

Bay Area Air Quality Management District

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**Permit Evaluation
and
Statement of Basis
for
MAJOR FACILITY REVIEW PERMIT**

**for
Delta Energy Center, LLC
Facility #B2095**

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Title V Permit Evaluation/Statement of Basis

A. Background

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Volume 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review because it is a Phase II Acid Rain facility as defined by BAAQMD Regulation 2-6-217, and because it is a “major facility” as defined by BAAQMD Regulation 2-6-212. It is an Acid Rain facility because it burns fossil fuel, serves a generator that is over 25 MW that is used to generate electricity for sale, and will be built after November 15, 1990. It is a “major facility” because it has the potential to emit more than 100 tons per year of a regulated air pollutant.

Major Facility Operating permits (Title V permits) must meet specifications contained in 40 CFR Part 70 as contained in BAAQMD Regulation 2, Rule 6. The permits must contain all applicable requirements (as defined in BAAQMD Regulation 2-6-202), monitoring requirements, recordkeeping requirements, and reporting requirements. The permit holders must submit reports of all monitoring at least every six months and compliance certifications at least every year.

In addition, Phase II Acid Rain facilities must meet the requirements of Title IV of the federal Clean Air Act, Acid Rain, and the Acid Rain regulations in Parts 72 through 78 of Volume 40 of the Code of Federal Regulations. These regulations were adopted and incorporated by reference by BAAQMD Regulation 2, Rule 7, Acid Rain. The main provisions of the regulations for natural gas fired acid rain sources, such as the ones at this facility, are the requirement to obtain one SO₂ allowance for each ton of SO₂ that is emitted, stringent monitoring requirements for NO_x, CO, CO₂, and SO₂, and stringent recordkeeping and reporting.

In the Bay Area, state and District requirements are also applicable requirements and are included in the permit. These requirements can be federally enforceable or non-federally enforceable. All applicable requirements are contained in Sections I through VI of the permit.

Each facility in the Bay Area is assigned a facility identifier that consists of a letter and a 4-digit number. This identifier is also considered to be the identifier for the permit. The identifier for this facility is B2095.

This facility is a new facility that received an Authority to Construct on March 23, 2000 pursuant to Application #19414 that was submitted to the District on January 14, 1999. An extensive evaluation of the requirements, including much background information, was prepared before the issuance of the Authority to Construct. This evaluation, referred to as the Final Determination of Compliance, is contained in Appendix A. The Final Determination of Compliance (FDOC) was prepared pursuant to District Regulation 2, Rule 3, Power Plants. The FDOC summarizes how the proposed power plant will comply with all applicable District, state, and federal regulations. As the lead agency under CEQA, the California Energy Commission adopts the FDOC as part of the record for the licensing of power plants in the state of California.

Four applications have been submitted after the original applications for modifications of the project. The evaluations for all four applications have been included in the appendices.

B. Facility Description

An extensive facility description is contained in Appendix A in the FDOC issued under Application #19414. The Delta Energy Center, LLC is located on the same site as an existing facility called Calpine Pittsburg, LLC which is identified as plant #B1928. This facility currently has a Title V operating permit. Although both facilities are under the ownership and control of Calpine, they are operated independently. For the purpose of clarity, the facilities are permitted separately under different plant numbers.

C. Permit Content

The legal and factual basis for the permit follows. The permit sections are described in the order presented in the permit.

I. Standard Conditions

This section contains administrative requirements and conditions that apply to all facilities. If the Title IV (Acid Rain) requirements for fossil-fuel fired electrical generating facilities or the accidental release (40 CFR § 68) programs apply, the section will contain a standard condition pertaining to these programs. Many of these conditions derive from 40 CFR § 70.6, Permit Content, which dictates certain standard conditions that must be placed in the permit. The language that the District has developed for many of these requirements has been adopted into the BAAQMD Manual of Procedures, Volume II, Part 3, Section 4, and therefore must appear in the permit.

The standard conditions also contain references to BAAQMD Regulation 1 and Regulation 2. These are the District's General Provisions and Permitting rules.

Condition I.J has been added to clarify that the capacity limits shown in Table II-A are enforceable limits.

II. Equipment

This section of the permit lists all permitted or significant sources. Each source is identified by an S and a number (e.g., S24).

Permitted sources are those sources that require a BAAQMD operating permit pursuant to BAAQMD Rule 2-1-302.

Significant sources are those sources that have a potential to emit of more than 2 tons of a "regulated air pollutant," as defined in BAAQMD Rule 2-6-222, per year or 400 pounds of a "hazardous air pollutant," as defined in BAAQMD Rule 2-6-210, per year.

All abatement (control) devices that control permitted or significant sources are listed. Each abatement device whose primary function is to reduce emissions is identified by an A and a number (e.g., A-24). If a source is also an abatement device, such as when an engine controls VOC emissions, it will be listed in this table but will have an “S” number. An abatement device may also be a source of secondary emissions (such as selective catalytic reduction, which has secondary ammonia emissions). If the primary function of a device is to control emissions, it is considered an abatement (or “A”) device. If the primary function of a device is a non-control function, the device is considered to be a source (or “S”).

The equipment section is considered to be part of the facility description. It contains information that is necessary for applicability determinations, such as fuel types, contents or sizes of tanks, etc. This information is part of the factual basis of the permit.

Each of the permitted sources has previously been issued an authority to construct or a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. These permits are issued in accordance with state law and the District’s regulations. The capacities in this table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-403.

There have been several changes to the equipment proposed for the Delta Energy Center since the FDOC was issued.

- The auxiliary boilers (S-7 and S-8) have been eliminated.
- The exempt natural-gas fired emergency generator has been eliminated.
- The cooling tower has been changed from a 12-cell design to a 14-cell design, although the maximum cooling water flow rate and corresponding maximum PM10 emission rate have not increased
- The fire pump diesel engine, which was originally exempt, has lost its exemption as a result of District Regulation amendments and is now a permitted source

III. Generally Applicable Requirements

This section of the permit lists requirements that generally apply to all sources at a facility including insignificant sources and portable equipment that may not require a District permit. If a generally applicable requirement applies specifically to a source that is permitted or significant, the standard will also appear in Section IV and the monitoring for that requirement will appear in Sections IV and VII of the permit. Parts of this section apply to all facilities (e.g., particulate, architectural coating, odorous substance, and sandblasting standards). In addition, standards that apply to insignificant or unpermitted sources at a facility (e.g., refrigeration units that use more than 50 pounds of an ozone-depleting compound) are placed in this section.

Unpermitted sources are exempt from normal District permits pursuant to an exemption in BAAQMD Regulation 2, Rule 1. They may, however, be specifically described in a Title V permit if they are considered significant sources pursuant to the definition in BAAQMD Rule 2-6-239.

Condition 18310, part 60 has been added to this section to require the facility to submit a Preplanned Abatement Strategy pursuant to BAAQMD Regulation 4 within 120 days of issuance of the Title V permit. This part was added because the rule does not contain deadlines for new facilities.

IV. Source-Specific Applicable Requirements

This section of the permit lists the applicable requirements that apply to permitted or significant sources. These applicable requirements are contained in tables that pertain to one or more sources that have the same requirements. The order of the requirements is:

- District Rules
- SIP Rules (if any) are listed following the corresponding District rules. SIP rules are District rules that have been approved by EPA for inclusion in the California State Implementation Plan. SIP rules are “federally enforceable” and a “Y” (yes) indication will appear in the “Federally Enforceable” column. If the SIP rule is the current District rule, separate citation of the SIP rule is not necessary and the “Federally Enforceable” column will have a “Y” for “yes”. If the SIP rule is not the current District rule, the SIP rule or the necessary portion of the SIP rule is cited separately after the District rule. The SIP portion will be federally enforceable; the non-SIP version will not be federally enforceable, unless EPA has approved it through another program.
- Other District requirements, such as the Manual of Procedures, as appropriate.
- Federal requirements (other than SIP provisions)
- BAAQMD permit conditions. The text of BAAQMD permit conditions is found in Section VI of the permit.
- Federal permit conditions. The text of Federal permit conditions, if any, is found in Section VI of the permit.

Section IV of the permit contains citations to all of the applicable requirements for particular sources. The text of the requirements is found in the regulations, which are readily available on the District’s or EPA’s websites, or in the permit conditions, which are found in Section VI of the permit. All monitoring requirements are cited in Section IV. Section VII is a cross-reference between the limits and monitoring requirements. A discussion of monitoring is included in Section C.VII of this permit evaluation/statement of basis.

Complex Applicability Determinations

The gas turbines and HRSGs are subject to 40 CFR Subpart Da, “The Standard of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978”. Section 60.44a(a)(2) of this subpart requires a minimum percentage NO_x reduction of potential combustion concentration of 25%. Because the potential NO_x combustion concentration depends upon the type of turbine specified, the minimum reduction cited in the Section VII tables is calculated as shown below.

Potential turbine NO_x combustion concentration: 9 ppmv

$$\begin{aligned} \text{Percent reduction} &= (0.25)(9 \text{ ppmv}) \\ &= 2.25 \text{ ppmv} \end{aligned}$$

Accidental Release

Ammonia storage at this facility is subject to 40 CFR 68, Accidental Release, because more than 10,000 pounds of anhydrous (100%) ammonia is stored. The requirement is in Standard Condition I.K.

112(j)

The facility is not subject to the case-by-case MACT determination requirement in 112(j) of the Clean Air Act because it is not a major facility for hazardous air pollutants (HAP). The potential to emit for HAPs can be found in Table 3 of the FDOC. Note that ammonia, propylene, and aluminum are not HAPs pursuant to 112(b) of the Clean Air Act.

Regulation 6

The Final Determination of Compliance refers to BAAQMD Regulation 6-302, Opacity Limitation. This regulation does not apply because it has not been invoked by the APCO. That is, the gas turbines and HRSGs are not equipped with opacity detectors.

S-10, Fire Pump Diesel Engine

BACT: The Authority to Construct evaluation report of application 2625 states that BACT does not apply to S-10 since the maximum daily emissions will not exceed 10 pounds for any pollutant. This determination is incorrectly based upon routine maintenance and reliability operation of the engine, which will not exceed 1 hour per day. In fact, the BACT determination should be based upon worst-case 24-hour per day operation under emergency conditions. Under these conditions, the BACT threshold of BAAQMD Regulation 2-2-301 would be exceeded. However, the S-10 Fire Pump Diesel Engine does meet the current District “Achieved in Practice BACT limitations specified in the District BACT Guideline.

V. Schedule of Compliance

A schedule of compliance is required in all Title V permits pursuant to BAAQMD Regulation 2-6-409.10 which provides that a major facility review permit shall contain the following information and provisions:

“409.10 A schedule of compliance containing the following elements:

- 10.1 A statement that the facility shall continue to comply with all applicable requirements with which it is currently in compliance;
- 10.2 A statement that the facility shall meet all applicable requirements on a timely basis as requirements become effective during the permit term; and
- 10.3 If the facility is out of compliance with an applicable requirement at the time of issuance, revision, or reopening, the schedule of compliance shall contain a plan by which the facility will achieve compliance. The plan shall contain deadlines for each item in the plan. The schedule of compliance shall also contain a requirement for submission of progress reports by the facility at least every six months. The progress reports shall contain the dates by which each item in the plan was achieved and an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.”

The gas turbines were first fired in early March of 2002. As of September 11, 2002, the turbines and heat recovery steam generators are all operating in compliance with their permit conditions.

The schedule of compliance for this permit contains only sections 2-6-409.10.1 and 2-6-409.10.2, since section 2-6-409.10.3 applies to facilities that are out of compliance.

VI. Permit Conditions

The permit conditions that were developed during the drafting of the FDOC under Application #19414 have been transferred to Section VI of the Title V permit. The permit condition is identified with a unique numerical identifier, up to five digits. Each part of the condition is identified by a part number and each subpart is identified by a letter (for example, Condition 789, part 1a).

When necessary to meet Title V requirements, additional monitoring, recordkeeping, or reporting has been added to the permit.

Any changes to existing permit conditions are clearly shown in “strike-out/underline” format in the proposed permit. When the permit is issued, all ‘strike-out’ language will be deleted; all “underline” language will be retained, subject to consideration of comments received.

Permit conditions may also be imposed or revised as part of the annual review of the facility by the District pursuant to California Health and Safety Code (H&SC) § 42301(e), through a variance pursuant to H&SC § 42350 et seq., an order of abatement pursuant to H&SC § 42450 et seq., or as an administrative revision initiated by District staff. After issuance of the Title V permit, permit conditions will be revised using the procedures in Regulation 2, Rule 6, Major Facility Review.

The regulatory basis is listed following each condition. The regulatory basis may be a rule or regulation. The District is also using the following terms for regulatory basis:

- BACT: This term is used for a condition imposed by the Air Pollution Control Officer (APCO) to ensure compliance with the Best Available Control Technology in Regulation 2-2-301.
- Cumulative Increase: This term is used for a condition imposed by the APCO that limits a source’s operation to the operation described in the permit application pursuant to BAAQMD Regulation 2-1-403.
- Offsets: This term is used for a condition imposed by the APCO to ensure compliance with the use of offsets for the permitting of a source or with the banking of emissions from a source pursuant to Regulation 2, Rules 2 and 4.
- PSD: This term is used for a condition imposed by the APCO to ensure compliance with a Prevention of Significant Deterioration permit issued pursuant to Regulation 2, Rule 2.
- TRMP: This term is used for a condition imposed by the APCO to ensure compliance with limits that arise from the District’s Toxic Risk Management Policy.

Additional monitoring has been added, where appropriate, to assure compliance with the applicable requirements.

Other Permit Condition Changes:

- Condition #17154, parts 26 through 33 have been deleted because they apply to the Calpine Pittsburg, LLC gas turbines and waste heat boilers that are permitted separately under Title IV/V as facility B1928. These parts are therefore redundant.
- A recordkeeping provision has been added to parts 8, 9, and 10 to ensure that the hours of firing without abatement are monitored.
- A sulfur content limit has been added to part 14 to ensure compliance with the District BACT specification for SO₂ and the cumulative increase requirement.
- In the definitions section, the term “clock hour” has been changed to “hour” so that data collected part way through an hour will count towards rolling averages for the purposes of compliance. Accordingly, the reference to “clock hour” in part 39 has been changed to “hour”.
- Condition 18310, part 60 has been added to this section to require the facility to submit a Preplanned Abatement Strategy pursuant to BAAQMD Regulation 4 within 120 days of issuance of the Title V permit. This part was added because the rule does not contain deadlines for new facilities.

The Final Determination of Compliance for the Delta Energy Center states that the sulfur content of the natural gas will be limited to 0.25 grains per 100 scf. However, the permit conditions in the FDOC contain no sulfur limit. Accordingly, a sulfur content limit of 0.25 gr/100 scf has been added to condition #17154, part 14.

VII. Applicable Limits and Compliance Monitoring Requirements

This section of the permit is a summary of numerical limits and related monitoring requirements for each source. The summary includes a citation for each monitoring requirement, frequency of monitoring, and type of monitoring. The applicable requirements for monitoring are completely contained in Sections IV, Source-Specific Applicable Requirements, and VI, Permit Conditions, of the permit.

The tables below contain only the limits for which there is no monitoring or inadequate monitoring in the applicable requirements. The District has examined the monitoring for other limits and has determined that monitoring is adequate to provide a reasonable assurance of compliance. Calculations for potential to emit will be provided in the discussion when no monitoring is proposed due to the size of a source.

Monitoring decisions are typically the result of a balancing of several different factors including: 1) the likelihood of a violation given the characteristics of normal operation, 2) degree of variability in the operation and in the control device, if there is one, 3) the potential severity of impact of an undetected violation, 4) the technical feasibility and probative value of indicator monitoring, 5) the economic feasibility of indicator monitoring, and 6) whether there is some other factor, such as a different regulatory restriction applicable to the same operation, that also provides some assurance of compliance with the limit in question.

SO₂ Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1, S-3, S-5 Gas Turbines, S-2, S-4, S-6 HRSGs	BAAQMD 9-1-301	Ground level concentrations of SO ₂ shall not exceed: 0.5 ppm for 3 consecutive minutes AND 0.25 ppm averaged over 60 consecutive minutes AND 0.05 ppm averaged over 24 hours	None
S-1, S-3, S-5 Gas Turbines, S-2, S-4, S-6 HRSGs	BAAQMD 9-1-302	300 ppm (dry)	None
S-1, S-3, S-5 Gas Turbines, S-2, S-4, S-6 HRSGs	NSPS 40 CFR 60.43a (b)(2)	0.2 lb/MM BTU, 24-hr average except during startup, shutdown	None

SO₂ Discussion:

BAAQMD Regulation 9-1-301

Area monitoring to demonstrate compliance with the ground level SO₂ concentration requirements of Regulation 9-1-301 is at the discretion of the APCO (per BAAQMD Regulation 9-1-501). This facility does not have equipment that emits large amounts of SO₂ and therefore is not required to have ground level monitoring by the APCO.

All facility combustion sources are subject to the SO₂ emission limitations in District Regulation 9, Rule 1 (ground-level concentration and emission point concentration). In EPA's June 24, 1999 agreement with CAPCOA and ARB, "Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP", EPA has agreed that natural-gas-fired combustion sources do not need additional monitoring to verify compliance with Regulation 9, Rule 1, since violations of the regulation are unlikely. Therefore, no monitoring is necessary for this requirement.

Based upon the fuel sulfur content limit of 0.25 gr/100 scf, the subject sources do not have the potential to emit SO₂ at a rate in excess of 0.2 lb/MM BTU. This is shown on page A-8 of Appendix A of the FDOC. The maximum SO₂ emission rate is calculated to be 0.0007 lb/MM BTU based upon the fuel sulfur content of 0.25 gr/100 scf. Because the fuel sulfur content will be tested on a monthly basis, additional monitoring is not necessary to ensure compliance with 40 CFR 60.43a(b)(2).

PM Sources

# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1, S-3, S-5 Gas Turbines, S-2, S-4, S-6 HRSGs, S-9 Cooling Tower, S-10 Fire Pump Diesel Engine	BAAQMD Regulation 6-301	Ringelmann 1.0	None
S-1, S-3, S-5 Gas Turbines, S-2, S-4, S-6 HRSGs, S-9 Cooling Tower, S-10 Fire Pump Diesel Engine	BAAQMD Regulation 6-310	0.15 gr/dscf	None

PM Discussion:

BAAQMD Regulation 6 “Particulate Matter and Visible Emissions”

Visible Emissions

BAAQMD Regulation 6-301 limits visible emissions to no darker than 1.0 on the Ringelmann Chart (except for periods or aggregate periods less than 3 minutes in any hour). Visible emissions are normally not associated with combustion of gaseous fuels, such as natural gas. Sources S-1, S-3, S-5 Gas Turbines and S-2, S-4, S-6 HRSGs burn natural gas exclusively; therefore, per the EPA's June 24, 1999 agreement with CAPCOA and ARB titled "Summary of Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP", no monitoring is required to ensure compliance with this limit for these sources.

With a maximum vendor-guaranteed drift rate of 0.0005% and corresponding maximum grain loading of 0.0023 gr/dscf as calculated below, the S-9 Cooling Tower is not expected to emit visible particulate emissions. Therefore, no monitoring is required to ensure compliance with this limit for this source.

EPA's June 24, 1999 agreement with CAPCOA and ARB entitled "Summary of Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP" states that no monitoring will be required for opacity for diesel standby and emergency reciprocating engines if California diesel or other low-sulfur fuels are used. The reason is that the use of low-sulfur fuels reduces particulates. Also, these engines are used infrequently and therefore, are not large sources of particulate emissions. Because the S-10 Fire Pump Diesel Engine will utilize “California” diesel fuel, no monitoring is required to ensure compliance with the visible emissions limitation of Regulation 6-301.

Particulate Weight Limitation

BAAQMD Regulation 6-310 limits filterable particulate (FP) emissions from any source to 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust volume. This is a “grain loading” standard.

Exceedances of the grain loading standards are normally not associated with combustion of gaseous fuels, such as natural gas. Sources S-1, S-3, S-5 Gas Turbines and S-2, S-4, S-6 HRSGs burn natural gas exclusively, therefore, per the EPA's July 2001 agreement with CAPCOA and ARB entitled "CAPCOA/CARB/EPA Region IX Recommended Periodic Monitoring for Generally Applicable Grain Loading Standards in the SIP: Combustion Sources: Summary of Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP", no monitoring is required to ensure compliance with this limit for these sources.

As shown in the following calculation, the worst-case grain loading from the S-9 Cooling Tower is much less than 0.15 grains per dscf. Therefore, no monitoring is required to ensure compliance with this limit for this source.

Maximum PM₁₀ emission rate: 2.172 lb/hr
 Exhaust gas flow rate: 112,222 dscfm

$$\begin{aligned} \text{Grain loading} &= (2.172 \text{ lb/hr})(\text{hr}/60 \text{ min})(7000 \text{ gr/lb})/(112,222 \text{ dscfm}) \\ &= 0.0023 \text{ gr/dscf} \end{aligned}$$

EPA's July 2001 agreement with CAPCOA and ARB entitled "CAPCOA/CARB/EPA Region IX Recommended Periodic Monitoring for Generally Applicable Grain Loading Standards in the SIP: Combustion Sources: Summary of Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP", proposes the following monitoring for the grain loading standard for non-utility distillate-oil-fueled emergency piston-type IC Engines: Maintain records of all engine usage (such as time or fuel meter readings) and maintenance. S-10 Fire Pump Diesel Engine is subject to such monitoring.

NO_x Sources

# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1, S-3, S-5 Gas Turbines, S-2, S-4, S-6 HRSGs	NSPS 40 CFR 60.44a(a)(1)	0.2 lb/MM BTU except during startup, shutdown, or malfunction	CEM
S-1, S-3, S-5 Gas Turbines, S-2, S-4, S-6 HRSGs	NSPS 40 CFR 60.44a(a)(2)	0.008 lb/MM BTU reduction of NO _x	CEM

NOx Sources

# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1, S-3, S-5 Gas Turbines, S-2, S-4, S-6 HRSGs	NSPS 40 CFR 60.44a(d)(1)	1.6 lbs/MW-hr	CEM

NOx discussion:

40 CFR 60 Part 60, Subpart Da, The Standard of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978 exempts duct burners from the requirement for continuous emission monitors (CEM) for NOx in Section 60.47(o). The Heat Recovery Steam Generators are duct burners. Therefore, the NOx CEMs that are required to monitor the BACT requirements will be used to determine compliance.

Because the NOx concentration in the exhaust from the gas turbines and fuel flow to those units are both monitored continuously, the NOx emission rate in lb/MM BTU is calculated continuously to verify compliance with the emission standard of 40 CFR 60.44a(a)(1).

Compliance with the emission reduction standard of 2.25 ppmv can be verified by monitoring the NOx concentration in the exhaust from the gas turbines. This is illustrated by the following calculation, which shows the minimum NOx reduction expected, based upon the difference between the unabated turbine NOx emission rate of 9 ppmv and the stack gas emission limit of 2.5 ppmv. As shown below, compliance with 40 CFR 60.44a(a)(2) is demonstrated by compliance with the NOx emission concentration limit, which is verified by CEM.

Minimum Unabated Turbine emission rate: 9 ppmv NOx
 Turbine emission rate after abatement: 2.5 ppmv NOx

$$\begin{aligned} \text{Minimum NOx reduction} &= (9 \text{ ppmv} - 2.5 \text{ ppmv}) \\ &= 6.5 \text{ ppmv NOx} \end{aligned}$$

As demonstrated by the following calculation, each gas turbine/HRSG power train will achieve compliance with the emission limit of 1.6 lb/MW-hr at the NOx emission limit of 2.5 ppmv (19.2 lb/hr). Therefore, monitoring of the NOx emission concentration will ensure compliance with the emission standard of 40 CFR 60.44a(d)(1).

Maximum combined emission rate: 19.2 lb NOx/hr
 Generating capacity per power train: 293 MW

$$\begin{aligned} \text{NOx emission rate} &= 19.2 \text{ lb NOx/hr} / 293 \text{ MW} \\ &= 0.066 \text{ lb NOx/MW-hr} \end{aligned}$$

VIII. Test Methods

This section of the permit lists test methods that are associated with standards in District or other rules. It is included only for reference. In most cases, the test methods in the rules are source test methods that can be used to determine compliance but are not required on an ongoing basis. They are not applicable requirements.

If a rule or permit condition requires ongoing testing, the requirement will also appear in Section IV of the permit.

IX. Permit Shield:

The District rules allow two types of permit shields. The permit shield types are defined as follows: (1) A provision in a major facility review permit that identifies and justifies specific federally enforceable regulations and standards are not applicable to a source or group of sources, or (2) A provision in a major facility review permit that identifies and justifies specific federally enforceable applicable requirements for monitoring, recordkeeping and/or reporting which are subsumed because other applicable requirements for monitoring, recordkeeping, and reporting in the permit will assure compliance with all emission limits.

The second type of permit shield is allowed by EPA's White Paper 2 for Improved Implementation of the Part 70 Operating Permits Program. The District uses the second type of permit shield for all streamlining of monitoring, recordkeeping, and reporting requirements in Title V permits. The District's program does not allow other types of streamlining in Title V permits.

This facility has the second type of permit shield.

Following is the detail of the permit shields that were requested by the applicant.

Table X B - 1
Permit Shield for Subsumed Requirements
S-1, S-3, S-5 TURBINES
S-2, S-4, S-6 HEAT RECOVERY STEAM GENERATORS

Subsumed Requirement Citation	Title or Description	Streamlined Requirements	Title or Description
40 CFR 60.334(b)(2)	Fuel Nitrogen Content monitoring (natural gas)	BAAQMD Condition 17154, part 39	Continuous emission monitoring for 2.5 ppmv limit @ 15% oxygen
40 CFR 60.334(b)(2)	Fuel Sulfur Content monitoring (natural gas)	BAAQMD Condition 17154, part 57	Requirement for exclusive use of natural gas with a maximum sulfur content of 1 gr/100 scf with monthly fuel testing
40 CFR 60.334(c)(1)	Periods of excess emissions, NOx	BAAQMD Condition 17154, Part 39	Requirement for continuous emission monitor for NOx

40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas Turbines, has two requirements for NOx monitoring. The first is measurement of water-to-fuel ratios if water is injected for NOx control. Since water injection is not used at this facility, it does not apply.

The second monitoring requirement is a daily measurement of nitrogen in the fuel. This requirement has been subsumed by the BACT requirement for continuous emission monitoring of NOx. Since the BACT NOx limit is much more stringent than the Subpart GG requirement (2.5 ppmv vs. 100 ppm ppmv, both at 15% oxygen), this monitoring will assure compliance with the Subpart GG emission limits.

Subpart GG has a fuel standard of 0.8% sulfur in the fuel. The monitoring requirement for this fuel limit is a daily measurement of sulfur in the fuel. The facility is limited to the use of natural gas containing only 1 grain of sulfur per 100 scf of gas. One grain of sulfur is equivalent to 1/7000 of a pound. 100 scf of gas weighs approximately 4.8 pounds, therefore one grain sulfur per 100 scf of gas is approximately equivalent to 0.003% sulfur in the fuel. Therefore, the requirement for daily fuel sulfur measurement has been subsumed with the requirement to burn gas that contains 1 grain sulfur/100 scf. The monitoring for this requirement is monthly measurement of the fuel sulfur.

D. Alternate Operating Scenarios:

No alternate operating scenario has been requested for this facility.

E. Compliance Status:

For existing plants, a compliance report from the Director of Compliance and Enforcement presents a review of the compliance record of each facility. Since this facility is new, there is no record.

F. Differences between the Application and the Proposed Permit:

The Title V permit application was originally submitted on May 11, 2001. This version is the basis for constructing the proposed Title V permit. However, there have been some minor changes to the equipment at the Delta Energy Center facility. A natural gas fired emergency generator will not be installed. The cooling tower has been changed from a 12-cell design to a 14-cell design, although the maximum flow rate and corresponding maximum PM₁₀ emissions have not increased. The original Title V permit application included sources from the Calpine Pittsburg facility, which is contiguous to the Delta Energy Center. At the time the application was submitted, the facilities were to be combined. Although, the two facilities are both owned by Calpine, they are operated independently. Therefore, they will be permitted separately for the purpose of Title V and District operating permits.

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APPENDIX A
FINAL DETERMINATION OF COMPLIANCE
for
APPLICATION 19414

APPENDIX B
PERMIT EVALUATION
for
APPLICATION 2233

APPENDIX C
PERMIT EVALUATION
for
APPLICATION 2625

APPENDIX D
PERMIT EVALUATION
for
APPLICATION 4965

APPENDIX E
PERMIT EVALUATION
for
APPLICATION 5813

APPENDIX F
GLOSSARY

ACT

Federal Clean Air Act

APCO

Air Pollution Control Officer

ARB

Air Resources Board

BAAQMD

Bay Area Air Quality Management District

BACT

Best Available Control Technology

Basis

The underlying authority that allows the District to impose requirements.

CAA

The federal Clean Air Act

CAAQS

California Ambient Air Quality Standards

CAPCOA

California Air Pollution Control Officers Association

CEQA

California Environmental Quality Act

CFR

The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

CO

Carbon Monoxide

Cumulative Increase

The sum of permitted emissions from each new or modified source since a specified date pursuant to BAAQMD Rule 2-1-403, Permit Conditions (as amended by the District Board on 7/17/91) and SIP Rule 2-1-403, Permit Conditions (as approved by EPA on 6/23/95). Cumulative increase is used to determine whether threshold-based requirements are triggered.

District

The Bay Area Air Quality Management District

dscf

Dry Standard Cubic Feet

EPA

The federal Environmental Protection Agency.

Excluded

Not subject to any District regulations.

Federally Enforceable, FE

All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60 (NSPS), Part 61 (NESHAPs), Part 63 (MACT), and Part 72 (Permits Regulation, Acid Rain), including limitations and conditions contained in operating permits issued under an EPA-approved program that has been incorporated into the SIP.

FP

Filterable Particulate as measured by BAAQMD Method ST-15, Particulate.

HAP

Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by 40 CFR Part 63.

Major Facility

A facility with potential emissions of: (1) at least 100 tons per year of regulated air pollutants, (2) at least 10 tons per year of any single hazardous air pollutant, and/or (3) at least 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity of hazardous air pollutants as determined by the EPA administrator.

MFR

Major Facility Review. The District's term for the federal operating permit program mandated by Title V of the Federal Clean Air Act and implemented by District Regulation 2, Rule 6.

MOP

The District's Manual of Procedures.

NAAQS

National Ambient Air Quality Standards

NESHAPS

National Emission Standards for Hazardous Air Pollutants. See in 40 CFR Parts 61 and 63.

NMHC

Non-methane Hydrocarbons (Same as NMOC)

NMOC

Non-methane Organic Compounds (Same as NMHC)

NO_x

Oxides of nitrogen.

NSPS

Standards of Performance for New Stationary Sources. Federal standards for emissions from new stationary sources. Mandated by Title I, Section 111 of the Federal Clean Air Act, and implemented by 40 CFR Part 60 and District Regulation 10.

NSR

New Source Review. A federal program for pre-construction review and permitting of new and modified sources of pollutants for which criteria have been established in accordance with Section 108 of the Federal Clean Air Act. Mandated by Title I of the Federal Clean Air Act and implemented by 40 CFR Parts 51 and 52 and District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

Offset Requirement

A New Source Review requirement to provide federally enforceable emission offsets for the emissions from a new or modified source. Applies to emissions of POC, NOx, PM10, and SO2.

Phase II Acid Rain Facility

A facility that generates electricity for sale through fossil-fuel combustion and is not exempted by 40 CFR 72 from Titles IV and V of the Clean Air Act.

POC

Precursor Organic Compounds

PM

Particulate Matter

PM10

Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

PSD

Prevention of Significant Deterioration. A federal program for permitting new and modified sources of those air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 2, Rule 2.

SIP

State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Air Ambient Quality Standards. Mandated by Title I of the Act.

SO2

Sulfur dioxide

THC

Total Hydrocarbons (NMHC + Methane)

Title V

Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOC

Total Organic Compounds (NMOC + Methane, Same as THC)

TPH

Total Petroleum Hydrocarbons

TRMP

Toxic Risk Management Plan

TSP

Total Suspended Particulate

VOC

Volatile Organic Compounds

Units of Measure:

bhp	=	brake-horsepower
btu	=	British Thermal Unit
cfm	=	cubic feet per minute
g	=	grams
gal	=	gallon
gpm	=	gallons per minute
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inches
max	=	maximum
m ²	=	square meter
min	=	minute
mm	=	million
MMbtu	=	million btu
MMcf	=	million cubic feet
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scfm	=	standard cubic feet per minute
yr	=	year