TECHNICAL EVALUATION
AND
PRELIMINARY DETERMINATION

APPLICANT

Orlando Utilities Commission
Reliable Plaza
100 West Anderson Street
Orlando, Florida 32801

Stanton Energy Center
Facility ID No. 0950137

PROJECT

Permit Revision No. 0950137-043-AC
Fuel Usage and Ammonia Testing

COUNTY

Orange County, Florida

PERMITTING AUTHORITY

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

August 8, 2014

1. GENERAL PROJECT INFORMATION

1.1. Air Pollution Regulations

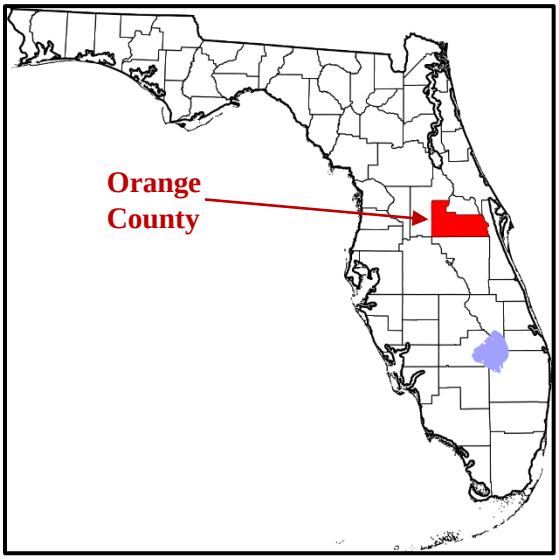
Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Rules 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations on a quarterly basis in Rule 62-204.800, F.A.C.

1.2. Facility Location and Description

The Orlando Utilities Commission (OUC) Curtis H. Stanton Energy Center (the Stanton Plant) is located in Orange County, Southeast of Orlando and North of Highway 528 at 5100 South Alafaya Trail. . The existing facility consists of two fossil fuel-fired steam electric generating stations, two combined cycle combustion turbines (Stanton A and Stanton B), solid fuels, fly ash, limestone, gypsum, slag, bottom ash storage, handling facilities and additional auxiliary equipment. Until recently, the site also included an auxiliary boiler (EU003). This unit has since been removed from service, and reference to it has been removed from the renewed concurrent Title V air operation permit.

The site is located 144 km southeast from the Chassahowitzka National Wildlife Area; the nearest Federal Prevention of Significant Deterioration (PSD) Class I Area. The UTM coordinates for this site are 483.6 kilometers (km) East and 3151.1 North. The location of Orange County is shown **Figure 1** while the location of the OUC Stanton Energy Center is shown in **Figure 2**.



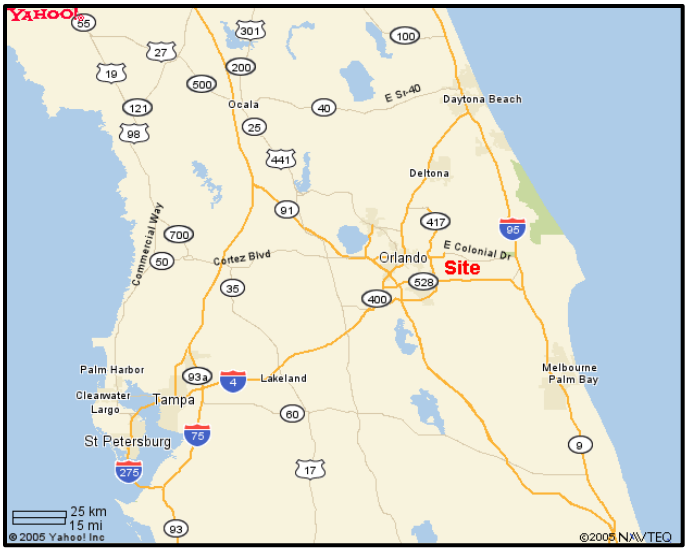


Figure 1. Project Location near Orlando.

Figure 2. Location of the Stanton Plant.

The facility is a major source of air pollution under the Title V program [Chapter 62-213, Florida Administrative Code (F.A.C.)] and the Prevention of Significant Deterioration (Rule 62-212.400, F.A.C.) program and is subject to the Clean Air Interstate Rule (CAIR) set forth in Rule 62-296.470, F.A.C. The facility is subject to 40 CFR 60, New Source Performance Standards (NSPS), Subparts A (General Provisions), Da (Standards of Performance for Fossil Fuel-Fired Steam Generating Units), GG (Standards of Performance for Stationary Gas Turbines), KKKK (Standards of Performance for Stationary Combustion Turbines that Commence Construction after February 18, 2005), and Y (Standards of Performance for Coal Preparation Plants), and operates units subject to the Acid Rain provisions of the Clean Air Act. This facility is a major source of hazardous air pollutants (HAP).

The facility is an electrical power generating plant with the Standard Industrial Classification Codes.

Industry Group No.	49	Electric, Gas, and Sanitary Services
Industry No.	4911	Electric Services

A satellite view OUC Stanton Energy Center is shown in **Figure 3** below.

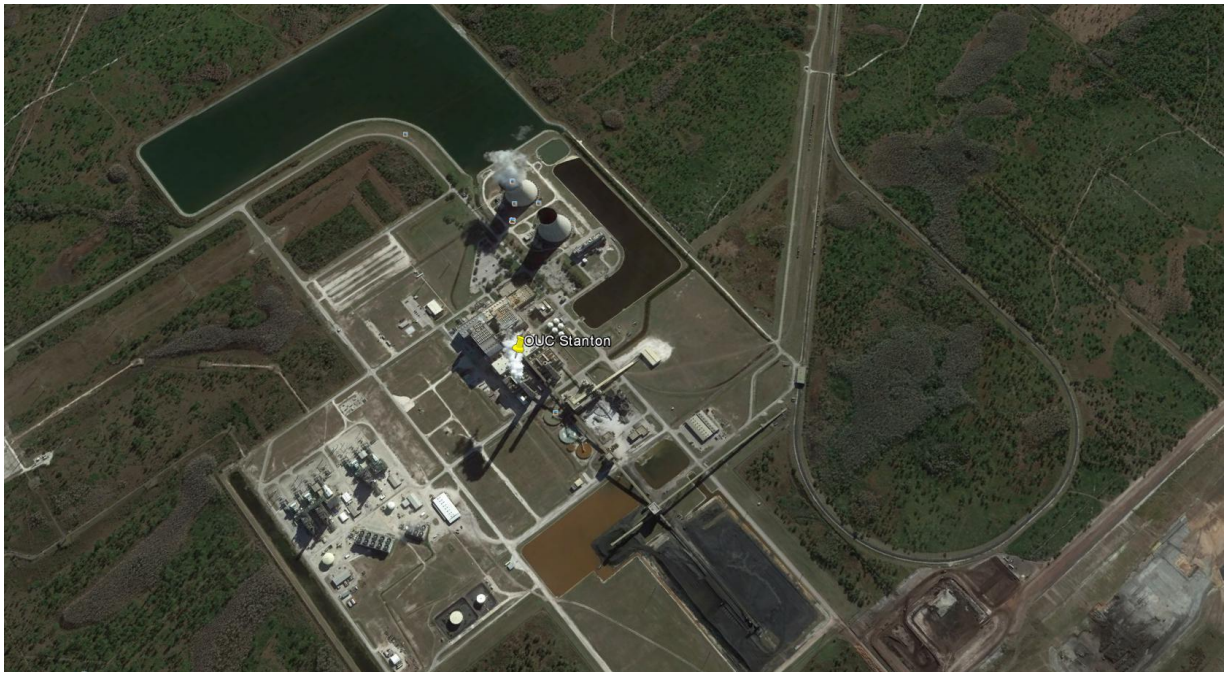


Figure 3. Satellite View of the OUC Stanton Energy Center.

1.3. Project Description

The applicant requested an air construction permit revision to change several conditions related to fuel oil testing requirements for Stanton Unit A and ammonia testing for Stanton Units A and B.

1.4. Application Processing Schedule

Application for an Air Construction Permit Revision received on May 20, 2014. Application was deemed complete.

2. PSD APPLICABILITY

2.1. General PSD Applicability

The Department regulates major stationary sources in accordance with Florida's PSD program pursuant to Rule 62-212.400, F.A.C. PSD preconstruction review is required in areas that are currently in attainment with the state and federal ambient air quality standards (AAQS) or areas designated as "unclassifiable" for these regulated pollutants. Commonly addressed PSD pollutants in the power industry include: carbon monoxide (CO), NO_X, particulate matter (PM), PM with a mean diameter of 10 microns or less (PM_{10}), PM with a mean diameter of 2.5 microns or less ($PM_{2.5}$), sulfur dioxide (SO_2), volatile organic compounds (VOC), lead (Pb), fluorides (F), sulfuric acid mist (SAM), and mercury (Hg). According to state and federal rules, six greenhouse gases (GHG), are also subject to PSD review.

Additional PSD pollutants that are more common to certain other industries include: hydrogen sulfide (H_2S), TRS including H_2S, reduced sulfur compounds (RSC) including H_2S, municipal waste combustor (MWC) organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans (dioxin/furan), MWC metals measured as PM; MWC acid gases measured as SO_2 and HCl, and MSW landfill emissions as non-methane organic compounds (NMOC).

As defined in Rule 62-210.200(189)(a)1, F.A.C., a stationary source is a "major stationary source" (major PSD source) if it emits or has the potential to emit (PTE):

- 250 tons per year (TPY) or more of any PSD pollutant; <u>or</u>

- 100 TPY or more of any PSD pollutant and the facility belongs to one of the 28 listed PSD major facility categories.

The list given in the citation includes the category of "fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input". This category applies to the Suwanee Plant before and after the proposed project. The Suwanee Plant is a major stationary source based on actual emissions of and potential to emit 100 TPY or more of several individual PSD pollutants.

For major stationary sources such as the Suwanee Plant, PSD applicability for modification projects is based on thresholds known as the significant emission rates (SER) as defined in Rule 62-210.200(274), F.A.C. Any "net emissions increase" as defined in Rule 62-210.200(204), F.A.C. of a PSD pollutant from the project that equals or exceeds the respective SER is considered "significant". SER also means any emissions rate or any net emissions increase of a PSD pollutant associated with a major stationary source or major modification which would construct within 10 km of a Class I area and have an impact on such area equal to or greater than 1 gram per cubic meter, 24-hour average.

Although a facility may be "major" (i.e. emits or has the potential to emit 100 or 250 TPY as applicable) for only one PSD pollutant, a project must include BACT controls for any PSD pollutant that exceeds the corresponding SER given in **Table 1**.

TABLE 1 – LIST OF SER BY PSD-POLLUTANT. [1]

Pollutant	SER (TPY)	Pollutant	SER (TPY)
CO	100	NO_X	40
$PM/PM_{10}/PM_{2.5}$	25/15/10	Ozone (VOC) [2]	40
$PM_{2.5}$ (NO_X)	40	$PM_{2.5}$ (SO_2)	40
Ozone (NO_X) [2]	40	SAM	7
SO_2	40	Pb	0.6
Hg	0.1	GHGs	0 [3]

1. Excluding fluoride and pollutants specific to the Pulp and Paper industry, MWCs, MSW landfills.
2. Ozone (O_3) is regulated by its precursors (VOC and NO_X). PSD for $PM_{2.5}$ can be triggered by its precursors (NO_X and SO_2).
3. Pursuant to 40 CFR 52.21(b)(23)(ii), pollutants with no SER listed at 40 CFR 52.21(b)(23)(i) have a SER of zero tons/year.

PSD Applicability for Project

The project will revise permit conditions related to fuel oil and ammonia testing at the facility. There will be no emissions increases as explained below and the project is not subject to PSD preconstruction review.

3. DEPARTMENT REVIEW

3.1. Requested Revisions to Testing Requirements

3.1.1. ISO Testing Requirements, Stanton Unit A

3.1.1.1. *Request*: The Subpart GG requirement to correct test data to International Organization for Standardization (ISO) conditions applies. However, such correction is not used for compliance determinations with the BACT standard for carbon monoxide (CO).

3.1.1.2. *Department's Response*: The Department agrees to this request since the CO emission limit is a BACT determination..

3.1.2. Ammonia Testing

3.1.2.1. *Request:* For Stanton A and Stanton B, Specific Conditions **D.26.** and **F.23.**, respectively, of the current Title V Air Operation Permit require annual compliance tests to be performed for ammonia slip. The applicant has requested the ammonia slip testing frequency be change from annual to every 5 years prior to TV renewal". In addition, this testing would only be on the primary fuel.

3.1.2.2. *Department's Response:* This purpose of this testing is primarily to diagnose SCR catalyst degradation. The requirements for continuous monitoring of nitrogen oxides (NO_X) and ammonia flow already serve to provide a representative characterization of catalyst performance. Consequently, the Department agrees to this request so long as the amount of ammonia required to meet permitted NO_X emission limits is recorded with the records keep on site. In addition, since natural gas (the primary fuel) is the fuel used almost exclusively in these units, requiring an additional ammonia slip test when firing fuel oil is not warranted.

3.1.3. Fuel Oil Testing

3.1.3.1. *Request:* Stanton Unit A consists of two nominal 170 MW General Electric "F" Class combustion turbines (EU Nos. 025 and 026) fired primarily with natural gas, but with fuel oil as a secondary, back-up fuel. While fuel oil is available as a secondary fuel, Stanton Unit A has not fired on oil for more than two years. No permit renewal tests for operation on fuel oil have been conducted because Stanton Unit A has been out of operation as an oil-fired unit. Given their limited oil-fired operation, there is no valid reason to require these units to test on fuel oil prior to permit renewal. Requiring such testing would mean combusting fuel oil purely for that purpose, resulting in unnecessary costs and unnecessary emissions for those hours of

3.1.3.2. *Department's Response:* The removal of the prior to renewal emissions stack testing for fuel oil is not allowed by Department rules. However, the Compliance Plan of the renewed Title V Air Operation permit addresses this this issue. For additional details see the Statement of Basis included with the Title V permit.

The Department will modify the original PSD permit (PSD-FL-313, Permit No. 0950137-002-AC) to provide relief to the applicant with regard to annual emissions limit stack testing. Specifically, annual stack testing will not be required because:

- NO_X and CO emissions are measured by continuous emission monitoring systems (CEMS);
- The emission limits for sulfur dioxide (SO_2) along with particulate matter (PM) and PM with a mean diameter of 10 microns are less (PM_{10}) are met by measuring the sulfur content of the fuels used in the unit;
- Only an initial test was required for volatile organic compounds (VOC); and
- An annual VE test will only be required when fuel oil usage exceeds 400 hours in a fiscal year (October 1st to September 30th).

3.2. Permit Changes

3.2.1. Changes to Permit No. 0950137-002-AC

- **Specific Condition III-22** is changed as follows:

Carbon Monoxide (CO) Emissions: Emissions of CO in the stack exhaust gas ~~(at ISO conditions)~~ with the combustion turbine operating on natural gas shall not exceed 17 ppmvd @15% 0 2 on a 24-hr block average to be demonstrated by CEMS; and neither 14 ppmvd@15% 0 2 with the CT operating on fuel oil on a 24-hr block average to be demonstrated by CEMS. These limits shall also be demonstrated by annual stack test using EPA Method 10 or through annual RAT A testing. Within 24 months of the date of completion of initial testing, the applicant shall either have installed oxidation catalyst in each CT/HRSG or forfeit its right to do so with the pre-determined (BACT) emission limits specified below. [BACT, Rule 62-212.400, F.A.C.)

- **Specific Condition III-30** is changed as follows:

Initial (I) performance tests shall be performed by the deadlines in Specific Condition 29. Initial Stack tests shall be conducted after any replacement of the major components of the air pollution control equipment (and shake down period not to exceed 100 days after restarting the CT), such as the replacement of the SCR catalyst or addition of an oxidation catalyst (or change of combustors, if specifically requested by the DEP on a case-by-case basis). ~~Annual (A) compliance test shall be performed during every fiscal year (October 1 – September 30) pursuant to Rule 62-297.310(7), F.A.C, on these units as indicated.~~ The Following reference methods shall be used. No other test methods may be used for compliance testing unless prior DEP approval is received in writing. Where initial tests are indicated, these tests shall be repeated prior to the renewal of each operation permit. Relative Accuracy Test Audits (RATA) for NO_X and CO CEMS may be used in lieu of annual stack testing for these pollutants. A VE tests is not required when firing fuel oil so long as total fuel oil firing during the fiscal year is less than 400 hours. An annual VE test is required when firing the primary fuel. Ammonia Slip testing while firing the primary fuel is required prior to the renewal of each operation permit.

- Method CTM-027 for ammonia slip ~~(I/A)~~ ~~to be completed simultaneously with NO_x compliance testing.~~

The applicant shall calculate and report the ppmvd ammonia slip (@ 15% O2) at the measured lb/hr NO_x emission rate as a means of compliance with the BACT standard.

- **Specific Condition III-45** is changed as follows:

Selective Catalytic reduction System (SCR) Compliance Procedures:

- At permit renewal an ~~An annual~~ a stack emission test for nitrogen oxides and ammonia from the CT/HRSG pair shall be simultaneously conducted while operating in the power augmentation mode with the duct burner as defined in Specific Condition 21 and operating on the primary fuel. The RATA for NO_X may be used in lieu of stack testing. The ammonia injection rate necessary to comply with the NO_X standard shall be established and reported during each performance test.

3.2.2. Changes to Permit No. 0950137-020-AC:

- **Specific Condition III.A-23** is changed as follows:

Annual Compliance Tests: During each federal fiscal year (October 1st, to September 30th), the CTG shall be tested to demonstrate compliance with the emission standard for visible emissions. NO_X and CO emissions data collected during the required continuous monitor Relative Accuracy Test Audits (RATAs) may be used to demonstrate compliance with the CO and NO_X standards. Prior to permit renewal stack ~~Annual~~ testing to determine the ammonia slip shall be conducted while firing the primary fuel. NO_X emissions recorded by the CEMS shall be reported for each ammonia slip test run. CO emissions

recorded by the CEMS shall be reported for the visible emissions observation period. [Rules 62-212.400 (BACT) and 62-297.310(7)(a)(4), F.A.C.]

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. No air quality modeling analysis is required because the project does not result in any increase in emissions.

Tom Cascio is the project engineer responsible for reviewing the application and drafting the air construction permit revision. Additional details of this analysis may be obtained by contacting him by telephone at 850/717-9077 or by e-mail at tom.cascio@dep.state.fl.us in the Department's Office of Permitting and Compliance at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.