

The DSRP system facilities include a propane-fired heater, which is vented to the atmosphere and operated continuously to provide required heat for the DSRP system.

## 2.4 CARBON CAPTURE AND SEQUESTRATION SYSTEMS

The carbon capture system will produce up to 300,000 tons per year (tpy) of high-quality $CO_2$, which is suitable for geologic sequestration at the PPS site. The carbon capture and sequestration systems include the following components:

- Water gas shift reactor system.
- Low-temperature gas cooling.
- Activated amine $CO_2$ capture system.
- $CO_2$ compression and drying system.
- $CO_2$ deep well injection sequestration system.

The following subsections provide descriptions of these systems.

### 2.4.1 WATER GAS SHIFT REACTOR SYSTEM

The water gas shift reactor system converts CO in the desulfurized syngas from the HTDP to $CO_2$. The system consists of three fixed-bed reactors operating in parallel and uses conventional commercial catalyst technologies. The syngas is mixed and preheated with steam provided from the PPS IGCC facilities to the reactor inlet temperature of 650 degrees Fahrenheit (°F) with water injected to control the temperature. In the reactors, CO and water are shifted to $CO_2$ and hydrogen.

### 2.4.2 LOW-TEMPERATURE GAS COOLING SYSTEM

The low-temperature gas cooling system cools the shifted gas stream from the water gas shift reactor system from approximately 650 to 100°F in boiler steam drums and a heat exchanger with cooling feedwater provided by the existing PPS IGCC cooling system. The cooling process generates steam that is routed to the PPS IGCC system. Condensate is also separated from the gas stream and routed to the PPS IGCC system.

### 2.4.3 ACTIVATED AMINE $CO_2$ CAPTURE SYSTEM

The activated amine $CO_2$ capture system separates $CO_2$ from hydrogen in the cooled shifted syngas for subsequent absorption by aMDEA in the amine absorber. The aMDEA process technology is commercially available. The absorbed $CO_2$ is separated from the amine in a regenerator/separation drum and the high-quality $CO_2$ steam sent to the $CO_2$

compression station. The separated hydrogen-rich stream is sent to the PPS IGCC syngas stream for firing in the combustion turbine.

### 2.4.4 $CO_2$ COMPRESSION AND DRYING SYSTEM

The captured $CO_2$ stream from the amine system is compressed in a five-stage compression station from approximately 7 to 1,500 pounds-force per square inch gauge. The $CO_2$ exits the compression station as a supercritical fluid, which is then cooled to approximately 100°F in coolers. The $CO_2$ stream is then dried, and the condensate treated and sent to the PPS IGCC system.

### 2.4.5 $CO_2$ DEEP WELL INJECTION SEQUESTRATION SYSTEM

The compressed $CO_2$ is transferred through a pressurized pipeline to an onsite injection well for injection and sequestration in a deep saline aquifer geologic formation.

Table 2-1 provides the estimated composition of the high-quality $CO_2$ stream to be sequestered. Up to 300,000 tpy of $CO_2$ will be sequestered during the demonstration period.

Table 2-1. Estimated Composition of the $CO_2$ Stream to be Sequestered

| Parameter | $CO_2$ Stream |
|---|---|
| Temperature (°F) | 120 |
| Pressure (psig) | 1,500 |
| Composition (molar %) | |
| Hydrogen gas | 0.50 |
| CO | 0.05 |
| $CO_2$ | 99.44 |
| Nitrogen | 0.01 |
| Argon | 0.00 |
| Methane | 0.00 |
| $H_2S$ | <100 ppmv |
| COS | <10 ppmv |
| Water | <15 ppmv |
| Ammonia | 0.00 |
| $SO_2$ | |
| Oxygen | |
| Total | 100.00 |

Source: RTI, 2011.

# 3.0 EMISSIONS RATE ESTIMATES

Emissions sources associated with operation of the proposed project during the approximate 18-month operation phase include the following continuous and intermittent sources:

- 23.75-million-British-thermal-units-per-hour (MMBtu/hr) dual-fuel (propane/natural gas and ULSD fuel oil) HTDP unit startup heater (intermittent combustion emissions source; will operate for approximately 32 percent of the time; i.e., up to 2,820 hours per year [hr/yr]).
- 2.1-MMBtu/hr propane-fired DSRP tailgas recycle heater (continuous combustion emissions source)
- HTDP unit adsorber sorbent hopper (intermittent PM emissions source; will operate for approximately 1.2 percent of the time; i.e., 104 hr/yr).
- Amine (aMDEA) surge drum (intermittent VOC emissions source; will operate for approximately 0.02 percent of the time; i.e., 12 hr/yr).
- HTDP unit regenerator system regenerator fines bin (intermittent PM emissions source; will operate for approximately 1.2 percent of the time; i.e., 104 hr/yr).

In addition to these emissions sources, the PPS existing flare will be used to oxidize intermittent emissions associated with startups, shutdowns, and malfunctions of the HTSC demonstration process. A vent stack will also be installed to vent the captured $CO_2$ during startups, shutdowns, and malfunctions of the $CO_2$ deep well sequestration system.

As noted in Section 2.1, the HTDP regenerator startup process includes the direct injection of ULSD fuel oil into the regenerator above its auto-ignition temperature to preheat the regenerator. For a short period during the initiation of the startup process, excess air is added to ensure proper ignition of the ULSD fuel oil. To prevent explosive flare gas mixtures from occurring in the existing PPS flare system during this period, HTDP regenerator offgas containing elevated oxygen concentrations will be routed to the $CO_2$ vent stack for approximately 15 minutes at the beginning of the startup cycle. This stream will con-

sist primarily of nitrogen, the products of combustion of ULSD fuel oil combustion, and some $SO_2$ due to partial oxidation of sulfur that is present on the regenerator sorbent. $SO_2$ emissions associated with HTDP regenerator startup venting are estimated to be less than 1 tpy. After ignition of the ULSD fuel oil is confirmed, the addition of excess air is reduced and the HTDP regenerator offgas is routed to the existing PPS flare for the remainder of the startup cycle.

Table 3-1 summarizes the emissions estimates for the process heaters. Emissions for the heaters were estimated using appropriate emissions factors taken from the U.S. Environmental Protection Agency's (EPA's) AP-42 Compilation of Air Pollutant Emissions Factors.

The sorbent hopper and regenerator fines bin will each be equipped with a cartridge-type filter to control PM emissions. Table 3-2 provides PM emissions estimates for the intermittent two storage hopper/bins.

Due to the low vapor pressure of aMDEA (i.e., less than 0.01 millimeters of mercury at 20 degrees Celsius [less than 0.0002 pound per square inch absolute at 68°F]) and the limited duration of venting (i.e., 12 hr/yr), VOC emissions from the amine surge drum will be negligible.

The existing PPS emissions units, including EU-001 (Unit 1 combined-cycle gas turbine), EU-004 ($H_2SO_4$ plant), and EU-006 (solid fuel gasification system), will continue to comply with the applicable requirements of Title V Final Permit No. 1050233-026-AV during the approximate 18-month HTSC/CCS demonstration period.

Table 3-1. HTSC Heater Emissions Estimates

Propane heat content = 91,500 Btu/gal
Natural gas heat content = 1,020 Btu/ft$^3$
ULSD fuel oil heat content = 130,000 Btu/gal

Propane sulfur content* = 254 ppmvd; 15.0 gr/100 ft$^3$
Natural gas sulfur content = 2.0 gr/100 ft$^3$
ULSD fuel oil sulfur content = 0.0015 weight percent sulfur

| Parameter | Unit | HTDP Startup Heater | | | | DSRP Recycle Heater Propane |
|---|---|---|---|---|---|---|
| | | Propane | Natural Gas | ULSD Fuel Oil | Maximums | |
| Heat Input | MMBtu/hr | 23.75 | 23.75 | 23.75 | 23.75 | 2.10 |
| Maximum operating hours | hr/yr | 2,820 | 2,820 | 2,820 | 2,820 | 8,760 |
| AP-42 Emission Factors† | | | | | | |
| Total PM/$PM_{10}$/$PM_{2.5}$ | lb/1,000 gal | 0.7 | N/A | 3.3 | 3.3 | 0.7 |
| $SO_2$ | lb/1,000 gal | 1.5 | N/A | 0.2 | 1.5 | 1.5 |
| $NO_x$ | lb/1,000 gal | 13.0 | N/A | 20.0 | 20.0 | 13.0 |
| CO | lb/1,000 gal | 7.5 | N/A | 5.0 | 7.5 | 7.5 |
| VOC | lb/1,000 gal | 0.8 | N/A | 0.2 | 0.8 | 0.8 |
| Total PM/$PM_{10}$/$PM_{2.5}$ | lb/MMBtu | 0.0077 | 0.0075 | 0.025 | 0.025 | 0.0077 |
| $SO_2$ | lb/MMBtu | 0.016 | 0.0059 | 0.0016 | 0.016 | 0.016 |
| $NO_x$ | lb/MMBtu | 0.14 | 0.098 | 0.15 | 0.15 | 0.14 |
| CO | lb/MMBtu | 0.082 | 0.082 | 0.038 | 0.082 | 0.082 |
| VOC | lb/MMBtu | 0.0087 | 0.0054 | 0.0015 | 0.0087 | 0.0087 |
| Total PM/$PM_{10}$/$PM_{2.5}$ | lb/$10^6$ ft$^3$ | N/A | 7.6 | N/A | 7.6 | N/A |
| $SO_2$ | lb/$10^6$ ft$^3$ | N/A | 6.0 | N/A | 6.0 | N/A |
| $NO_x$ | lb/$10^6$ ft$^3$ | N/A | 100 | N/A | 100 | N/A |
| CO | lb/$10^6$ ft$^3$ | N/A | 84 | N/A | 84 | N/A |
| VOC | lb/$10^6$ ft$^3$ | N/A | 5.5 | N/A | 5.5 | N/A |
| Potential Emission Rates | | | | | | |
| Total PM/$PM_{10}$/$PM_{2.5}$ | lb/hr | 0.18 | 0.18 | 0.60 | 0.60 | 0.016 |
| $SO_2$ | lb/hr | 0.39 | 0.14 | 0.04 | 0.39 | 0.034 |
| $NO_x$ | lb/hr | 3.37 | 2.33 | 3.65 | 3.65 | 0.298 |
| CO | lb/hr | 1.95 | 1.95 | 0.91 | 1.95 | 0.172 |
| VOC | lb/hr | 0.21 | 0.13 | 0.04 | 0.21 | 0.018 |
| Total PM/$PM_{10}$/$PM_{2.5}$ | tpy | 0.26 | 0.25 | 0.85 | 0.85 | 0.07 |
| $SO_2$ | tpy | 0.55 | 0.20 | 0.05 | 0.55 | 0.15 |
| $NO_x$ | tpy | 4.76 | 3.28 | 5.15 | 5.15 | 1.31 |
| CO | tpy | 2.74 | 2.74 | 1.29 | 2.74 | 0.75 |
| VOC | tpy | 0.29 | 0.18 | 0.05 | 0.29 | 0.08 |

*Gas Processors Association (GPA) Liquefied Petroleum Gas Specifications; GPA Standard 2140-92.
†Propane: Table 1.5-1, AP-42, EPA, July 2008. Natural gas: Tables 1.4-1 and 1.4-2, AP-42, EPA, July 1998. ULSD Fuel Oil: Tables 1.3-1 and 1.3-3, AP-42, EPA, May 2010.

Note: Btu/gal = British thermal unit per gallon.
ppmvd = part per million by dry volume.
gr/100 ft$^3$ = grain per 100 cubic feet.
lb/1,000 gal = pound per 1,000 gallons.
lb/MMBtu = pound per million British thermal units.
lb/$10^6$ ft$^3$ = pound per million cubic feet.
lb/hr = pound per hour.

Sources: RTI, 2011.
ECT, 2011.

Table 3-2. HTSC Hopper/Bin PM Emissions Estimates—Intermittent Sources

| Parameter | Unit | HTDP Sorbent Hopper | HTDP Regenerator Fines Bin |
|---|---|---|---|
| Maximum duration of a release | hours per release | 2 | 2 |
| Maximum frequency of releases | releases per year | 52 | 52 |
| Total $PM/PM_{10}/PM_{2.5}$ | pounds per release | 4.0 | 4.0 |
| | pound per hour | 2.0 | 2.0 |
| | tpy | 0.10 | 0.10 |

Sources: RTI, 2011.
ECT, 2011.

# 4.0 REGULATORY APPLICABILITY ANALYSIS

Federal and state regulations that apply or that are potentially applicable to the HTSC/CCS demonstration project are discussed in the following subsections.

## 4.1 FEDERAL EMISSIONS STANDARDS

### 4.1.1 NEW SOURCE PERFORMANCE STANDARDS

There are no New Source Performance Standards (NSPS) that are applicable to the HTSC/CCS project.

NSPS Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generators, is applicable to steam generating units that are constructed after June 9, 1989, that have a design heat input greater than or equal to 10 MMBtu/hr and less than 100 MMBtu/hr. The HTDP startup heater is not subject to this NSPS since the Subpart Dc §60.41c definition of a steam generating unit excludes process heaters. A process heater is defined by Subpart Dc §60.41c as "a device that is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst."

### 4.1.2 NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS

There are no National Emissions Standards for Hazardous Air Pollutants (NESHAPs) that are applicable to the HTSC/CCS project.

NESHAPs Subpart JJJJJJ, National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources, is applicable to new industrial boilers located at area HAP sources that are constructed after June 4, 2010. Industrial boilers are defined by Subpart JJJJJJ §63.11237 as "a boiler used in manufacturing, processing, mining, and refining or any other industry to provide steam, hot water, and/or electricity." The HTSC heaters do not provide steam, hot water, and/or electricity and, therefore, are not industrial boilers as defined by Subpart JJJJJJ.

In addition, boilers used specifically for research and development and gas-fired boilers are not subject to Subpart JJJJJJ pursuant to §63.11195(d) and (e), respectively. The Subpart JJJJJJ definitions define a gaseous fuel as a fuel that "includes, but is not limited to, natural gas, process gas, landfill gas, coal derived gas, refinery gas, hydrogen, and biogas." The Subpart JJJJJJ definition of natural gas specifically includes propane.

In summary, the two HTSC heaters are not subject to NESHAPs Subpart JJJJJJ.

## 4.2 STATE PERMITTING REQUIREMENTS

Florida Department of Environmental Protection (FDEP) air construction permitting requirements are codified in Chapter 62-210, Stationary Sources – General Requirements, and Chapter 62-212, Stationary Sources – Preconstruction Review, F.A.C.

Rule 62-210.300(1)(a), F.A.C., requires the owner or operator of any proposed new, reconstructed, or modified facility or emissions unit or new pollution control equipment to obtain an air construction permit prior to the beginning of construction unless otherwise exempt from permitting. This permitting requirement is also stated by Rule 62-212.300(1)(a), F.A.C.

Section 62-212.400, Prevention of Significant Deterioration, F.A.C., applies to new and modified emissions units that exceed the emissions rate thresholds specified in the FDEP Section 62210.200, F.A.C., definitions for new major stationary sources and major modifications. The potential emissions rate increases associated with the HTSC/CCS demonstration project are well below the major modification significant emissions rate thresholds; therefore, the project is not subject to PSD review.

In addition, the Section 62-210.200, F.A.C., definition of a major modification excludes the installation, operation, cessation, or removal of a temporary clean coal technology demonstration project provided the project complies with the state implementation plan and other requirements necessary to attain and maintain the national ambient air quality standards during the project and after it is terminated.

## 4.3 STATE EMISSIONS STANDARDS

FDEP emissions standards for stationary sources are contained in Chapter 62-296, Stationary Sources-Emissions Standards, F.A.C. General pollutant emissions limit standards are included in Section 62-296.320, F.A.C. Sections 62-296.401 through 62-296.417, F.A.C., specify emissions standards for 17 categories of sources. Sections 62-296.470 and 62-296.480 address Clean Air Interstate Rule (CAIR) and Clean Air Mercury Rule (CAMR) requirements, respectively. Sections 62-296.500 through 62-296.570, F.A.C., establish reasonably available control technology (RACT) requirements for VOC and $NO_x$-emitting facilities. RACT requirements for lead and PM are found in Sections 62-296.600 through 62-296.605 and 62-296.700 through 62-296.712, F.A.C., respectively. FDEP emissions standards applicable to PPS are discussed in the following subsections.

Rule 62-296.320(2), Objectionable Odor Prohibited, F.A.C., will apply to all HTSC/CCS demonstration project emissions sources and activities. The general Rule 62-296.320(4)(b), General Particulate Emissions Limiting Standards, F.A.C., visible emissions limitation of 20-percent opacity will apply to all HTSC/CCS demonstration project point (i.e., stack) emissions sources.

The two HTSC process heaters do not produce steam and therefore are not subject to the requirements of Section 62-296.406, Fossil Fuel Steam Generators with Less than 250-MMBtu/hr Heat Input, New and Existing Emissions Units.

Emissions from the HTSC/CCS demonstration project will comply with the FDEP general pollutant emissions standards discussed previously. None of the remaining emissions standards specified in Sections 62-296.401 through 62-296.417, F.A.C., are applicable to the project. CAIR; CAMR; the VOC, $NO_x$, lead, and PM RACT requirements of Sections 62-296.500 through 62-296.570, F.A.C., Sections 62-296.600 through 62-296.605, and 62-296.700 through 62-296.712 are also not applicable to the HTSC/CCS demonstration project.

# FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

# APPLICATION FOR AIR PERMIT – LONG FORM

ECT
Environmental Consulting & Technology, Inc.

# Department of Environmental Protection

## Division of Air Resource Management

## APPLICATION FOR AIR PERMIT - LONG FORM

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BUREAU OF AIR REGULATION

### 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: **Tampa Electric Company** | |
| 2. Site Name: **Polk Power Station** | |
| 3. Facility Identification Number: **1050233** | |
| 4. Facility Location...<br>Street Address or Other Locator: **9995 State Road 37 South**<br>City: **Mulberry** County: **Polk** Zip Code: **33860-0775** | |
| 5. Relocatable Facility?<br>☐ Yes ☒ No | 6. Existing Title V Permitted Facility?<br>☒ Yes ☐ No |

**Application Contact**

| |
|---|
| 1. Application Contact Name: **Paul L. Carpinone**<br>**Director, Environmental, Health & Safety** |
| 2. Application Contact Mailing Address<br>Organization/Firm: **Tampa Electric Company**<br>Street Address: **P.O. Box 111**<br>City: **Tampa** State: **Florida** Zip Code: **33601-0111** |
| 3. Application Contact Telephone Numbers...<br>Telephone: **(813) 228-4858** ext. Fax: **(813) 228-1308** |
| 4. Application Contact Email Address: **plcarpinone@tecoenergy.com** |

**Application Processing Information (DEP Use)**

| | |
|---|---|
| 1. Date of Receipt of Application: 8/12/11 | 3. PSD Number (if applicable): |
| 2. Project Number(s): 1050233-027-AC | 4. Siting Number (if applicable): |

## 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

**TEC plans to modify the PPS IGCC plant by installing and operating a pre-commercial scale demonstration high temperature syngas cleanup (HTSC) system. The demonstration project, which will receive Department of Energy (DOE) funding, will also include an integrated carbon dioxide ($CO_2$) capture and sequestration (CCS) system.**

**This application package constitutes TEC's minor modification air construction permit application for the HTSC/CCS demonstration project and is submitted to satisfy the requirements of Chapter 62-210.300(1), F.A.C.**

## APPLICATION INFORMATION

**Scope of Application**

| Emissions Unit ID Number | Description of Emissions Unit | Air Permit Type | Air Permit Processing Fee |
|---|---|---|---|
| 013 | High Temperature Syngas Cleanup Carbon Capture and Sequestration Demonstration Project | N/A | N/A |
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**Application Processing Fee**

**Check one:** ☐ Attached - Amount: $_____ ☒ Not Applicable

**The PPS is an existing Title V source. Application processing fee not required pursuant to Rule 62-213.205(4), F.A.C.**

## APPLICATION INFORMATION

**Owner/Authorized Representative Statement**

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

1. Owner/Authorized Representative Name :
   **Karen Sheffield, Director Polk Power Station**
2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **Tampa Electric Company**
   Street Address: **P.O. Box 111**
   City: **Tampa** State: **Florida** Zip Code: **33601-0111**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **( 813 ) 228 – 4111** ext. Fax: **( 813 ) 228 – 1308**
4. Owner/Authorized Representative E-mail Address: **kasheffield@tecoenergy.com**
5. Owner/Authorized Representative Statement:

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

   Karen Sheffield
   Signature

   8/10/2011
   Date

## APPLICATION INFORMATION

**Application Responsible Official Certification** **NOT APPLICABLE**

**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):

   ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.

   ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

   ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.

   ☐ The designated representative at an Acid Rain source or CAIR source.

3. Application Responsible Official Mailing Address...
   Organization/Firm:
   Street Address:
   City: State: Zip Code:

4. Application Responsible Official Telephone Numbers...
   Telephone: ext. Fax:

5. Application Responsible Official E-mail Address:

6. Application Responsible Official Certification:

   I, *the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.*

   Signature Date

## APPLICATION INFORMATION

### Professional Engineer Certification

1. Professional Engineer Name: **Thomas W. Davis**
   Registration Number: **36777**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Environmental Consulting & Technology, Inc.**
   Street Address: **3701 Northwest 98th Street**
   City: **Gainesville** State: **Florida** Zip Code: **32606-5004**
3. Professional Engineer Telephone Numbers...
   Telephone:**(352) 248 – 3351** ext. Fax: **(352) 332 - 6722**
4. Professional Engineer Email Address: **tdavis@ectinc.com**
5. Professional Engineer Statement:

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

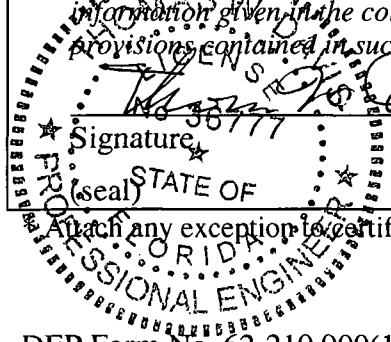
*(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant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

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

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

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

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




Signature (seal) Date: 8/10/11

Attach any exception to certification statement.

## II. FACILITY INFORMATION

## A. GENERAL FACILITY INFORMATION

**Facility Location and Type**

| | | | |
|---|---|---|---|
| 1. Facility UTM Coordinates...<br>Zone **17** East (km) **402.45**<br>North (km) **3,067.35** | | 2. Facility Latitude/Longitude...<br>Latitude (DD/MM/SS) **27/43/43**<br>Longitude (DD/MM/SS) **81/59/23** | |
| 3. Governmental Facility Code:<br>**0** | 4. Facility Status Code:<br>**A** | 5. Facility Major Group SIC Code:<br>**49** | 6. Facility SIC(s):<br>**4911** |
| 7. Facility Comment : | | | |

**Facility Contact**

| |
|---|
| 1. Facility Contact Name:<br>**Julie Ward, Engineer Air Programs** |
| 2. Facility Contact Mailing Address<br>Organization/Firm: **Tampa Electric Company**<br>Street Address: **P.O. Box 111**<br>City: **Tampa** State: **Florida** Zip Code: **33601-0111** |
| 3. Facility Contact Telephone Numbers:<br>Telephone: **(813) 228-4111** ext. **39109** Fax: **(813) 228-1308** |
| 4. Facility Contact Email Address: **jmward@tecoenergy.com** |

**Facility Primary Responsible Official** **NOT APPLICABLE**

**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...<br>Organization/Firm:<br>Street Address:<br>City: State: Zip Code: |
| 3. Facility Primary Responsible Official Telephone Numbers...<br>Telephone: ( ) - ext. Fax: ( ) - |
| 4. Facility Primary Responsible Official E-mail Address: |

## FACILITY 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. ☐ Small Business Stationary Source | ☐ Unknown |
| 2. ☐ Synthetic Non-Title V Source | |
| 3. ☒ Title V Source | |
| 4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs) | |
| 5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs | |
| 6. ☐ Major Source of Hazardous Air Pollutants (HAPs) | |
| 7. ☒ Synthetic Minor Source of HAPs | |
| 8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60) | |
| 9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60) | |
| 10. ☒ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63) | |
| 11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5)) | |

12. Facility Regulatory Classifications Comment:

**Gas turbine Units 1 through 5 (EU ID 001, 009, 010, 011, and 012) are subject to New Source Performance Standard (NSPS) 40 CFR Part 60 Subpart GG.**

**The auxiliary boiler (EU ID 003) is subject to NSPS 40 CFR Part 60 Subpart Db.**

**The solid fuel handling system (EU ID 005) is subject to NSPS 40 CFR Part 60 Subpart Y.**

**The PPS emergency generator and firewater pump engines are subject to National Emission Standards for Hazardous Air Pollutants (NESHAPS) 40 CFR Part 63 Subpart ZZZZ.**

## FACILITY INFORMATION

**List of Pollutants Emitted by Facility**

| 1. Pollutant Emitted | 2. Pollutant Classification | 3. Emissions Cap [Y or N]? |
|---|---|---|
| **$NO_x$** | **A** | **N** |
| **$SO_2$** | **A** | **N** |
| **$PM_{10}$** | **B** | **N** |
| **CO** | **A** | **N** |
| **VOC** | **B** | **N** |
| **SAM** | **A** | **N** |
| **PB** | **B** | **N** |
| **Arsenic Compounds (H015)** | **B** | **N** |
| **Beryllium Compounds (H021)** | **B** | **N** |
| **Mercury Compounds (H114)** | **B** | **N** |
| | | |
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## B. EMISSIONS CAPS

**Facility-Wide or Multi-Unit Emissions Caps** **NOT APPLICABLE**

| 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 (tpy) | 6. Basis for Emissions Cap |
|---|---|---|---|---|---|
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7. Facility-Wide or Multi-Unit Emissions Cap Comment:

## C. FACILITY ADDITIONAL INFORMATION

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

| |
|---|
| 1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)<br>☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: **May 2009** |
| 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)<br>☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: **May 2009** |
| 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)<br>☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: **May 2009** |

**Additional Requirements for Air Construction Permit Applications**

| |
|---|
| 1. Area Map Showing Facility Location:<br>☐ Attached, Document ID: _____ ☒ Not Applicable (existing permitted facility) |
| 2. Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL):<br>☒ Attached, Document ID: **Section 2.0** |
| 3. Rule Applicability Analysis:<br>☒ Attached, Document ID: **Section 3.0** |
| 4. List of Exempt Emissions Units:<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 5. Fugitive Emissions Identification:<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 8. Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 9. Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |

## C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

**Additional Requirements for FESOP Applications**

**NOT APPLICABLE**

| |
|---|
| 1. List of Exempt Emissions Units:<br>☐ Attached, Document ID:_____ ☐ Not Applicable (no exempt units at facility) |

**Additional Requirements for Title V Air Operation Permit Applications**

**NOT APPLICABLE**

| |
|---|
| 1. List of Insignificant Activities: (Required for initial/renewal applications only)<br>☐ Attached, Document ID: _____ ☐ Not Applicable (revision application) |
| 2. Identification of Applicable Requirements: (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought)<br>☐ Attached, Document ID:_____<br>☐ Not Applicable (revision application with no change in applicable requirements) |
| 3. Compliance Report and Plan: (Required for all initial/revision/renewal applications)<br>☐ Attached, Document ID:_____<br>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)<br>☐ Attached, Document ID:_____<br>☐ Equipment/Activities Onsite but Not Required to be Individually Listed<br>☐ Not Applicable |
| 5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only)<br>☐ Attached, Document ID:_____ ☐ Not Applicable |
| 6. Requested Changes to Current Title V Air Operation Permit:<br>☐ Attached, Document ID:_____ ☐ Not Applicable |

## C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

**NOT APPLICABLE**

**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:_____
   ☐ Not Applicable (not an Acid Rain source)

   Phase II $NO_X$ Averaging Plan (DEP Form No. 62-210.900(1)(a)1.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

   New Unit Exemption (DEP Form No. 62-210.900(1)(a)2.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

2. CAIR Part (DEP Form No. 62-210.900(1)(b)):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable (not a CAIR source)

**Additional Requirements Comment**

**EMISSIONS UNIT INFORMATION**
**Section [ 1 ] of [ 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:
**High Temperature Syngas Cleanup Carbon Capture and Sequestration Demonstration Project**

3. Emissions Unit Identification Number: **013**

| 4. Emissions Unit Status Code: | 5. Commence Construction Date: | 6. Initial Startup Date: | 7. Emissions Unit Major Group SIC Code: |
|---|---|---|---|
| **C** | **N/A** | **N/A** | **49** |

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

☐ Acid Rain Unit

☐ CAIR Unit

9. Package Unit:
Manufacturer: **N/A** Model Number: **N/A**

10. Generator Nameplate Rating: **N/A** MW

11. Emissions Unit Comment:

**See Sections 1.0 (Introduction) and 2.0 (Project Description).**

**EMISSIONS UNIT INFORMATION**
**Section [ 1 ] of [ 1 ]**

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

| |
|---|
| 1. Control Equipment/Method Description:<br><br>**Cartridge PM Filter:**<br><br>**HTDP adsorber sorbent hopper**<br>**HTDP regenerator system regenerator fines bin** |
| 2. Control Device or Method Code: **099** |

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

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

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

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

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

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

## B. EMISSIONS UNIT CAPACITY INFORMATION

**(Optional for unregulated emissions units.)**

**Emissions Unit Operating Capacity and Schedule**

| | |
|---|---|
| 1. Maximum Process or Throughput Rate: | |
| 2. Maximum Production Rate: | |
| 3. Maximum Heat Input Rate: **23.75** million Btu/hr **(HHV)** | |
| 4. Maximum Incineration Rate: pounds/hr<br>tons/day | |
| 5. Requested Maximum Operating Schedule: | |
| **24** hours/day | **7** days/week |
| **52** weeks/year | **8760** hours/year |
| 6. Operating Capacity/Schedule Comment: | |

**Maximum heat input shown is for the HTDP start-up heater. The DSRP tailgas recycle heater has a design heat input of 2.1 MMBtu/hr.**

**Maximum operating schedule is for the overall HTSC/CCS demonstration project. Some components of the overall project will operate intermittently.**

**EMISSIONS UNIT INFORMATION**
**Section [ 1 ] of [ 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: **HTDP Startup Heater** | | 2. Emission Point Type Code: **1** |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **N/A** | | |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A** | | |
| 5. Discharge Type Code: **V** | 6. Stack Height: **60** feet | 7. Exit Diameter: **1.7** feet |
| 8. Exit Temperature: **400** °F | 9. Actual Volumetric Flow Rate: **10,340** acfm | 10. Water Vapor: **N/A** % |
| 11. Maximum Dry Standard Flow Rate: **N/A** dscfm | | 12. Nonstack Emission Point Height: feet |
| 13. Emission Point UTM Coordinates... Zone: East (km): North (km): | | 14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS) |
| 15. Emission Point Comment: **The DSRP Tailgas Recycle Heater has the following stack data:** **Stack Height: 60 feet** **Exit Diameter: 0.5 feet** **Exit Temperature: 400 °F** **Actual Volumetric Flow Rate: 750 acfm** | | |

**EMISSIONS UNIT INFORMATION**
**Section [ 1 ] of [ 1 ]**

## D. SEGMENT (PROCESS/FUEL) INFORMATION

**Segment Description and Rate:** Segment 1 of 4

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type): **Propane burned in industrial process heater (HTDP Start-Up Heater).** | | |
| 2. Source Classification Code (SCC): **1-02-010-02** | 3. SCC Units: **thousand gallons burned** | |
| 4. Maximum Hourly Rate: **0.260** | 5. Maximum Annual Rate: **732.0** | 6. Estimated Annual Activity Factor: **N/A** |
| 7. Maximum % Sulfur: **0.0184** | 8. Maximum % Ash: **N/A** | 9. Million Btu per SCC Unit: **91,400 (HHV)** |
| 10. Segment Comment: **Field 7 sulfur content is based on maximum Gas Processor Association (GPA) specification of 254 ppmvd S for propane and a propane density of 0.116 lb/scf.** | | |

**Segment Description and Rate:** Segment 2 of 4

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type): **Natural gas burned in industrial process heater (HTDP Start-Up Heater).** | | |
| 2. Source Classification Code (SCC): **1-02-006-03** | 3. SCC Units: **million cubic feed burned** | |
| 4. Maximum Hourly Rate: **0.023** | 5. Maximum Annual Rate: **65.7** | 6. Estimated Annual Activity Factor: **N/A** |
| 7. Maximum % Sulfur: **N/A** | 8. Maximum % Ash: **N/A** | 9. Million Btu per SCC Unit: **1,020 (HHV)** |
| 10. Segment Comment: | | |

**Segment Description and Rate:** Segment 3 of 4

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type):<br>**ULSD fuel oil burned in industrial process heater (HTDP Start-Up Heater).** | | |
| 2. Source Classification Code (SCC):<br>**1-02-005-02** | 3. SCC Units:<br>**thousand gallons burned** | |
| 4. Maximum Hourly Rate:<br>**0.183** | 5. Maximum Annual Rate:<br>**515.2** | 6. Estimated Annual Activity Factor: **N/A** |
| 7. Maximum % Sulfur:<br>**0.0015** | 8. Maximum % Ash:<br>**N/A** | 9. Million Btu per SCC Unit:<br>**130,000 (HHV)** |
| 10. Segment Comment: | | |

**Segment Description and Rate:** Segment 4 of 4

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type):<br>**Propane burned in industrial process heater (DSRP Tailgas Recycle Heater).** | | |
| 2. Source Classification Code (SCC):<br>**1-02-010-02** | 3. SCC Units:<br>**thousand gallons burned** | |
| 4. Maximum Hourly Rate:<br>**0.023** | 5. Maximum Annual Rate:<br>**201.0** | 6. Estimated Annual Activity Factor: **N/A** |
| 7. Maximum % Sulfur:<br>**0.0184** | 8. Maximum % Ash:<br>**N/A** | 9. Million Btu per SCC Unit:<br>**91,400 (HHV)** |
| 10. Segment Comment:<br>**Field 7 sulfur content is based on maximum Gas Processor Association (GPA) specification of 254 ppmvd S for propane and a propane density of 0.116 lb/scf.** | | |

**EMISSIONS UNIT INFORMATION**
**Section [ 1 ] of [ 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 |
|---|---|---|---|
| $NO_x$ | N/A | N/A | NS |
| CO | N/A | N/A | NS |
| VOC | N/A | N/A | NS |
| $SO_2$ | N/A | N/A | NS |
| $PM/PM_{10}/PM_{2.5}$ | N/A | N/A | NS |
| | | | |
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## F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

**(Optional for unregulated emissions units.)**

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

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

| | |
|---|---|
| 1. Pollutant Emitted: **$NO_X$** | 2. Total Percent Efficiency of Control: **N/A** |
| 3. Potential Emissions: **4.0** lb/hour **6.5** tons/year | 4. Synthetically Limited? ☒ Yes ☐ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): to tons/year | |
| 8. Emission Factor: **13.0 lb $NO_x$/1,000 gallons propane** **20.0 lb $NO_x$/1,000 gallons fuel oil** Reference: **AP-42, Tables 1.5-1 and 1.3-3** | 7. Emissions Method Code: **3** |
| 8.a. Baseline Actual Emissions (if required): tons/year **N/A** | 8.b. Baseline 24-month Period: **N/A** From: To: |
| 9.a. Projected Actual Emissions (if required): tons/year **N/A** | 9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years **N/A** |

10. Calculation of Emissions:

**$NO_x$ (HTDP Start-Up Heater) = (20.0 lb $NO_x$/1,000 gal) × (182.69 gal/hr) = 3.7 lb/hr**

**$NO_x$ (DSRP Recycle Heater) = (13.0 lb $NO_x$/1,000 gal) × (22.95 gal/hr) = 0.3 lb/hr**

**$NO_x$ = ((3.7 lb/hr × (2,820 hr/yr) + (0.3 lb/hr × 8,760 hr/yr)) × (1 ton/2,000 lb)**

**$NO_x$ = 6.5 tpy**

11. Potential, Fugitive, and Actual Emissions Comment:

**Potential emission rates shown are combined totals for the HTDP Start-Up Heater and DSRP Tailgas Recycle Heater.**

## F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

**NOT APPLICABLE**

**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): | |

## F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

**(Optional for unregulated emissions units.)**

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

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

| | |
|---|---|
| 1. Pollutant Emitted: **CO** | 2. Total Percent Efficiency of Control: **N/A** |
| 3. Potential Emissions: **2.1** lb/hour **3.5** tons/year | 4. Synthetically Limited? ☒ Yes ☐ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): to tons/year | |
| 8. Emission Factor: **7.5 lb CO/1,000 gallons propane** Reference: **AP-42, Table 1.5-1** | 7. Emissions Method Code: **3** |
| 8.a. Baseline Actual Emissions (if required): tons/year **N/A** | 8.b. Baseline 24-month Period: **N/A** From: To: |
| 9.a. Projected Actual Emissions (if required): tons/year **N/A** | 9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years **N/A** |

10. Calculation of Emissions:

**CO (HTDP Start-Up Heater) = (7.5 lb CO/1,000 gal) × (259.56 gal/hr) = 1.95 lb/hr**

**CO (DSRP Recycle Heater) = (7.5 lb CO/1,000 gal) × (22.95 gal/hr) = 0.17 lb/hr**

**CO = ((1.95 lb/hr × (2,820 hr/yr) + (0.17 lb/hr × 8,760 hr/yr)) × (1 ton/2,000 lb)**

**CO = 3.5 tpy**

11. Potential, Fugitive, and Actual Emissions Comment:

**Potential emission rates shown are combined totals for the HTDP Start-Up Heater and DSRP Tailgas Recycle Heater.**

## F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

NOT APPLICABLE

**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): | |

## F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

**(Optional for unregulated emissions units.)**

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

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

| | |
|---|---|
| 1. Pollutant Emitted: **VOC** | 2. Total Percent Efficiency of Control: **N/A** |
| 3. Potential Emissions: **0.23** lb/hour **0.4** tons/year | 4. Synthetically Limited? ☒ Yes ☐ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): to tons/year | |
| 8. Emission Factor: **0.8 lb VOC/1,000 gallons propane** Reference: **AP-42, Table 1.5-1** | 7. Emissions Method Code: **3** |
| 8.a. Baseline Actual Emissions (if required): tons/year **N/A** | 8.b. Baseline 24-month Period: **N/A** From: To: |
| 9.a. Projected Actual Emissions (if required): tons/year **N/A** | 9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years **N/A** |

10. Calculation of Emissions:

**VOC (HTDP Start-Up Heater) = (0.8 lb VOC/1,000 gal) × (259.56 gal/hr) = 0.21 lb/hr**

**VOC (DSRP Recycle Heater) = (0.8 lb VOC/1,000 gal) × (22.95 gal/hr) = 0.02 lb/hr**

**VOC = ((0.21 lb/hr × (2,820 hr/yr) + (0.02 lb/hr × 8,760 hr/yr)) × (1 ton/2,000 lb)**

**VOC = 0.4 tpy**

11. Potential, Fugitive, and Actual Emissions Comment:

**Potential emission rates shown are combined totals for the HTDP Start-Up Heater and DSRP Tailgas Recycle Heater.**

## F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

**NOT APPLICABLE**

**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): | |

## F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

**(Optional for unregulated emissions units.)**

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

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

| | |
|---|---|
| 1. Pollutant Emitted: **$SO_2$** | 2. Total Percent Efficiency of Control: **N/A** |
| 3. Potential Emissions: **0.42** lb/hour **0.7** tons/year | 4. Synthetically Limited? ☒ Yes ☐ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): to tons/year | |
| 8. Emission Factor: **1.5 lb $SO_2$/1,000 gallons propane** Reference: **AP-42, Table 1.5-1; GPA Propane 254 ppmvd S** | 7. Emissions Method Code: **3** |
| 8.a. Baseline Actual Emissions (if required): tons/year **N/A** | 8.b. Baseline 24-month Period: **N/A** From: To: |
| 9.a. Projected Actual Emissions (if required): tons/year **N/A** | 9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years **N/A** |

10. Calculation of Emissions:

**$SO_2$ (HTDP Start-Up Heater) = (1.5 lb $SO_2$/1,000 gal) × (259.56 gal/hr) = 0.39 lb/hr**

**$SO_2$ (DSRP Recycle Heater) = (1.5 lb $SO_2$/1,000 gal) × (22.95 gal/hr) = 0.03 lb/hr**

**$SO_2$ = ((0.39 lb/hr × (2,820 hr/yr) + (0.03 lb/hr × 8,760 hr/yr)) × (1 ton/2,000 lb)**

**$SO_2$ = 0.7 tpy**

11. Potential, Fugitive, and Actual Emissions Comment:

**Potential emission rates shown are combined totals for the HTDP Start-Up Heater and DSRP Tailgas Recycle Heater.**

## F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

**NOT APPLICABLE**

**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): | |

## 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: **$PM/PM_{10}/PM_{2.5}$ (PM)** | 2. Total Percent Efficiency of Control: **N/A** |
| 3. Potential Emissions: **0.62** lb/hour **0.9** tons/year | 4. Synthetically Limited? ☒ Yes ☐ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): to tons/year | |
| 8. Emission Factor: **0.7 lb PM/1,000 gallons propane** **3.3 lb PM/1,000 gallons fuel oil** Reference: **AP-42, Table 1.5-1, 1.3-1, and 1.3-2** | 7. Emissions Method Code: **3** |
| 8.a. Baseline Actual Emissions (if required): tons/year **N/A** | 8.b. Baseline 24-month Period: **N/A** From: To: |
| 9.a. Projected Actual Emissions (if required): tons/year **N/A** | 9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years **N/A** |

10. Calculation of Emissions:

**PM (HTDP Start-Up Heater) = (3.3 lb PM/1,000 gal) × (182.69 gal/hr) = 0.60 lb/hr**

**PM (DSRP Recycle Heater) = (0.7 lb PM/1,000 gal) × (22.95 gal/hr) = 0.02 lb/hr**

**PM = ((0.60 lb/hr × (2,820 hr/yr) + (0.02 lb/hr × 8,760 hr/yr)) × (1 ton/2,000 lb)**

**PM = 0.9 tpy**

11. Potential, Fugitive, and Actual Emissions Comment:

**Potential emission rates shown are combined totals for the HTDP Start-Up Heater and DSRP Tailgas Recycle Heater.**

## F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

**NOT APPLICABLE**

**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): | |

**EMISSIONS UNIT INFORMATION**
**Section [ 1 ] of [ 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: **VE 20** | 2. Basis for Allowable Opacity: ☒ Rule ☐ Other |
| 3. Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: **N/A** % Maximum Period of Excess Opacity Allowed: **N/A** min/hour | |
| 4. Method of Compliance: **EPA Reference Method 9** | |
| 5. Visible Emissions Comment: **Rule 62-296.320(4)(b), F.A.C.** | |

**Visible Emissions Limitation:** Visible Emissions Limitation __ of ___

| | |
|---|---|
| 1. Visible Emissions Subtype: | 2. Basis for Allowable Opacity: ☐ Rule ☐ Other |
| 3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour | |
| 4. Method of Compliance: | |
| 5. Visible Emissions Comment: | |

## H. CONTINUOUS MONITOR INFORMATION

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

**NOT APPLICABLE**

**Continuous Monitoring System:** Continuous Monitor ___ of ___

| | |
|---|---|
| 1. Parameter Code: | 2. Pollutant(s): |
| 3. CMS Requirement: | ☐ Rule ☐ Other |
| 4. Monitor Information... Manufacturer: Model Number: | Serial Number: |
| 5. Installation Date: | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment: | |

**Continuous Monitoring System:** Continuous Monitor ___ of ___

| | |
|---|---|
| 1. Parameter Code: | 2. Pollutant(s): |
| 3. CMS Requirement: | ☐ Rule ☐ Other |
| 4. Monitor Information... Manufacturer: Model Number: | Serial Number: |
| 5. Installation Date: | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment: | |

**EMISSIONS UNIT INFORMATION**
**Section [ 1 ] of [ 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)
   ☒ Attached, Document ID: **Section 2.0** ☐ Previously Submitted, Date:

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☒ Not Applicable

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)
   ☒ Attached, Document ID: **Section 2.0** ☒ Not Applicable

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date:
   ☒ Not Applicable

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☒ Not Applicable

6. Compliance Demonstration Reports/Records:
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ Previously Submitted, Date:
   Test Date(s)/Pollutant(s) Tested: _____
   ☐ To be Submitted, Date (if known): ___
   Test Date(s)/Pollutant(s) Tested:_____
   ☒ Not Applicable
   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
   ☐ Attached, Document ID: _____ ☒ Not Applicable

## I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

**Additional Requirements for Air Construction Permit Applications**

| |
|---|
| 1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only)<br>☐ Attached, Document ID: _____ ☒ Not Applicable |

**Additional Requirements for Title V Air Operation Permit Applications**

**NOT APPLICABLE**

| |
|---|
| 1. Identification of Applicable Requirements:<br>☐ Attached, Document ID: _____ |
| 2. Compliance Assurance Monitoring:<br>☐ Attached, Document ID: _____ ☐ Not Applicable |
| 3. Alternative Methods of Operation:<br>☐ Attached, Document ID: _____ ☐ Not Applicable |
| 4. Alternative Modes of Operation (Emissions Trading):<br>☐ Attached, Document ID: _____ ☐ Not Applicable |

**Additional Requirements Comment**

| |
|---|
| |