

Bay Area Air Quality Management District

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**Permit Evaluation
and
Statement of Basis
for
RENEWAL of**

MAJOR FACILITY REVIEW PERMIT

for
**Cardinal Cogen, Inc.
Facility #A1629**

Facility Address:
Campus and Jordan Way
Palo Alto, CA 94305

Mailing Address:
Stanford University
Building 14-105
Stanford, CA 94305-4114

Application Engineer: Dennis Jang
Site Engineer: Dennis Jang

Application: 6648

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Title V 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 major facility as defined by BAAQMD Regulation 2-6-212. It is a major facility because it has the “potential to emit,” as defined by BAAQMD Regulation 2-6-218, of more than 100 tons per year of a regulated air pollutant. This facility is not subject to Title IV (Acid Rain) requirements since it is a “qualifying small power production facility” per section 3(17)(C) of the Federal Power Act.

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 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 A1629.

This facility received its initial Title V permit on May 12, 1998. This application is for a permit renewal. Although the current permit expired on May 11, 2003, it continues in force until the District takes final action on the permit renewal. The standard sections of the permit have changed since May 12, 1998. The proposed permit shows all changes to the permit in strikeout/underline format.

B. Facility Description

Cardinal Cogen is a cogeneration facility that produces steam, chilled water, and electricity that it sells to Stanford University and PG&E. The total electrical output of the facility is 49 MW and consists of 4 water-tube boilers, one gas turbine, and one heat recovery steam generator with duct burners.

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 certain 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.

Changes to permit:

Two existing standby generator diesel engines and an existing turbine starter diesel engine have lost their permit exemptions as a result of District regulation amendments and have been added to the equipment list and other tables as necessary.

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.

Any 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).

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 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 the permitted sources table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-403.

Following are explanations of the differences in the equipment list between the time that the facility originally applied for a Title V permit and the permit proposal date:

Devices with Changed Permit Status:

Two existing standby generator diesel engines and an existing turbine starter diesel engine have lost their permit exemptions as a result of District regulation amendments and have been added to the source list.

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.

Changes to permit:

Language has been added to Section III to clarify that this section contains requirements that may apply to temporary sources. This provision allows contractors that have "portable" equipment permits that require them to comply with all applicable requirements to work at the facility on a temporary basis, even if the permit does not specifically list the temporary source. Examples are temporary sand-blasting or soil-vapor extraction equipment.

Section III has been modified to say that SIP standards are now found on EPA's website and are not included as part of the permit.

The note regarding SIP information from the Rule Development Section has been deleted since the SIP standards are now found on EPA's website.

Table III has been updated by adding the following rules and standards to conform to current practice:

- BAAQMD Regulation 2, Rule 1, General Requirements
- BAAQMD 2-1-429, Federal Emissions Statement
- SIP Regulation 2, Rule 1, General Requirements
- SIP Regulation 5, Open Burning
- Regulation 8, Rule 2, Miscellaneous Operations
- BAAQMD Regulation 8, Rule 40 Aeration of Contaminated Soil and Removal of Underground Storage Tanks

- BAAQMD Regulation 8, Rule 47, Air Stripping and Soil Vapor Extraction Operations
- SIP Regulation 8, Rule 51, Adhesive and Sealant Products
- California Health and Safety Code Section 41750 et seq., Portable Equipment
- California Health and Safety Code Section 44300 et seq., Air Toxics “Hot Spots” Information and Assessment Act of 1987
- 40 CFR Part 61, Subpart M, National Emission Standards for Hazardous Air Pollutants – National Emission Standard for Asbestos

The dates of adoption or approval of the rules and their "federal enforceability" status in Table III have also been updated.

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. 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

This facility is not subject to Title IV (Acid Rain) requirements since it is a “qualifying small power production facility” per section 3(17)(C) of the Federal Power Act.

Section 112(j) of Clean Air Act

The original permit evaluation does not evaluate whether the facility is a major facility due to emissions of hazardous air pollutants (HAP). Following are the estimated worst-case combined emissions of HAPs from S-6 Gas Turbine and S-8 Duct Burners resulting from the combustion of natural gas.

Pollutant	Emission Factor (lbs/MMscf)³	Emissions (ton/yr)
Acetaldehyde ¹	1.80E-01	0.466
Acrolein ¹	3.69E-03	0.01
Benzene ²	3.33E-02	0.086
Benzo(a)anthracene ²	2.26E-05	5.82E-05
Benzo(a)pyrene ²	1.39E-05	3.58E-05
Benzo(b)fluoranthene ²	1.13E-05	2.91E-05
Benzo(k)fluoranthene ²	1.10E-05	2.83E-05
1,3-Butadiene ²	1.27E-04	3.27E-04
Chrysene ²	2.52E-05	6.49E-05
Dibenzo(a,h)anthracene ²	2.35E-05	6.05E-05
Ethyl benzene ¹	1.79E-02	0.046
Formaldehyde ¹	9.17E-01	2.36
Hexane ²	1.75E+00	4.5
Ideno(1,2,3-cd)pyrene ²	2.35E-05	6.05E-05
Naphthalene ²	1.66E-03	0.004
Propylene Oxide ¹	4.78E-02	0.12
Toluene ¹	7.26E-02	0.19
Xylene ¹	2.89E-02	0.074

Notes:

1 Emission factors from AP-42, Table 3.1-3, "Emission Factors for Hazardous Air Pollutants from Natural Gas-Fired Stationary Gas Turbines"

2 CATEF database for natural gas fired combustion gas turbines

3 Based upon maximum firing rate of gas turbine and duct burner of 588 MM BTU/hr and 8,760 firing hours per year.

Following are the estimated worst-case combined emissions of HAPs from the S-1, S-2, S-3, and S-4 Boilers when fired on fuel oil.

Pollutant¹	Emission Factor (lb/10³ gal)	Emissions (ton/yr)
Acenaphthene	2.11E-05	0.003
Acenaphthylene	2.53E-07	3.13E-05
Anthracene	1.22E-06	1.51E-04
Benzene	2.14E-04	0.027
Benzo(a)anthracene	4.01E-06	0.001
Benzo(b,k)fluoranthene	1.48E-06	1.83E-04
Benzo(g,h,i)perylene	2.26E-06	2.80E-04

Pollutant¹	Emission Factor (lb/10³ gal)	Emissions (ton/yr)
Fluoranthene	4.84E-06	0.001
Chrysene	2.38E-06	2.95E-04
Dibenzo(a,h)anthracene	1.67E-06	2.07E-04
Ethylbenzene	6.36E-05	0.008
Formaldehyde	3.30E-02	4.1
Fluorene	4.47E-06	0.001
Indo(1,2,3-cd)pyrene	2.14E-06	2.65E-04
Naphthalene	1.13E-03	0.14
Phenanthrene	1.05E-05	0.001
Pyrene	4.25E-06	0.001
Xylene	1.09E-04	0.014
1,1,1-Trichloroethane	2.36E-04	0.03
Toluene	6.20E-03	0.77

Notes:

- 1 Emission factors from AP-42, Table 1.3-9, "Emission Factors for Speciated Organic Compounds from Fuel Oil Combustion"
- 2 Based upon maximum firing rate of 99 MM BTU/hr for each boiler and 8,760 firing hours per boiler per year

As shown above, the estimated facility HAP emissions are lower than 10 tons/yr for any single HAP, and 25 ton/yr for any combination of HAPs. Therefore, the facility is not subject to Section 112 of the Clean Air Act or its implementing regulations.

BAAQMD Regulation 1-107

Because the facility has installed and operates a NO_x CEM between the gas turbine and the HRSG duct burner, they can determine the individual emissions from the turbine and duct burners even though they exhaust through a common stack. Therefore, District Regulation 1-107, Combination of Emissions does not apply.

CAM

No source at the facility is subject to 40 CFR 64, Compliance Assurance Monitoring, because the requirement only applies to abatement devices and the facility has none. The gas turbine is equipped with dry low-NO_x combustors and does not utilize steam or water injection to control NO_x emissions.

Changes to permit:

Section IV has been modified to say that SIP standards are now found on EPA's website and are not included as part of the permit.

The applicable provisions of Regulation 6 have been added to Table IV for the S-1, S-2, S-3, and S-4 Boilers.

The SIP version of Regulation 9, Rule 1, Section 301 has been deleted since the District version of the Rule has been approved and is now federally enforceable.

The applicable requirements of Subpart GG, Standards of Performance for Stationary Gas Turbines, as revised by EPA on 7/8/04, have been added to Table IV for S-6 Gas Turbine.

The applicable requirements of Regulation 1 have been updated since District Regulation 1 was amended on 8/28/99.

Tables IV-D and IV-E have been added for emergency standby engines.

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.”

Since the District has not determined that the facility is out of compliance with an applicable requirement, the schedule of compliance for this permit contains only sections 2-6-409.10.1 and 2-6-409.10.2.

The BAAQMD Compliance and Enforcement Division has conducted a review of compliance over the past year and has no records of compliance problems at this facility during the past year. The compliance report is contained in Appendix A of this permit evaluation and statement of basis.

Changes to permit:

The phrase "on a timely basis" has been added to the Schedule of Compliance so that the wording follows the federal requirement more closely.

VI. Permit Conditions

During the Title V permit development, the District has reviewed the existing permit conditions, deleted the obsolete conditions, and, as appropriate, revised the conditions for clarity and enforceability. Each permit condition is identified with a unique numerical identifier, up to five digits.

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

All 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.

The existing permit conditions are derived from previously issued District Authorities to Construct (A/C) or Permits to Operate (P/O). 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.

Conditions that are obsolete or that have no regulatory basis have been deleted from the permit.

Conditions have also been deleted due to the following:

- Redundancy in record-keeping requirements.
- Redundancy in other conditions, regulations and rules.
- The condition has been superseded by other regulations and rules.
- The equipment has been taken out of service or is exempt.
- The event has already occurred (i.e. initial or start-up source tests).

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.

Changes to permit:

Condition 2878, part 4 (b) has been amended to reflect the installation of the required CEMs.

Condition 2878, part 11 has been amended to reflect the installation of the required fuel meter.

Condition 2878, part 18 has been added insure that to insure that the sulfur content of fuel oil in storage does not exceed applicable limits.

Condition 2878, part 16(b) that requires recordkeeping of therm use at S-6 Gas Turbine has been deleted since there is no applicable requirement limiting gas usage at S-6.

Condition 2878, part 16(c) that requires the retention of “appropriate records to verify compliance will all listed permit conditions” has been deleted since it is not specific and could result in conflicting interpretations of what records are required.

Condition 19698 has been added to the permit. These conditions apply to the S-10 and S-11 Standby Generator Diesel Engines.

Condition 21844 has been added to the permit. These conditions apply to the S-9 Turbine Starter Diesel Engine.

The permit evaluation for application 4663 (see appendix B) includes the original version of condition 19698. Because the S-9 diesel engine was incorrectly permitted as a standby engine when it is actually a “discretionary-use” engine that is used to start the gas turbine, condition 19698 has been revised to remove all references to S-9 as shown below. Condition 21844 was created and added to the permit to reflect the actual nature of operation of the S-9 diesel engine.

Condition #19698

Conditions for ~~S-9~~, S-10, & S-11

- 1) *The ~~S-9~~, S-10, and S-11 engines are subject to the requirements of Regulation 9, Rule 1 ("Sulfur Dioxide"), and the requirements of Regulation 6 ("Particulate and Visible Emissions"). These engines may be subject to other District regulations, including Regulation 9, Rule 8 ("NOx and CO from Stationary Internal Combustion Engines") in the future. [basis: Regulation 9, Rule 1; Regulation 6]*
- 2) *The owner/operator of ~~S-9~~, S-10, and S-11 engines shall operate those engines for no more than 100 hours EACH in any consecutive 12-month period for the purpose of reliability-related activities as defined in Regulation 9-8-232. [basis: Regulation 9-8-330.2]*
- 3) *The owner/operator of ~~S-9~~, S-10, and S-11 engines may operate those engines for an unlimited amount of time for the purpose of emergency use as defined in Regulation 9-8-231. [basis: Regulation 9-8-330.1]*
- 4) *The owner/operator of the S-10 and S-11 engines shall not operate the engines unless the liquid fuel burned contains less than 0.5% sulfur by weight. (Basis: Regulation 9-1-304)*
- 5) *To demonstrate compliance with part 4, the owner/operator of the S-10 and S-11 engines shall obtain a certification of the fuel sulfur content from the supplier for each fuel delivery. (Basis: Regulation 9-1-304)*

- 64) *The owner/operator shall equip each of the ~~S-9~~, S-10, and S-11 diesel engines with a non-resettable totalizing counter which records hours of operation for each engine. [basis: Recordkeeping Regulation 9-8-530]*
- 75) *The owner/operator shall maintain the following monthly records in a District-approved log for at least 2 years and shall ~~be~~ make those records available to the District upon request:*
- a) *hours of operation for reliability-related activities for ~~S-9~~, S-10, and S-11 on an individual basis and a description of the activity*
 - b) *hours of operation under emergency conditions for ~~S-9~~, S-10, and S-11 on an individual basis and a description of the nature of the emergency condition*
 - c) *fuel usage at ~~S-9~~, S-10, and S-11 on an individual basis*
[basis: Recordkeeping Regulation 9-8-530]

Condition #21844

For Source S-9 Turbine Starter Diesel Engine

1. *The S-9 engine is subject to the requirements of Regulation 9, Rule 1 ("Sulfur Dioxide"), and the requirements of Regulation 6 ("Particulate Matter and Visible Emissions"). (basis: Regulation 9, Rule 1; Regulation 6)*
2. *The owner/operator of S-9 engine shall operate the engine for no more than 200 hours in any consecutive 12-month period. (basis: cumulative increase)*
3. *The owner/operator shall equip S-9 diesel engine with a non-resettable totalizing counter that records hours of operation for each engine. (basis: Cumulative increase)*
4. *The owner/operator of the S-9 engine shall not operate the engines unless the liquid fuel burned contains less than 0.5% sulfur by weight. (Basis: Regulation 9-1-304)*
5. *To demonstrate compliance with part 4, the owner/operator of the S-9 engine shall obtain a certification of the fuel sulfur content from the supplier for each fuel delivery. (Basis: Regulation 9-1-304)*
6. *The owner/operator shall maintain monthly records of the hours of operation of the S-9 engine in a District-approved log for at least 5 years and shall make those records available to the District upon request. (basis: cumulative increase)*

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 District has reviewed all monitoring and has determined the existing monitoring is adequate with the following exceptions.

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.

These factors are the same as those historically applied by the District in developing monitoring for applicable requirements. It follows that, although Title V calls for a re-examination of all monitoring, there is a presumption that these factors have been appropriately balanced and incorporated in the District’s prior rule development and/or permit issuance. It is possible that, where a rule or permit requirement has historically had no monitoring associated with it, no monitoring may still be appropriate in the Title V permit if, for instance, there is little likelihood of a violation. Compliance behavior and associated costs of compliance are determined in part by the frequency and nature of associated monitoring requirements. As a result, the District will generally revise the nature or frequency of monitoring only when it can support a conclusion that existing monitoring is inadequate.

SO₂ Sources

# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1, S-2, S-3, & S-4 Boilers, S-6 Gas Turbine, S-8 HRSG Duct Burner, S-9 Turbine Starter Diesel Engine, S-10 & S-11 Standby Generator Diesel Engines	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-2, S-3, & S-4 Boilers, S-6 Gas Turbine, S-8 HRSG Duct Burner	BAAQMD 9-1-302	300 ppm (dry)	None

SO₂ Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1, S-2, S-3, & S-4 Boilers, S-9 Turbine Starter Diesel Engine, S-10 & S-11 Standby Generator Diesel Engines	BAAQMD 9-1-304	Sulfur content of fuel < 0.5% by weight	Fuel Sulfur Content Certification by supplier for each lot

SO₂ Discussion:

BAAQMD Regulation 9-1-301, 302

All facility combustion sources are subject to the SO₂ emission limitations in District Regulation 9, Rule 1, Sections 301 and 302 (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 these requirements for S-6 Gas Turbine and S-8 HRSG duct burner since they are fired exclusively on natural gas.

S-1 through S-4 Boilers are also expected to comply with these standards since the sulfur content of diesel fuel fired at these sources will be verified by vendor fuel certification.

S-9 Turbine Starter Diesel Engine and S-10 and S-11 Standby Generator Diesel Engines are expected to comply with Regulation 9-1-301 and 302 since the sulfur content of diesel fuel fired at the engines is limited by permit condition to 0.5% by weight. The sulfur content will be monitored by vendor fuel certification.

Per the CAPCOA/ARB/EPA Agreement of 6/24/99 entitled "Periodic Monitoring Recommendations For Generally Applicable Requirements in SIP", compliance with the diesel fuel sulfur content limit in BAAQMD Regulation 9-1-304 will be assured by certification of the sulfur content by the fuel supplier for each fuel delivery.

PM Sources

# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1, S-2, S-3, & S-4 Boilers, S-6 Gas Turbine, S-8 HRSG Duct Burner, S-10 Standby Generator Diesel Engine	BAAQMD Regulation 6-301	Ringelmann 1.0	None
S-9 Turbine Starter Diesel Engine & S-11 Standby Generator Diesel Engine	BAAQMD Regulation 6-303.1	Ringelmann 2.0	None
S-1, S-2, S-3, & S-4 Boilers, S-6 Gas Turbine, S-8 HRSG Duct Burner, S-9 Turbine Starter Diesel Engine, S-10 & S-11 Standby Generator Diesel Engines	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-6 Gas Turbine and S-8 HRSG Duct Burners 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 assure compliance with this limit for these sources.

Because the S-1, S-2, S-3, and S-4 Boilers were retrofitted with low-NOx burners in 1993, they are expected to operate in a very efficient manner with little potential for visible emissions when firing natural gas or fuel oil. Therefore, continuing compliance with Regulation 6-301 is expected.

Because the S-10 Standby Generator Diesel Engine will be fired exclusively on diesel fuel with a maximum sulfur content of 0.5% by weight, visible emissions are not expected. Therefore, S-10 is expected to continue to comply with Regulation 6-303.

Because S-9 Turbine Starter Diesel Engine and S-11 Standby Generator Diesel Engine will be fired exclusively on diesel fuel with a maximum sulfur content of 0.5% by weight, visible emissions are not expected. Therefore, S-9 and S-11 are expected to continue to comply with Regulation 6-303.1.

Moreover, the standby generators and starter engine operate infrequently, so additional monitoring is not warranted.

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. Section 310.3 limits filterable particulate emissions from "heat transfer operations" to 0.15 gr/dscf @ 6% O₂. These are the "grain loading" standards.

Particulate matter emission rates in excess of the grain loading standards are normally not associated with combustion of gaseous fuels, such as natural gas. Sources S-6 Gas Turbine and S-8 HRSG Duct Burner 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 assure compliance with this limit for these sources.

S-1, S-2, S-3, and S-4 Boilers:

The following potential to emit calculations are based on the following assumptions:

The maximum capacity of each boiler is 99 mm Btu/hr.

The maximum heat input to all four boilers combined is 1,980,000 therms/yr (198,000 mm Btu/yr, equivalent to 2000 hours for one boiler), in accordance with permit condition # BAAQMD Permit Condition Number 2878, parts 1e & 1f. The worst-case assumption is that one boiler would burn all 1,980,000 therms in one year.

The heat content of fuel oil is 140 mm Btu/Mgal.

The following AP-42 emission factors for combustion of fuel oil (worst-case):

PM: 2 lb/Mgal

The PM PTE for each boiler is calculated as follows:

$$\begin{aligned} \text{PM} &= (2 \text{ lb/Mgal})(198,000 \text{ MM BTU/yr})(\text{mgal}/140 \text{ MM BTU}) \\ &= 1.41 \text{ tons per year} \end{aligned}$$

Because the throughput limit assures that the PTE for PM is low, and because operation is intermittent, additional monitoring to assure compliance with these emission limits is

not justified and will not be required. Requiring the addition of CEMs or annual source tests would be onerous.

S-9 Turbine Starter Diesel Engine and S-10 and S-11 Standby Generator Diesel Engines:

The potential to emit calculations are based upon the following assumptions:

PM emission factors are supplied by the respective engine manufacturers:

- S-9: 260 g/hr
- S-10: 1.67 lb/hr
- S-11: 0.17 lb/hr

- Hours of operation: S-9: 200 hr/yr for turbine starting
- S-10, S-11: 100 hr/yr for reliability-related activities

$$\begin{aligned} \text{S-9: PM} &= (260 \text{ g/hr})(2.2 \text{ lb/1000 g})(200 \text{ hr/yr}) \\ &= 114 \text{ lb/yr} \end{aligned}$$

$$\begin{aligned} \text{S-10: PM} &= (1.67 \text{ lb/hr})(100 \text{ hr/yr}) \\ &= 167 \text{ lb/yr} \end{aligned}$$

$$\begin{aligned} \text{S-11: PM} &= (0.17 \text{ lb/hr})(100 \text{ hr/yr}) \\ &= 17 \text{ lb/yr} \end{aligned}$$

Because the potential to emit for PM for these sources is so low and the operation is intermittent, additional monitoring to assure compliance with the emission limits is not justified and will not be required. Requiring CEMs or annual source tests for these sources would be onerous.

NO_x Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1, S-2, S-3, & S-4 Boilers	BAAQMD Permit Condition 2878 part 1f	25 ppmv @ 3% O ₂ , dry, averaged over 3 hours	None
	PSD permit part IX, C, 2	25 ppm @ 3% O ₂ , 3-hr rolling average	None
	BAAQMD 9-7-301.1	30 ppmv @ 3% O ₂ , dry	None
	BAAQMD 9-7-302.1	40 ppmv @ 3% O ₂ , dry	None
	BAAQMD 9-7-303	Weighted average of 9-7-301.1 and 9-7-302.1	None
	BAAQMD 9-7-305.1	150 ppmv @ 3% O ₂ , dry	None
	BAAQMD 9-7-306.1	150 ppmv @ 3% O ₂ , dry	None

NO_x Discussion:

S-1, S-2, S-3, and S-4 Boilers:

The following potential to emit calculations are based on the following assumptions:

The maximum capacity of each boiler is 99 mm Btu/hr.

The maximum heat input to all four boilers combined is 1,980,000 therms/yr (198,000 mm Btu/yr, equivalent to 2000 hours for one boiler), in accordance with permit condition # BAAQMD Permit Condition Number 2878, parts 1e & 1f. The worst-case assumption is that one boiler would burn all 1,980,000 therms in one year.

Maximum NOx emission rate of 25 ppmv @ 3% O₂ per condition 2878, part 1e.

NOx emission factor is derived as follows:

$$(25 \text{ ppmvd})(20.95 - 0)/(20.95 - 3) = 29.18 \text{ ppmvd @ } 0\% \text{ O}_2$$

$$(29.18/10^6)(1 \text{ lbmol}/385.3 \text{ dscf})(46.01 \text{ lb NO}_2/\text{lbmol})(8600 \text{ dscf}/ \text{MM BTU}) = 0.03 \text{ lb}/ \text{MM BTU}$$

The NOx PTE for each boiler is calculated as follows:

$$\begin{aligned} \text{NOx} &= (0.03 \text{ lb}/\text{MM BTU})(198,000 \text{ MM BTU}/\text{yr}) \\ &= 5,940 \text{ lb}/\text{yr} \\ &= 3 \text{ tons per year} \end{aligned}$$

Because the throughput and emission concentration limits ensure that the NOx PTE is low, and because operation is intermittent (500 hr/yr per boiler), additional monitoring to assure compliance with the emission limits is not justified and will not be required. In this case, the addition of a CEM for NOx for these sources would be onerous.

CO Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1, S-2, S-3, & S-4 Boilers	BAAQMD Permit Condition 2878, part 1f	200 ppmv @ 3%O ₂ , dry, averaged over 3 hours	None
	BAAQMD 9-7-301.2	400 ppmv @ 3%O ₂ , dry	None
	BAAQMD 9-7-302.2	400 ppmv @ 3%O ₂ , dry	None
	BAAQMD 9-7-303	400 ppmv @ 3%O ₂ , dry	None
	BAAQMD 9-7-305.2	400 ppmv @ 3%O ₂ , dry	None
	BAAQMD 9-7-306.2	400 ppmv @ 3%O ₂ , dry	None

CO Discussion:

S-1, S-2, S-3, and S-4 Boilers:

The following potential to emit calculations are based on the following assumptions:

The maximum capacity of each boiler is 99 mm Btu/hr.

The maximum heat input to all four boilers combined is 1,980,000 therms/yr (198,000 mm Btu/yr, equivalent to 2000 hr/yr for one boiler), in accordance with permit condition # BAAQMD Permit Condition Number 2878, parts 1e & 1f. The worst-case assumption is that one boiler would burn all 1,980,000 therms in one year.

Heat content of diesel fuel: 140,000 BTU/gal

Maximum CO emission factor is taken from AP-42, chapter 1.3, Fuel Oil Combustion:

CO: 5 lb/10³ gallons

The CO PTE for each boiler is calculated as follows:

$$\begin{aligned}\text{CO} &= (5 \text{ lb}/10^3 \text{ gal})(198,000 \text{ MM BTU}/\text{yr})(\text{gal}/140,000 \text{ BTU}) \\ &= 7,071.4 \text{ lb}/\text{yr} \\ &= 3.5 \text{ tons per year}\end{aligned}$$

Because the fuel usage limit ensures that the CO PTE is low, and because operation is intermittent (500 hr/yr per boiler, average), additional monitoring to assure compliance with the emission limits is not justified and will not be required. In this case, the addition of a CEM for CO for these sources would be onerous.

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.

Changes to permit:

The test method citation for the SIP version of Regulation 6-301 has been deleted from Table VIII since the 6-301 has been approved.

The test method citation for Regulation 6-310.3 (heat transfer operations) has been added to Table VIII.

An alternate test method has been added for Regulations 6-310 and 6-310.3.

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 explaining that specific federally enforceable regulations and standards do not apply to a source or group of sources, or (2) A provision in a major facility review permit explaining that specific federally enforceable applicable requirements for monitoring, recordkeeping and/or reporting 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 original permit for this facility had the first and second types of permit shield. Due to changes in the NSPS for turbines, this permit no longer has the second type of shield.

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

A. Non-applicable Requirements

Pursuant to District Regulations 2-6-233 and 2-6-409.12, the federally enforceable regulations and/or standards cited in the following table[s] ~~are not applicable~~ do not apply to the source or group of sources identified at the top of the table[s]. Enforcement actions and litigation may not be initiated against the source or group of sources covered by this shield based on the regulatory and/or statutory provisions cited, as long as the reasons listed below remain valid for the source or group of sources covered by this shield.

**Table IX-A-1
S-1, S-2, S-3, & S-4, Boilers**

Citation	Title or Description
NSPS Subpart D	Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction Is Commenced After August 17, 1971 (Boiler capacities below 250 million btu/hr)
NSPS Subpart Da	Standards of Performance for Electric Utility Steam Generating Units for Which Construction Is Commenced After September 18, 1978 (Boilers not built for the purposes of generating electricity)
NSPS Subpart Db	Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units (Boiler capacities below 100 MMbtu)
NSPS Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (Boilers built before 6/9/1989 and not modified or reconstructed since 6/9/1989)
40 CFR 63, subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters (Facility is not a major source of HAP emissions)
40 CFR Part 64	Compliance Assurance Monitoring (Sources do not utilize abatement devices)
40 CFR Part 72	Acid Rain Permit Program (Qualifying power production facility)
BAAQMD 1-520	Opacity, NO _x , and CO ₂ or O ₂ Monitoring for steam generators over 250 MMbtu/hr (Boiler capacities below 250 million btu/hr)
BAAQMD 6-302	Opacity Limitation (District has not required monitoring)
BAAQMD 9-1-501	Area Monitoring Requirements (District has not required monitoring)
BAAQMD 9-1-502	Emission Monitoring Requirements (District has not required monitoring)

**Table IX-A-2
S-6, Gas Turbine**

Citation	Title or Description
40 CFR 63, subpart YYYY	National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines (Facility is not a major source of HAP emissions)
40 CFR Part 64	Compliance Assurance Monitoring (Source does not utilize an abatement device)
40 CFR Part 72	Acid Rain Permit Program (Qualifying power production facility)

**Table IX-A-2
S-6, Gas Turbine**

Citation	Title or Description
BAAQMD 1-520.1	Opacity Monitoring for steam generators over 250 MMbtu/hr (Requirement does not apply to turbines)
BAAQMD 6-302	Opacity Limitation (District has not required monitoring)
BAAQMD 9-1-501	Area Monitoring Requirements (District has not required monitoring)
BAAQMD 9-1-502	Emission Monitoring Requirements (District has not required monitoring)

**Table IX-A-3
S-8, Duct Burner**

Citation	Title or Description
40 CFR Part 64	Compliance Assurance Monitoring (Source does not utilize an abatement device)
40 CFR Part 72	Acid Rain Permit Program (Qualifying power production facility)
BAAQMD 1-520.1	Opacity, NOx, and CO ₂ or O ₂ Monitoring for steam generators over 250 mmbtu/hr (Boiler capacities below 250 million btu/hr)
BAAQMD 6-302	Opacity Limitation (District has not required monitoring)
BAAQMD 9-1-501	Area Monitoring Requirements (District has not required monitoring)
BAAQMD 9-1-502	Emission Monitoring Requirements (Duct burner does not burn liquid or solid fuels)

B. Subsumed requirements

The requirements in the table below have been deleted from the permit since the NSPS Subpart GG has been modified to allow the operator to demonstrate that the gaseous fuel burned meets the definition of natural gas rather than monitor the total sulfur content of the fuel.

**Table VIII-B-1
S-6, Gas Turbine**

Subsumed Requirement Citation	Title or Description	Streamlined Requirements	Title or Description
40 CFR 60.334 (b)(2)	Fuel Sulfur and Nitrogen Content (natural gas)	Title V Condition 14501	Requirement for use of PUC quality natural gas
40 CFR 60.334 (c)(2)	Reports of periods of excess emissions, SO ₂ , natural gas	Title V Condition 14501	Requirement for use of PUC quality natural gas

X. Revision History

A revision history section was added.

XI. Glossary

The glossary was updated.

XII. Appendix A - State Implementation Plan

Changes to permit:

This section has been deleted. The address for EPA's website is now found in Sections III and IV.

D. Alternate Operating Scenarios:

No alternate operating scenario has been requested for this facility.

E. Compliance Status:

An office memorandum dated November 3, 2004 from the Director of Compliance and Enforcement to the Director of Permit Services presents a review of the compliance record of Cardinal Cogen, Inc. (Site # A1629). The Compliance and Enforcement Division staff has reviewed the records for Cardinal Cogen, Inc. for the period of September 30, 2003 through September 30, 2004. This review was initiated as part of the District evaluation of an application by Cardinal Cogen, Inc. for a Title V permit. During the period subject to review, activities known to the District include:

- There were no Notices of Violation issued during this review period.
- The District did not receive any alleged complaints.

- The facility is not operating under a Variance or an Order of Abatement from the District Board.
- Cardinal Cogen, Inc. requested breakdown relief for an indicated NO_x excess that lasted 1 hour. District staff reviewed the indicated excess and it was determined not to be in violation.

The owner certified that all equipment was operating in compliance on November 8, 2002. No non-compliance issues have been identified to date.

F. Differences between the Application and the Proposed Permit:

The Title V renewal permit application was submitted on November 12, 2002. This version is the basis for constructing the proposed renewal Title V permit. Revisions were made to the application 6648 as a result of changes at the facility that were made pursuant to Permit Application 4663. Changes to the sources include the following:

S-9 Turbine Starter Diesel Engine and S-10 and S-11 Standby Generator Diesel Engines are no longer exempt from permit requirements as a result of Regulation amendments. The renewal Title V permit therefore includes the applicable permit conditions and corresponding changes to the part IV and part VII tables.

H:\pub_data\TitleVPermitAppls\A1629\Renew-6648\1.0Workingdocs\A1629SOB.doc

APPENDIX A
BAAQMD COMPLIANCE REPORT

APPENDIX B
Application 4663 Permit Evaluation

**Cardinal Cogen; Plant #1629
Building 14-105, Stanford University, Stanford CA 94305**

BACKGROUND

Cardinal Cogen has applied for permits to operate for 3 diesel engines (S-9, S-10, and S-11) that are used to power standby generators. These engines were put into service prior to May 17, 2000. The engines are considered loss of exemption sources. Therefore, these sources are not subject to New Source Review requirements (BACT, cumulative increase, offsets, toxic review, or public notification requirements triggered by proximity to a K-12 school.)

In accordance with current District policy, the operation of each engine will be limited to no more than 100 hr/yr for "discretionary use" (maintenance and testing). The operation of the engines to provide power during emergencies will not be limited.

CRITERIA-POLLUTANT EMISSION SUMMARY

Annual Average Project Emissions Increase:

Pollutant	lb/day	ton/yr
POC	0	0
NO _x	0	0
SO ₂	0	0
CO	0	0
PM ₁₀	0	0
NPOC	0	0

EMISSION CALCULATIONS

S-9 Generator Set, Detroit Diesel Engine; installed 12/87

Max rating: 750 bhp

Emission factors supplied by engine manufacturer

PM₁₀ 260 g/hr
NO_x 16,820 g/hr
CO 1,170 g/hr
POC 268 g/hr
SO₂ 1,340 g/hr

$$\begin{aligned} \text{PM}_{10} &= (260 \text{ g/hr})(2.2 \text{ lb/1000 g})(100 \text{ hr/yr}) \\ &= \mathbf{57.2 \text{ lb/yr}} \end{aligned}$$

$$\begin{aligned} \text{NO}_x &= (1,280 \text{ g/hr})(2.2 \text{ lb/1000 g})(100 \text{ hr/yr}) \\ &= \mathbf{281.6 \text{ lb/yr}} \end{aligned}$$

$$\begin{aligned}\text{CO} &= (1,170 \text{ g/hr})(2.2 \text{ lb/1000 g})(100 \text{ hr/yr}) \\ &= \mathbf{257.4 \text{ lb/yr}}\end{aligned}$$

$$\begin{aligned}\text{POC} &= (268 \text{ g/hr})(2.2 \text{ lb/1000 g})(100 \text{ hr/yr}) \\ &= \mathbf{59 \text{ lb/yr}}\end{aligned}$$

$$\begin{aligned}\text{SO}_2 &= (1,340 \text{ g/hr})(2.2 \text{ lb/1000 g})(100 \text{ hr/yr}) \\ &= \mathbf{294.8 \text{ lb/yr}}\end{aligned}$$

S-10 Generator Set, Peterson Diesel Engine; installed 10/97

Max rating: 1818 bhp
Maximum fuel consumption rate:
Emission factors supplied by engine manufacturer

PM ₁₀	1.67 lb/hr
NO _x	39.7 lb/hr
CO	11.26 lb/hr
POC	0.57 lb/hr
SO ₂	1.84 lb/hr (at 0.15 wt% S, max. fuel consumption rate of 80 gal/hr)

$$(80 \text{ gal/hr})(0.920)(8.34 \text{ lb/gal})(0.0015 \text{ S})(32 \text{ lb-mol SO}_2/16 \text{ lb-mol S}) = 1.84 \text{ lb/hr}$$

$$\begin{aligned}\text{PM}_{10} &= (1.67 \text{ lb/hr})(100 \text{ hr/yr}) \\ &= \mathbf{167 \text{ lb/yr}}\end{aligned}$$

$$\begin{aligned}\text{NO}_x &= (39.7 \text{ lb/hr})(100 \text{ hr/yr}) \\ &= \mathbf{3,970 \text{ lb/yr}}\end{aligned}$$

$$\begin{aligned}\text{CO} &= (11.26 \text{ lb/hr})(100 \text{ hr/yr}) \\ &= \mathbf{1,260 \text{ lb/yr}}\end{aligned}$$

$$\begin{aligned}\text{POC} &= (0.57 \text{ lb/hr})(100 \text{ hr/yr}) \\ &= \mathbf{57 \text{ lb/yr}}\end{aligned}$$

$$\begin{aligned}\text{SO}_2 &= (1.84 \text{ lb/hr})(100 \text{ hr/yr}) \\ &= \mathbf{184 \text{ lb/yr}}\end{aligned}$$

S-11 Generator Set, Peterson Diesel Engine; installed 3/98

Max rating: 349 bhp
Emission factors supplied by engine manufacturer

PM ₁₀	0.17 lb/hr
NO _x	4.11 lb/hr
CO	1 lb/hr

POC 0.15 lb/hr
 SO₂ 0.42 lb/hr (at 0.15 wt% S, max. fuel consumption rate of 18.1 gal/hr)

$$(18.1 \text{ gal/hr})(0.920)(8.34 \text{ lb/gal})(0.0015 \text{ S})(32 \text{ lb-mol SO}_2/16 \text{ lb-mol S}) = 0.42 \text{ lb/hr}$$

$$\text{PM}_{10} = (0.17 \text{ lb/hr})(100 \text{ hr/yr}) \\ = \mathbf{17 \text{ lb/yr}}$$

$$\text{NO}_x = (4.11 \text{ lb/hr})(100 \text{ hr/yr}) \\ = \mathbf{411 \text{ lb/yr}}$$

$$\text{CO} = (1 \text{ lb/hr})(100 \text{ hr/yr}) \\ = \mathbf{100 \text{ lb/yr}}$$

$$\text{POC} = (0.15 \text{ lb/hr})(100 \text{ hr/yr}) \\ = \mathbf{15 \text{ lb/yr}}$$

$$\text{SO}_2 = (0.42 \text{ lb/hr})(100 \text{ hr/yr}) \\ = \mathbf{42 \text{ lb/yr}}$$

FACILITY CUMULATIVE INCREASE (since April 5, 1991)

Not applicable

TOXIC RISK SCREENING ANALYSIS

Not applicable

BACT/OFFSET ANALYSIS

Not applicable

FEE SUMMARY

Source	Fee Schedule	Filing Fee	Initial Fee	Late Fee	Permit to Operate Fee	Source Sub-Total
S-9 Standby Generator Set, Detroit Diesel	B	\$0.00	\$0.00	\$0.00	\$132.00	\$132.00
S-10 Standby Generator Set, Peterson	B	\$0.00	\$0.00	\$0.00	\$132.00	\$132.00
S-11 Standby Generator Set, Peterson	B	\$0.00	\$0.00	\$0.00	\$132.00	\$132.00
					Grand Total	\$396.00
					Amount Paid	\$396.00
					Log Number	H333X

STATEMENT OF COMPLIANCE

S-9, S-10, and S-11 Standby Diesel engines are fired with liquid fuel and therefore are not subject to Regulation 9, Rule 8 ("NO_x and CO from Stationary Internal Combustion Engines"). The engines are subject to the SO₂ limitations of 9-1-301 (ground-level concentration) and 9-1-304 (0.5% by weight in fuel). Compliance with both of these requirements is expected since diesel fuel with a 0.05% by weight sulfur is mandated for use in California. Like all sources, the engines are subject to Regulation 6 ("Particulate and Visible Emissions"). These engines are not expected to produce visible emissions or fallout in violation of this regulation and they will be assumed to be in compliance with Regulation 6 pending a regular inspection.

This project is considered to be **ministerial** under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors as outlined in the District Permit Handbook (**chapter 2.3, Internal Combustion Engines**) and therefore is not considered discretionary as defined by CEQA.

The public notification requirements of Regulation 2-1-412 are applicable only to the issuance of Authorities to Construct and Permits to Operate for new and modified sources and do not apply to these "loss of exclusion" sources.

A Toxics Risk Screening Analysis is not required for these "loss of exclusion/exemption" sources.

BACT, Offsets, PSD, NSPS, and NESHAPS do not apply to this project.

PERMIT CONDITIONS

Conditions for S-9, S-10, & S-11

- 1) **The S-9, S-10, and S-11 engines are subject to the requirements of Regulation 9, Rule 1 ("Sulfur Dioxide"), and the requirements of Regulation 6 ("Particulate and Visible Emissions"). These engines may be subject to other District regulations, including Regulation 9, Rule 8 ("NO_x and CO from Stationary Internal Combustion Engines") in the future. [basis: Regulation 9, Rule 1; Regulation 6]**
- 2) **The owner/operator of S-9, S-10, and S-11 engines shall operate those engines for no more than 100 hours EACH in any consecutive 12 month period for the purpose of reliability-related activities as defined in Regulation 9-8-232. [basis: Regulation 9-8-330.2]**
- 3) **The owner/operator of S-9, S-10, and S-11 engines may operate those engines for an unlimited amount of time for the purpose of emergency use as defined in Regulation 9-8-231. [basis: Regulation 9-8-330.1]**
- 4) **The owner/operator shall equip each of the S-9, S-10, and S-11 diesel engines with a non-resettable totalizing counter which records hours of operation for each engine. [basis: Recordkeeping]**

- 5) **The owner/operator shall maintain the following monthly records in a District-approved log for at least 2 years and shall be make those records available to the District upon request:**
- a) **hours of operation for reliability-related activities for S-9, S-10, and S-11 on an individual basis and a description of the activity**
 - b) **hours of operation under emergency conditions for S-9, S-10, and S-11 on an individual basis and a description of the nature of the emergency condition**
 - c) **fuel usage at S-9, S-10, and S-11 on an individual basis**
[basis: Recordkeeping]

RECOMMENDATION

Issue a **conditional Permit to Operate** for the following sources:

S-9 Standby Generator Set, Detroit Diesel Model 7123-7300 Diesel Engine, 750 bhp, Turbocharged

S-10 Standby Generator Set, Peterson Model PWMKT13 Diesel Engine, 1818 bhp

S-11 Standby Generator Set, Peterson Model PWMKT03 Diesel Engine, 349 bhp

EXEMPT SOURCES

None

By: _____
Air Quality Engineer II

_____ **Date**

APPENDIX C
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