

Bay Area Air Quality Management District

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

**for
University of California, Berkeley
Facility #A0059**

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Application: 30107

May 2022

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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 Title 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) more than 100 tons per year of nitrogen oxide and carbon monoxide.

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 A0059.

This application is for a minor permit revision of the Major Facility Review permit with changes to the permit identified in strikeout/underline format. These changes are discussed in this Statement of Basis. The attached permit evaluation for BAAQMD Application 30106 explains the changes and forms part of this Statement of Basis. This document will only discuss the proposed changes to the permit.

The purpose of this minor revision is to change the permit conditions for the turbine, Source 201. The facility has installed low-NO_x burners and therefore, is discontinuing the use of steam or water injection for NO_x control. The District has determined that this is an alteration and that there will be no emissions increase. The facility has also given up the permit to burn distillate oil.

This action is a minor revision to the Major Facility Review permit because it is not:

- A major modification under 40 CFR Parts 51 (NSR) or 52 (PSD).
- A change considered a modification under 40 CFR Parts 60 (NSPS), 61 (NESHAPS), or Section 112 of the Clean Air Act.
- A significant change or relaxation of any applicable monitoring, reporting or recordkeeping condition.
- An establishment of or change to a permit term or condition allowing a facility to avoid an applicable requirement.
- An establishment of or change to a case-by-case determination of any emission limit or other standard.
- An establishment of or change to a facility-specific determination for ambient impacts, visibility analysis, or increment analysis on portable sources.
- The incorporation of any requirement promulgated by the U. S. EPA under the authority of the Clean Air Act.

The cases above are significant revisions to a Major Facility Review permit per Section 2-6-226.

The deletion of the fuel oil provisions is an administrative amendment per Section 2-1-101 because it is similar to the deletion of a source. The facility is giving up the permit to burn fuel oil.

The BACT and RACT limits are being retained because the new lower emissions are not due to BACT or RACT limits. Since there are no new limits, there is no establishment of or change to a case-by-case determination of any emission limit or other standard.

B. Facility Description

The facility has a cogeneration facility comprised of a multi-fuel turbine/generator and a duct burner to fire a heat recovery steam generator. The facility produces electricity that is sold to PG&E and steam that is used for space heat. The total electrical output of the facility is 24 MW. The facility has three 137 MMBtu/hr boilers that can be used if the cogeneration facility is not operating or is not producing enough steam. The boilers are limited to 10% of their capacity per BAAQMD Regulation 9-7-112.2.

The facility also has numerous emergency generators and a paint booth.

Emissions from the facility are primarily combustion emissions (NO_x, CO, PM₁₀, SO₂, VOC, and an insignificant amount of HAPs). There has been no significant change in emissions since the issuance of the last Title V permit renewal.

The turbine received an Authority to Construct under BAAQMD Application 30106, which is attached in Appendix B and forms part of this Statement of Basis.

Before issuance, the conditions were altered slightly to allow a longer startup period.

New limits were not established. However, the carbon monoxide emissions dropped due to the removal of steam injection and the NO_x emissions dropped due to the installation of low-NO_x 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.

Changes to the Permit, Section I:

- Not Applicable/No Changes

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 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) but have no District permits. This facility has no significant sources.

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

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

Each of the permitted sources has previously been issued 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.

Changes to the Permit, Section II:

The facility has given up the permit to burn distillate oil at the turbine.

Table II-A- Permitted Sources

Each of the following sources has been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. The capacities in this table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-301.

S#	Description	Make or Type	Model	Capacity
201	Turbine, 23.5 MW (Natural gas, distillate oil)	General Electric	LM-2500	243 MMbtu/hr
202	Duct Burner (Natural gas)	COEN	PowerPlus	84.0 MMbtu/hr

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” as defined in BAAQMD Rule 2-6-239.

Changes to the Permit, Section III:

- Not Applicable/No Changes

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 or EPA 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:

- No determinations are currently proposed in this action.

Changes to the Permit, Section IV:

The facility has given up the permit to burn distillate oil at the turbine. Therefore, additional changes were made to the applicable requirements. A complete explanation is in the permit evaluation for Application 30106, which is found in Appendix B.

**Table IV-F
Source-specific Applicable Requirements
S201, Turbine**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Regulation 1	General Provisions and Definitions (7/9/08)		
1-107	Combination of Emissions	Y	
1-521	Monitoring May Be Required	Y	
1-522	Continuous Emission Monitoring and Recordkeeping Procedures	N	
1-522.1	approval of plans and specifications	Y	
1-522.2	scheduling requirements	Y	
1-522.3	CEM performance testing	Y	
1-522.4	reporting of inoperative CEMs	Y	
1-522.5	CEM calibration requirements	Y	
1-522.6	CEM accuracy requirements	Y	
1-522.7	emission limit exceedance reporting requirements	N	
1-522.8	monitoring data submittal requirements	Y	
1-522.9	recordkeeping requirements	Y	
1-522.10	Monitors Required by Sections 1-521 or 2-1-403	Y	
1-602	Area and Continuous Emission Monitoring Requirements	N	
SIP Regulation 1	General Provisions and Definitions (6/28/99)		
1-522	Continuous Emission Monitoring and Recordkeeping Procedures	Y	
1-522.7	Monitor excesses	Y	
BAAQMD Regulation 2, Rule 1	Regulation 2, Rule 1 - Permits, General Requirements (11/19/08)		
2-1-501	Monitors	Y	
BAAQMD Regulation 6, Rule 1	Particulate Matter, General Requirements (8/1/18)		
6-1-301	Ringelmann Number 1 Limitation	N	
6-1-305	Visible Particles	N	
6-1-310.1	Particulate Weight Limitation	N	
6-1-310.3	Heat Transfer Operations	N	
6-1-401	Appearance of Emissions	N	

**Table IV-F
Source-specific Applicable Requirements
S201, Turbine**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
6-1-504	Demonstration of Total Suspended Particles (TSP) Compliance	N	
SIP Regulation 6	Particulate Matter and Visible Emissions (9/4/98)		
6-301	Ringelmann Number 1 Limitation	Y	
6-305	Visible Particles	Y	
6-310	Particulate Weight Limitation	Y	
6-310.3	Heat Transfer Operations	Y	
6-401	Appearance of Emissions	Y	
BAAQMD Regulation 9, Rule 1	Inorganic Gaseous Pollutants - Sulfur Dioxide (3/15/95)		
9-1-301	Limitations on Ground Level Concentrations	Y	
9-1-302	General Emission Limitations	Y	
9-1-304	Fuel Burning—Liquid Fuels	Y	
BAAQMD Regulation 9, Rule 9	Inorganic Gaseous Pollutants – Nitrogen Oxides from Stationary Gas Turbines (12/6/06)		
9-9-113	Exemption, Inspection and Maintenance Periods	N	
9-9-114	Exemption, Start-up and Shutdown Periods	N	
9-9-115	Limited Exemption, Minor Inspection and Maintenance Work	N	
9-9-301	Emission Limits, General	N	
9-9-301.1	NOx limits	N	
9-9-301.1.2	NOx limit for turbines over 10.0 MW without SCR	N	
9-9-301.2	January 1, 2010 NOx limits	N	
9-9-301.3	NOx limit when burning a mixture of fuels	N	
9-9-301.4	Demonstration of compliance with Section 9-9-301.2	N	
9-9-401	Certification, Efficiency	N	
9-9-501	Monitoring & Recordkeeping Requirements	N	
9-9-603	Continuous Emission Monitoring	N	
9-9-605	Compliance with Output Based NOx Emissions Standards	N	
SIP Regulation 9, Rule 9	Inorganic Gaseous Pollutants – Nitrogen Oxides from Stationary Gas Turbines (12/15/97)		
9-9-113	Exemption-Inspection/Maintenance	Y	
9-9-114	Exemption-Start-up/Shutdown	Y	
9-9-303	Emission Limits-Alternative Schedule	Y	
9-9-303.2	January 1, 2000 standard	Y	
9-9-401	Efficiency Certification	Y	

**Table IV-F
Source-specific Applicable Requirements
S201, Turbine**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
9-9-403.5	Modification or installation status report submittal	Y	
9-9-403.6	Compliance with emission standards	Y	
9-9-501	Monitoring & Recordkeeping	Y	
9-9-503	Initial Demonstration of Compliance	Y	
9-9-503.1	Deadline for demonstration of compliance with 9-9-303.1	Y	
9-9-503.3	Deadline for demonstration of compliance with 9-9-303.2	Y	
BAAQMD Manual of Procedures, Volume V	Continuous Emission Monitoring Policy and Procedures (1/20/82)	Y	
40 CFR 60	Standards of Performance for New Stationary Sources 12/23/71)	Y	
Subpart A	General Provisions	Y	
60.4(a)	Reports to EPA	Y	
60.4(b)	Reports to EPA and District	Y	
60.7(a)	Written notification	Y	
60.7(b)	Records	Y	
60.8	Performance Tests	Y	
60.9	Availability of Information	Y	
60.11(a)	Compliance with standards and maintenance requirements	Y	
60.11(d)	Minimizing emissions	Y	
60.12	Circumvention	Y	
60.13	Monitoring Requirements	Y	
60.19	General notification and reporting requirements	Y	
Subpart GG	Standards of Performance for Stationary Gas Turbines (2/24/06)	Y	
60.332	Standard for nitrogen oxides	Y	
60.332 (a)(1)	NOx limit	Y	
60.332(f)	Exemption when ice fog hazard	Y	
60.332(i)	Exemption on a case-by-case basis during mandatory water restrictions	Y	
60.333	Standard for Sulfur dioxide	Y	
60.333(a)	SO2 discharge limit	Y	
60.333(b)	Fuel sulfur content limit	Y	
60.334	Monitoring of operations	Y	
60.334(b)	CEM requirements	Y	
60.334(h)(1)	Sulfur content monitoring of fuel oil	Y	
60.334(h)(2)	Exemption from fuel nitrogen monitoring (natural gas)	Y	
60.334(h)(3)	Exemption from fuel sulfur monitoring (natural gas)	Y	
60.334(h)(3)(i)	Current, valid purchase contract, tariff sheet or transportation contract	Y	

**Table IV-F
Source-specific Applicable Requirements
S201, Turbine**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
60.334(h)(3)(ii)	Representative fuel sampling data	Y	
60.334(i)(1)	Sulfur and nitrogen content of fuel oil	Y	
60.334(j)(1)(iii)	Reports of excess NOx emissions	Y	
60.334(j)(2)(iii)	Reports of Sulfur content	Y	
60.334(j)(3)	Reporting of ice fog	Y	
60.334(j)(5)	Deadline for excess emission reports	Y	
60.335	Test Methods and Procedures	Y	
60.335(a)	Performance tests as required by 40 CFR 60.8	Y	
60.335(b)	Performance tests for NOx	Y	
60.335(b)(1)	ISO correction	Y	
60.335(b)(2)	Testing at various loads	Y	
60.335(b)(3)	Optional measurement after duct burner	Y	
60.335(b)(10)	Minimum sample requirements	Y	
60.335(b)(11)	Option of fuel analysts	Y	
60.335(c)(1)	Optional method to adjust NOx emission level	Y	
40 CFR 60 Appendix B	Performance Specifications	Y	
Performance Specification 2	Specifications and test procedures for SO2 and NOx continuous emission monitoring systems in stationary sources	Y	
Performance Specification 3	Specifications and test procedures for O2 and CO2 continuous emission monitoring systems	Y	
40 CFR 60 Appendix F	Quality Assurance Procedures		
Procedure 1	Quality assurance requirements for gas continuous emission monitoring systems used for compliance determination	Y	
40 CFR Part 72	Permit Regulation (Title IV – Acid Rain Program)		
72.6(b)(4)	Exemption from Acid Rain Program	Y	
BAAQMD Condition 366		Y	
Part 1	Operation of Boilers at Facility A0059 [cumulative increase]	Y	
Part 2	Sulfur Limit [BACT]	Y	
Part 3	Sulfur Limit (natural gas curtailment) [BACT]	Y	

**Table IV-F
Source-specific Applicable Requirements
S201, Turbine**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
Part 4	Heat input limit [Basis: 2-1-320, Cumulative Increase]	<u>Y</u>	
Part 4a	Fuel Limited to Natural Gas [2-1-320]	<u>Y</u>	
Part 4 b	NOx Limit (natural gas) [BAAQMD Regulation 9-9]	Y N	
Part 4 ac	CO Limit [RACT]	Y	
Part 4 db	PUC Quality Natural Gas [BAAQMD Regulation 2-1-403]	Y	
Part 5a	Fuel Limited to Natural Gas [2-1-320, Cumulative Increase]	<u>Y</u>	
Part 5 b	NOx Concentration limit (natural gas) – combined S201 & S202 emissions [BAAQMD Regulation 1-107]	Y	
Part 5 ca	CO Concentration Limit – combined S201 & S202 emissions [BAAQMD Regulation 1-107]	Y	
Part 6	NOx Limit (fuel oil) [BAAQMD Regulation 9-9]	Y	
Part 7	NOx Concentration Limit (fuel oil) – combined S201 & S202 emissions [BACT]	Y	
Part 8	Steam injection [BAAQMD Regulation 2-1-403]	Y	
Part 10	NOx and CO Limit (lb/day) – combined S201 & S202 emissions [cumulative increase]	Y	
Part 11	SO2 Limit (lb/day & tpy) – combined S201 & S202 emissions [cumulative increase]	Y	
Part 12	Monitoring [BACT]	Y	
Part 12a	Monitoring [RACT]	Y	
Part 14	Sampling ports [RACT-BAAQMD Regulation 9-9]	Y	
Part 17	Records [BACT]	Y	
Part 18	CO Source Test [RACT]	Y	
Part 19	Visible emissions inspection [BAAQMD Regulation 6-1-301, SIP-6-301, BAAQMD Regulation 2-6-501]	Y	
Part 20	Requirement for efficiency test [2-6-503]	<u>Y</u>	

**Table IV-G
Source-specific Applicable Requirements
S202, Duct Burner**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Regulation 1	General Provisions and Definitions (7/9/08)		
1-107	Combination of Emissions	Y	
1-521	Monitoring May Be Required	Y	
1-522	Continuous Emission Monitoring and Recordkeeping Procedures		
1-522.1	approval of plans and specifications	Y	

**Table IV-G
Source-specific Applicable Requirements
S202, Duct Burner**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
1-522.2	scheduling requirements	Y	
1-522.3	CEM performance testing	Y	
1-522.4	reporting of inoperative CEMs	Y	
1-522.5	CEM calibration requirements	Y	
1-522.6	CEM accuracy requirements	Y	
1-522.7	emission limit exceedance reporting requirements	N	
1-522.8	monitoring data submittal requirements	Y	
1-522.9	recordkeeping requirements	Y	
1-522.10	Monitors Required by Sections 1-521 or 2-1-403	Y	
1-602	Area and Continuous Emission Monitoring Requirements	N	
SIP Regulation 1	General Provisions and Definitions (6/28/99)		
1-522	Continuous Emission Monitoring and Recordkeeping Procedures	Y	
1-522.7	Monitor excesses	Y	
BAAQMD Regulation 2, Rule 1	Regulation 2, Rule 1 – Permits, General Requirements (11/19/08)		
2-1-501	Monitors	Y	
BAAQMD Regulation 6, Rule 1	Particulate Matter, General Requirements (8/1/18)		
6-301	Ringelmann Number 1 Limitation	N	
6-305	Visible Particles	N	
6-310.1	Particulate Weight Limitation	N	
6-310.3	Heat Transfer Operations	N	
6-401	Appearance of Emissions	N	
6-1-504	Demonstration of Total Suspended Particles (TSP) Compliance	N	
SIP Regulation 6	Particulate Matter and Visible Emissions (9/4/98)		
6-301	Ringelmann Number 1 Limitation	Y	
6-305	Visible Particles	Y	
6-310	Particulate Weight Limitation	Y	
6-310.3	Heat Transfer Operations	Y	
6-401	Appearance of Emissions	Y	
BAAQMD Regulation 9, Rule 1	Inorganic Gaseous Pollutants - Sulfur Dioxide (3/15/95)		
9-1-301	Limitations on Ground Level Concentrations	Y	

**Table IV-G
Source-specific Applicable Requirements
S202, Duct Burner**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
9-1-302	General Emission Limitations	Y	
9-1-304	Fuel Burning—Liquid Fuels	Y	
BAAQMD Regulation 9, Rule 9	Inorganic Gaseous Pollutants – Nitrogen Oxides from Stationary Gas Turbines (12/6/06)		
9-9-303	Emission Limits-Alternative Schedule	N	
9-9-303.2	January 1, 2000 standard	N	
9-9-401	Efficiency Certification	N	
SIP Regulation 9, Rule 9	Inorganic Gaseous Pollutants – Nitrogen Oxides from Stationary Gas Turbines (12/15/97)		
9-9-303	Emission Limits-Alternative Schedule	Y	
9-9-303.2	January 1, 2000 standard	Y	
9-9-401	Efficiency Certification	Y	
BAAQMD Manual of Procedures, Volume V	Continuous Emission Monitoring Policy and Procedures (1/20/82)	Y	
Subpart GG	Standards of Performance for Stationary Gas Turbines (2/24/06)	Y	
60.332 (a)(1)	Standard for nitrogen oxides	Y	
60.333	Standard for sulfur dioxide	Y	
60.333(a)	SO2 discharge limit	Y	
60.333(b)	Fuel sulfur content limit	Y	
BAAQMD Condition 366	Permit to Operate Condition	Y	
Part 1	Operation of Boilers at Facility A0059 [cumulative increase]	Y	
Part 2	Sulfur Limit [BACT]	Y	
Part 3	Sulfur Limit (natural gas curtailment) [BACT]	Y	
Part 5a	Fuel Limited to Natural Gas [2-1-320, Cumulative Increase]	Y	
Part 5b	NOx Concentration Limit (natural gas) – combined S201 & S202 emissions [BAAQMD Regulation 1-107]	Y	
Part 5ac	CO Concentration Limit – combined S201 & S202 emissions [BAAQMD Regulation 1-107]	Y	
Part 7	NOx Concentration Limit (fuel oil) – combined S201 & S202 emissions [BACT]	Y	
Part 10	NOx and CO Limit (lb/day) - combined S201 & S202 emissions [cumulative increase]	Y	

**Table IV-G
Source-specific Applicable Requirements
S202, Duct Burner**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
Part 11	SO₂ Limit (lb/day & tpy) — combined S201 & S202 emissions [cumulative increase]	Y	
Part 12	monitoring [BACT]	Y	
Part 12a	Monitoring [RACT]	Y	
Part 14	Sampling ports [RACT-BAAQMD Regulation 9-9]	Y	
Part 17	Records [BACT]	Y	
Part 18	CO Source Test [BACT]	Y	
Part 19	Visible emissions inspection [cumulative increase]	Y	

V. Schedule of Compliance

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

“409.10 A schedule of compliance containing the following elements:

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

The facility is required to continually comply with all applicable requirements cited in this permit. In addition, the facility will also need to comply with applicable requirements that become effective during the term of this permit on a timely basis.

Changes to the Permit, Section V:

- Not Applicable/No Changes

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 requirements have 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 and 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.

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.

Changes to the Permit, Section VI:

The amendments below are contained in the permit evaluation for Application 30106, which is attached in Appendix B. In addition, changes to the startup period are contained in the addendum to Application 30106, which is attached in Appendix C.

Permit Condition #366 (Strikeout/Underline Version)

For S201, Turbine and S202, Duct Burner

Any condition preceded by an asterisk is not federally enforceable.

Permit Condition #366, for the Gas Turbine (S201) and Duct Burner (S202), was initially adopted within New Source Review (NSR) Application #29854 on January 7, 1985. The permit condition was later revised within NSR Application #30849 on May 13, 1985, NSR Application #579 on March 29, 2000, and Major Facility Review (MFR) Application 28853 on August 31, 2020. The permit condition is further amended within NSR Application #30106.

1. "Operation" for the purposes of this condition refers only to firing of fuel in the boiler; hot standby maintained with steam does not constitute operation. The existing boilers ~~at Plant No. 59~~, Sources 2, 3, and 4 shall operate only during periods when the Gas Turbine

(S201) and Duct Burner (S202) are not operating, except the following cases; ~~(basis: cumulative increase)~~

- a. ~~during~~ During switch-over periods.
- b. ~~if~~ If the steam demand of the campus exceeds the 120,000 lb/hr design rate available from the gas turbine (S201) and ~~duct burners~~ burner (S202), then the existing boilers may fire only to the extent necessary to satisfy campus steam demands, up to a rolling annual average of 95,000 lbm/hr. This limit on the existing boilers will go into effect when the cogeneration plant begins operation and will not apply when the cogeneration plant is non-operative.
- c. If either ~~Source S201, the Gas-gas Turbineturbine (S201), or Source S202, D~~ duct burner (S202) malfunctions and the cogeneration system can-not meet the 120,000 lb/hr steam rate, then the existing boilers may fire only to the extent necessary to satisfy the campus steam demands. The duct burners will not operate when the gas turbine is not operational, except during switch-over periods.

[Basis: Cumulative Increase]

2. ~~Any fuel oil used as a primary fuel shall not exceed a maximum sulfur content of 0.12% (by weight). Compliance shall be determined from fuel samples taken and analyzed using the District's Laboratory Procedure Method 10. Such fuel oil use shall not exceed the equivalent of 85 days per year at full load operation of the gas turbine and duct burner. (basis: BACT)~~ [Deleted: Fuel Oil Sulfur Content, Fuel Oil No Longer Used]
3. ~~During periods of natural gas curtailment or shutdown, the maximum sulfur content of the fuel oil burned shall not exceed 0.25% (by weight), provided that the gas turbine was being fired on natural gas prior to the curtailment or shutdown. (basis: BACT)~~ [Deleted: Fuel Oil Sulfur Content During Natural Gas Curtailment or Shutdown, Fuel Oil No Longer Used]
4. The owner/operator of the gas turbine (S201) shall not exceed an hourly maximum throughput of 243 MMBtu/hr. [Basis: 2-1-320, Cumulative Increase]

The owner/operator shall meet the following emission limitations:

- a. The owner/operator of the gas turbine (S201) shall only consume natural gas; [Basis: 2-1-320]
- b. ~~When the gas turbine is burning natural gas, t*~~ The concentration of oxides of nitrogen (NOx) in the gas turbine's exhaust shall not exceed 0.70 lbs/MW-hr or 20.2 ppm_v NOx (measured as NO₂) at 15% oxygen, averaged over any three-hour period, except during a start-up, which is not to exceed ~~two-four (4)~~ four (4) hours; (basis: BAAQMD Regulation 9-9-301.2 adjusted for efficiency certified at 33.7% per BAAQMD Regulation 9-9-401)
- c. ~~The emission of nitrogen oxides (NOx) shall not exceed 319 lb/day;~~
- 4adc. ~~When the gas turbine is burning natural gas or fuel oil, the~~ The concentration of carbon monoxide (CO) in the gas turbine's exhaust shall not exceed 200 ppm at 15% oxygen, averaged over any three-hour period, except during a start-up, which is not to exceed ~~two-four (4)~~ four (4) hours. (basis: RACT)

~~e. The emission factor of precursor organic compounds (POC) in the gas turbine's exhaust shall not exceed 2.66E-02 lb/MMBtu; and,~~

~~4bfd. All natural gas burned at sources the gas turbine (S201), Gas Turbine, and duct burner (S202), Duct Burner, shall be Public Utilities Commission (PUC) quality gas. [Basis: BAAQMD Regulation 2-1-403]~~

~~[(Basis: BAAQMD Regulations 2-1-320, 2-1-403, 9-9-301.2, and 9-9-401)]~~

5. The owner/operator of the gas turbine (S201) and duct burner (S202) shall meet the following emission limitations:

a. The owner/operator of the gas turbine (S201) and duct burner (S202) shall only consume natural gas; [Basis: 2-1-320, Cumulative Increase]

b. When the gas turbine (S201) and the duct burner (S202) are firing natural gas, the *The concentration of oxides of nitrogen (NOx) in the combined exhaust from the gas turbine and the duct burner shall not exceed a weighted average of 0.70 lbs/MW-hr or 20.2 ppmdv @ 15% oxygen, averaged over any three-hour period, except during a startup, which is not to exceed two hours. (basis: BAAQMD Regulation 1-107)

~~5ac. When the gas turbine (S201) and the duct burner (S202) are firing natural gas or fuel oil, the The concentration of carbon monoxide (CO) in the combined exhaust from the gas turbine and the duct burner shall not exceed a weighted average of 200 ppm @ 15% oxygen, averaged over any three-hour period, except during a startup, which is not to exceed two hours. (basis: BAAQMD Regulation 1-107)]~~

6. When the gas turbine is burning fuel oil, the concentration of oxides of nitrogen (NOx) in the gas turbine's exhaust shall not exceed 42 ppmdv NOx (measured as NO2) at 15% oxygen, averaged over any three hour period, except during a start up, which is not to exceed two hours. In the event that NOx emissions exceed the 42 ppm limit while burning fuel oil, the owner/operator shall switch to natural gas as soon as practicable until the 42 ppm can be met while burning fuel oil. (basis: BACT, BAAQMD Regulation 9-9-303)[Deleted: Fuel Oil Turbine NOx Limit, Fuel Oil No Longer Used]

7. When the gas turbine is firing fuel oil and the duct burner is in operation, the concentration of oxides of nitrogen (NOx) in the combined exhaust from the gas turbine and the duct burner shall not exceed a weighted average of 39 ppmdv @ 15% oxygen, averaged over any three-hour period, except during a startup, which is not to exceed two hours. (basis: BACT)[Deleted: Fuel Oil Turbine and Duct Burner NOx Limit, Fuel Oil No Longer Used]

8. The steam injection to control NOx emissions shall be operated during all periods of gas turbine operation. the owner/operator shall, during the start-up period, perform tests to

~~determine the steam injection rate necessary to assure compliance with parts 4 and 6. The steam injection rate will be controlled by the gas turbine control system at all times during the operation of the turbine. (basis: BAAQMD 2-1-403)[Deleted: Steam Injection No Longer Used]~~

9. ~~[Deleted: (w)Water injection-Injection no-No longer-Longer usedUsed)]~~

10. a. The emission of nitrogen oxides (NO_x) from the full-load operation of the gas turbine(S201) -and duct ~~burners~~ burner (S202) shall not exceed 547 lb/day when firing natural gas ~~and 1,093 lb/day when firing fuel oil.~~ The emission of carbon monoxide (CO) from the full-load operation of the gas turbine and duct burners shall not exceed 2195 -lb/day ~~when firing natural gas or fuel oil.~~ ~~[(basisBasis: BACT, BAAQMD Regulation 9-9-303.2, RACT and cumulative increase for CO)]~~

11. ~~The total emission of sulfur dioxide (SO₂) shall not exceed 987 lb/day, except under natural gas curtailment or shutdown as allowed in part 3. In no event shall SO₂ emissions exceed 40 tons per year (tpy). Compliance with this condition shall be based on calculating SO₂ emissions from fuel oil density, usage rate, and actual sulfur content. The owner/operator shall determine the sulfur content of the fuel oil by sampling and analyzing, according to the District's Laboratory Procedure Method 10 or an equivalent procedure approved by the APCO, either each fuel oil delivery or once during each 24-hour period that fuel oil is fired. (basis: cumulative increase) [Deleted: Fuel Oil SO₂ Limit, Fuel Oil No Longer Used]~~

12. The owner/operator shall install, calibrate and operate District-approved continuous in-stack emission monitors and recorders for oxides of nitrogen, and either oxygen or carbon dioxide. (basis: BACT)

12a. The owner/operator shall install, calibrate and operate District-approved continuous in-stack emission monitors and recorders for carbon monoxide, and either oxygen or carbon dioxide. [(basis: RACT); (Effective May 1, 2001)]

13. Deleted (initial startup source test)

14. For purposes of source testing, the exhaust stack shall be equipped with stack sampling ports and platforms, the location of which shall be subject to the approval of the APCO. (basis: RACT, – BAAQMD Regulation 9-9)

15. Deleted (offsets provided already)

16. Deleted (PSD review not required)

17. All records associated with the above conditions shall be retained by the owner/operator for at least five years and shall be made available to the District upon request. The recording format for ~~parts~~ Parts 2, 3, 4a, 5a, 7, 10 and 14, shall be subject to the approval of the APCO. (basis: BACT)

18. The owner/operator shall perform an annual source test for carbon monoxide. (basis: RACT)

19. ~~If the gas turbine is fired on fuel oil more than 200 hours in any consecutive twelve-month period, on the first day of oil firing following the accumulation of 200 hours, and on the first day following every 1000 hours of cumulative operation afterwards during a twelve-month period, the permit holder shall conduct a visible emission inspection of the stack gas effluent. This visible emissions inspection shall be conducted during daylight hours while the gas turbine is firing on fuel oil, but need not be conducted by a trained observer. [basis: BAAQMD Regulation 6-1-301, SIP Regulation 6-301, BAAQMD Regulation 2-6-501]~~

~~If any visible emissions, excluding condensed water vapor, are detected during an inspection and the emissions are observed continuously or intermittently for more than three minutes, the permit holder shall either take corrective action that eliminates the visible emissions and report the visible emissions as a potential exceedance, or have a CARB-certified smoke reader determine compliance with the opacity standard, using EPA Method 9 or the procedures outlined in the CARB manual, "Visible Emissions Evaluation." The certified smoke reader shall continue to conduct the Method 9 or CARB Visible Emission Evaluation on a daily basis on every subsequent day that oil is fired until the daily reading shows compliance with the applicable limit.~~

~~The permit holder shall record and maintain the following records for each day of any fuel oil firing of gas turbine:~~

- ~~calendar day;~~
- ~~total elapsed time of fuel oil firing;~~
- ~~running 12-month total accumulated time of fuel oil firing;~~
- ~~if 12-month total exceeds 200 hours or for every 1000 hours of cumulative operation during a 12-month period, name of inspector, time inspection was made, presence of visible emissions, description of corrective action taken to abate visible emissions, date and time visible emissions were abated.~~

~~All records made pursuant to the above shall be retained for five (5) years and shall be made available to District personnel upon request. [Deleted: Visible Emissions, Fuel Oil No Longer Used]~~

20. Within one year of issuance of the renewal of the Title V permit, the owner/operator shall conduct and submit a demonstration of efficiency for S201, Turbine, pursuant to SIP Regulation 9-9-401 and BAAQMD Regulation 9-9-401 to the District. The efficiency shall be determined while the turbine is in compliance with all applicable requirements. If a source test is necessary to demonstrate compliance, the owner/operator shall submit a testing protocol to the Source Test Group for approval and obtain approval before conducting the source test. If the efficiency demonstration shows that the adjusted NOx limit pursuant to 9-9-401 should be lowered or raised, the owner/operator shall submit an application for a minor revision to the Major Facility Review permit within two months of submitting the demonstration to the District. (Basis: 2-6-503)

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.

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 requirements only when it can support a conclusion that existing monitoring is inadequate.

The turbine, S201, and duct burner, S202, are equipped with continuous emission monitors for NO_x and CO, which is considered to be appropriate NO_x and CO monitoring.

The facility has given up the permit to burn distillate oil at the turbine. Therefore, changes to the following requirements were made:

- Permit conditions
- Regulation 9, Rule 1, Sulfur Dioxide
- Regulation 9, Rule 9, Nitrogen Oxides from Stationary Gas Turbines
- NSPS, 40 CFR Subpart GG, Standards of Performance for Stationary Gas Turbines

In addition, visual emissions monitoring during distillate oil combustion was deleted.

Changes to the Permit, Section VII:

**Table VII-F
Applicable Limits and Compliance Monitoring Requirements
S201, Turbine**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NOx	BAAQMD 9-9-301.2 and 9-9-603	N		0.70 lbs/MW-hr or 20.2 ppmv, 3-hr average when burning natural gas	BAAQMD 9-9-501	C	CEM
	BAAQMD 9-9-301.2 and 9-9-603	N		1.97 lbs/MW-hr or 42 ppmv, 3-hr average when burning non-gaseous fuel	BAAQMD 9-9-501	C	CEM
NOx	SIP 9-9-303.2	Y		20.2 ppmv @ 15% O ₂ , dry (adjusted per 9-9-401), except during start-up	SIP 9-9-501	C	CEM
	SIP 9-9-303.2	Y		42 ppmv @ 15% O₂, dry when burning fuel oil during natural gas curtailment or short testing periods	SIP 9-9-501	C	CEM
	BAAQMD Cond #366 Part 4	Y		0.70 lbs/MW-hr or 20.2 ppmdv - natural gas: @ 15 % O ₂ , 3 hr avg, except during start-up	BAAQMD Cond #366 Part 12	C	CEM
NOx	BAAQMD Cond #366 Part 5	Y		0.70 lb/MW-hr or 20.2 ppmdv - natural gas: @ 15 % O ₂ (combined S201 & S202), 3 hr avg, except during start-up	BAAQMD Cond #366 Part 12	C	CEM
	BAAQMD Cond #366 Part 6	Y		42 ppmdv - fuel oil: @ 15 % O₂, 3 hr avg, except during start-up	BAAQMD Cond #366 Part 12	C	CEM
NOx	BAAQMD Cond #366 Part 7	Y		39 ppmdv - fuel oil: @ 15 % O ₂ (combined S201 & S202), 3 hr avg, except during start-up	BAAQMD Cond #366 Part 12	C	CEM
	BAAQMD Cond #366 Part 10	Y		547 lb/day when burning natural gas and 1093 lb/day when burning fuel oil (combined S201 & S202)	BAAQMD Cond #366 Part 12	C	CEM

**Table VII-F
Applicable Limits and Compliance Monitoring Requirements
S201, Turbine**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
	NSPS Subpart GG, 60.332(a)(1)	Y		99 ppmdv @ 15% O2 dry, 4-hr average	NSPS Subpart GG, 60.334(b)	C	CEM
CO	BAAQMD Cond #366 Part 4a	Y		200 ppm @ 15% O2, 3-hour average except during start-up	BAAQMD Cond #366 Part 12a	C	CEM
CO	BAAQMD Cond #366 Part 5a	Y		200 ppm @ 15% O2 (combined S201 & S202) 3-hour average except during start-up	BAAQMD Cond #366 Part 12a	C	CEM
CO	BAAQMD Cond #366 Part 10	Y		2195 lb/day (natural gas or fuel oil) (combined S201 & S201)	BAAQMD Cond #366 Parts 10, 12a, and 18	C	CEM, annual source test
SO2	BAAQMD Cond #366 Part 2	Y		Maximum of 0.12% by wt. Sulfur in fuel oil	BAAQMD Cond #366 Parts 2	P/E	At Each Delivery, Fuel Sampling using District's Laboratory Procedure Method 10
SO2	BAAQMD Cond #366 Part 3	Y		Maximum of 0.25% by wt. Sulfur in fuel oil during periods of natural gas curtailment	BAAQMD Cond #366 Parts 2	P/E	At Each Delivery, Fuel Sampling using District's Laboratory Procedure Method 10
	BAAQMD Cond #366 Part 11	Y		987 lb/day except during natural gas curtailment or shutdown as allowed by Cond #366, part 3 (combined S201 & S202)	BAAQMD Cond #366 Part 11	P/E	Fuel Sampling using District's Laboratory Procedure Method 10

**Table VII-F
Applicable Limits and Compliance Monitoring Requirements
S201, Turbine**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
	BAAQMD Cond #366 Part 11	Y		40 tons/year (combined S201 & S202)	BAAQMD Cond #366 Part 11	P/E	Fuel Sampling using District's Laboratory Procedure Method 10
SO2	BAAQMD 9-1-301	Y		GLC ¹ of 0.5 ppm for 3 min or 0.25 ppm for 60 min or 0.05 ppm for 24 hours		N	
SO2	BAAQMD 9-1-302	Y		300 ppm (dry)		N	
	BAAQMD 9-1-304	Y		0.5% wt. Sulfur in liquid fuel		P/E	Fuel certification
SO2	NSPS Subpart GG, 60.333 (a)	Y		0.015% (vol) @ 15% O2 (dry), or 0.8 % sulfur in gaseous fuel by weight	NSPS Subpart GG, 60.334 (h)(3)	P/M or EN	Monthly gaseous fuel analysis or current, valid purchase contract, tariff sheet or transportation contract
SO2	NSPS Subpart GG, 60.33 (b)	Y		0.8 % sulfur in fuel oil by weight	NSPS Subpart GG, 60.334 (h)(1), 60.334(i)(1)	P/E	At-Each Fuel Oil Delivery, Fuel Sampling using District's Laboratory Procedure Method 10

**Table VII-F
Applicable Limits and Compliance Monitoring Requirements
S201, Turbine**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Opacity	BAAQMD 6-1-301	N		≥Ringelmann No. 1 for < 3 minutes in an hour	BAAQMD Cond #366 Part 19	P/E, during distillate oil combustion None	Visible emissions monitoring
Opacity	SIP 6-301	Y		≥Ringelmann No. 1 for < 3 minutes in an hour	BAAQMD Cond #366 Part 19	P/E, during distillate oil combustion None	Visible emissions monitoring
FP	BAAQMD 6-1-310.1 and 6-1-310.3	N		0.15 grain/dscf @ 6% O ₂		N	
FP	SIP 6-310	Y		0.15 grain/dscf @ 6% O ₂		N	

1 Ground Level Concentration

**Table VII-G
Applicable Limits and Compliance Monitoring Requirements
S202, Duct Burner**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NO _x	BAAQMD 9-9-301.2	N		0.70 lbs/MWhr or 15 ppmv, 3-hr average when burning natural gas	BAAQMD 9-9-501	C	CEM
	BAAQMD 9-9-301.2	N		1.97 lbs/MWhr or 42 ppmv, 3-hr average when burning non-gaseous fuel	BAAQMD 9-9-501	C	CEM
NO _x	SIP 9-9-303.2	Y		20.2 ppmv @ 15% O ₂ , dry (adjusted per 9-9-401) , except during start-up	BAAQMD 9-9-501	C	CEM

**Table VII-G
Applicable Limits and Compliance Monitoring Requirements
S202, Duct Burner**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NO _x	SIP 9-9-303.2	Y		42 ppmv @ 15% O ₂ , dry during natural gas curtailment or short testing periods	BAAQMD 9-9-501	C	CEM
NO _x	BAAQMD Cond #366, Part 5	Y		0.70 lbs/MW-hr or 15 ppmv - natural gas: @15 % O ₂ (combined S201 & S202), 3 hr avg, except during start-up	BAAQMD Cond #366, Part 12	C	CEM
	BAAQMD Cond #366, Part 7	Y		39 ppmv - fuel oil: @15 % O ₂ (combined S201 & S202), 3 hr avg, except during start-up	BAAQMD Cond #366, Part 12	C	CEM
NO _x	BAAQMD Cond #366, Part 10	Y		547 lb/day when burning natural gas and 1093 lb/day when burning fuel oil (combined S201 & S202)	BAAQMD Cond #366, Parts 9 and 12	C	CEM
	NSPS Subpart GG, 60.332(a)(1)	Y		99 ppmv @ 15% O ₂ dry, 4 - hr average	NSPS Subpart GG, 60.334(b)	C	CEM
CO	BAAQMD Cond #366, Part 5a	Y		200 ppm @15% O ₂ (combined S201 & S202) 3-hour average except during start-up	BAAQMD Cond #366, Part 12a	C	CEM
CO	BAAQMD Cond #366, Part 10	Y		2195 lb/day (natural gas) 2195 lb/day (fuel oil) (combined S201 & S202)	BAAQMD Cond #366, Parts 10, 12a, and 18	C	CEM, annual source test
SO ₂	BAAQMD Cond #366, Part 11	Y		987 lb/day except during natural gas curtailment or shutdown as allowed by Cond #366, part 3 (combined S201 & S202)	BAAQMD Cond #366, Part 11	P/E	Fuel Sampling using District's Laboratory Procedure Method 10

**Table VII-G
Applicable Limits and Compliance Monitoring Requirements
S202, Duct Burner**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
SO ₂	BAAQMD Cond #366, Part 11	Y		40 tons/year (combined S201 & S202)	BAAQMD Cond #366, Part 11	P/E	At Each Delivery, Fuel Sampling using District's Laboratory Procedure Method 10
SO ₂	BAAQMD 9-1-301	Y		GLC ¹ of 0.5 ppm for 3 min or 0.25 ppm for 60 min or 0.05 ppm for 24 hours		N	
SO ₂	BAAQMD 9-1-302	Y		300 ppm (dry)		N	
	BAAQMD 9-1-304	Y		0.5% wt Sulfur in liquid fuel		P/E	Fuel certification
SO ₂	NSPS Subpart GG, 60.333 (a)	Y		0.015% (vol) @ 15% O ₂ (dry), or 0.8 % sulfur in gaseous fuel by weight	NSPS Subpart GG, 60.334 (h)(3)	P/M or EN	Monthly gaseous fuel analysis or current, valid purchase contract, tariff sheet or transportation contract
SO ₂	NSPS Subpart GG, 60.333 (b)	Y		0.8% sulfur in fuel oil by weight	NSPS Subpart GG, 60.334 (h)(1), 60.334(i)(1)	P/E	At Each Fuel Oil Delivery, Fuel Sampling using District's Laboratory Procedure Method 10

**Table VII-G
Applicable Limits and Compliance Monitoring Requirements
S202, Duct Burner**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Opacity	BAAQMD 6-1-301	N		≥Ringelmann No. 1 for < 3 minutes in an hour	BAAQMD Cond #366 Part 19	NP/E, during distillate oil combustion None	Visible emissions monitoring None
Opacity	SIP 6-301	Y		≥Ringelmann No. 1 for < 3 minutes in an hour	BAAQMD Cond #366 Part 19	Ncombustion P/E, during distillate oil combustion None	None Visible emissions monitoring
FP	BAAQMD 6-1-310.1 and 6-1-310.3	N		0.15 grain/dscf @ 6% O ₂		N	
FP	SIP 6-310	Y		0.15 grain/dscf @ 6% O ₂		N	

1 Ground Level Concentration

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” as defined by Regulation 2-6-202.

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

Changes to the Permit, Section VIII:

The facility has given up the permit to burn distillate oil at the turbine. Therefore, changes to the following requirements were made:

**Table VIII
Test Methods**

Applicable Requirement	Description of Requirement	Acceptable Test Methods
BAAQMD 6-1-301	Ringelmann No. 1 Limitation	Manual of Procedures, Volume I, Evaluation of Visible Emissions
BAAQMD 6-1-310.1	Particulate Weight Limitation	EPA Method 5, Particulate Matter

**Table VIII
Test Methods**

Applicable Requirement	Description of Requirement	Acceptable Test Methods
BAAQMD 6-1-310.2	Particulate Weight Limitation	EPA Method 5, Particulate Matter
BAAQMD 6-1-310.3	Particulate Weight Limitation	EPA Method 5, Particulate Matter
SIP 6-310.1	Particulate Weight Limitation	Manual of Procedures, Volume IV, ST-15, Particulates Sampling
BAAQMD 9-1-302	General Emission Limitation	Manual of Procedures, Volume IV, ST-19A, Sulfur Dioxide, Continuous Sampling, or ST-19B, Total Sulfur Oxides Integrated Sample
BAAQMD 9-1-304	Fuel Burning (Liquid and Solid Fuels)	Manual of Procedures, Volume III, Method 10, Determination of Sulfur in Fuel Oils.
BAAQMD 9-9-303	Emission Limits-Alternative Schedule (9/21/94)	Manual of Procedures, Volume IV, ST-13A, Oxides of Nitrogen, Continuous Sampling and ST-14, Oxygen, Continuous Sampling
BAAQMD 9-9-303.2	January 1, 2000 standard	Manual of Procedures, Volume IV, ST-13A, Oxides of Nitrogen, Continuous Sampling and ST-14, Oxygen, Continuous Sampling
BAAQMD 9-9-401	Certification, Efficiency	ASTM D240-87 or ASTM D-2382-88 for liquid hydrocarbon fuel or ASTM 1826-88 or ASTM 1945-81 in conjunction w/ASTM D3588-89 for gaseous fuels
NSPS 40 CFR 60, Subpart GG	Standards of Performance for Stationary Gas Turbines(2/24/06)	
60.332 (a)(1)	Performance Standard, NOx	EPA Method 20, Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent Emissions from Stationary Gas Turbines
60.333 (a)	SO2 Volumetric Emission Limit	EPA Method 20, Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent Emissions from Stationary Gas Turbines
60.333(b)	Fuel Sulfur Limit (liquid fuel)	ASTM D 2880-71 Standard specification for Gas Turbine Fuel Oils
60.333 (b)	Fuel Sulfur Limit (gaseous fuel)	ASTM D 1072-80, Standard Method for Total Sulfur in Fuel Gases ASTM D 3031-81, Standard Test Method for Total Sulfur in Natural Gas by Hydrogenation
BAAQMD Condition 366		
Part 2	Sulfur Limit [BACT]	Manual of Procedures, Volume III, Method 10, Determination of Sulfur in Fuel Oils.
Part 3	Sulfur Limit (natural gas curtailment) [BACT]	Manual of Procedures, Volume III, Method 10, Determination of Sulfur in Fuel Oils.

**Table VIII
Test Methods**

Applicable Requirement	Description of Requirement	Acceptable Test Methods
Part 4	BACT NOx Limit (natural gas) [BACT]	Manual of Procedures, Volume IV, ST-13A, Oxides of Nitrogen, Continuous Sampling and ST-14, Oxygen, Continuous Sampling
Part 4a	RACT CO Limit (natural gas & fuel oil) [RACT]	Manual of Procedures, Volume IV, ST-6, Carbon Monoxide, Continuous Sampling and ST-14, Oxygen, Continuous Sampling
Part 6	BACT NOx Limit (fuel oil) [BACT]	Manual of Procedures, Volume IV, ST-13A, Oxides of Nitrogen, Continuous Sampling and ST-14, Oxygen, Continuous Sampling
Part 10	NOx and CO Limit (lb/day) - combined S201 & S202 emissions [BACT]	Manual of Procedures, Volume IV, ST-13A, Oxides of Nitrogen, Continuous Sampling and ST-14, Oxygen, Continuous Sampling
Part 11	SO2 Limit (lb/day & tpy) - combined S201 & S202 emissions [BACT]	Manual of Procedures, Volume IV, ST-19A, Sulfur Dioxide, Continuous Sampling, or ST-19B, Total Sulfur Oxides Integrated Sample
Part 18	CO Source Test	Manual of Procedures, Volume IV, ST-6, Carbon Monoxide, Continuous Sampling and ST-14, Oxygen, Continuous Sampling
Part 19	Visible Emission Inspection	EPA Method 9

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 the Permit, Section IX:

The justification for this permit shield will be changed to the following:

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] 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
S201, Turbine and S202, Duct Burner

Citation	Title or Description (Reason not applicable)
Regulation 8, Rule 2	Organic Compounds - Miscellaneous Operations (Rule not applicable to combustion sources that burn natural gas exclusively: Section 8-2-110)

X. Revision History

The revision history will be updated when the permit is revised.

XI. Glossary

This section of the permit defines and explains acronyms, abbreviations, and other terms that are used in this permit.

Changes to the Permit, Section XI:

- Not Applicable/No Changes

D. Alternate Operating Scenarios:

No alternate operating scenario has been requested for this facility.

E. Compliance Status:

The responsible official for University of California Berkeley submits annual compliance certifications.

F. Differences between the Application and the Proposed Permit:

The Title V permit minor revision application was submitted on August 27, 2019.

The following NSR application has been discussed in this Statement of Basis and included in the proposed minor revision of the Title V Permit:

- NSR Application #30106: Alteration to Turbine (S201).

APPENDIX A - 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 which allows the District to impose requirements.

CAA

The federal Clean Air Act

CAAQS

California Ambient Air Quality Standards

CAM

Compliance Assurance Monitoring per 40 CFR Part 64

CAPCOA

California Air Pollution Control Officers Association

CEM

Continuous Emission Monitor

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

DPF

Diesel Particulate Filter

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, NO_x, 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.

PTE

Potential to Emit as defined by BAAQMD Regulation 2-6-218

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

TSP

Total Suspended Particulate

VOC

Volatile Organic Compounds

Units of Measure:

bhp	=	brake-horsepower
btu	=	British Thermal Unit
cu. ft.	=	cubic foot
cfm	=	cubic feet per minute
dscf	=	dry standard cubic foot
dscfm	=	dry standard cubic foot per minute
g	=	gram
gal	=	gallon
gpm	=	gallons per minute
gr	=	grain
hp	=	horsepower
h r	=	hour
lb	=	pound
in	=	inch
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
tpy	=	tons per year
yr	=	year

**APPENDIX B,
Permit Evaluation for Application 30106**

Engineering Evaluation
University of California, Berkeley
Plant Location: Berkeley Campus
Equipment Location: 209 Frank Schlessinger Way, Berkeley, CA 94704
Plant No. 59 (Site No. A0059)
Application No. 30106
Project Description: Turbine Dry Low-NO_x Burner Replacement

BACKGROUND

University of California, Berkeley (UCB) has applied to obtain an Authority to Construct (A/C) and Permit to Operate (P/O) for the following equipment:

S-201 Natural Gas Turbine, 23.5 MW
General Electric Model LM-2500, 243 MMBtu/Hr

UCB is proposing to replace the burners of the 23.5 MW Turbine (S-201). Currently, UCB controls nitrogen oxides (NO_x) from S-201 with steam injection. The existing burners, along with steam injection, will be replaced with dry low-NO_x burners. Furthermore, UCB has agreed to limit the capacity of S-201 to 243 MMBtu/hr, the current capacity, and to only combust natural gas.

The proposed burner replacement will result in no emission increase. Therefore, the proposal is deemed an alteration.

The criteria pollutants associated with the project are precursor organic compounds (POC), NO_x, particulate matter 10 microns in size (PM₁₀), particulate matter 2.5 microns in size (PM_{2.5}), sulfur dioxide (SO₂), and carbon monoxide (CO). The alteration of S-201 should not pose any health threats to the surrounding community of public at large.

EMISSIONS SUMMARY

Current and proposed emission factors for S-201 are based on a combination of manufacturer guaranteed specifications, expert knowledge, and literature from the Environmental Protection Agency (EPA) AP-42, Chapter 3 "*Stationary Internal Combustion Sources*," Section 3.1 "*Stationary Gas Turbines*" (AP-42). The following table provides a summary and basis for each emission factor. For further information, please reference Appendix A. "*Project Emissions Review for New Source Review Application*" (Appendix A).

Table 1. Natural Gas Turbine Criteria Pollutant Emission Factor Summary				
Pollutant	Current Emission Factor¹ (lb/MMBtu)	Basis	Proposed Emission Factor¹ (lb/MMBtu)	Basis
POC	4.20E-02	Expert Knowledge ²	2.66E-02	Manufacturer ³
NO _x	7.35E-02	Enforceable Limit ⁴	5.46E-02	Manufacturer ³
PM ₁₀	6.60E-03	AP-42 ⁵	6.60E-03	AP-42 ⁵
PM _{2.5}	6.60E-03	AP-42 ⁵	6.60E-03	AP-42 ⁵
SO ₂	1.60E-03	AP-42/Sulfur Content ⁶	1.60E-03	Ap-42/Sulfur Content ⁶
CO	4.43E-01	Enforceable Limit ⁴	1.19E-01	Manufacturer ³

- ¹ Emission factors have been corrected to 0% O₂.
- ² The manufacturer of the burner has estimated that the emission factor of the current configuration is 0.0120 lb POC/MMBtu at 15% O₂.
- ³ The manufacturer has guaranteed the emission factors at 15% O₂.
- ⁴ The emission factors are based on enforceable limits within Permit Condition #366.
- ⁵ Emission factors were obtained from AP-42.
- ⁶ Emission factor was obtained from AP-42 and based on a fuel sulfur content of 17 ppm for natural gas.

The following tables provide the current and proposed potential to emit (PTE) for each pollutant, as well as an emission increase analysis.

Table 2. Current Natural Gas Turbine Potential to Emit			
Pollutant	Hourly Emission Rate (lb/hr)	Daily Emission Rate (lb/day)	Annual Emission Rate
POC	10.21	244.94	44.702
NO _x	17.87	428.85	78.266
PM ₁₀	1.60	38.49	7.025
PM _{2.5}	1.60	38.49	7.025
SO ₂	0.39	9.32	1.701
CO	107.67	2584.00	471.580

Table 3. Proposed Natural Gas Turbine Potential to Emit			
Pollutant	Hourly Emission Rate (lb/hr)	Daily Emission Rate (lb/day)	Annual Emission Rate
POC	6.46	155.13	28.311
NO _x	13.27	318.46	58.118
PM ₁₀	1.60	38.49	7.025
PM _{2.5}	1.60	38.49	7.025
SO ₂	0.39	9.32	1.701
CO	48.45	1162.80	212.211

Table 4. Potential to Emit Emission Increase Summary						
Pollutant	Daily Emission Rate (lb/day)			Annual Emission Rate (ton/yr)		
	Current	Proposed	Increase	Current	Proposed	Increase
POC	244.94	155.13	0.00	44.702	28.311	0.000
NO _x	428.85	318.46	0.00	78.266	58.118	0.000
PM ₁₀	38.49	38.49	0.00	7.025	7.025	0.000
PM _{2.5}	38.49	38.49	0.00	7.025	7.025	0.000
SO ₂	9.32	9.32	0.00	1.701	1.701	0.000
CO	2584.00	1162.80	0.00	471.580	212.211	0.000

The following table reviews the actual to projected-actual emissions. This review determines if a “major modification” will occur pursuant to the definition in Title 40 of the Code of Federal Regulation (CFR), Sections 51.165(a)(1)(v) and 52.21(b)(2)(i). Actual emissions for POC, PM₁₀, PM_{2.5}, and SO₂ were estimated using the highest average annual throughput rate over a consecutive 24-month period, which has occurred in the previous 10 years from the completion of the application. The emission factors for POC, PM₁₀, PM_{2.5}, and SO₂ are based on AP-42. For NO_x and CO, continuous emissions monitoring (CEM) data were used to determine the actual emissions. For further information, please reference Appendix A and Appendix B. *“Project Actual Emissions Review - Continuous Emissions Monitoring Data”* (Appendix B).

Table 5. Actual to Projected-Actual Major Modification Review					
Pollutant	Actual Emissions (ton/yr)	Projected Emissions (ton/yr)	Emission Increase (ton/yr)	Significant Increase Threshold (ton/yr)	Exceeds Significant Increase?
POC	51.780	28.311	0.000	40	no
NO _x	67.031	58.118	0.000	40	no
PM ₁₀	8.137	7.025	0.000	15	no
PM _{2.5}	8.137	7.025	0.000	10	no
SO ₂	1.970	1.701	0.000	40	no
CO	181.179	212.211	31.032	100	no

The proposed project will not exceed a significant increase threshold. Therefore, the project is not a major modification.

TOXIC RISK SCREENING ANALYSIS

Pursuant to Regulation 2-5-110, a project shall not be subject to the requirements of Regulation 2-5, for each toxic air contaminant (TAC), if the total project emissions are below the acute and chronic trigger levels listed in Table 2-5-1 of this regulation. A project includes all new or modified sources of TACs within a 3-year period. However, if the applicant can demonstrate that the current application was neither a reasonably foreseeable consequence of the previous project, nor a critical element or integral part of the previous project, the District may review the application separate of the previous project.

Since the capacity of S-201 will remain the same, there will be no TAC emission increase. Therefore, S-201 is not subject to the requirements of this regulation. For further information, please reference Appendix A.

BEST AVAILABLE CONTROL TECHNOLOGY

Pursuant to Regulation 2-2-301, Best Available Control Technology (BACT) shall apply to new or modified sources with a potential to emit (PTE) equal to or greater than 10 lb per highest day of any single regulated air pollutant.

The physical changes to S-201 will not result in an emission increase. Therefore, S-201 is not a modified source and not subject to the requirements of BACT.

OFFSETS

Pursuant to Regulation 2-2-302, offsets must be provided for any new or modified source at a facility that emits, or is permitted to emit, more than 10 tons per year of POC or NO_x. Furthermore, pursuant to Regulation 2-2-303 offsets must be provided for any new or modified source at a major facility with a cumulative increase that exceeds 1.0 ton per year of PM₁₀, PM_{2.5}, or SO₂. For purposes of Regulation 2-2-303, a major facility is defined as a facility that is permitted to emit 100 tons/yr or more of PM₁₀, PM_{2.5}, or SO₂.

S-201 will not result in an emission increase. Therefore, the offsetting requirements of Regulations 2-2-302 and 2-2-303 do not apply.

NEW SOURCE PERFORMANCE STANDARDS

The following New Source Performance Standards (NSPS) apply to the facility.

40 CFR Part 60 Subpart GG

Pursuant to §66.330, stationary gas turbines, greater than 10 MMBtu/hr and constructed, modified, or reconstructed after October 3, 1977, are subject to the requirements of this regulation. S-201 has an input heat rating of 243 MMBtu and was constructed on October 1, 1987. S-201 is subject to the requirements of this regulation.

S-201 is required to meet the NO_x and SO₂ limitations of §60.332(c) and §60.333. The NO_x limitation of §60.332(c) is based on the following equation:

$$NO_x \text{ STD} = 0.0150 \frac{14.4}{Y} + F$$

The NO_x standard is in the units of percent pollutant exhaust volume at 15% O₂. Y is the heat input over the peak load in the units of kJ/watt-hr; which is 10.9 for S-201. F is the fuel bound-nitrogen content of the specific fuel; which is assumed to be negligible for natural gas. The NO_x standard for S-201 is 198 ppmv at 15% O₂. S-201 is expected to meet this requirement with a NO_x volumetric concentration of 15 ppmv at 15% O₂.

The SO₂ standard is an exhaust concentration of 0.015% by volume at 15% O₂ and a fuel sulfur content of no more than 0.8% by weight (8,000 ppmw). S-201 will combust natural gas only, which has a sulfur content of up to 17 ppmw. S-201 is expected to meet the SO₂ standard.

40 CFR Part 60 Subpart KKKK

Pursuant to §60.4305 turbines equal to or greater than 10 MMBtu/hr, which commenced construction, modification, or reconstruction after February 18, 2005, are subject to the

requirements of this regulation. S-201 was not constructed, modified, or reconstructed after February 18, 2005. Therefore, S-201 is not subject to the requirements of this subpart.

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

40 CFR Part 63 Subpart YYYY

Pursuant to §63.6085, this subpart is applicable to turbines located at major sources of hazardous air pollutants (HAPs). UCB currently does not emit 10 tons per year of a single HAP, nor 25 tons per year of a combination of HAPs. Therefore, the requirements of this subpart do not apply.

STATEMENT OF COMPLIANCE

Regulation 2, Rule 6, Major Facility Review

UC Berkeley is a major facility as defined by Section 2-6-212 of the rule and has a Major Facility Review (Title V) permit. This alteration will be processed as an administrative amendment and minor revision to the Major Facility Review permit because it is not:

- A major modification under 40 CFR Parts 51 (NSR) or 52 (PSD).
- A change considered a modification under 40 CFR Parts 60 (NSPS), 61 (NESHAPS), or Section 112 of the Clean Air Act.
- A significant change or relaxation of any applicable monitoring, reporting or recordkeeping condition.
- An establishment of or change to a permit term or condition allowing a facility to avoid an applicable requirement.
- An establishment of or change to a case-by-case determination of any emission limit or other standard.
- An establishment of or change to a facility-specific determination for ambient impacts, visibility analysis, or increment analysis on portable sources.
- The incorporation of any requirement promulgated by the U. S. EPA under the authority of the Clean Air Act.

The cases above are significant revisions to a Major Facility Review permit per Section 2-6-226.

The deletion of the fuel oil provisions is an administrative amendment per Section 2-1-101 because it is similar to the deletion of a source. The facility is giving up the permit to burn fuel oil.

The BACT and RACT limits are being retained because the new lower limits are not BACT or RACT limits.

Regulation 6, Rule 1

Pursuant to Regulation 6-1-301, a person shall not emit from any source for a period or periods aggregating more than three minutes in any hour, a visible emission which is as dark or darker than No. 1 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree.

In addition, per Regulation 6-1-302, a person shall not emit from any source for a period or periods aggregating more than three minutes in any hour an emission equal to or greater than 20% opacity as perceived by an opacity sensing device, where such device is required by District regulations.

Furthermore, pursuant to Regulation 6-1-305, a person shall not emit particles from any operation in sufficient number to cause annoyance to any other person, which particles are large enough to be visible as individual particles at the emission point or of such size and nature as to be visible individually as incandescent particles. This Section 6-1-305 shall only apply if such particles fall on real property other than that of the person responsible for the emission.

Lastly, pursuant to Regulation 6-1-310.1, a person shall not emit total suspended particulates (TSP) in excess of 0.15 gr/dscf. Pursuant to Regulation 6-1-310.2, effective July 1, 2020, sources that have an exhaust flowrate greater than 26,486 dscfm, but less than 35,315 dscfm, and have a TSP PTE greater than 1.1 ton/yr, shall not emit TSP in excess of 0.0495 gr/dscf.

At a TSP exhaust concentration of 0.0053 gr/dscf, S-201 is expected to meet the requirements of this regulation.

Regulation 9, Rule 9

Pursuant to Regulation 9-9-301.2, natural gas turbines with a heat input rating of greater than 150 MMBtu/hr, but less than or equal to 250 MMBtu/hr, shall limit NO_x emissions to 15 ppmv at 15% O₂ on a dry basis.

The replacement burners of S-201 are expected to meet the requirements of this Regulation.

California Environmental Quality Act

S-201 has been in operation at the current location since October 1, 1987. The overall capacity of S-201, after the alteration, will remain the same.

Pursuant to Regulation 2-1-312.6, permit applications relating exclusively to the repair, maintenance or minor alteration of existing facilities, equipment or sources involving negligible or no expansion of use beyond that previously existing, are exempt from the requirements of CEQA.

UCB has submitted Form Appendix H “Environmental Information Form” with this application.

California Health & Safety Code §42301.6 and Regulation 2-1-412

Pursuant to California Health & Safety Code §42301.6(a), prior to approving an application for a permit to construct or modification of a source, which is located within 1,000 feet from the outer boundary of a school site, the District shall prepare a public notice as detailed in §42301.6. §42301.9(a) defines a “school” as any public or private school used for the purposes of the education of more than 12 children in kindergarten or any grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in private homes.

The source is located more than 1,000 feet from the nearest school.

PERMIT CONDITIONS

The following permit condition is for S-201.

Permit Condition #366 (Strikeout/Underline Version)

For S201, Turbine and S202, Duct Burner

Any condition preceded by an asterisk is not federally enforceable.

Permit Condition #366, for the Gas Turbine (S201) and Duct Burner (S202), was initially adopted within New Source Review (NSR) Application #29854 on January 7, 1985. The permit condition was later revised within NSR Application #30849 on May 13, 1985, NSR Application #579 on March 29, 2000, and Major Facility Review (MFR) Application 28853 on August 31, 2020. The permit condition is further amended within NSR Application #30106.

1. "Operation" for the purposes of this condition refers only to firing of fuel in the boiler; hot standby maintained with steam does not constitute operation. The existing boilers ~~at Plant No. 59~~, Sources 2, 3, and 4 shall operate only during periods when the Gas Turbine (S201) and Duct Burner (S202) are not operating, except the following cases; ~~(basis: cumulative increase)~~
 - a. ~~during~~ During switch-over periods.
 - b. ~~if~~ If the steam demand of the campus exceeds the 120,000 lb/hr design rate available from the gas turbine (S201) and ~~duct burners~~ burner (S202), then the existing boilers may fire only to the extent necessary to satisfy campus steam demands, up to a rolling annual average of 95,000 lbm/hr. This limit on the existing boilers will go into effect when the cogeneration plant begins operation and will not apply when the cogeneration plant is non-operative.
 - c. If either ~~Source S201, the Gas gas Turbineturbine~~ (S201), or ~~Source S202, D~~ duct burner (S202) malfunctions and the cogeneration system can-not meet the 120,000 lb/hr steam rate, then the existing boilers may fire only to the extent necessary to satisfy the campus steam demands. The duct burners will not operate when the gas turbine is not operational, except during switch-over periods.

[Basis: Cumulative Increase]

2. ~~Any fuel oil used as a primary fuel shall not exceed a maximum sulfur content of 0.12% (by weight). Compliance shall be determined from fuel samples taken and analyzed using the District's Laboratory Procedure Method 10. Such fuel oil use shall not exceed the equivalent of 85 days per year at full-load operation of the gas turbine and duct burner. (basis: BACT)~~ [Deleted: Fuel Oil Sulfur Content, Fuel Oil No Longer Used]
3. ~~During periods of natural gas curtailment or shutdown, the maximum sulfur content of the fuel oil burned shall not exceed 0.25% (by weight), provided that the gas turbine was being fired on natural gas prior to the curtailment or shutdown. (basis: BACT)~~ [Deleted: Fuel Oil Sulfur Content During Natural Gas Curtailment or Shutdown, Fuel Oil No Longer Used]
4. The owner/operator of the gas turbine (S201) shall not exceed an hourly maximum throughput of 243 MMBtu/hr. [Basis: 2-1-320, Cumulative Increase]

The owner/operator shall meet the following emission limitations:

- a. The owner/operator of the gas turbine (S201) shall only consume natural gas; [Basis: 2-1-320]

~~b. When the gas turbine is burning natural gas, t~~*The concentration of oxides of nitrogen (NOx) in the gas turbine's exhaust shall not exceed 0.70 lbs/MW-hr or 20.2 ppm_{dv} NOx (measured as NO₂) at 15% oxygen, averaged over any three-hour period, except during a start-up, which is not to exceed two hours. (basis: BAAQMD Regulation 9-9-301.2 adjusted for efficiency certified at 33.7% per BAAQMD Regulation 9-9-401)

~~e. The emission of nitrogen oxides (NOx) shall not exceed 319 lb/day;~~

~~4adc. When the gas turbine is burning natural gas or fuel oil, the~~The concentration of carbon monoxide (CO) in the gas turbine's exhaust shall not exceed 200 ppm at 15% oxygen, averaged over any three-hour period, except during a start-up, which is not to exceed two hours. (basis: RACT)

~~e. The emission factor of precursor organic compounds (POC) in the gas turbine's exhaust shall not exceed 2.66E-02 lb/MMBtu; and,~~

~~4bfd. All n~~Natural gas burned at ~~sources the gas turbine (S201), Gas Turbine, and duct burner (S202), Duct Burner,~~ shall be Public Utilities Commission (PUC) quality gas. [Basis: BAAQMD Regulation 2-1-403]

~~([basisBasis: BAAQMD Regulations 2-1-320, 2-1-403, 9-9-301.2, and 9-9-401])~~

5. The owner/operator of the gas turbine (S201) and duct burner (S202) shall meet the following emission limitations:

a. The owner/operator of the gas turbine (S201) and duct burner (S202) shall only consume natural gas; [Basis: 2-1-320, Cumulative Increase]

b. When the gas turbine (S201) and the duct burner (S202) are firing natural gas, the*The concentration of oxides of nitrogen (NOx) in the combined exhaust from the gas turbine and the duct burner shall not exceed a weighted average of 0.70 lbs/MW-hr or 20.2 ppm_{dv} @ 15% oxygen, averaged over any three-hour period, except during a startup, which is not to exceed two hours. (basis: BAAQMD Regulation 1-107)

5ac. When the gas turbine (S201) and the duct burner (S202) are firing natural gas or fuel oil, theThe concentration of carbon monoxide (CO) in the combined exhaust from the gas turbine and the duct burner shall not exceed a weighted average of 200 ppm @ 15% oxygen, averaged over any three-hour period, except during a startup, which is not to exceed two hours. (basisBasis: BAAQMD Regulation 1-107)]

6. When the gas turbine is burning fuel oil, the concentration of oxides of nitrogen (NOx) in the gas turbine's exhaust shall not exceed 42 ppm_{dv} NOx (measured as NO₂) at 15% oxygen, averaged over any three hour period, except during a start up, which is not to exceed two hours. In the event that NOx emissions exceed the 42 ppm limit while

~~burning fuel oil, the owner/operator shall switch to natural gas as soon as practicable until the 42 ppm can be met while burning fuel oil. (basis: BACT, BAAQMD Regulation 9-9-303)[Deleted: Fuel Oil Turbine NOx Limit, Fuel Oil No Longer Used]~~

7. ~~When the gas turbine is firing fuel oil and the duct burner is in operation, the concentration of oxides of nitrogen (NOx) in the combined exhaust from the gas turbine and the duct burner shall not exceed a weighted average of 39 ppmdv @ 15% oxygen, averaged over any three hour period, except during a startup, which is not to exceed two hours. (basis: BACT)[Deleted: Fuel Oil Turbine and Duct Burner NOx Limit, Fuel Oil No Longer Used]~~
8. ~~The steam injection to control NOx emissions shall be operated during all periods of gas turbine operation. the owner/operator shall, during the start up period, perform tests to determine the steam injection rate necessary to assure compliance with parts 4 and 6. The steam injection rate will be controlled by the gas turbine control system at all times during the operation of the turbine. (basis: BAAQMD 2-1-403)[Deleted: Steam Injection No Longer Used]~~
9. ~~[Deleted: (w)Water injection-Injection no-No longer-Longer usedUsed]~~
10. ~~a. The emission of nitrogen oxides (NOx) from the full-load operation of the gas turbine(S201) -and duct burners burner (S202) shall not exceed 547 lb/day when firing natural gas-and 1,093 lb/day when firing fuel oil. The emission of carbon monoxide (CO) from the full-load operation of the gas turbine and duct burners shall not exceed 2195 -lb/day -when firing natural gas-or fuel oil. ([basisBasis: BACT, BAAQMD Regulation 9-9-303.2, RACT and cumulative increase for CO])~~
11. ~~The total emission of sulfur dioxide (SO2) shall not exceed 987 lb/day, except under natural gas curtailment or shutdown as allowed in part 3. In no event shall SO2 emissions exceed 40 tons per year (tpy). Compliance with this condition shall be based on calculating SO2 emissions from fuel oil density, usage rate, and actual sulfur content. The owner/operator shall determine the sulfur content of the fuel oil by sampling and analyzing, according to the District's Laboratory Procedure Method 10 or an equivalent procedure approved by the APCO, either each fuel oil delivery or once during each 24-hour period that fuel oil is fired. (basis: cumulative increase)-[Deleted: Fuel Oil SO2 Limit, Fuel Oil No Longer Used]~~
12. The owner/operator shall install, calibrate and operate District-approved continuous in-stack emission monitors and recorders for oxides of nitrogen, and either oxygen or carbon dioxide. (basis: BACT)
- 12a. The owner/operator shall install, calibrate and operate District-approved continuous in-stack emission monitors and recorders for carbon monoxide, and either oxygen or carbon dioxide. [(basis: RACT); (Effective May 1, 2001)]
13. Deleted (initial startup source test)

14. For purposes of source testing, the exhaust stack shall be equipped with stack sampling ports and platforms, the location of which shall be subject to the approval of the APCO. (basis: RACT, – BAAQMD Regulation 9-9)
15. Deleted (offsets provided already)
16. Deleted (PSD review not required)
17. All records associated with the above conditions shall be retained by the owner/operator for at least five years and shall be made available to the District upon request. The recording format for ~~parts~~ Parts 2, 3, 4a, 5a, 7, 10 and 14, shall be subject to the approval of the APCO. (basis: BACT)
18. The owner/operator shall perform an annual source test for carbon monoxide. (basis: RACT)
19. ~~If the gas turbine is fired on fuel oil more than 200 hours in any consecutive twelve-month period, on the first day of oil firing following the accumulation of 200 hours, and on the first day following every 1000 hours of cumulative operation afterwards during a twelve-month period, the permit holder shall conduct a visible emission inspection of the stack gas effluent. This visible emissions inspection shall be conducted during daylight hours while the gas turbine is firing on fuel oil, but need not be conducted by a trained observer. [basis: BAAQMD Regulation 6-1-301, SIP Regulation 6-301, BAAQMD Regulation 2-6-501]~~

~~If any visible emissions, excluding condensed water vapor, are detected during an inspection and the emissions are observed continuously or intermittently for more than three minutes, the permit holder shall either take corrective action that eliminates the visible emissions and report the visible emissions as a potential exceedance, or have a CARB-certified smoke reader determine compliance with the opacity standard, using EPA Method 9 or the procedures outlined in the CARB manual, “Visible Emissions Evaluation.” The certified smoke reader shall continue to conduct the Method 9 or CARB Visible Emission Evaluation on a daily basis on every subsequent day that oil is fired until the daily reading shows compliance with the applicable limit.~~

~~The permit holder shall record and maintain the following records for each day of any fuel oil firing of gas turbine:~~

- ~~calendar day;~~
- ~~total elapsed time of fuel oil firing;~~
- ~~running 12-month total accumulated time of fuel oil firing;~~
- ~~if 12-month total exceeds 200 hours or for every 1000 hours of cumulative operation during a 12-month period, name of inspector, time inspection was made, presence of visible emissions, description of corrective action taken to abate visible emissions, date and time visible emissions were abated.~~

~~All records made pursuant to the above shall be retained for five (5) years and shall be made available to District personnel upon request. [Deleted: Visible Emissions, Fuel Oil No Longer Used]~~

20. Within one year of issuance of the renewal of the Title V permit, the owner/operator shall conduct and submit a demonstration of efficiency for S201, Turbine, pursuant to SIP Regulation 9-9-401 and BAAQMD Regulation 9-9-401 to the District. The efficiency shall be determined while the turbine is in compliance with all applicable requirements. If a source test is necessary to demonstrate compliance, the owner/operator shall submit a testing protocol to the Source Test Group for approval and obtain approval before conducting the source test. If the efficiency demonstration shows that the adjusted NO_x limit pursuant to 9-9-401 should be lowered or raised, the owner/operator shall submit an application for a minor revision to the Major Facility Review permit within two months of submitting the demonstration to the District. (Basis: 2-6-503)

End of Conditions

Permit Condition #366 (Clean Version)

For S201, Turbine and S202, Duct Burner

THE FOLLOWING CONDITION APPLIES TO THE FACILITY PRIOR TO ALTERATION PROPOSED IN APPLICATION 30106

1. "Operation" for the purposes of this condition refers only to firing of fuel in the boiler; hot standby maintained with steam does not constitute operation. The existing boilers at Plant No. 59, Sources 2, 3, and 4 shall operate only during periods when the Gas Turbine (S201) and Duct Burner (S202) are not operating, except the following cases; (basis: cumulative increase)
 - a. during switch-over periods.
 - b. if the steam demand of the campus exceeds the 120,000 lb/hr design rate available from the gas turbine and -duct burners, then the existing boilers may fire only to the extent necessary to satisfy campus steam demands, up to a rolling annual average of 95,000 lbm/hr. This limit on the existing boilers will go into effect when the cogeneration plant begins operation and will not apply when the cogeneration plant is non-operative.
 - c. If either Source S201, Gas Turbine, or Source S202, Duct burner malfunctions and the cogeneration system can not meet the 120,000 lb/hr steam rate, then the existing boilers may fire only to the extent necessary to satisfy the campus steam demands. The duct burners will not operate when the gas turbine is not operational, except during switch-over periods.
2. Any fuel oil used as a primary fuel shall not exceed a maximum sulfur content of 0.12% (by weight). Compliance shall be determined from fuel samples taken and analyzed using the District's Laboratory Procedure Method 10. Such fuel oil use shall not exceed the equivalent of 85 days per year at full-load operation of the gas turbine and duct burner. (basis: BACT)
3. During periods of natural gas curtailment or shutdown, the maximum sulfur content of the fuel oil burned shall not exceed 0.25% (by weight), provided that the gas turbine was being fired on natural gas prior to the curtailment or shutdown. (basis: BACT)

4. When the gas turbine is burning natural gas, the concentration of oxides of nitrogen (NO_x) in the gas turbine's exhaust shall not exceed 0.70 lbs/MW-hr or 20.2 ppm_{dv} NO_x (measured as NO₂) at 15% oxygen, averaged over any three-hour period, except during a start-up, which is not to exceed two hours. (basis: BAAQMD Regulation 9-9-301.2 adjusted for efficiency certified at 33.7% per BAAQMD Regulation 9-9-401)
- 4a. When the gas turbine is burning natural gas or fuel oil, the concentration of carbon monoxide (CO) in the gas turbine's exhaust shall not exceed 200 ppm at 15% oxygen, averaged over any three-hour period, except during a start-up, which is not to exceed two hours. (basis: RACT)
- 4b. All natural gas burned at sources S201, Gas Turbine, and S202, Duct Burner, shall be PUC quality gas. (basis: BAAQMD Regulation 2-1-403)
5. When the gas turbine and the duct burner are firing natural gas, the concentration of oxides of nitrogen (NO_x) in the combined exhaust from the gas turbine and the duct burner shall not exceed a weighted average of 0.70 lbs/MW-hr or 20.2 ppm_{dv} @ 15% oxygen, averaged over any three-hour period, except during a startup, which is not to exceed two hours. (basis: BAAQMD Regulation 1-107)
- 5a. When the gas turbine and the duct burner are firing natural gas or fuel oil, the concentration of carbon monoxide (CO) in the combined exhaust from the gas turbine and the duct burner shall not exceed a weighted average of 200 ppm @ 15% oxygen, averaged over any three-hour period, except during a startup, which is not to exceed two hours. (basis: BAAQMD Regulation 1-107)
6. When the gas turbine is burning fuel oil, the concentration of oxides of nitrogen (NO_x) in the gas turbine's exhaust shall not exceed 42 ppm_{dv} NO_x (measured as NO₂) at 15% oxygen, averaged over any three-hour period, except during a start-up, which is not to exceed two hours. In the event that NO_x emissions exceed the 42 ppm limit while burning fuel oil, the owner/operator shall switch to natural gas as soon as practicable until the 42 ppm can be met while burning fuel oil. (basis: BACT, BAAQMD Regulation 9-9-303)
7. When the gas turbine is firing fuel oil and the duct burner is in operation, the concentration of oxides of nitrogen (NO_x) in the combined exhaust from the gas turbine and the duct burner shall not exceed a weighted average of 39 ppm_{dv} @ 15% oxygen, averaged over any three-hour period, except during a startup, which is not to exceed two hours. (basis: BACT)
8. The steam injection to control NO_x emissions shall be operated during all periods of gas-turbine operation. the owner/operator shall, during the start-up period, perform tests to determine the steam injection rate necessary to assure compliance with parts 4 and 6. The steam injection rate will be controlled by the gas turbine control system at all times during the operation of the turbine. (basis: BAAQMD 2-1-403)
9. Deleted (water injection no longer used)

10. The emission of nitrogen oxides (NO_x) from the full-load operation of the gas turbine and duct burners shall not exceed 547 lb/day when firing natural gas and 1,093 lb/day when firing fuel oil. The emission of carbon monoxide (CO) from the full-load operation of the gas turbine and duct burners shall not exceed 2195 lb/day when firing natural gas or fuel oil. (basis: BACT, BAAQMD Regulation 9-9-303.2, RACT and cumulative increase for CO)
11. The total emission of sulfur dioxide (SO₂) shall not exceed 987 lb/day, except under natural gas curtailment or shutdown as allowed in part 3. In no event shall SO₂ emissions exceed 40 tons per year (tpy). Compliance with this condition shall be based on calculating SO₂ emissions from fuel oil density, usage rate, and actual sulfur content. The owner/operator shall determine the sulfur content of the fuel oil by sampling and analyzing, according to the District's Laboratory Procedure Method 10 or an equivalent procedure approved by the APCO, either each fuel oil delivery or once during each 24-hour period that fuel oil is fired. (basis: cumulative increase)
12. The owner/operator shall install, calibrate and operate District-approved continuous in-stack emission monitors and recorders for oxides of nitrogen, and either oxygen or carbon dioxide. (basis: BACT)
- 12a. The owner/operator shall install, calibrate and operate District-approved continuous in-stack emission monitors and recorders for carbon monoxide, and either oxygen or carbon dioxide. [(basis: RACT); (Effective May 1, 2001)]
13. Deleted (initial startup source test)
14. For purposes of source testing, the exhaust stack shall be equipped with stack sampling ports and platforms, the location of which shall be subject to the approval of the APCO. (basis: RACT, – BAAQMD Regulation 9-9)
15. Deleted (offsets provided already)
16. Deleted (PSD review not required)
17. All records associated with the above conditions shall be retained by the owner/operator for at least five years and shall be made available to the District upon request. The recording format for parts 2, 3, 4a, 5a, 7, 10 and 14, shall be subject to the approval of the APCO. (basis: BACT)
18. The owner/operator shall perform an annual source test for carbon monoxide. (basis: RACT)
19. If the gas turbine is fired on fuel oil more than 200 hours in any consecutive twelve-month period, on the first day of oil firing following the accumulation of 200 hours, and on the first day following every 1000 hours of cumulative operation afterwards during a twelve-month period, the permit holder shall conduct a visible emission inspection of the stack gas effluent. This visible emissions inspection shall be conducted during daylight hours while the gas turbine is firing on fuel oil, but need not be conducted by a trained

observer. [basis: BAAQMD Regulation 6-1-301, SIP Regulation 6-301, BAAQMD Regulation 2-6-501]

If any visible emissions, excluding condensed water vapor, are detected during an inspection and the emissions are observed continuously or intermittently for more than three minutes, the permit holder shall either take corrective action that eliminates the visible emissions and report the visible emissions as a potential exceedance, or have a CARB-certified smoke reader determine compliance with the opacity standard, using EPA Method 9 or the procedures outlined in the CARB manual, "Visible Emissions Evaluation." The certified smoke reader shall continue to conduct the Method 9 or CARB Visible Emission Evaluation on a daily basis on every subsequent day that oil is fired until the daily reading shows compliance with the applicable limit.

The permit holder shall record and maintain the following records for each day of any fuel oil firing of gas turbine:

- calendar day;
- total elapsed time of fuel oil firing;
- running 12-month total accumulated time of fuel oil firing;
- if 12-month total exceeds 200 hours or for every 1000 hours of cumulative operation during a 12-month period, name of inspector, time inspection was made, presence of visible emissions, description of corrective action taken to abate visible emissions, date and time visible emissions were abated.

All records made pursuant to the above shall be retained for five (5) years and shall be made available to District personnel upon request.

20. Within one year of issuance of the renewal of the Title V permit, the owner/operator shall conduct and submit a demonstration of efficiency for S201, Turbine, pursuant to SIP Regulation 9-9-401 and BAAQMD Regulation 9-9-401 to the District. The efficiency shall be determined while the turbine is in compliance with all applicable requirements. If a source test is necessary to demonstrate compliance, the owner/operator shall submit a testing protocol to the Source Test Group for approval and obtain approval before conducting the source test. If the efficiency demonstration shows that the adjusted NO_x limit pursuant to 9-9-401 should be lowered or raised, the owner/operator shall submit an application for a minor revision to the Major Facility Review permit within two months of submitting the demonstration to the District. (Basis: 2-6-503)

End of Conditions

THE FOLLOWING CONDITION APPLIES TO THE FACILITY AFTER THE COMPLETION OF THE PROPOSED ALTERATION IN APPLICATION 30106

For S201, Turbine and S202, Duct Burner

Any condition preceded by an asterisk is not federally enforceable.

Permit Condition #366, for the Gas Turbine (S201) and Duct Burner (S202), was initially adopted within New Source Review (NSR) Application #29854 on January 7, 1985. The permit

condition was later revised within NSR Application #30849 on May 13, 1985, NSR Application #579 on March 29, 2000, and Major Facility Review (MFR) Application 28853 on August 31, 2020. The permit condition is further amended within NSR Application #30106.

1. "Operation" for the purposes of this condition refers only to firing of fuel in the boiler; hot standby maintained with steam does not constitute operation. The existing boilers, Sources 2, 3, and 4 shall operate only during periods when the Gas Turbine (S201) and Duct Burner (S202) are not operating, except the following cases;
 - a. During switch-over periods.
 - b. If the steam demand of the campus exceeds the 120,000 lb/hr design rate available from the gas turbine (S201) and duct burner (S202), then the existing boilers may fire only to the extent necessary to satisfy campus steam demands, up to a rolling annual average of 95,000 lbm/hr. This limit on the existing boilers will go into effect when the cogeneration plant begins operation and will not apply when the cogeneration plant is non-operative.
 - c. If either the gas turbine (S201), or duct burner (S202) malfunctions and the cogeneration system cannot meet the 120,000 lb/hr steam rate, then the existing boilers may fire only to the extent necessary to satisfy the campus steam demands. The duct burner will not operate when the gas turbine is not operational, except during switch-over periods.

[Basis: Cumulative Increase]

2. [Deleted: Fuel Oil Sulfur Content, Fuel Oil No Longer Used]
3. [Deleted: Fuel Oil Sulfur Content During Natural Gas Curtailment or Shutdown, Fuel Oil No Longer Used]
4. The owner/operator of the gas turbine (S201) shall not exceed an hourly maximum throughput of 243 MMBtu/hr. [Basis: 2-1-320, Cumulative Increase]

The owner/operator shall meet the following emission limitations:

- a. The owner/operator of the gas turbine (S201) shall only consume natural gas; [Basis: 2-1-320]
- b. *The concentration of oxides of nitrogen (NO_x) in the gas turbine's exhaust shall not exceed 0.70 lb/MW-hr or 20.2 ppmv NO_x (measured as NO₂) at 15% oxygen, averaged over any three-hour period, except during a start-up, which is not to exceed two hours;. (basis: BAAQMD Regulation 9-9-301.2 adjusted for efficiency certified at 33.7% per BAAQMD Regulation 9-9-401)
- c. The concentration of carbon monoxide (CO) in the gas turbine's exhaust shall not exceed 200 ppm at 15% oxygen, averaged over any three-hour period, except during a start-up, which is not to exceed two hours. (basis: RACT)
- d. Natural gas burned at the gas turbine (S201) and duct burner (S202), shall be Public Utilities Commission (PUC) quality gas. [Basis: BAAQMD Regulation 2-1-403]

5. The owner/operator of the gas turbine (S201) and duct burner (S202) shall meet the following emission limitations:
 - a. The owner/operator of the gas turbine (S201) and duct burner (S202) shall only consume natural gas; [Basis: 2-1-320, Cumulative Increase]
 - b. *The concentration of oxides of nitrogen (NO_x) in the combined exhaust from the gas turbine and the duct burner shall not exceed a weighted average of 0.70 lbs/MW-hr or 20.2 ppm_{dv} @ 15% oxygen, averaged over any three-hour period, except during a startup, which is not to exceed two hours. (basis: BAAQMD Regulation 1-107)
 - c. , The concentration of carbon monoxide (CO) in the combined exhaust from the gas turbine and the duct burner shall not exceed a weighted average of 200 ppm @ 15% oxygen, averaged over any three-hour period, except during a startup, which is not to exceed two hours. (Basis: BAAQMD Regulation 1-107)]
6. [Deleted: Fuel Oil Turbine NO_x Limit, Fuel Oil No Longer Used]
7. [Deleted: Fuel Oil Turbine and Duct Burner NO_x Limit, Fuel Oil No Longer Used]
8. [Deleted: Steam Injection No Longer Used]
9. [Deleted: Water Injection No Longer Used]
10. a. The emission of nitrogen oxides (NO_x) from the full-load operation of the gas turbine(S201) and duct burner (S202) shall not exceed 547 lb/day when firing natural gas. The emission of carbon monoxide (CO) from the full-load operation of the gas turbine and duct burner shall not exceed 2195 lb/day. [Basis: BACTRegulation 9-9-303.2, RACT and cumulative increase for CO)]
11. [Deleted: Fuel Oil SO₂ Limit, Fuel Oil No Longer Used]
12. The owner/operator shall install, calibrate and operate District-approved continuous in-stack emission monitors and recorders for oxides of nitrogen, and either oxygen or carbon dioxide. (basis: BACT)
- 12a. The owner/operator shall install, calibrate and operate District-approved continuous in-stack emission monitors and recorders for carbon monoxide, and either oxygen or carbon dioxide. [(basis: RACT); (Effective May 1, 2001)]
13. Deleted (initial startup source test)
14. For purposes of source testing, the exhaust stack shall be equipped with stack sampling ports and platforms, the location of which shall be subject to the approval of the APCO. (basis: RACT, – BAAQMD Regulation 9-9)
15. Deleted (offsets provided already)

16. Deleted (PSD review not required)
17. All records associated with the above conditions shall be retained by the owner/operator for at least five years and shall be made available to the District upon request. The recording format for Parts 2, 3, 4a, 5a, 7, 10 and 14, shall be subject to the approval of the APCO. (basis: BACT)
18. The owner/operator shall perform an annual source test for carbon monoxide. (basis: RACT)
19. [Deleted: Visible Emissions, Fuel Oil No Longer Used]
20. Within one year of issuance of the renewal of the Title V permit, the owner/operator shall conduct and submit a demonstration of efficiency for S201, Turbine, pursuant to SIP Regulation 9-9-401 and BAAQMD Regulation 9-9-401 to the District. The efficiency shall be determined while the turbine is in compliance with all applicable requirements. If a source test is necessary to demonstrate compliance, the owner/operator shall submit a testing protocol to the Source Test Group for approval and obtain approval before conducting the source test. If the efficiency demonstration shows that the adjusted NOx limit pursuant to 9-9-401 should be lowered or raised, the owner/operator shall submit an application for a minor revision to the Major Facility Review permit within two months of submitting the demonstration to the District. (Basis: 2-6-503)

End of Conditions

RECOMMENDATION

Issue an Authority to Construct to University of California, Berkeley for the proposed burner alteration of the following equipment:

**S-201 Natural Gas Turbine, 23.5 MW
General Electric Model LM-2500, 243 MMBtu/Hr**

By: _____
Alfonso Borja
Senior Air Quality Engineer

Date: _____

**APPENDIX C,
Addendum to Permit Evaluation for Application 30106**

For S201, Turbine and S202, Duct Burner

Any condition preceded by an asterisk is not federally enforceable.

Permit Condition #366, for the Gas Turbine (S201) and Duct Burner (S202), was initially adopted within New Source Review (NSR) Application #29854 on January 7, 1985. The permit condition was later revised within NSR Application #30849 on May 13, 1985, NSR Application #579 on March 29, 2000, and Major Facility Review (MFR) Application 28853 on August 31, 2020. The permit condition is further amended within NSR Application #30106.

1. "Operation" for the purposes of this condition refers only to firing of fuel in the boiler; hot standby maintained with steam does not constitute operation. The existing boilers, Sources 2, 3, and 4 shall operate only during periods when the Gas Turbine (S201) and Duct Burner (S202) are not operating, except the following cases:
 - a. During switch-over periods.
 - b. If the steam demand of the campus exceeds the 120,000 lb/hr design rate available from the gas turbine (S201) and duct burner (S202), then the existing boilers may fire only to the extent necessary to satisfy campus steam demands, up to a rolling annual average of 95,000 lbm/hr. This limit on the existing boilers will go into effect when the cogeneration plant begins operation and will not apply when the cogeneration plant is non-operative.
 - c. If either the gas turbine (S201), or duct burner (S202) malfunctions and the cogeneration system cannot meet the 120,000 lb/hr steam rate, then the existing boilers may fire only to the extent necessary to satisfy the campus steam demands. The duct burner will not operate when the gas turbine is not operational, except during switch-over periods.

[Basis: Cumulative Increase]

2. [Deleted: Fuel Oil Sulfur Content, Fuel Oil No Longer Used]
3. [Deleted: Fuel Oil Sulfur Content During Natural Gas Curtailment or Shutdown, Fuel Oil No Longer Used]
4. The owner/operator of the gas turbine (S201) shall not exceed an hourly maximum throughput of 243 MMBtu/hr. [Basis: Regulation 2-1-320 and Cumulative Increase]

The owner/operator shall meet the following emission limitations:

- a. The owner/operator of the gas turbine (S201) shall only consume natural gas. [Basis: Regulation 2-1-320]
- b. *The concentration of oxides of nitrogen (NOx) in the gas turbine's exhaust shall not exceed 0.70 lb/MW-hr or 20.2 ppmv NOx (measured as NO₂) at 15% oxygen, averaged over any three-hour period, except during a start-up, which is not to exceed ~~two~~ four (4) hours. [Basis: BAAQMD Regulation 9-9-301.2 adjusted for efficiency certified at 33.7% per BAAQMD Regulation 9-9-401]
- c. The concentration of carbon monoxide (CO) in the gas turbine's exhaust shall not exceed 200 ppm at 15% oxygen, averaged over any three-hour period, except during a start-up, which is not to exceed ~~two~~ four (4) hours. [Basis: RACT]

- d. Natural gas burned at the gas turbine (S201) and duct burner (S202), shall be Public Utilities Commission (PUC) quality gas. [Basis: BAAQMD Regulation 2-1-403]
5. The owner/operator of the gas turbine (S201) and duct burner (S202) shall meet the following emission limitations:
 - a. The owner/operator of the gas turbine (S201) and duct burner (S202) shall only consume natural gas. [Basis: 2-1-320 and Cumulative Increase]
 - b. *The concentration of oxides of nitrogen (NOx) in the combined exhaust from the gas turbine and the duct burner shall not exceed a weighted average of 0.70 lb/MW-hr or 20.2 ppm_{dv} @ 15% oxygen, averaged over any three-hour period, except during a startup, which is not to exceed ~~two~~four (4) hours. [Basis: BAAQMD Regulation 1-107]
 - c. The concentration of carbon monoxide (CO) in the combined exhaust from the gas turbine and the duct burner shall not exceed a weighted average of 200 ppm @ 15% oxygen, averaged over any three-hour period, except during a startup, which is not to exceed ~~two~~four (4) hours. [Basis: BAAQMD Regulation 1-107]
 6. [Deleted: Fuel Oil Turbine NOx Limit, Fuel Oil No Longer Used]
 7. [Deleted: Fuel Oil Turbine and Duct Burner NOx Limit, Fuel Oil No Longer Used]
 8. [Deleted: Steam Injection No Longer Used]
 9. [Deleted: Water Injection No Longer Used]
 10. The emission of nitrogen oxides (NOx) from the full-load operation of the gas turbine (S201) and duct burner (S202) shall not exceed 547 lb/day when firing natural gas. The emission of carbon monoxide (CO) from the full-load operation of the gas turbine and duct burner shall not exceed 2,195 lb/day. [Basis: BACT, Regulation 9-9-303.2, RACT, and Cumulative Increase for CO]
 11. [Deleted: Fuel Oil SO₂ Limit, Fuel Oil No Longer Used]
 12. The owner/operator shall install, calibrate, and operate District-approved continuous in-stack emission monitors and recorders for oxides of nitrogen, and either oxygen or carbon dioxide. [Basis: BACT]
 - 12a. The owner/operator shall install, calibrate, and operate District-approved continuous in-stack emission monitors and recorders for carbon monoxide, and either oxygen or carbon dioxide. [Basis: RACT; Effective May 1, 2001]
 13. Deleted (initial startup source test)

14. For purposes of source testing, the exhaust stack shall be equipped with stack sampling ports and platforms, the location of which shall be subject to the approval of the APCO. [Basis: RACT, BAAQMD Regulation 9-9]
15. Deleted (offsets provided already)
16. Deleted (PSD review not required)
17. All records associated with the above conditions shall be retained by the owner/operator for at least five years and shall be made available to the District upon request. The recording format for Parts 2, 3, 4a, 5a, 7, 10 and 14, shall be subject to the approval of the APCO. [Basis: BACT]
18. The owner/operator shall perform an annual source test for carbon monoxide. [Basis: RACT]
19. [Deleted: Visible Emissions, Fuel Oil No Longer Used]
20. Within one year of issuance of the renewal of the Title V permit, the owner/operator shall conduct and submit a demonstration of efficiency for S201, Turbine, pursuant to SIP Regulation 9-9-401 and BAAQMD Regulation 9-9-401 to the District. The efficiency shall be determined while the turbine is in compliance with all applicable requirements. If a source test is necessary to demonstrate compliance, the owner/operator shall submit a testing protocol to the Source Test Group for approval and obtain approval before conducting the source test. If the efficiency demonstration shows that the adjusted NO_x limit pursuant to 9-9-401 should be lowered or raised, the owner/operator shall submit an application for a minor revision to the Major Facility Review permit within two months of submitting the demonstration to the District. [Basis: Regulation 2-6-503]