

**Bay Area Air Quality Management District**

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

**MAJOR FACILITY REVIEW PERMIT**

**for  
City Of Santa Clara, Electric Department  
Facility #A0621**

**Facility Address:**  
524 Robert Avenue  
Santa Clara, CA 95050

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Application Engineer: Robert Hull  
Site Engineer: Robert Hull

Application: 10664

## TABLE OF CONTENTS

A.	Background .....	3
B.	Facility Description .....	3
C.	Permit Content.....	4
I.	Standard Conditions.....	4
II.	Equipment .....	5
III.	Generally Applicable Requirements .....	5
IV.	Source-Specific Applicable Requirements .....	6
V.	Schedule of Compliance .....	9
VI.	Permit Conditions .....	9
VII.	Applicable Limits and Compliance Monitoring Requirements .....	10
VIII.	Test Methods.....	14
D.	Alternate Operating Scenario: .....	15
E.	Compliance Status:.....	15
F.	Differences Between the Application and the Proposed Permit: .....	16

## **Title V Statement of Basis**

### **A. Background**

The City of Santa Clara, Electric Department is a major facility subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Title 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, "Major Facility Review". It is a major facility because it has the "potential to emit," (PTE) of more than 100 tons per year of a regulated air pollutant. PTE is defined in BAAQMD Rule 2-6-218.

Major Facility Operating permits (Title V permits) must meet federal specifications, which are set forth in 40 CFR Part 70 and incorporated 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 for that facility. 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. Some of these requirements are federally enforceable and others are not 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 A0621.

This facility received its initial Title V permit on March 22, 2000. This application for permit renewal was submitted by the City of Santa Clara on August 25, 2004. The current permit expires on February 28, 2005, but all of its provisions will remain in effect until the District takes final action on the permit renewal. The Facility has not added any equipment since the original issuance nor has it proposed any changes to the permit. However, the District has updated the permit to incorporate current BAAQMD regulations, requirements and standards and if applicable, has corrected errors the previous permit. Deletions in the permit are clearly shown in strikeout format and new language is underlined.

### **B. Facility Description**

The primary business of the City of Santa Clara, Electric Department is the production of steam and electricity at the Cogeneration Plant Facility. The Facility consists of two Allison 501-KB Combustion Turbines (S-1, S-2) used to drive two 3-phase 3.5 MW electric generators. Waste heat from the turbines is supplied to two Heat Recovery Steam Generators, the steam from which is sold to an adjoining industrial customer. The Supplemental Duct Burners (S-3, S-4) provide additional steam when needed. The Facility has not had a significant increase or decrease in its emissions since issuance of the initial Title V permit.

### **C. Permit Content**

The permit includes a section entitled Permit Content, which contains eight sections, listed by roman numeral, that set forth the permit's conditions, requirements and standards. A summary of the legal and factual basis for the permit's contents follows. The summary discusses each of the permit's sections in the same order as they are presented in the permit. Changes to the standard permit text have been made since the initial Title V Permit for this site was issued. These changes are reflected in the new proposed permit in strikeout/underline format.

#### **I. Standard Conditions**

This section contains administrative requirements and conditions that apply to all permitted facilities. If the Facility must also comply with Title IV (Acid Rain) requirements for certain fossil-fuel fired electrical generating facilities or with the accidental release (40 CFR § 68) programs, this Section will include a standard condition pertaining to these programs also. Many of the standards 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, "General Provisions", and Regulation 2, "Permits".

#### Changes to permit:

- The dates of adoption and approval of rules in Standard Condition 1.A have been updated.
- The following language was added to Standard Condition I.B: "If the permit renewal has not been issued by [ ], but a complete application for renewal has been submitted in accordance with the above deadlines, the existing permit will continue in force until the District takes final action on the renewal application." This is the "application shield," set forth in BAAQMD Regulation 2-6-407.
- Standard Condition I.B.11, which requires the responsible official to certify all documents submitted, was added to conform to the most recent version of Regulation 2, Rule 6.
- Standard Condition I.E.1 requiring the permit holder to provide any information, records, and reports requested or specified by the APCO, was added because it was inadvertently omitted in the initial permit.
- The reference to Regulation 3 "Fees" was removed from the regulatory basis in Standard Conditions E "Records" and F "Monitoring Reports". BAAQMD Regulation 3 does not form a fundamental basis for these requirements.
- The text for the "Monitoring Reports" section in Standard Conditions I.F was revised for uniformity with the current standard text.
- Standard Condition I.H was modified to conform to the current standard.
- Standard Condition I.J has been added to clarify that the capacity limits prescribed in Table II-A are enforceable limits.

## **II. Equipment**

This section of the permit lists all of the Facility's permitted and significant sources. Each source is identified by an S and a number (e.g., S-24).

Permitted sources are those sources that require a BAAQMD operating permit pursuant to BAAQMD Rule 2-1-302. The Facility has four permitted sources.

BAAQMD Rule 2-6-239 defines "significant sources" as those sources that have a PTE more than 2 tons per year of a "regulated air pollutant," as defined in BAAQMD Rule 2-6-222, or 400 pounds per year of a "hazardous air pollutant," as defined in BAAQMD Rule 2-6-210. This facility has no significant sources that are not otherwise permitted.

The Equipment Section is part of the facility description. This Section contains information necessary for applicability determinations, such as fuel types and contents or sizes of tanks. 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 BAAQMD Regulation 2-1-403. An exceedence of any of these capacities is a violation of BAAQMD Regulations.

### Changes to permit:

Standard text has been updated to clarify that the capacity limits prescribed in Table II-A are enforceable limits.

## **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, this Section includes standards that apply to sources that are insignificant or that do not require a permit to operate at a facility (e.g., refrigeration units that use more than 50 pounds of an ozone-depleting compound) are placed in this section.

### 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 to add rules and requirements to conform to the current District standard. In addition, generally applicable requirements that were excluded inadvertently in the initial Title V permit were added. For example, the current BAAQMD version of Regulation 8, Rule 16 was added because the facility may engage in solvent cleaning operations that are subject to these requirements but are not included as permitted sources in the Title V permit. The Note concerning the differences between BAAQMD rules and the SIP rules has been revised to clarify the permit holder's compliance obligations under both. The following rules and standards were added to Table III:
  - 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
  - BAAQMD Regulation 8, Rule 2, Miscellaneous Operations
  - BAAQMD Regulation 8, Rule 16, Solvent Cleaning 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
  - BAAQMD Regulation 11, Rule 1, Lead
  - SIP Regulation 11, Rule 1, Lead
  - SIP Regulation 12, Rule 4, Sandblasting
  - 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 A, National Emission Standards for Hazardous Air Pollutants – General Provisions
- 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:

1. District Rules
2. 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.

3. Other District requirements, such as the Manual of Procedures, as appropriate.
4. Federal requirements (other than SIP provisions)
5. BAAQMD permit conditions. The text of BAAQMD permit conditions is found in Section VI of the permit.
6. 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 each source. 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**

#### Combined Emissions

Exhaust gases from the Gas Turbines S-1 and S-2 are combined with those from the Duct Burners S-3 and S-4 (e.g. S-1/S-3 and S-2/S-4) and cannot be separated for the purpose of determining compliance with individual emissions limits. In accordance with BAAQMD Regulation 1-107, such combined emissions shall be subject to the most stringent applicable limitations and requirements. As a result of this determination, the applicable requirements for the Duct Burners are largely the same as those for the Gas Turbines.

#### Correction of NSPS NO<sub>x</sub> Limit

The NO<sub>x</sub> emissions limit as required by 40 CFR 60.332(a)(2) was found to be in error in the initial Title V permit. The limit was given as 141 ppmv @ 15% O<sub>2</sub> (dry) in the initial permit, but the correct limit was 150 ppmv @ 15% O<sub>2</sub> (dry). This NO<sub>x</sub> limit (STD) is determined by the following equation:

$$\text{STD} = 0.0150 \frac{(14.4)}{Y} = \text{NO}_x \text{ \% by volume @ 15\% excess oxygen (dry)}$$

where:

Y = manufacturer's rated heat rate at manufacturer's rated peak load (kilojoules per watt-hour). The value of Y shall not exceed 14.4 kilojoules per watt-hour.

The Gas Turbines S-1 and S-2 each have a rated heat input of 55.1 MMBTU/hr (58,086,420 kilojoules/hr) and a rated peak load of 3,800,000 watts. Therefore, for S-1 and S-2, Y = 15.29 kilojoules per watt-hour. Since the actual value of Y exceeds 14.4, the default value of 14.4 must be used. STD then equals 0.0150 % (equivalent to 150 ppmv) @ 15% O<sub>2</sub> (dry). In the initial permit, the actual value of Y was used to determine STD.

#### Acid Rain

In accordance with 40 CFR 72.6 (b)(2) the facility is not subject to the requirements of 40 CFR 72 “Acid Rain Program” because the power generation units commenced commercial operation prior to November 15, 1990 and they have nameplate capacities below 25Mwe.

NESHAP for Stationary Combustion Turbines

The Gas Turbines S-1 and S-2 are not subject to 40 CFR 63 Subpart YYYYY “National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines” because they are not a major source of hazardous air pollutants (HAPs).

40 CFR 64, Compliance Assurance Monitoring (CAM)

The applicability of CAM must be considered because S-1 and S-2, Turbines, have water injection for NOx control, which is considered a control device by the regulation, and the turbines also have federally enforceable NOx limits. The standard applies for each source that has a pre-control potential to emit that is higher than the major source threshold, which is 100 tons per year for NOx in the Bay Area. The potential to emit for each turbine is less than the threshold as shown in the calculation below. The turbines have a capacity of 55.1 MMbtu/hr. The uncontrolled emission factor is 0.32 lb NOx/MMbtu, from Table 3.1.1 in AP-42 Chapter 3.1. The turbines are allowed to run 8760 hours per year.

$$55.1 \text{ MMbtu/hr} \times 8760 \text{ hr/yr} \times 0.32 \text{ lb NOx/MMbtu} \times 1 \text{ ton/2000 lb} = 77.2 \text{ ton/yr}$$

Since the uncontrolled emissions of NOx are less than 77.2 tons/yr at each turbine, the turbines are not subject to CAM.

Changes to permit:

- The Applicable Requirements Tables IV-A and IV-B for the Gas Turbines and Duct Burners respectively, were combined into a single applicable requirements table (Table IV-A).
- The applicable parametric monitoring requirements from BAAQMD Regulation 1 and SIP Regulation were added to Table IV-A, because parameter monitoring, including fuel consumption for the Gas Turbines and Duct Burners and injected water-to-fuel ratio for the Gas Turbines, is required for this equipment.
- BAAQMD Regulation 6-401 was removed as an applicable requirement for the Gas Turbines and Duct Burners because it does not apply to gas fired heat transfer operations.
- BAAQMD Regulation 9-9-501 was removed because it only applies to Gas Turbines with a rated output of 10.0 MW or higher. The Gas Turbines S-1 and S-2 each have rated outputs of 3.8 MW.
- The requirements of 40 CFR 60 Subpart GG in Table IV-A were updated to reflect recent changes (effective July 8, 2004). Of particular note is the removal of the requirement to periodically monitor the sulfur and nitrogen content of the fuel fired in the Gas Turbines (formerly 60.334(b)). In the revised version of Subpart GG, Part 60.334 (h)(3) allows the owner/operator to elect not to monitor fuel sulfur content if “natural gas” is combusted in the turbine. Furthermore, fuel nitrogen monitoring is not required unless the owner/operator claims an allowance for fuel bound nitrogen (ref. 60.334 (h)(2)). Since the Gas Turbines S-1 and S-2 are required by federally enforceable permit conditions to fire only “California Public Utilities Commission (PUC) quality natural gas” and there is



no allowance taken for fuel bound nitrogen for NOx compliance, fuel sulfur and nitrogen content monitoring will no longer be required.

#### **V. Schedule of Compliance**

All major facility review permits must include a schedule of compliance. BAAQMD Rule 2-6-409.10 requires the schedule of compliance to contain 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.”

Based on available information, the District has determined that the facility is in compliance with all applicable requirements. Therefore, the permit’s schedule of compliance contains the provisions set forth in Regulations 2-6-409.10.1 and 2-6-409.10.2 only.

#### Changes to permit:

A minor change was made to this section to reflect the standard text used by the District.

#### **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. Subject to consideration of comments received, the final permit will include all underlined language. The struck language will have been deleted.

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 Major Facility Review permit

renewal, permit conditions may be revised, in accordance with the procedures set forth 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.

Changes to permit:

Minor changes were made to the permit conditions' text for clarity.

**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 imposes monitoring requirements that are necessary to assure the facilities meet their applicable emissions limits. This District establishes the monitoring requirements for facilities' initial permits and renewal permits based on a balancing of several different factors including, but not limited to: 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.

As noted above, evaluation of this permit renewal's monitoring requirements is based on the same factors that were 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.

The following requirements in the Title V permit do not currently require monitoring:

**Particulate Sources**

<b>S# &amp; Description</b>	<b>Emission Limit Citation</b>	<b>Federally Enforceable Emission Limit</b>	<b>Monitoring</b>
<b>GAS TURBINES W/WATER INJECTION: S1, S2</b>	BAAQMD Regulation 6-301	Ringelmann 1.0	None
	BAAQMD Regulation 6-310	0.15 gr/dscf @ 6% O2	None
<b>DUCT BURNERS: S3, S4</b>	BAAQMD Regulation 6-301	Ringelmann 1.0	None
	BAAQMD Regulation 6-310	0.15 gr/dscf @ 6% O2	None

**PM Discussion:**

**S1, S2: Gas Turbines; 55.1 MMBTU/hr, Natural Gas Fired**

The Gas Turbines S1 and S2 are required by a federally enforceable permit condition to fire only natural gas except during periods of PG&E curtailment. Because visible emissions are not normally associated with proper natural gas combustion, periodic monitoring for Ringelmann limits would not be appropriate for the turbines.

BAAQMD Regulation 6-310.3 limits PM emissions from “heat transfer operations” to 0.15 gr/dscf @ 6% O2. This compares to a PM10 factor of 0.042 lb/MMBTU from AP-42 Table 3.1-2 “Emission Factors For Large Uncontrolled Gas Turbines”. For a typical natural gas fuel with a gross heating value of 1000 BTU/scf, 0.15 gr/dscf @ 6% O2 can be converted to lb/MMscf (natural gas fired) as follows:

From 40 CFR 60, Appendix A, Method 19, the stoichiometric dry natural gas combustion factor of 8.710 dscf (combustion products)/scf (natural gas) can be derived from Table 19-1. At 6% excess O<sub>2</sub>, this factor becomes:

$$8.710 \times [21\% / (21\% - 6\%)] = 12.194 \text{ dscf (combustion.products)/scf (natural gas(n.g.))}$$

Therefore, the conversion of 0.15 gr/dscf @ 6% O<sub>2</sub> to lb/MMscf (n.g.) is:

$$(12.194 \text{ dscf/scf-ng}) \times (0.15 \text{ gr/dscf}) \times (1\text{ lb}/7000 \text{ gr}) \times (1,000,000 \text{ scf-ng/MMscf-ng})$$

$$= 261.3 \text{ lb/MMscf natural gas (0.261 lb/MMBTU)}$$

Since this factor is so far above the AP-42 factor of 0.042 lb/MMBTU, the addition of periodic monitoring to demonstrate compliance with this limit would not be appropriate.

**S3, S4: Duct Burners; 20 MMBTU/hr, Natural Gas Fired**

The case for not monitoring particulate emissions from the duct burners is the same as discussed for the Gas Turbines; natural gas combustion does not produce visible

emissions, and the AP-42 emission factor is far below the Regulation 6-310.3 standard. EPA AP-42 Table 1.4-1 “Emission Factors For Particulate Matter (PM) From Natural Gas Combustion” lists a PM factor of 6.2 lb/MMscf (natural gas) for small industrial boilers (analogous to duct burners). This is well below the converted Regulation 6-310.3 standard of 261.3 lb/MMscf (natural gas).

**SO2 Sources**

<b>S# &amp; Description</b>	<b>Emission Limit Citation</b>	<b>Federally Enforceable Emission Limit</b>	<b>Monitoring</b>
<b>GAS TURBINES W/WATER INJECTION: S1, S2</b>	BAAQMD 9-1-301	Ground level concentrations: 0.5 ppm for 3 consecutive minutes, 0.25 ppm averaged over 60 consecutive minutes, 0.05 ppm averaged over 24 hours	None
	BAAQMD 9-1-302	300 ppm (dry) general emission limitation	None
	40 CFR 60 Subpart GG 60.333 (b)	0.8% (wt) fuel sulfur content	None
<b>DUCT BURNERS: S3, S4</b>	BAAQMD Regulation 9-1-301	Ground level concentrations: 0.5 ppm for 3 consecutive minutes, 0.25 ppm averaged over 60 consecutive minutes, 0.05 ppm averaged over 24 hours	None
	BAAQMD 9-1-302	300 ppm (dry) general emission limitation	None

**SO2 Discussion:**

**S1, S2: Gas Turbines; 55.1 MMBTU/hr, Natural Gas Fired**

BAAQMD Condition #14194, part 1 requires PUC grade natural gas to be used at all combustion sources at the facility. PUC standard natural gas can have no more than 5 grains total sulfur per 100 standard cubic feet (170 ppm, 0.017% by weight). In accordance with 40 CFR 60.334(h)(3)(i), gaseous fuel sulfur monitoring is not required if the gas quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the gaseous fuel show that the fuel has a sulfur content equal to or less than 20 grains total sulfur per 100 standard cubic feet. Therefore, the exclusive use of PUC standard gas will eliminate the need to monitor fuel sulfur content for 40 CFR 60 Subpart GG.

**S1, S2: Gas Turbines; 55.1 MMBTU/hr, Natural Gas Fired**  
**S3, S4: Duct Burners; 20 MMBTU/hr, Natural Gas Fired**

BAAQMD Regulation 9-1-301

Area monitoring to demonstrate compliance with the ground level SO<sub>2</sub> 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 SO<sub>2</sub> and therefore is not required to have ground level monitoring by the APCO.

BAAQMD Regulation 9-1-302

All natural gas combustion sources at the facility are subject to the 300 ppm (dry) SO<sub>2</sub> emission limit in District Regulation 9-1-302. 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 BAAQMD Regulation 9-1-302, since violations of the regulation are unlikely. Therefore, no monitoring is necessary for this requirement.

Changes to permit:

- Table VII-B was removed and the requirements for the Duct Burners S-3 and S-4 were included with those for the Gas Turbines S-1 and S-2 (Table VII-A) for the reasons previously discussed.
- The monitoring requirements for 40 CFR 60.333(b) were updated in Table VII-A to reflect recent changes (effective July 8, 2004). There is no longer any requirement to monitor the sulfur content of natural gas other than gas quality specifications from the supplier. Therefore, the reference to subsumed requirements was removed and replaced by the citation from Subpart GG that releases the owner/operator from fuel sulfur monitoring.
- The applicable parametric monitoring requirements from BAAQMD Regulation 1 were added to Table VII A.

**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. The test methods are not applicable requirements, unless a rule or permit condition requires such ongoing testing, in which case the requirement will also appear in Section IV of the permit.

Changes to permit:

New NO<sub>x</sub> test methods for demonstrating compliance with 40 CFR 60.332(a)(2) were added because the requirements were recently changed.

An alternate method was added for BAAQMD Regulation 6-310.

Method 19B, Total Sulfur Oxides Integrated Sample, was deleted because it has been deleted from the Manual of Procedures.

### **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.

#### Changes to permit:

The subsumed monitoring requirements from the initial Title V permit in Table IX B-1 are no longer relevant and were removed from the permit. As previously discussed, changes to 40 CFR 60 Subpart GG have made it unnecessary for the owner/operator to monitor the sulfur content of natural gas.

### **X. Revision History**

The revision history section was updated.

### **XI. Glossary**

The glossary was updated.

### **XII. Appendix A - State Implementation Plan**

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 was requested for this facility.

### **E. Compliance Status:**

A 4/14/05 office memorandum from the Director of Compliance and Enforcement, to the Director of Engineering, presents a review of the compliance record of City of Santa Clara, Electric Department (Site #: A0621). The Compliance and Enforcement Division staff has reviewed the records for this facility for the period of April 1, 2004 through April 1, 2005. This review was initiated as part of the District's evaluation of an application by City of Santa Clara for a Renewal 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.
- There were no monitor excesses or equipment breakdowns reported or documented by District staff.
- There were no outstanding compliance issues identified.

As part of the Title V renewal application, the responsible official for the facility certified that all equipment was operating in compliance with all applicable requirements on August 13, 2004.

**F. Differences between the Application and the Proposed Permit:**

The City of Santa Clara submitted its Title V permit renewal application on August 25, 2004. That version is the basis for conditions, terms, and requirements of the proposed Major Facility Review permit. All differences between the Facility's application and the proposed permit have been discussed in this Statement of Basis.



APPENDIX A  
BAAQMD COMPLIANCE REPORT

APPENDIX B  
GLOSSARY

**ACT**

Federal Clean Air Act

**APCO**

Air Pollution Control Officer

**API**

American Petroleum Institute

**AP-42**

EPA publication: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources

**ARB**

Air Resources Board

**BAAQMD**

Bay Area Air Quality Management District

**BACT**

Best Available Control Technology

**BARCT**

Best Available Retrofit Control Technology

**C5**

An Organic chemical compound with five carbon atoms

**C6**

An Organic chemical compound with six carbon atoms

**CAA**

The federal Clean Air Act

**CAAQS**

California Ambient Air Quality Standards

**CAPCOA**

California Air Pollution Control Officers Association

**CEC**

California Energy Commission

**CEQA**

California Environmental Quality Act

**CEM**

A "continuous emission monitor" is a monitoring device that provides a continuous direct measurement of some pollutant (e.g. NO<sub>x</sub> concentration) in an exhaust stream.

**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

**CO<sub>2</sub>**

Carbon Dioxide

**Cumulative Increase**

The sum of permitted emissions from each new or modified source since a specified date. Used to determine whether threshold-based requirements are triggered.

**District**

The Bay Area Air Quality Management District

**dscf**

Dry Standard Cubic Feet

**dscm**

Dry Standard Cubic Meter

**E 6, E 9, E 12**

Very large or very small number values are commonly expressed in a form called scientific notation, which consists of a decimal part multiplied by 10 raised to some power. For example, 4.53 E 6 equals  $(4.53) \times (10^6) = (4.53) \times (10 \times 10 \times 10 \times 10 \times 10 \times 10) = 4,530,000$ . Scientific notation is used to express large or small numbers without writing out long strings of zeros.

**EGT**

Exhaust Gas Temperature

**EPA**

The federal Environmental Protection Agency.

**Excluded**

Not subject to any District Regulations.

**FE, Federally Enforceable**

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 (HAP), and Part 72 (Permits Regulation, Acid Rain), and also 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.

**FR**

Federal Register

**GDF**

Gasoline Dispensing Facility

**GLC**

Ground level concentration.

**GLM**

Ground Level Monitor

**grains**

1/7000 of a pound

**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 both 40 CFR Part 63, and District Regulation 2, Rule 5.

**H<sub>2</sub>S**

Hydrogen Sulfide

**HHV**

Higher Heating Value. The quantity of heat evolved as determined by a calorimeter where the combustion products are cooled to 60F and all water vapor is condensed to liquid.

**LHV**

Lower Heating Value. Similar to the higher heating value (see HHV) except that the water produced by the combustion is not condensed but retained as vapor at 60F.

**Major Facility**

A facility with potential emissions of regulated air pollutants greater than or equal to 100 tons per year, greater than or equal to 10 tons per year of any single hazardous air pollutant, and/or greater than or equal to 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity 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 Act and implemented by District Regulation 2, Rule 6.

**MOP**

The District's Manual of Procedures.

**MSDS**

Material Safety Data Sheet

**MW**

Megawatts

**NA**

Not Applicable

**NAAQS**

National Ambient Air Quality Standards

**NESHAPs**

National Emission Standards for Hazardous Air Pollutants. Contained in 40 CFR Part 61.

**NMHC**

Non-methane Hydrocarbons

**NMOC**

Non-methane Organic Compounds (Same as NMHC)

**NO<sub>x</sub>**

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 Act, and implemented by both 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 air pollutants for which the District is classified "non-attainment". Mandated by Title I of the Clean Air Act and implemented by 40 CFR Parts 51 and 52 as well as District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

**O<sub>2</sub>**

The chemical name for naturally-occurring oxygen gas.

**Offset Requirement**

A New Source Review requirement to provide federally enforceable emission offsets at a specified ratio for the emissions from a new or modified source and any pre-existing cumulative increase minus any onsite contemporaneous emission reduction credits. Applies to emissions of POC, NO<sub>x</sub>, PM<sub>10</sub>, and SO<sub>2</sub>.

**Phase II Acid Rain Facility**

A facility that generates electricity for sale through fossil-fuel combustion and by virtue of certain other characteristics (defined in Regulation 2, Rule 6) is subject to Titles IV and V of the Clean Air Act.

**POC**

Precursor Organic Compounds

**PM**

Total Particulate Matter

**PM<sub>10</sub>**

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 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.

**SCR**

A "selective catalytic reduction" unit is an abatement device that reduces NOx concentrations in the exhaust stream of a combustion device. SCRs utilize a catalyst, which operates at a specific temperature range, and injected ammonia to promote the conversion of NOx compounds to nitrogen gas.

**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

**SO2 Bubble**

An SO2 bubble is an overall cap on the SO2 emissions from a defined group of sources, or from an entire facility. SO2 bubbles are sometimes used at refineries because combustion sources are typically fired entirely or in part by "refinery fuel gas" (RFG), a waste gas product from refining operations. Thus, total SO2 emissions may be conveniently quantified by monitoring the total amount of RFG that is consumed, and the concentration of H2S and other sulfur compounds in the RFG.

**SO3**

Sulfur trioxide

**THC**

Total Hydrocarbons (NMHC + Methane)

**therm**

100,000 British Thermal Unit

**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)

**TRMP**

Toxic Risk Management Plan

**TSP**

Total Suspended Particulate

**TVP**

True Vapor Pressure

**VOC**

Volatile Organic Compounds

**Units of Measure:**

bhp	=	brake-horsepower
Btu	=	British Thermal Unit
g	=	grams
gal	=	gallon
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inches
max	=	maximum
m <sup>2</sup>	=	square meter
min	=	minute
MM	=	million
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

**Symbols:**

<	=	less than
>	=	greater than
≤	=	less than or equal to
≥	=	greater than or equal to