San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

October 3, 2022

Mr. David King
Sunrise Power Co.
12857 Sunrise Power Rd.
Fellows, CA 93224

Re: Proposed ATC / Certificate of Conformity (Significant Mod)
Facility Number: S-3746
Project Number: S-1204133

Dear Mr. King:

Enclosed for your review is the District's analysis of an application for Authorities to Construct for the facility identified above. You requested that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. The project requests increasing the rating of two gas turbine engine generators.

The notice of preliminary decision for this project has been posted on the District's website (www.valleyair.org). After addressing all comments made during the 30-day public notice and the 45-day EPA comment periods, the District intends to issue the Authorities to Construct with Certificates of Conformity. Please submit your comments within the 30-day public comment period, as specified in the enclosed public notice. Prior to operating with modifications authorized by the Authorities to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

If you have any questions, please contact Ms. Erin Scott, Permit Services Manager, at (559) 230-5900.

Thank you for your cooperation in this matter.

Sincerely,

Brian Clements
Director of Permit Services

Enclosures

cc: Courtney Graham, CARB (w/enclosure) via email
cc: Laura Yannayon, EPA (w/enclosure) via EPS

Samir Sheikh
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www.valleyair.org www.healthyairliving.com

San Joaquin Valley Air Pollution Control District

Authority to Construct Application Review

Modification of Gas Turbines

Facility Name:	Sunrise Power Company, LLC	Date:	5/16/2022
Mailing Address:	12857 Sunrise Power Road Fellows, CA 93224	Engineer:	Dan Klevann
		Lead Engineer:	Steven Davidson
Contact Person:	Adam Rogge		
Telephone:	303-945-1060		
E-mail:	arogge@camstex.com		
Application #(s):	S-3746-1-13 and '-2-13		
Project #:	S-1204133		
Deemed Complete:	10/18/21		

I. Proposal

The Sunrise Power Company, LLC (Sunrise) is a 585-megawatt (MW) nominally rated 2x1 combined cycle power facility consisting of the following major components:

PTO S-3746-1:

- One 160 MW (Nominal Net) General Electric Frame 7FA, Natural Gas Fired Combustion Turbine Generator (CTG1 and CTG2) Equipped with Dry Low NOx (DLN) Combustors (Modified)
- One Heat Recovery Steam Generator (HRSG) with Duct Firing (Not modified)
- One Steam Turbine Generator (STG) (shared with '-2) (Not modified)
- Selective Catalytic Reduction (SCR) and Oxidation Catalyst for CTG1 (Not modified)

PTOs S-3746-2:

- One 160 MW (Nominal Net) General Electric Frame 7FA, Natural Gas Fired Combustion Turbine Generator (CTG1 and CTG2) Equipped with Dry Low NOx (DLN) Combustors (Modified)
- One Heat Recovery Steam Generator (HRSG) with Duct Firing (Not modified)
- One Steam Turbine Generator (STG) (shared with '-1) (Not modified)
- Selective Catalytic Reduction (SCR) and Oxidation Catalyst for CTG2 (Not modified)

PTO S-3746-3:

- Cooling tower (Not modified)

PTO S-3746-4:

- Portable diesel fuel-fired engine driving an electrical generator (Not modified)

Sunrise plans to upgrade this facility by making improvements that include retrofit with improved DLN combustors and updated control system to the CTGs. These changes will increase power output, improve efficiency and the nominal net rating of the entire power plant will increase from 585 MW to 635 MW. There is not an increase in annual potential emissions at this facility as a result of this project.

Entire Power Plant's Nominal Rating Accounting (MW):

The original licensing of the combined cycle plant listed the gas turbines as nominal net 160 MW, the steam turbine (ST) as 173 MW nominal net without duct burners (DB) and only referenced the DBs MMBtu rating. A nominal rating is provided due to variable performance due to ambient conditions (temperature, moisture, etc.) excluding plant auxiliary loads. Each DB is approximately 46 MW. The post-project nominal rating of the gas turbines will be 190 MW, the steam turbine remains unchanged, and the DBs remain unchanged. However, because of the increased output and efficiency of the gas turbines less duct firing will be necessary. The total nominal MW output has some loss prior to the point of interconnect (POI) due to auxiliary load in the plant and line loss to the POI. In addition, the total plant output is transmission line capacity limited to 635 MW, also nominal due to ambient conditions.

Entire Power Plant's Nominal Rating Accounting (MW):

***Pre-Project**		**Cumulative MW**	**Source**
GT1	160	160	PTO S-3746-1-12 in Equip. Desc
GT2	160	320	PTO S-3746-2-12 in Equip. Desc
ST	173	493	Modeling with 2 GTs only
2 DBs	92	**585 nominal net**	DB Manufacturer

****Post-Project**		**Cumulative MW**	**Source**
GT1	190	190	GT1 Modeling
GT2	190	380	GT2 Modeling
ST	173	553	Modeling with 2 GTs only
2 DB	82	**635 nominal net**	DB Manufacturer – Maximum load reduced due to interconnect limitations. The max. rating of DBs continues to be 92 MW

Although the proposed project will increase output, increase some hourly and daily pollutant masses and increase the maximum hourly fuel consumption, this project will not result in an increase in annual emissions above existing permitted limits. Emission rates listed in Conditions 37, 38, 39 and 40 of permit S-3746-1-12 and S-3745-2-12 are being modified as a result of physical modifications to the turbines. Details and justification of all the condition modifications are included in the calculations and compliance sections, below. Draft Authorities to Construct are included in ***Appendix A***.

Sunrise received their Title V Permit on December 31, 2003. This modification can be classified as a Title V minor modification pursuant to Rule 2520, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the Authority to Construct. Sunrise must apply to administratively amend their Title V permit.

II. Applicable Rules

Rule 1080	Stack Monitoring (12/17/92)
Rule 1081	Source Sampling (12/16/93)
Rule 2201	New and Modified Stationary Source Review Rule (8/15/19)
Rule 2410	Prevention of Significant Deterioration (6/16/11)
Rule 2520	Federally Mandated Operating Permits (8/15/19)
Rule 4001	New Source Performance Standards (4/14/99)
Rule 4002	National Emissions Standards for Hazardous Air Pollutants (5/20/04)
Rule 4101	Visible Emissions (2/17/05)
Rule 4102	Nuisance (12/17/92)
Rule 4201	Particulate Matter Concentration (12/17/92)
Rule 4202	Particulate Matter Emission Rate (12/17/92)
Rule 4301	Fuel Burning Equipment (12/17/92)
Rule 4703	Stationary Gas Turbines (9/20/07)
Rule 4801	Sulfur Compounds (12/17/92)
CH&SC 41700	Health Risk Assessment
CH&SC 42301.6	School Notice

Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines
40 CFR Part 60, Subpart GG - Standards of Performance for Stationary Gas Turbines
40 CFR Part 60, Subpart KKKK, Standards of Performance for Stationary Combustion Turbines
40 CFR Part 60, Subpart TTTT, Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units
40 CFR Part 63, Subpart YYYY, National Emission Standard for Hazardous Air Pollutants (NESHAP) for Combustion Turbines
40 CFR Part 64, Compliance Assurance Monitoring
40 CFR Part 75, Continuous Emission Monitoring (CEMS)

III. Project Location

Sunrise is located at 12857 Sunrise Power Road in Fellows, CA. The facility is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

IV. Process Description

The proposed power plant modifications will increase maximum net output rating from approximately 585 MW to 635 MW nominal at an ambient temperature of 30 degrees Fahrenheit (ºF) with a corresponding 2 to 3% improvement in efficiency (i.e., generation output per unit of fuel input).

The existing Sunrise facility is a 585 MW combined cycle power plant that supplies electricity to the power grid that includes the following major components:

- Two 160 MW (Nominal) General Electric Frame 7FA, Natural Gas Fired Combustion Turbine Generators, CTG1 and CTG2
- Two Heat Recovery Steam Generators with Duct Firing
- One Steam Turbine Generator (STG) serving both CTGs
- Selective Catalytic Reduction (SCR) and Oxidation Catalyst

The proposed upgraded combined cycle power system will produce electricity from the two CTGs and the STG. Fuel for the CTGs and duct burners is pipeline utility natural gas. Heat from the CTG exhaust gases is recovered in HRSGs to generate steam. Steam exiting the HRSGs is directed to a single STG, and approximately 275 MW with the duct burners operating at maximum fired duty. While approximately 635 MW will be produced with the duct burners in-service. The total maximum duct burner heat input is about 820 MMBtu/hr (410 MMBtu/hr per unit) at higher heating value.

The SCR emission control system is used to reduce NOx emissions from the natural gas fired combustion turbine. The SCR system consists of an anhydrous ammonia (NH_3) storage, injection system, catalyst and catalyst housing. The SCR system selectively reduces NOx emissions by injecting anhydrous NH_3 into the exhaust gas stream. Nitrogen oxides, ammonia and oxygen react on the surface of the catalyst to form N_2 and water. Oxidation catalyst (EmeraChem) is used to reduce emissions of CO and VOC.

Sunrise is connected to the California Power Grid through the Buttonwillow Substation.

Sunrise plans to retrofit the existing DLN combustors in the existing CTGs and their existing control systems. Sunrise is proposing to install enhanced hardware to the combustor and turbine sections of CTG1 and CTG2 and optimize the control logic of the gas turbines. The proposed performance upgrades include replacement combustion cans with higher gas turbine firing temperatures, resulting in increased MW output and improved efficiency made possible by improved cooling, sealing enhancements and advanced materials. The replacement DLN combustion system will achieve a NOx concentration of 9.0 ppmvd @ 15% O_2 compared to the current OEM guarantee of 15 ppmvd @ 15% O_2. These emission concentrations are prior to the SCR. The system NOx emissions after SCR control, with ammonia injection, will be no more than 2.0 ppmvd @ 15% O_2 at all normal operating loads but excludes startup and shutdown periods. The enhanced CTGs will each have a nominal rating of 190 MW.

The performance upgrades are augmented by the addition of an upgraded Mark VIe turbine control system incorporating combustion optimization capabilities, which also provides

enhanced operational flexibility. The applicant's overall goal of the project is to increase the output and efficiency of each turbine to improve the overall performance of the Sunrise combined cycle facility with a minimal to no change in permitted emissions limits.

The unit performance is optimal at lower ambient conditions (30º F) and can have the highest emissions rates for the CTG units. The reason for this is that cooler air entering the turbine creates more mass flow due to the higher density of cooler air. The denser the air that is entering the turbine the more power output there is. More power output leads to more emissions. To maximize power output, CTG plants will routinely place inlet water coolers at the intake of the turbine. The use of 15º F ambient condition used in the original application was not considered in this analysis, since this very low ambient temperature condition is extreme and very rare and therefore not considered relevant for this analysis. 30º F ambient air occurs in the valley. This plant has CTG inlet air coolers. 30º F inlet turbine air occurs routinely.

The output increase is provided as an estimate from model projections. The actual change will depend on ambient conditions. The projected annual emissions from the Sunrise facility will be less than the annual emission limits in the current SJVAPCD Permits to Operate. There are calculated increases in the maximum hourly emissions of some pollutants because of increased fuel consumption combined with default emission factors and permit concentration limits.

The upgraded CTGs will require a period of commissioning. The commissioning period is expected to be about 80 hours for each CTG. In addition, there may be 6 months between commissioning of the two CTGs. The commissioning is expected to occur in three phases. The first phase will be "break-in" and should take about 24 hours. The next phase is tuning and is expected to require another 24 hours. The remainder of the commissioning time will be for testing. Sunrise expects testing will be at normal operation but may include a number of stops and starts.

V. Equipment Listing

Pre-Project Equipment Description:

PTO S-3746-1-12:

160 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #1 CONSISTING OF GENERAL ELECTRIC FRAME 7FA, NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW-NOX COMBUSTORS, HEAT RECOVERY STEAM GENERATOR WITH DUCT FIRING, SCR, AND OXIDATION CATALYSTS (585 MW TOTAL PLANT NOMINAL RATING)

PTO S-3746-2-12:

160 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #1 CONSISTING OF GENERAL ELECTRIC FRAME 7FA, NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW-NOX COMBUSTORS, HEAT RECOVERY STEAM GENERATOR WITH DUCT FIRING, SCR, AND OXIDATION CATALYSTS (585 MW TOTAL PLANT NOMINAL RATING)

Proposed Modification:

ATC S-3746-1-13:

MODIFICATION OF 160 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #1 CONSISTING OF GENERAL ELECTRIC FRAME 7FA, NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW-NOX (DLN) COMBUSTORS, HEAT RECOVERY STEAM GENERATOR WITH DUCT FIRING, SCR, AND OXIDATION CATALYSTS (585 MW TOTAL PLANT NOMINAL RATING): INCREASE NOMINAL RATING TO 190 MW BY RETROFIT WITH IMPROVED DLN COMBUSTORS AND UPGRADE MARK VIE TURBINE CONTROL SYSTEM SO THAT THE NEW TOTAL PLANT NOMINAL RATING WILL BE 635 MW

ATC S-3746-2-13:

MODIFICATION OF 160 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #1 CONSISTING OF GENERAL ELECTRIC FRAME 7FA, NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW-NOX (DLN) COMBUSTORS, HEAT RECOVERY STEAM GENERATOR WITH DUCT FIRING, SCR, AND OXIDATION CATALYSTS (585 MW TOTAL PLANT NOMINAL RATING): INCREASE NOMINAL RATING TO 190 MW BY RETROFIT WITH IMPROVED DLN COMBUSTORS AND UPGRADE MARK VIE TURBINE CONTROL SYSTEM SO THAT THE NEW TOTAL PLANT NOMINAL RATING WILL BE 635 MW

Post-Project Equipment Description:

PTO S-3746-1-13:

190 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #2 CONSISTING OF GENERAL ELECTRIC FRAME 7FA, NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW-NOX (DLN) COMBUSTORS, HEAT RECOVERY STEAM GENERATOR WITH DUCT FIRING, SCR, AND OXIDATION CATALYSTS (635 MW TOTAL PLANT NOMINAL RATING)

PTO S-3746-2-13:

190 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #2 CONSISTING OF GENERAL ELECTRIC FRAME 7FA, NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW-NOX COMBUSTORS, HEAT RECOVERY STEAM GENERATOR WITH DUCT FIRING, SCR, AND OXIDATION CATALYSTS (635 MW TOTAL PLANT NOMINAL RATING)

VI. Emission Control Technology Evaluation

The existing CTGs will be retrofit with improved DLN combustors. The replacement DLN combustors will achieve a NOx concentration of 9 ppmvd @ 15% O_2 on their own. DLN burner technology uses a two-stage combustor that premixes a portion of the air and fuel in the first stage and the remaining air and fuel are injected into the second stage. This two-stage process optimizes the mixing of combustion air and fuel, thereby minimizes the amount of air required and controlling peak flame temperatures, which results in low NOx emissions.

The exhaust from each of the CTGs will be sent through a HRSG to further capture energy for steam generation. Each of the HRSGs on the CTGs' exhaust is currently fitted with SCR and an oxidation catalyst system.

The SCR uses an ammonia injection grid in the HRSG duct upstream of the catalyst bed. The catalyst bed is integrated into the HRSG because it must be located at a point in the exhaust stream where the gas temperature is between 600 and 800°F. The ammonia reduces NOx to N_2 and water in the presence of the catalyst. The system NOx emissions after control will be no more than 2.0 ppmvd @ 15% O_2 at all normal operating loads but excludes startup and shutdown periods. Since unreacted ammonia (ammonia slip) is present in the exhaust gas downstream of the SCR, ammonia slip is limited to 10 ppmvd @ 15% O_2.

Continuous emissions monitoring systems (CEMS) are in place to sample, analyze, and record NOx, CO, and O_2 concentrations in the stack gas. There is one CEMS for each unit. NOx concentrations are measured before and after the SCR unit. The NH_3 slip is determined using NOx reduction measurements and NH_3 consumption. Other emission controls and details are included the Top-Down BACT Analysis included as ***Appendixes C and D***.

VII. General Calculations

The current permit does not limit Sunrise a specific number of hours of operation. There are only hourly, daily and annual emission limits. These limits are calculated based on manufacturer emissions data of the plant.

The Thermoflow suite is a comprehensive plant design and simulation system consisting of nine modules used to project the emissions from various configurations. The Thermoflow CCGT model uses Thermoflow library physical engine model of a GE 7FA (.04) (Model ID #612), in conjunction with models of the HRSG and STG (configured and calibrated to match

Alstom data), condenser and cooling tower (configured to match plant PI data) plus balance of plant systems and equipment. The GT performance data was generated by GE Performance Engineering using their in-house engine models.

The user provides desired input parameters such as ambient temperature, desired load, duct firing status, and inlet air conditioning. The model will then provide gross generator output, gross generator heat rate, exhaust mass flow rate, exhaust temperature, and exhaust gas key parameters including molecular weight and composition (i.e., percent oxygen, water, CO2, etc.) at different ambient conditions to match GE's predicted performance. Thermoflow was used calculate the exhaust composition for each ambient case evaluated. For NOx, CO and VOC proposed emission limits in ppmv @15% oxygen were used and converted to concentration at actual stack gas oxygen content obtained from Thermoflow. The Thermoflow generated stack gas flow rate in lbs/hr was then used to determine the emission rates in pound per hour. For SOx the Thermoflow generated fuel flow rate and sulfur grain content were used to calculate sulfur dioxide emissions. PM10 and PM2.5 emission factors are also provided by the model. To those estimates the amount of PM10 and PM2.5 that is generated by conversion of SO2 to PM through the oxidation and SCR catalysts is added. The average conversion of SO2 to SO3 through the oxidation catalyst is 40%. All SO3 is presumed to get converted to sulfuric acid mist and the reacts with the ammonia to become ammonium bisulfate.

Thermoflow model results are verified by CEMS monitoring and by third party and District witnessed source tests.

Actual emissions vary depending on ambient temperature, load and numbers of starts, and historical operation.

The proposed emissions from the plant are calculated at worst case scenarios for the daily emissions and the annual emissions will be calculated based on historical operation.

A. Assumptions

- Emission concentration limits of NOx- 2.0 ppmvd @ 15% O_2, CO- 4 ppmvd @ 15% O_2, and VOC- 2.0 ppmvd @ 15% O_2 remain the same as the current permit emission concentration limits at all operating loads (except during startups and shutdowns).

- SOx emissions are based on 1,041 Btu/scf (HHV) for natural gas and a natural gas sulfur content of 0.25 gr. S/100 scf.

- $PM_{10}/PM_{2.5}$ Emissions: Air inlet cooler/filter, lube oil vent coalescer to achieve less than 5% opacity visible emissions at lube oil vents, and natural gas as fuel.

- The maximum daily emissions are calculated using startup/shutdown emissions based on maximum historical CEMS/source test data and applicant request. The maximum annual emissions are calculated using the manufacturer calculated maximum emissions for startup/shutdowns.

- The maximum total (combined for both CTGs) hourly NOx and CO emissions are based on both CTG experiencing one startup with the highest hourly NOx and CO emission rate predicted for a cold startup. (Applicant)

- Maximum daily $PM_{10}/PM_{2.5}$, SOx, NOx, VOC, and CO emissions for each CTG (@ ppmvd limits) were determined by dividing the emissions from both CTGs by 2.

- Maximum daily $PM_{10}/PM_{2.5}$, SOx, NOx, VOC, and CO emissions for both CTG (@ ppmvd limits) were estimated by assuming there is one cold start per CTG and 19 hours and 10 minutes of normal operation for each unit, and one shutdown for both at maximum firing for the CTGs and duct burners at an ambient temperature of 30°F. Applicant requested only one shutdown as the CTG are operated in combined service with the steam turbine.

- Maximum annual emissions are calculated from adding the hours of estimated startups, hours of estimated full load operation, and hours of estimated shutdowns during the year. The facility has indicated that they may operate the turbines differently during the various quarters of the year resulting in different quarterly emissions.

- Maximum 1st and 4th quarter NOx, VOC, CO, $PM_{10}/PM_{2.5}$ and SOx emissions for each CTG (@ ppmvd limits) were estimated using the Combustion Turbine/Duct Burner Model (see Table 6) assuming 100% capacity, at an average ambient temperature of 30°F, for the proposed operating scenario below. (Applicant)

- Maximum 2nd quarter NOx, VOC, CO, $PM_{10}/PM_{2.5}$ and SOx emissions for each CTG (@ ppmvd limits) were estimated using the Combustion Turbine/Duct Burner Model (see Table 7) assuming 100% capacity, at an average ambient temperature of 65°F, for the proposed operating scenario below. (Applicant)

- Maximum 3rd quarter NOx, VOC, CO, $PM_{10}/PM_{2.5}$ and SOx emissions for each CTG (@ ppmvd limits) were estimated using the Combustion Turbine/Duct Burner Model (see Table 8) assuming 100% capacity, at an ambient temperature of 115°F, for the Proposed Operating Scenario (Table 1) below. (Applicant)

- Quarterly and annual emissions are based on the following proposed hypothetical operating schedule (Applicant)

Table 1: Proposed Annual Operating Scenario						
		Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**	**Annual**
Number of Startup Events	Hot (60 min. each)	16	16	6	16	54
	Warm (128 min. each)	27	28	9	27	91
	Cold (230 min. each)	13	11	0	13	37
Number of Shutdown Events	60 minutes each	56	55	15	56	182
Hours of Operation	Duct Burners Off	554	568	193	276	1,591
	Duct Burners On	1,145	1,175	1,931	1,471	5,722
Downtime Hours		282	268	43	282	875
Maximum Hr/Qtr (includes startups & shutdowns)		2,160	2,184	2,208	2,208	8,760
Maximum Operating Hours		1,699	1,743	2,125	1,747	7,313

B. Emission Factors

The emission factors for the all the criteria pollutant emissions for the two CTGs, including NOx, SOx, PM_{10}, CO and VOC, are derived from the current permitted limits and from the manufacturer emission modeling software for each mode of operation. These factors are used in the annual emissions calculations.

Table 2: CTG Emission Factors Normal Operation		
Pollutant		**Source**
NO_X	2.0 ppmvd	Manufacturer
SO_X	1.58 lb/hr	Manufacturer
PM_{10}	17.8 lb/hr	Manufacturer
CO	4 ppmvd	Manufacturer
VOC	2.0 ppmvd	Manufacturer

Table 3: CTG Emission Factors Cold Startup		
Pollutant		**Source**
NO_X	82.0 lb/hr	Manufacturer
SO_X	1.67 lb/hr	Manufacturer
PM_{10}	22 lb/hr	Manufacturer
CO	329.0 lb/hr	Manufacturer
VOC	4.26 lb/hr	Manufacturer

Table 4: CTG Emission Factors Shutdown		
Pollutant		**Source**
NO_X	115.0 lb/hr	Manufacturer
SO_X	1.55 lb/hr	Manufacturer
PM_{10}	13.4 lb/hr	Manufacturer
CO	325.0 lb/hr	Manufacturer
VOC	30.0 lb/hr	Manufacturer

Table 5: Startup & Shutdown Emissions Per Event (per Turbine) for Annual Emission calculations (Applicant)					
	$PM_{10}/PM_{2.5}$ (lb/event)	**SOx (lb/event)**	**NOx (lb/event)**	**VOC (lb/event)**	**CO (lb/event)**
Cold Startup (230 minutes/event)					
Total lb/event	84.3	6.40	314.3	16.33	1261.2
Warm Startup (128 minutes/event)					
Total lb/event	85.3	3.60	77.0	9.09	34.8
Hot Startup (60 minutes/event					
Total lb/event	22	1.67	28.0	4.26	36.0
Shutdown (60 minutes)					
Total lb/event	13.4	1.55	115.0	30.0	325.0

The proposed hourly emission rates used to calculate 1st and 4th quarter emissions are based on 100 percent load and 30°F, with and without duct burner firing. The 2nd quarter emissions are based on 100 percent load and 65°F, with and without duct burner firing. The 3rd quarter emissions are based on 100 percent load and 115°F, with and without duct burner firing. The proposed emission rates are based on emission rates from modeled performance data from the manufacturer. These emission rates are used to establish quarterly and annual emissions limits for the CTGs.

Table 6: Hourly Emissions (For 1st and 4th Quarter Emissions)					
	$PM_{10}/PM_{2.5}$	**SOx**	**NOx (1-hour average)**	**VOC (3-hr rolling average)**	**CO (3-hr rolling average)**
Mass Emission Rates with Duct Burner Firing (per turbine, lb/hr)	17.8	1.58	16.74	5.84	20.38
Mass Emission Rates without Duct Burner Firing (per turbine, lb/hr)	13.4	1.36	14.36	2.85	17.49

Table 7: Hourly Emissions (For 2nd Quarter Emissions)					
	$PM_{10}/PM_{2.5}$	**SOx**	**NOx (1-hour average)**	**VOC (3-hr rolling average)**	**CO (3-hr rolling average)**
Mass Emission Rates with Duct Burner Firing (per turbine, lb/hr)	17.5	1.52	16.15	5.63	19.66
Mass Emission Rates without Duct Burner Firing (per turbine, lb/hr)	12.2	1.27	13.41	2.71	16.33

Table 8: Hourly Emissions (For 3rd Quarter Emissions)					
	$PM_{10}/PM_{2.5}$	**SOx**	**NOx (1-hour average)**	**VOC (3-hr rolling average)**	**CO (3-hr rolling average)**
Mass Emission Rates with Duct Burner Firing (per turbine, lb/hr)	17.0	1.45	15.44	5.38	18.80
Mass Emission Rates without Duct Burner Firing (per turbine, lb/hr)	11.7	1.18	12.52	2.56	15.24

C. Calculations

1. Pre-Project Potential to Emit (PE1)

PE for each CTG from the existing PTO conditions 37, 38 and 40.

Table 9: PE1 (Each CTG)		
Pollutant	**Daily Emissions (lb/day)**	**Annual Emissions (lb/year)**
NO_X	1,170.9	155,669
SO_X	37.2	12,130
PM_{10}	461.2	134,826
CO	2,443.4	253,989
VOC	220.6	43,837

2. Post-Project Potential to Emit (PE2)

Daily Emissions:

The maximum daily emissions will occur when there is a cold start, normal operation, and a shutdown in the same day.

A sample calculation is provided below for NOx emissions. The other criteria pollutants are as shown in the following table.

NOx emissions per CTG (lb/day)
Daily = (Startup + Normal Operation + Shutdown)
= 750 lb/event + 319.73 lb/event + 115.0 lb/event
= 1,184.73 lb NOx/day per turbine

Table 10: Calculated Daily Emissions per CTG

		$PM_{10}/PM_{2.5}$	SOx	NOx	VOC	CO
Startup (230 min/event)	Total lb/event	85.3	6.4	750	85.0	1,750
Normal Operation (19 hr 10 min)	Total lb/event	339.98	30.18	319.73	111.54	389.26
Shutdown (60 min)	Total lb/event	13.4	1.55	115.0	30.0	325.0
Daily Total Emissions per CTG	lb/day	438.68	38.13	1,184.73	226.54	2,464.26

However, the facility has proposed that the turbine emissions for each pollutant be limited. The proposed limited values are shown below and listed on the permit.

Table 11: Permitted Daily Emissions per CTG - PE2

		$PM_{10}/PM_{2.5}$	SOx	NOx	VOC	CO
Permit-Limited Daily Emissions per CTG	**lb/day**	**432.0**	**37.4**	**1,127.2**	**211.5**	**2,301.8**

The facility has CEMS for NOx, SOx, and CO along with annual source tests to ensure compliance with the proposed daily emission limit.

Maximum Annual Emissions:

PE2 are calculated using the proposed number of hours from each mode of operation during each quarter. The number of starts/stops/normal operations will change depending on the quarter of operation (Table 1). This varying operation closely follows the actual operations from the facility based on historical usage. The manufacturer provided emission rates for the various quarterly operating scenarios.

The quarterly emissions are calculated by multiplying the number of starts and stops by the emission rate for each start and stop then adding in the remaining hourly normal operation emissions (Tables 12 - 19). Each of the quarterly emissions are added together to calculate the annual emissions (see Table 21).

Sample calculation is shown below for the first quarter PM10 emissions.

PM10 emissions:
PM10 emissions (qtr 1 hot start) =
= # Hot starts (Table 1) * emission per start lb PM10/start (Table 5)
= 16 hot starts * 22 lb PM10/start
= 352 lb PM10

PM10 emissions (qtr 1 warm start) =
= # warm starts (Table 1) * emission per start lb PM10/start (Table 5)
= 27 warm starts * 85.3 lb PM10/start
= 2,303 lb PM10

PM10 emissions (qtr 1 cold start) =
= # cold starts (Table 1) * emission per start lb PM10/start (Table 5)
= 13 cold starts * 84.3 lb PM10/start
= 1,096 lb PM10

PM10 emissions (qtr 1 shutdown) =
= # shutdown (Table 1) * emission per shutdown lb PM10/shutdown (Table 5)
= 56 shutdown * 13.4 lb PM10/shutdown
= 750 lb PM10

PM10 emissions (qtr 1 normal duct burner off) =
=# hours normal w/ duct burner off (Table 1) * emission lb PM10/hr (Table 5)
= 554 hours * 13.4 lb PM10/hr
= 7,424 lb PM10

PM10 emissions (qtr 1 normal duct burner on) =
=# hours normal w/ duct burner on (Table 1) * emission lb PM10/hr (Table 5)
= 1,145 hours * 17.8 lb PM10/hr
= 20,381 lb PM10

1st Quarter Emissions

Table 12: First Quarter Startup/Shutdown Emissions					
	$PM_{10}/PM_{2.5}$ (lb/qtr)	**SOx (lb/qtr)**	**NOx (lb/qtr)**	**VOC (lb/qtr)**	**CO (lb/qtr)**
Startup Emissions	3,751	207	6,613	526	17,911
Number of Hot Starts	16	16	16	16	16
Hot Start Emissions	352	27	448	68	576
Number of Warm Starts	27	27	27	27	27
Warm Start Emissions	2,303	97	2,079	245	940
Number Cold Starts	13	13	13	13	13
Cold Start Emissions	1,096	83	4,086	212	16,396
Shutdown Emissions	750	87	6,440	1,680	18,200
Number of Shutdowns	56	56	56	56	56
Total Startup & Shutdown Emissions	**4,501**	**294**	**13,053**	**2,206**	**36,111**

Table 13: First Quarter Total Emissions					
	$PM_{10}/PM_{2.5}$ (lb/qtr)	**SOx (lb/qtr)**	**NOx (lb/qtr)**	**VOC (lb/qtr)**	**CO (lb/qtr)**
Startup/Shutdown Emissions	4,501	294	13,053	2,206	36,111
Baseload Emissions w/duct firing	20,381	1,803	19,160	6,686	23,333
Baseload Emissions w/o duct firing	7,424	750	7,951	1,577	9,684
Total 1st Quarter PE (per CTG)	32,306	2,847	40,163	10,469	69,128
Total Combined 1st Quarter PE (2 CTGs)	**64,612**	**5,695**	**80,327**	**20,938**	**138,256**

2nd Quarter Emissions

Table 14: Second Quarter Startup/Shutdown Emissions					
	$PM_{10}/PM_{2.5}$ (lb/qtr)	**SOx (lb/qtr)**	**NOx (lb/qtr)**	**VOC (lb/qtr)**	**CO (lb/qtr)**
Startup Emissions	3,668	198	6,061	502	15,424
Number of Hot Starts	16	16	16	16	16
Hot Start Emissions	352	27	448	68	576
Number of Warm Starts	28	28	28	28	28
Warm Start Emissions	2,388	101	2,156	254	974
Number Cold Starts	11	11	11	11	11
Cold Start Emissions	927	70	3,457	180	13,873
Shutdown Emissions	737	85	6,325	1,650	17,875
Number of Shutdowns	55	55	55	55	55
Total Startup & Shutdown Emissions	**4,405**	**283**	**12,386**	**2,152**	**33,299**

Table 15: Second Quarter Total Emissions					
	$PM_{10}/PM_{2.5}$ (lb/qtr)	**SOx (lb/qtr)**	**NOx (lb/qtr)**	**VOC (lb/qtr)**	**CO (lb/qtr)**
Startup/Shutdown Emissions	4,405	283	12,386	2,152	33,299
Baseload Emissions w/duct firing	20,573	1,786	18,975	6,615	23,099
Baseload Emissions w/o duct firing	6,907	719	7,619	1,542	9,278
Total 2nd Quarter PE (per CTG)	31,884	2,788	38,981	10,309	65,676
Total Combined 2nd Quarter PE (2 CTGs)	**63,769**	**5,576**	**77,961**	**20,618**	**131,352**

3rd Quarter Emissions

Table 16: Third Quarter Startup/Shutdown Emissions					
	$PM_{10}/PM_{2.5}$ (lb/qtr)	**SOx (lb/qtr)**	**NOx (lb/qtr)**	**VOC (lb/qtr)**	**CO (lb/qtr)**
Startup Emissions	900	42	861	107	529
Number of Hot Starts	6	6	6	6	6
Hot Start Emissions	132	10	168	26	216
Number of Warm Starts	9	9	9	9	9
Warm Start Emissions	768	32	693	82	313
Number Cold Starts	0	0	0	0	0
Cold Start Emissions	0	0	0	0	0
Shutdown Emissions	201	23	1,725	450	4,875
Number of Shutdowns	15	15	15	15	15
Total Startup & Shutdown Emissions	**1,101**	**66**	**2,586**	**557**	**5,404**

Table 17: Third Quarter Total Emissions					
	$PM_{10}/PM_{2.5}$ (lb/qtr)	**SOx (lb/qtr)**	**NOx (lb/qtr)**	**VOC (lb/qtr)**	**CO (lb/qtr)**
Startup/Shutdown Emissions	1,179	66	2,586	557	5,404
Baseload Emissions w/duct firing	32,738	2,805	29,822	10,391	36,311
Baseload Emissions w/o duct firing	2,258	228	2,420	495	2,947
Total 3rd Quarter PE (per CTG)	36,175	3,099	34,827	11,443	46,892
Total Combined 3rd Quarter PE (2 CTGs)	**72,350**	**6,199**	**69,655**	**22,887**	**93,784**

4th Quarter Emissions

Table 18: Fourth Quarter Startup/Shutdown Emissions					
	$PM_{10}/PM_{2.5}$ (lb/qtr)	**SOx (lb/qtr)**	**NOx (lb/qtr)**	**VOC (lb/qtr)**	**CO (lb/qtr)**
Startup Emissions	3,729	205	6,613	526	17,911
Number of Hot Starts	16	16	16	16	16
Hot Start Emissions	352	27	448	68	576
Number of Warm Starts	27	27	27	27	27
Warm Start Emissions	2,303	97	2,079	245	940
Number Cold Starts	13	13	13	13	13
Cold Start Emissions	1,074	82	4,086	212	16,396
Shutdown Emissions	750	87	6,440	1,680	18,200
Number of Shutdowns	56	56	56	56	56
Total Startup & Shutdown Emissions	**4,466**	**291**	**13,053**	**2,206**	**36,111**

Table 19: Fourth Quarter Total Emissions					
	$PM_{10}/PM_{2.5}$ (lb/qtr)	**SOx (lb/qtr)**	**NOx (lb/qtr)**	**VOC (lb/qtr)**	**CO (lb/qtr)**
Startup/Shutdown Emissions)	4,479	292	13,053	2,206	36,111
Baseload Emissions w/duct firing	26,182	2,317	24,615	8,590	29,977
Baseload Emissions w/o duct firing	3,694	374	3,959	785	4,822
Total 4th Quarter PE (per CTG)	34,355	2,982	41,627	11,581	70,910
Total Combined 4th Quarter PE (2 CTGs)	**68,711**	**5,965**	**83,254**	**23,162**	**141,819**

Table 20: PE2 (Each CTG)		
Pollutant	**Daily Emissions (lb/day)**	**Annual Emissions (lb/year)**
NO_X	1,127.2	155,599
SO_X	37.4	11,717
PM_{10}	432.0	134,721
CO	2,301.8	252,606
VOC	211.5	43,803

Table 21: Annual Emissions Summary (Gas Turbines combined)					
Quarter	**$PM_{10}/PM_{2.5}$**	**SOx**	**NOx**	**VOC**	**CO**
1st (lb)	64,612	5,695	80,327	20,938	138,256
2nd (lb)	63,769	5,576	77,961	20,618	131,352
3rd (lb)	72,350	6,199	69,655	22,887	93,784
4th (lb)	68,711	5,965	83,254	23,162	141,819
Proposed Annual PE (lb)	**269,442**	**23,434**	**311,197**	**87,606**	**505,211**

3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to District Rule 2201, the SSPE1 is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of Emission Reduction Credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions (AER) that have occurred at the source, and which have not been used on-site. Permits S-3746-3 and '-4 emissions are from the current respective permit.

Table 22: SSPE1 (lb/year)					
Permit Unit	**PM_{10}**	**SO_X**	**NO_X**	**VOC**	**CO**
S-3746-1-12	134,825	12,130	155,669	43,837	253,989
S-3746-2-12	134,825	12,130	155,669	43,837	253,989
S-3746-3-6	5,760	0	0	0	0
S-3746-4-5	35	1	652	47	612
SSPE1	**275,445**	**24,261**	**311,990**	**87,721**	**508,590**

4. Post-Project Stationary Source Potential to Emit (SSPE2)

Pursuant to District Rule 2201, the SSPE2 is the PE from all units with valid ATCs or PTOs at the Stationary Source and the quantity of ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site.

Table 23: SSPE2 (lb/year)					
Permit Unit	**PM_{10}**	**SO_X**	**NO_X**	**VOC**	**CO**
S-3746-1-13	134,721	11,717	155,599	43,803	252,606
S-3746-2-13	134,721	11,717	155,599	43,803	252,606
S-3746-3-6	5,760	0	0	0	0
S-3746-4-5	35	1	652	47	612
SSPE2	**275,237**	**23,435**	**311,850**	**87,653**	**505,824**

5. Major Source Determination

Rule 2201 Major Source Determination:

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values. For the purposes of determining major source status the following shall not be included:

- any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months), pursuant to the Clean Air Act, Title 3, Section 302, US Codes 7602(j) and (z)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 70.2

Table 24: Rule 2201 Major Source Determination (lb/year)						
	PM_{10}	**$PM_{2.5}$**	**SO_X**	**NO_X**	**VOC**	**CO**
SSPE1	275,445	275,445	24,260	311,989	87,721	508,590
SSPE2	275,237	275,237	23,435	311,850	87,653	505,824
Major Source Threshold	140,000	140,000	140,000	20,000	20,000	200,000
Major Source?	Yes	Yes	No	Yes	Yes	Yes

*Note: PM2.5 assumed to be equal to PM10

As shown in the table, above, Sunrise is an existing Major Source for PM_{10}/$PM_{2.5}$, NOx, VOC and CO emissions and will remain a Major Source for PM_{10}/$PM_{2.5}$, NOx, VOC and CO

Rule 2410 Major Source Determination:

The facility or the equipment evaluated under this project is listed as one of the categories specified in 40 CFR 52.21 (b)(1)(iii). Therefore the PSD Major Source threshold is 100 tpy for any regulated NSR pollutant.

Table 25: PSD Major Source Determination (tons/year)

	PM	PM_{10}	SO_2	NO_2	VOC	CO
Estimated Facility PE before Project Increase	137.7	137.7	12.1	156	43.9	254.3
PSD Major Source Thresholds	100	100	100	100	100	100
PSD Major Source?	Yes	Yes	No	Yes	No	Yes

As shown above, the facility is an existing PSD major source for at all pollutants except VOC and SO_2.

6. Baseline Emissions (BE)

The BE calculation (in lb/year) is performed pollutant-by-pollutant for each unit within the project to calculate the QNEC, and if applicable, to determine the amount of offsets required.

Pursuant to District Rule 2201, BE = PE1 for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to District Rule 2201.

a. BE NO_X

Clean Emissions Unit, Located at a Major Source
Pursuant to Rule 2201, a Clean Emissions Unit is defined as an emissions unit that is "equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application. The current BACT guideline is 3.4.2.

The turbines are equipped with a 2.0 ppmvd NOx @ 15% O_2 (1 hr average) - except during startup/shutdown, dry low NOx combustors, SCR with ammonia injection, & natural gas fuel, which meets the District requirements for the technologically feasible option which is more stringent than the achieved-in-practice BACT.

Therefore, BE = PE1.

BE = PE1 = 155,669 lb/year

b. BE SO_X

Unit Located at a Non-Major Source
As shown in Section VII.C.5 above, the facility is not a major source for SO_X emissions.

Therefore Baseline Emissions BE=PE1.

BE = PE1 = 12,130 lb SO_X/year

c. BE PM_{10}

Clean Emissions Unit, Located at a Major Source
Pursuant to Rule 2201, a Clean Emissions Unit is defined as an emissions unit that is equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application. The current BACT guideline is 3.4.2.

The emissions units are equipped Air inlet cooler/filter, lube oil vent coalescer to achieve less than 5% opacity visible emissions at lube oil vents, and natural gas as fuel which meets the District requirements for achieved-in-practice BACT.

Therefore Baseline Emissions BE = PE1.

BE = PE1 = 134,826 lb/year

d. BE CO

Clean Emissions Unit, Located at a Major Source
Pursuant to Rule 2201, a Clean Emissions Unit is defined as an emissions unit that is equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application. The current BACT guideline is 3.4.2.

The emissions units are equipped with 4 ppmvd @ 15% O2 (3 hr rolling average) - except during startup/shutdown, achieved with dry low-NOx combustors and oxidation catalyst.

Therefore Baseline Emissions BE = PE1.

BE = PE1 = 253,989 lb/year

e. BE VOC

Clean Emissions Unit, Located at a Major Source
Pursuant to Rule 2201, a Clean Emissions Unit is defined as an emissions unit that is equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application. The current BACT guideline is 3.4.2.

The emissions units are equipped with 2.0 ppmvd @ 15% O_2 (3 hr rolling average) - except during startup/shutdown, achieved with dry low-NOx combustors and oxidation catalyst.

Therefore Baseline Emissions BE = PE1.

BE = PE1 = 43,837 lb/year

7. SB 288 Major Modification

40 CFR Part 51.165 defines a SB 288 Major Modification as any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act.

Since this facility is a major source for (PM10, NOx, VOC and CO), the project's PE2 is compared to the SB 288 Major Modification Thresholds in the following table in order to determine if further SB 288 Major Modification calculation is required.

As calculated in the Calculation section above:

Table 26: SB 288 Major Modification Thresholds

Pollutant	Project PE2 (lb/year)	Threshold (lb/year)	SB 288 Major Modification Calculation Required?
NO_x	311,197	50,000	Yes
SO_x	23,434	80,000	No
PM_{10}	269,442	30,000	Yes
VOC	87,606	50,000	Yes

Since the project's PE2 surpasses the SB 288 Major Modification Thresholds for (NOx, PM10, VOC pollutants), the project Net Emissions Increase (NEI) will be compared to the SB 288 Major Modification thresholds in order to determine if this project constitutes an SB 288 Major Modification.

The project NEI is the total of emission increases for every permit unit addressed in this project and is calculated as follows:

NEI = ∑(PE2 – AE)

Where: PE2 = The sum of all the PE2s for each permit unit in this project
AE = Actual emissions, as of a particular date, shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a consecutive 24-month period which precedes the particular date and which is representative of normal source operation. The reviewing authority shall allow the use of a different time period upon a determination that it is more representative of normal source operation

The AE is used to calculate the NEI and make the SB 288 Major Modification determination in the following table. The AE 24-month period is March 2021 – April 2019.

The AE are calculated in Appendix K and used in the calculation of the net emission increase. See the table below.

Table 27: SB 288 Major Modification Calculation and Determination

Pollutant	PE2 (lb/year)	AE (lb/yr)	NEI (lb/yr)	Thresholds (lb/yr)	SB 288 Major Modification?
NOx	311,197	194,727	213,396	50,000	Yes
SOx	23,434	23,887	11,765	80,000	No
PM_{10}	269,442	195,858	161,549	30,000	Yes
VOC	87,606	62,437	47,563	50,000	No

As demonstrated in the preceding table, this project does constitute an SB 288 Major Modification for NOx and PM_{10}.

8. Federal Major Modification / New Major Source

Emission increases at non-major sources cannot trigger a Federal Major Modification. Sunrise is not a major source for SOx. CO emissions are not part of the FMM calculation. Therefore, only NOx, VOC, and PM10 emissions will be calculated for FMM purposes.

Federal Major Modification

District Rule 2201 states that a Federal Major Modification is the same as a “Major Modification” as defined in 40 CFR 51.165 and part D of Title I of the CAA.

As defined in 40 CFR 51.165, Section (a)(1)(v) and part D of Title I of the CAA, a Federal Major Modification is any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any

pollutant subject to regulation under the Act. The significant net emission increase threshold for each criteria pollutant is included in Rule 2201.

The determination of Federal Major Modification is based on a two-step test. For the first step, only the emission *increases* are counted. In step 1, emission decreases cannot cancel out the increases. Step 2 allows consideration of the project's net emissions increase as described in 40 CFR 51.165 and the Federal Clean Air Act Section 182 (e), as applicable.

Step 1: Project Emissions Increase

For modified existing emissions units, according to 40 CFR 51.165(a)(2)(ii)(C), the project's emission increase for each pollutant is equal to the sum of the differences between the projected actual emissions (PAE) and the baseline actual emissions (BAE). Please note that in step 1, since the District is classified as extreme non-attainment for ozone, no NOx and VOC emission decreases associated with the proposed project shall be accounted for.

Project Emissions Increase = $\sum$(PAE – BAE)

As described in 40 CFR 51.165(a)(1)(xxviii)(B), when using historical data and company's expected business activity to determine PAE, the portion of the emissions after the project that the existing unit could have accommodated (Unused Baseline Capacity, UBC) before the project (during the same 24-month baseline period used to determine BAE) and that are unrelated to the particular project (including emissions increases due to product demand growth) are to be excluded.

Otherwise, according to 40 CFR 51.165(a)(1)(xxvii)(B)(4), when determining PAE, in lieu of using the method described in 40 CFR 51.165 (a)(1)(xxviii)(B)(1)-(3), *Projected Actual Emissions*, the owner/operator may elect to use emissions unit's Potential to Emit. If appropriate projected actual emissions are not provided by the applicant, then the emissions unit's Potential to Emit is used to calculate the emissions increase.

Since the project proponent has provided the required historical and projected operation data (see Appendix H) required to calculate PAE, the project emissions increase will be calculated as follows:

Project Emissions Increase = PAE – BAE – UBC

Where: PAE = Projected Actual Emissions, and
BAE = Baseline Actual Emissions
UBC = Unused baseline capacity

<u>Projected Actual Emissions (PAE)</u>

Sunrise has presented the PAE in Appendix H. Sunrise's PAE, according to 40 CFR 51.165(a)(1)(xxviii)(B)(1), is based on all relevant information, including but not limited to,

historical operational data, the company's own representations, the company's expected business activity and the company's highest projections of business activity.

Sunrise's PAE represents an estimated annual "up to" emissions based on a projection of startup and shutdown events and normal operations from 2023 through 2032. Many factors affect the business activity for projected future operations. Sunrise, as an efficient combined cycle plant that supports California's grid regionally (i.e., to the north and south), is expected to operate at similar capacity factors (i.e., plant output vs. the total plant output capacity) in the future. However, more startups and shutdowns are anticipated in the future as Sunrise backstops the increasing amount of renewables that will come onto the grid; yet efficient baseload-capable generation like Sunrise may support the grid for extended dispatches as the California electricity system responds to the future retirement of Diablo Canyon nuclear plant in the 2024-2025 timeframe. Sunrise's efficiency and design as a combined cycle plant will enable Sunrise to continue to provide baseload level support to the grid, but we expect the grid coordinator will also dispatch it more often for shorter durations to support changing renewable output.

Since Sunrise has estimated the PAE based on all information relevant to the emission units, the following permit condition will be added to the permit:

*****New condition #30 to track annual emissions and compare to PAE values.

30. If the total actual emissions from both units (S-3746-1 and '-2) combined exceed any of the following: NOx - 122,200 lb/year, VOC – 48,120 lb/year or PM – 142,200 lb/year, the permittee must report to the District the annual NOx, VOC and PM emissions as calculated pursuant to paragraph 40 CFR 51.165(a)(6)(iii) and any other information that the owner or operator wishes to include in the report (e.g., an explanation as to why the emissions differ from the preconstruction projection. Such information must be submitted to the District for a period of 5 calendar years beginning the year of operation under ATCs S-3746-1-13 and '-2-13 and shall be submitted within 60 days of the end of each calendar year. [District Rule 2201]

*****The original condition #30 was deleted, which is discussed in the compliance section below, replacing condition #30 this way allows for the original permit condition numbering to remain the same.

Baseline Actual Emissions (BAE)

For electric utility steam generating units, according to according to 40 CFR 51.165(a)(1)(xxxv)(B), the BAE are calculated as the average, in tons/year, at which the emissions unit actually emitted during any 24-month period selected by the operator within the previous 5-year period.

Sunrise provided the Actual Emissions (AE) for each Combustion Turbine Generator (CTG) over the prior 5 years on a monthly basis. The BAE is based on continuous 24-month periods per pollutant.

The representative 24-month periods for the respective pollutants are highlighted on the spreadsheets. Historical pollutant emissions and the BAE are presented in Appendix I.

Unused Baseline Capacity (UBC)

Sunrise has estimated UBC or otherwise referred to as “excludable emissions” that shall be subtracted from the PAE as unused capacity that is unrelated to the uprate project, the basis of which is described in APR 1150 and from 40 CFR 51.165(a)(1)(xxviii)(B). Sunrise is using historical operating data (CEMS, source test, fuel use) and the projected business activity, including an estimate of the highest projections of business activity to estimate its PAE as outlined in the regulation. The portion of projected emissions after the uprate project that CTG 1 and 2 that could have been accommodated before the uprate project and unrelated to the uprate project during the same 24-month baseline periods used to calculate the BAE are to be excludable.

Sunrise has calculated two UBC-associated emissions to be excluded from the PAE: (1) the aggregate difference between the monthly emissions during the BAE period and the highest achieved emissions during a single month during the BAE period for the respective CTGs, since the respective CTGs could have operated at the highest achieved emissions during each month of the BAE period; this unused capacity was achievable pre-project, the exclusion of which would not be due to the uprate project; and (2) the difference in startup and shutdown emissions calculated for the BAE period and the associated startup and shutdown emissions for the projected startups/shutdowns in the PAE, since the CTGs could have achieved the number of projected startups/shutdowns pre-project (i.e., there is not a permit condition limiting the number of annual startups), but did not. The estimated startups/shutdowns for the PAE calculation are primarily the outcome of how the CAISO utilizes electricity generation assets like Sunrise to balance against renewable generation connected to the grid. The two UBC-associated emissions to be excluded from the PAE are calculated in Appendix J and shown in Table 27 below.

Project Emissions Increase (PEI)

Table 27 below presents the Project Emissions Increase (PEI) for the estimated annual emissions post-project. Sunrise estimates the PAE to be the total emissions from the CTGs starting more than 200 times each and operating at an 80 to 90% capacity factor. The PAE, reduced by the excludable emissions (UBC), will be less than the BAE, indicating that the uprate project will result in a decrease in emissions (i.e., PEI <0) for NOx, VOCs and PM. This facility is not a major source for SOx. Therefore, FMM calcs are not performed for SOx emissions. Per Rule 2201, CO emissions are not part of FMM calculations.

Table 28: Project Emission Increases				
Pollutant	**PAE (lb/yr)**	**BAE (lb/yr)**	**UBC (lb/yr)**	**Project Emissions Increases (lb/yr)**
NO_x	122,200	101,701	45,400	-24,901
VOC	48,200	40,042	14,000	-5,842
PM_{10}	142,200	118,930	45,400	-22,130
$PM_{2.5}$	142,200	118,930	45,400	-22,130

In conclusion, the project's combined total emission increases are calculated in Appendix H, I, J and summarized in the following table and are compared to the Federal Major Modification Thresholds in the following table.

Table 29: Federal Major Modification Thresholds for Emission Increases			
Pollutant	**Total Emissions Increases (lb/yr)**	**Thresholds (lb/yr)**	**Federal Major Modification?**
NO_x*	-24,901	0	No
VOC*	-5,842	0	No
PM_{10}	-22,130	30,000	No
$PM_{2.5}$	-22,130	20,000	No

Since none of the Federal Major Modification Thresholds are being surpassed with this project, this project does not constitute a Federal Major Modification and step 2 is not required and no further discussion is required.

New Major Source

As demonstrated above, this facility is not becoming a Major Source as a result of this project, therefore, this facility is not a New Major Source pursuant to 40 CFR 51.165 a(1)(iv)(A)(3).

9. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination

Rule 2410 applies to any pollutant regulated under the Clean Air Act, except those for which the District has been classified nonattainment. The pollutants which must be addressed in the PSD applicability determination for sources located in the SJV and which are emitted in this project are: (See 52.21 (b) (23) definition of significant).

- NO2 (as a primary pollutant)
- SO2 (as a primary pollutant)
- CO
- PM
- PM10

The facility is an existing PSD Major Source (see Section VII.C.5).

I. Project Location Relative to Class 1 Area

As demonstrated in the "PSD Major Source Determination" Section above, the facility was determined to be a existing PSD Major Source. Because the project is not located within 10 km (6.2 miles) of a Class 1 area – modeling of the emission increase is not required to determine if the project is subject to the requirements of Rule 2410.

II. Project Emission Increase – Significance Determination

a. Evaluation of Calculated Post-project Potential to Emit for New or Modified Emissions Units vs PSD Significant Emission Increase Thresholds

As a screening tool, the post-project potential to emit from all new and modified units is compared to the PSD significant emission increase thresholds, and if the total potentials to emit from all new and modified units are below the applicable thresholds, no futher PSD analysis is needed.

Table 30: PSD Significant Emission Increase Determination: Potential to Emit (tons/year)

	NO_2	SO_2	CO	PM	PM_{10}
Total PE from New and Modified Units	156	12	253	135	135
PSD Significant Emission Increase Thresholds	40	40	100	25	15
PSD Significant Emission Increase?	Yes	No	Yes	Yes	Yes

As demonstrated in the table above, because the post-project potential to emit from all new and modified emission units is greater than at least one PSD significant emission increase threshold, further analysis is required to determine

if the project will result in an increase greater than the PSD significant emission increase thresholds, see step b. below for further analysis.

b. Evaluation of Calculated Emission Increases vs PSD Significant Emission Increase Thresholds

In this step, the emission increase for each subject pollutant is compared to the PSD significant emission increase threshold, and if the emission increase for each subject pollutant is below their threshold, no futher analysis is required.

For existing emissions units, the increase in emissions is calculated as follows:

Emission Increase = PAE – BAE - UBC

Where: PAE = Projected Actual Emissions, and
BAE = Baseline Actual Emissions
UBC = Unused baseline capacity

The project's total emission increases, as calculated in the Federal Major Modification section above, are listed below and compared to the PSD significant emission increase thresholds in the following table.

Table 31: PSD Significant Emission Increase Determination: Emission Increase (tons/year)

	NO_2	SO_2	CO	PM	PM_{10}
Emission Increases (only)	0	0	0	0	0
PSD Significant Emission Increase Thresholds	40	40	100	25	15
PSD Significant Emission Increase?	No	No	No	No	No

As shown in the table above, the emission increases from the project, for all new and modified emission units, does not exceed any of the PSD significant emission increase thresholds. Therefore, the project does not result in a PSD major modification and no further discussion is required.

10. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in Appendix F.

VIII. Compliance Determination

District Rule 1080 Stack Monitoring

This rule grants the Air Pollution Control Officer (APCO) the authority to request the installation and use of CEMS, and specifies performance standards for the equipment and administrative requirements for record keeping, reporting, and notification. The facility is equipped with operational CEMS, and provisions contained in the operating permits are consistent with the requirements of this rule. Therefore, ongoing compliance with this rule is expected.

District Rule 1081 Source Sampling

This rule requires adequate and safe facilities for using in sampling to determine compliance with emissions limits, and specifies methods and procedures for source testing and sample collection. The current permit conditions are consistent with the requirements of this rule. Ongoing compliance with this rule is expected.

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

Pursuant to District Rule 2201, Section 4.1, BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless specifically exempted by Rule 2201, BACT shall be required for the following actions*:

a. Any new emissions unit with a potential to emit exceeding two pounds per day,
b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an Adjusted Increase in Permitted Emissions (AIPE) exceeding two pounds per day, and/or
d. Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule.

*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

a. New emissions units – PE > 2 lb/day

As discussed in Section I above, there are no new emissions units associated with this project. Therefore BACT for new units with PE > 2 lb/day purposes is not triggered.

b. Relocation of emissions units – PE > 2 lb/day

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another; therefore BACT is not triggered.

c. Modification of emissions units – AIPE > 2 lb/day

The AIPE is determined by subtracting the emissions unit's Historically Adjusted Potential to Emit (HAPE) in pounds per day from the new potential to emit (PE2) also in pounds per day. HAPE is equal to the pre-project potential to emit (PE1) times the ratio of the new permitted emission factor (EF2) and the pre-project permitted emission factor (EF1). If EF2 is greater than EF1 the ratio is set to 1.

AIPE = PE2 – HAPE

Where,

AIPE = Adjusted Increase in Permitted Emissions, (lb/day)
PE2 = Post-Project Potential to Emit, (lb/day)
HAPE = Historically Adjusted Potential to Emit, (lb/day)

HAPE = PE1 x (EF2/EF1)

Where,

PE1 = The emissions unit's PE prior to modification or relocation, (lb/day)
EF2 = The emissions unit's permitted emission factor for the pollutant after modification or relocation. If EF2 is greater than EF1 then EF2/EF1 shall be set to 1
EF1 = The emissions unit's permitted emission factor for the pollutant before the modification or relocation

AIPE = PE2 – (PE1 ∗ (EF2 / EF1))

S-3746-1-13 and '-2-13 (each):

PM_{10} AIPE = 431.9 – (461.2 ∗ (1))
= 431.9 – 461.2
= - 29.3 = **0.0 lb PM_{10}/day**

NOx AIPE = 1,127.3 – (1,170.9 ∗ (1))
= 1,127.3 – 1,170.9
= - 43.6 = **0.0 lb NOx/day**

SOx AIPE = 37.35 – (37.2 ∗ (1))
= 37.35 – 37.2
= **0.15 lb SOx/day**

VOC AIPE = 211.5 – (220.6 ∗ (1))
= 211.5 – 220.6
= -9.1 = **0.0 lb VOC/day**

CO AIPE = 2,301.8 – (2443.4 ∗ (1))
= 2,301.8– 2443.4
= -141.6 = **0.0 lb CO/day**

As demonstrated above, the AIPE is not greater than 2.0 lb/day for PM_{10}, NOx, SOx, VOC and CO emissions. Therefore, BACT is not triggered for AIPE purposes for these pollutants.

d. SB 288/Federal Major Modification

As discussed in Sections VII.C.7 and VII.C.8 above, this project does constitute an SB 288 Major Modification for NO_X and PM_{10} emissions. Therefore BACT is triggered for NO_X and PM_{10} for both CTGs in this project.

2. BACT Guideline

BACT Guideline 3.4.2, applies to Gas Turbines > 50 MW, Uniform Load, with Heat Recovery (See ***Appendix C***).

3. Top-Down BACT Analysis

Per Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule.

Pursuant to the attached Top-Down BACT Analysis (see ***Appendix D***), BACT has been satisfied with the following:

$PM_{10}/PM_{2.5}$: Air inlet cooler/filter, lube oil vent coalescer to achieve less than 5% opacity visible emissions at lube oil vents, and natural gas as fuel.

NOx: 2.0 ppmvd @ 15% O_2 (1 hr average) - except during startup/shutdown, dry low NOx combustors, SCR with ammonia injection, & natural gas fuel.

B. Offsets

1. Offset Applicability

Pursuant to District Rule 2201, Section 4.5, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the SSPE2 equals or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The SSPE2 is compared to the offset thresholds in the following table.

Table 32: Offset Determination (lb/year)					
	NO_X	**SO_X**	**PM_{10}**	**CO**	**VOC**
SSPE2	311,850	23,435	275,237	505,823	87,653
Offset Thresholds	20,000	54,750	29,200	200,000	20,000
Offsets Triggered?	Yes	No	Yes	Yes	Yes

2. Quantity of District Offsets Required

As demonstrated above, District offsets are triggered for NOx, VOC, CO, PM10, and PM2.5, under NSR. Therefore, offset calculations will be required for this project.

Surplus at the Time Of Use Emission Reduction Credits

As demonstrated above, this project does not trigger a Federal Major Modification and is not a New Major Source, therefore NOx and VOC emissions and federal offset quantities are not required for this project for NOx or VOC.

District Offset Quantities Calculation

The quantity of offsets in pounds per year for each pollutant is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) = (Σ[PE2 – BE] + ICCE) x DOR, for all new or modified emissions units in the project,

Where,

PE2 = Post-Project Potential to Emit, (lb/year)
BE = Baseline Emissions, (lb/year)
ICCE = Increase in Cargo Carrier Emissions, (lb/year)
DOR = Distance Offset Ratio, determined pursuant to Section 4.8

BE = PE1 for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, Located at a Major Source.

Otherwise,

BE = HAE

In this case, BE = PE1 as the CTGs are clean emissions units. See Baseline Emissions (BE) calculations above for details.

CO offsets are not required for increases in CO in attainment areas if the Ambient Air Quality Standards (AAQS) are not violated in the areas affected, and such emissions will be consistent with Reasonable Further Progress, and will not cause or contribute to a violation of AAQS. Since the overall CO emissions from this project will be decreased, the project will not cause or contribute to a violation of AAQS, so CO offsets are not required.

There are two identical emissions units associated with this project and there are no increases in cargo carrier emissions. Therefore offsets can be determined as follows:

Offsets Required (lb/year) = (Σ [PE2 – BE] + ICCE) x DOR

Table 33. Offsets Required for Each CTG

Pollutant	PE2 (lb/yr)	BE (lb/yr)	ICCE (lb/yr)	Offsets Required = [PE2 – BE] + ICCE)
NO_X	155,599	155,669	0	-70 → 0
SO_X	11,718	12,129	0	-411 → 0
PM_{10}	134,715	134,825	0	-110 → 0
CO	- -	- -	- -	0*
VOC	43,803	43,837	0	-34 → 0

* CO offsets are not required as is explained above.

As demonstrated in the calculation above, the amount of offsets required is zero.

As shown above, District offsets are triggered but not required for any criteria pollutant under NSR. In addition, as demonstrated above, this project does not trigger Federal Major Modification or New Major Source requirements and no federal offsets are required for this project. In conclusion, offsets will not be required for this project and no further discussion is required.

C. Public Notification

1. Applicability

Pursuant to District Rule 2201, Section 5.4, public noticing is required for:

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications,
b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
c. Any project which results in the offset thresholds being surpassed,
d. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant, and/or
e. Any project which results in a Title V significant permit modification

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications

As demonstrated in Section VII.C.7 of this evaluation, this project is an SB 288 Major Modification. Therefore, public noticing is required for this project for SB 288 Major Modification purposes.

b. PE > 100 lb/day

Applications which include a new emissions unit with a PE greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. There are no new emissions units associated with this project. Therefore public noticing is not required for this project for PE > 100 lb/day.

c. Offset Threshold

Public notification is required if the pre-project Stationary Source Potential to Emit (SSPE1) is increased to a level exceeding the offset threshold levels. The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

Table 34: Offset Thresholds

Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO_X	311,989	311,850	20,000 lb/year	No
SO_X	24,260	23,435	54,750 lb/year	No
PM_{10}	275,445	275,237	29,200 lb/year	No
CO	508,590	505,823	200,000 lb/year	No
VOC	87,721	87,653	20,000 lb/year	No

As demonstrated above, there were no thresholds surpassed with this project; therefore public noticing is not required for offset purposes.

d. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a SSIPE of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE = SSPE2 – SSPE1. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

Table 35: SSIPE Public Notice Thresholds					
Pollutant	**SSPE2 (lb/year)**	**SSPE1 (lb/year)**	**SSIPE (lb/year)**	**SSIPE Public Notice Threshold**	**Public Notice Required?**
NO_x	311,850	311,989	-140	20,000 lb/year	No
SO_x	23,435	24,260	-825	20,000 lb/year	No
PM_{10}	275,237	275,445	-208	20,000 lb/year	No
CO	505,823	508,590	-2,767	20,000 lb/year	No
VOC	87,653	87,721	-68	20,000 lb/year	No

As demonstrated above, the SSIPEs for all pollutants were less than 20,000 lb/year; therefore public noticing for SSIPE purposes is not required.

e. Title V Significant Permit Modification

As shown in the Discussion of Rule 2520 below, this project constitutes a Title V significant modification. Therefore, public noticing for Title V significant modifications is required for this project.

2. Public Notice Action

As discussed above, public noticing is required for this project as it is an SB 288 Major Modification. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be electronically published on the District's website prior to the issuance of the ATC for this equipment.

D. Daily Emission Limits (DELs)

DELs and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. The DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

The DELs for the CTGs are specified in the existing permit. Sunrise is proposing to change the DELs in the following conditions:

These calculations are done for ambient temperatures of 30 degrees Fahrenheit (°F), and for the CTG and duct burner firing combined. Permit Condition 37 is based on fuel consumption of the turbine and duct burner firing at 30°F.) (lb/hr emission limits are documented in ATC permit condition 37).

The revised conditions are as follows:

37. Emission rates from each CTG, except during startup and/or shutdown, shall not exceed any of the following: PM10 - 17.8 lb/hr, SOx (as SO2) - 1.58 lb/hr, NOx (as NO2) - 16.74 lb/hr and 2.0 ppmvd @ 15% O2, VOC - 5.84 lb/hr and 2.0 ppmvd @ 15% O2, CO - 20.38 lb/hr and 4 ppmvd @ 15% O2, ammonia - 10 ppmvd @ 15%O2. NOx (as NO2) ppmvd and lb/hr limits are a one-hour rolling average. Ammonia emission limit is a twenty-four hour rolling average. All other ppmvd and lb/hr limits are three-hour rolling averages. If a CTG is in either startup or shutdown mode during any portion of a clock hour, that unit will not be subject to the aforementioned limits during that clock hour. [40 CFR 60.4320(a), District Rules 2201, 4001, 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

38. Emission rates from each CTG shall not exceed any of the following: PM10 – 432.0 lb/day, SOx (as SO2) - 37.4 lb/day, NOx (as NO2) – 1,127.3 lb/day, VOC (as methane) – 211.5 lb/day, or CO - 2,301.8 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit

39. Emission rates from both CTGs (S-3746-1 and -2) shall not exceed any of the following: PM10 – 863.9 lb/day, SOx (as SO2) - 74.2 lb/day, NOx (as NO2) – 2,254.5 lb/day, VOC (as methane) – 423.1 lb/day, or CO – 4,604.5 lb/day. [District Rule 2201 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

40. Annual emissions from both CTGs calculated on a twelve consecutive month rolling basis shall not exceed any of the following: PM10 - 269,442 lb/year, SOx (as SO2) - 23,434 lb/year, NOx (as NO2) - 311,197 lb/year, VOC - 87,606 lb/year, or CO - 505,211 lb/year. [District Rule 2201 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

E. Compliance Assurance

1. Source Testing

No changes are proposed to the current permits' conditions to address source testing requirements for the CTGs. Sunrise is not proposing changes to these source testing requirements.

For the CTGs initial compliance source testing for $PM_{10}/PM_{2.5}$, NOx, VOC, and CO will be performed within 60 days of initial operation of the proposed modified CTGs. Annual compliance source testing for $PM_{10}/PM_{2.5}$, NOx, VOC, and CO will be required thereafter. Periodic compliance demonstration with the fuel gas sulfur content limit will be required as allowed in 40 CFR 60 Subpart GG (New Source Performance Standards for Gas Turbine Engines), 40 CFR Part 60 Subpart KKKK (Standards Of Performance For Stationary Combustion Turbines) and 40 CFR 75 (Continuous Emission Monitoring).

Each CTG has a separate exhaust stack. The units are equipped with CEMs for NOx, CO, and O_2. Each CTG is equipped with an individual CEM. Each CEM has two ranges to allow accurate measurements of NOx and CO emissions during startup.

The CEMs must meet the installation, performance, relative accuracy, and quality assurance requirements specified in 40 CFR 60.13 and Appendix B (referenced in the CEM requirements of Rule 4703) and in 40 CFR part 75.

An initial source test for NOx and CO during startup of one CTG will be required initially and then every seven years thereafter. This testing will serve two purposes, to validate the startup emission estimates used in the emission calculations and to verify that the CEMs accurately measure startup emissions.

The source testing conditions in the current permits are shown below:

- While dormant, normal source testing shall not be required.

- Upon recommencing operation of this unit, normal source testing shall resume.

- Any source testing required by this permit shall be performed within 60 days of recommencing operation of this unit, regardless of whether the unit remains active or is again designated as dormant.

- Short term emission limits (lb/hr and ppmv @ 15% O2) shall be measured annually by District witnessed in-situ sampling of exhaust gases by a qualified independent source test firm at full load conditions as follows - NOx: ppmvd @ 15% O2 and lb/hr, CO: ppmvd @ 15% O2 and lb/hr, VOC: ppmvd @ 15% O2 and lb/hr, PM10: lb/hr, and ammonia: ppmvd @ 15% O2. Sample collection to demonstrate compliance with ammonia emission limit shall be based on three consecutive test runs of thirty minutes each. [District Rules 1081 and 4703, and PSD SJ 01-01] Y

- Startup NOx, CO, and VOC mass emission limits shall be measured for one of the CTGs (S-3746-1, or -2) at least every seven years by District witnessed in situ sampling of exhaust gases by a qualified independent source test firm. [District Rule 1081] Y

- The District and the EPA must be notified 30 days prior to any source test, and a source test plan must be submitted for approval 15 days prior to testing. Official test results and field data collected by source tests required by conditions on this permit shall be submitted to the District within 60 days of testing. [District Rule 1081 and PSD SJ 01-01] Y

- The following test methods shall be used PM10: EPA method 5 (front half and back half) or 201A, NOx: EPA Method 7E or 20, CO: EPA method 10 or 10B, O2: EPA Method 3, 3A, or 20, VOC: EPA method 18 or 25, ammonia: BAAQMD ST-1B, and fuel gas sulfur content: ASTM D3246 or ASTM D6228. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [40 CFR 60.335(a) & (c), District Rules 1081, 4001, 4703, and PSD SJ 01-01] Y

2. Monitoring

Each CTG/HRSG has a separate exhaust stack. Each unit is equipped with operational continuous emissions monitors (CEMs) for NOx, CO and O_2. The CEMs have two ranges to allow accurate measurements of NOx and CO emissions during startup and shutdown episodes. The CEMs must meet the installation, performance, relative accuracy and quality assurance requirements specified in 40 CFR 60.13 and the acid rain requirements in 40 CFR 75.

The following conditions on each CTG permit address monitoring of emissions:

- CTG shall be equipped with continuously recording fuel gas flowmeter. [District Rule 2201] Y

- CTG exhaust after the SCR unit shall be equipped with continuously recording emissions monitors dedicated to this unit for NOx, CO, and O2. Continuous emissions monitors shall meet the requirements of 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, and shall be capable of monitoring emissions during startups and shutdowns as well as normal operating conditions. If relative accuracy of CEM(s) cannot be demonstrated during startup conditions, CEM results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits. [40 CFR 60.334(c), District Rules 1080, 2201 and 4703, 40 CFR 64, and PSD SJ 01-01] Y

- CTG shall be equipped with a continuously recording emission monitor preceding the SCR module measuring NOx concentration for the purposes of calculating ammonia slip. Permittee shall check, record, and quantify the calibration drift (CD) at two concentration values at least once daily (approximately 24 hours). The calibration shall be adjusted whenever the daily zero or high-level CD exceeds 5%. If either the zero or high-level CD exceeds 5% for five consecutive daily periods, the analyzer shall be deemed out-of-control. If either the zero or high-level CD exceeds 10% during any CD check, analyzer shall be deemed out-of-control. If the analyzer is out-of-control, the permittee shall take appropriate corrective action and then repeat the CD check. [District Rule 2201, and 40 CFR 64] Y

- The facility shall maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080] Y

- Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080] Y

- {2255} The owner or operator shall be required to conform to the compliance testing and sampling procedures described in District Rule 1081 (as amended 12/16/93). [District Rule 1081] Y

- CEM cycling times shall be those specified in 40 CFR, Part 51, Appendix P, Sections 3.4, 3.4.1 and 3.4.2, or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080, and 40 CFR 64] Y

- The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NOx, CO, and O2 analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081] Y

- Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080] Y

- Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080] Y

- The owner/operator shall perform a relative accuracy test audit (RATA) as specified by 40 CFR Part 60, Appendix F, 5.11, at least once every four calendar quarters. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080] Y

- Operators of CEM systems installed at the direction of the APCO shall submit a written report for each calendar quarter to the APCO and EPA (Attn: AIR-5). The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred; And reports on opacity monitors giving the number of three minute periods during which the average opacity exceeded the standard for each hour of operation. The averaged may be obtained by integration over the averaging period or by arithmetically averaging a minimum of four equally spaced instantaneous opacity measurements per minute. Any time exempted shall be considered before determining the excess averages of opacity. [40 CFR 64, District Rule 1080 and PSD SJ 01-01] Y

- An hour of excess emissions shall be defined as any operating hour in which 4-hour rolling average NOx concentration exceeds applicable emissions limit in §60.332(a)(1), and a period of monitor downtime shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NOx, CO or O2. The 4-hour rolling average is the arithmetic average of the average NOx concentration measured by the CEMS for a given hour (corrected to 15 percent O2) and the three unit operating hour average NOx concentrations immediately preceding that unit operating hour. [40 CFR 64 and 40 CFR 60.334(j)(1)(iii)] Y

- The owner or operator shall submit reports of NOx excess emissions and monitor downtime, in accordance with 40 CFR 60.7(c) on a semiannual basis. Excess emissions shall be reported for all periods of unit operation, including startup, shutdown and malfunction, for any 4-consecutive rolling average that exceeds the NOx limit under 40 CFR 60.332(a)(1). For the purpose of reports required under 40 CFR 60.7(c), periods of excess emissions and monitor downtime that shall be reported are defined in 40 CFR 60.334(j). All reports required under 40 CFR 60.7(c) shall be postmarked by the 30th day following the end of each six-month period. [40 CFR 60.334(j), 40 CFR 60.334 (j)(5) and District Rule 4703] Y

- If the total duration of NOx excess emissions for the reporting period is less than 1 percent of the total operating time for the reporting period and CEMS downtime for the reporting period is less than 5 percent of the total operating time for the reporting period, only the summary report form in §60.7(d) shall be submitted and the excess emission report described in §60.7(c) need not be submitted unless requested by the EPA or the Air District. [40 CFR 60.334(j), and 40 CFR 60.7(c) and (d)] Y

- Ammonia injection grid shall be equipped with operational ammonia flowmeter and injection pressure indicator. [District Rule 2201] Y

- Permittee shall monitor and record exhaust gas temperature at selective catalytic reduction and oxidation catalyst inlets. [District Rule 2201] Y

Continued compliance is expected.

3. Recordkeeping

Recordkeeping is required to demonstrate compliance with the offset, public notification and daily emission limit requirements of Rule 2201. The current permit includes permit conditions to address recordkeeping requirements for the CTGs. Sunrise is not proposing changes to these recordkeeping requirements. The recordkeeping requirements in the current permit are shown below.

- Records of all dates and times that this unit is designated as dormant or active, and copies of all corresponding notices to the District, shall be maintained, retained for a period of at least five years, and made available for District inspection upon request.

- The permittee shall maintain hourly records of NOx, CO, and ammonia emission concentrations (ppmvd@ 15% O_2), and hourly, daily, and twelve month rolling average records of NOx and CO emissions.

- The permittee shall maintain records of SOx lb/hr, lb/day, and lb/twelve month rolling average emission. SOx emissions shall be based on fuel use records, natural gas sulfur content, and mass balance calculations.

- The owner or operator shall maintain records that contain the following: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments, any periods during which a continuous monitoring system or monitoring device is inoperative, maintenance of any CEM system that has been installed pursuant to District Rule 1080 (as amended 12/17/92), and emission measurements.

- All records required to be maintained by this permit shall be maintained for a period of five years and shall be made readily available for District inspection upon request.

- The owners and operators of each affected unit at the source shall keep on site each of the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority; (ii) All emissions monitoring information, in accordance with 40 CFR Part 75; (iii) Copies of all reports, compliance certifications and other submissions and all records made or required under the Acid Rain Program; (iv) Copies of all documents used to complete an Acid Rain permit application and any other submission that demonstrates compliance with the requirements of the Acid Rain Program.

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Ambient Air Quality Analysis (AAQA)

Section 4.14 of District Rule 2201 requires that an AAQA be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The District's Technical Services Division conducted the required analysis. Refer to ***Appendix E*** of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO_X, CO, and SO_X. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO_X, CO, or SO_X.

The proposed location is in a non-attainment area for the state's PM_{10} as well as federal and state $PM_{2.5}$ thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for PM_{10} and $PM_{2.5}$.

G. Compliance Certification

The federal major modification compliance certification is required for any project, which constitutes a New Major Source or a Federal Major Modification. The proposed project does not constitute a New Major Source or a Federal Major Modification. Therefore, the federal major modification certification of compliance is not required.

H. Alternate Siting Analysis

The current project occurs at an existing facility. The applicant proposes to increase nominal rating to 190 MW by replacing combustor and turbine sections, which will upgrade DLN combustion system, and upgrade mark vie turbine control system so that the new total plant nominal rating will be 635 MW.

Since the project will provide grid electricity at the same location, the existing site will result in the least possible impact from the project. Alternative sites would involve the relocation and/or construction of various support structures on a much greater scale, and would therefore result in a greater impact.

Rule 2410 Prevention of Significant Deterioration

This Rule is applicable to any source and the owner or operator of any source subject to any requirement under 40 CFR Part 52.21. The proposed project does not result in a significant net emissions increase of an air contaminant for which the area is designated attainment. Therefore, Rule 2410 is not applicable and no further analysis is required.

Rule 2520 Federally Mandated Operating Permits

This facility is subject to this Rule, and has received their Title V Operating Permit. The proposed modification is a Minor Modification to the Title V Permit.

In accordance with Rule 2520, Minor Permit Modifications are permit modifications that:

1. Do not violate requirements of any applicable federally enforceable local or federal requirement;
2. Do not relax monitoring, reporting, or recordkeeping requirements in the permit and are not significant changes in existing monitoring permit terms or conditions;
3. Do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis;
4. Do not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject. Such terms and conditions include:
   a. A federally enforceable emission cap assumed to avoid classification as a modification under any provisions of Title I of the Federal Clean Air Act; and
   b. An alternative emissions limit approved pursuant to regulations promulgated under section 112(i)(5) of the Federal Clean Air Act; and
5. Are not Title I modifications as defined in District Rule 2520 or modifications as defined in section 111 or 112 of the Federal Clean Air Act; and
6. Do not seek to consolidate overlapping applicable requirements;
7. Do not grant or modify a permit shield.

Additionally, Section 11.4 requires a description of the proposed change, the emissions resulting from the change, any new applicable requirements that will apply if the change occurs, suggested draft permits, compliance certification and an EPA 45-day review period of the proposed permit modification (or a shorter period if EPA has notified the District that EPA will not object to issuance of the permit modification, whichever is first).

As discussed above, the facility has applied for a Certificate of Conformity (COC) and the District will forward to EPA, for a 45-day review period, this application review which includes the proposed modified Title V permit [i.e. proposed ATC(s)] and the compliance certification form which demonstrates compliance with the minor permit modification requirements in Section 11.4. Therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications. Continued compliance with this rule is expected. The facility may construct/operate under the ATC upon submittal of the Title V administrative amendment application.

Rule 2540 Acid Rain Program

The CTGs are subject to the acid rain program that is implemented through the Title V operating permit. The acid rain program requirements for this facility are monitoring of the NOx and SOx emissions and SOx allowances (from a national SOx allowance bank) are required as well as the use of a NOx CEM. The facility currently complies with the requirements of the rule. Continued compliance with this rule is expected.

Rule 4001 New Source Performance Standards (NSPS)

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60.

40 CFR Part 60, Subpart GG, Standards of Performance for Stationary Gas Turbines

The CTGs at the existing power plant are subject to Subpart GG which limits oxides of nitrogen and sulfur from stationary gas turbines. The applicable NOx limit specified in section 60.332 (a)(1), one hour average, is as follows:

NOx % by volume @ 15% O_2 = 0.0075 * 14.4/Y + F

Y = manufacturers rated heat rate at rated peak load (kJ/watt hour), or actual measured heat rate at LHV and peak load. Y shall not exceed 14.4 kJ/watt hour.

F = NOx emission allowance for fuel bound nitrogen. Natural gas typically has no fuel bound nitrogen, so F is set equal to 0.

Please note that the NSPS NOx standard occurs at the maximum heat rate (depending on ambient temperature) at full load.

NSPS NOx limit:

Y = max heat rate @ LHV = 10,046 Btu/kW hr (peak load @ 115°F)
= 10.046 Btu/W hr * 1.0542 kJ/Btu

Y = 10.59 kJ/W hr (less than 14.4 kJ/W hr)

NOx % by vol. @ 15% O_2 = 0.0075 * 14.4/10.59 + 0
= 0.0102 = 102 ppmvd @15% O_2

The CTGs will continue to operate at a BACT NOx level of 2.0 ppmvd @ 15% O_2, except during startup and shutdown, on a one-hour rolling average. Therefore, compliance with the Subpart GG NOx standard (one-hour average) is expected.

The applicable SOx limits specified in section 60.333 are as follows:

SOx = 0.015% by vol. @ 15% O_2
= 150 ppmvd @ 15% O_2
or fuel S ≤ 0.8% by weight

SOx emissions are based on combusting utility quality natural gas with a fuel sulfur content of 0.25 gr/100 scf. This fuel sulfur content is equivalent to 6.4 ppm by weight or a weight percent of 0.00064 percent.

Both SOx emissions and fuel sulfur content are less than that required by Subpart GG.

Recordkeeping and reporting of the fuel sulfur content is required. Reporting will continue to be performed using an alternative custom reporting schedule. Because the CTGs do not use water injection, monitoring of water injection rate is not applicable and not required.

Reporting and notifications are required as specified in 40 CFR, Subpart A. Subpart GG will not apply after the CTG upgrades. The units will be subject to 40 CFR Part 60, Subpart KKKK.

40 CFR Part 60, Subpart KKKK, Standards of Performance for Stationary Combustion Turbines

40 CFR Part 60, Subpart KKKK covers the Standards of Performance for Stationary Combustion Turbines which commenced construction, modification, or reconstruction after February 18, 2005. §60.14 defines a modification as any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies. There are some exclusions. However, the proposed project would is subject to Subpart KKKK. This NSPS sets NOx concentration limits and allows the use of CEMs for compliance. The proposed CTGs exhaust to SCR units with a residual NOx concentration of no more than 2.0 ppmvd @ 15% O_2. This concentration is well below the standards presented in Table 1 of the Subpart. Sunrise already uses CEMs for compliance purposes. The NSPS also limits SOx emissions to no more than 0.060 lb SO_2/MMBtu. These turbines and duct burners combust pipeline quality natural gas and compliance is expected.

The NSPS requires units with SCR to continuously monitor “appropriate parameters” to verify proper operation. The current permits contain conditions to monitor appropriate parameters. These conditions will remain in the ATC and new PTOs. Continued compliance is expected.

Proposed Modifications to permit condition wording referencing 40 CFR and the justification for changes for ATCs S-3746-1-13 and ‘-2-13:

A. Permit condition #9 modifications:

9. CTG exhaust after the SCR unit shall be equipped with continuously recording emissions monitors dedicated to this unit for NOx, CO, and O2. Continuous emissions monitors shall meet the requirements of 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, and shall be capable of monitoring emissions during startups and shutdowns as well as normal operating conditions. If relative accuracy of CEM(s) cannot be demonstrated during startup conditions, CEM results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits. [40 CFR ~~60.334(c)~~ 60.4340(b), District Rules 1080, 2201 and 4703, 40 CFR 64, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

Permit condition #9 modification justification:
The prior New Source Performance Standard (NSPS), 40 CFR Subpart GG (section 60.330 through 60.335), does not apply to the modified system. NSPS 40 CFR Subpart KKKK (sections 60.4300 through 60.4420) applies to stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005. The condition was revised to reflect the new NSPS. Specifically, 40 CFR Rule 60.334(c) was updated to the current applicable rule, 60.4340(b).

B. Permit condition #20 modifications:

20. An excess emissions is any unit operating period in which the 4-hour or 30-day rolling average NOx emission rate exceeds the applicable emission limit in §60.4320. For the purposes of this subpart, a "4-hour rolling average NOx emission rate" is the arithmetic average of the average NOx emission rate in ppm or ng/J (lb/MWh) measured by the continuous emission monitoring equipment for a given hour and the three unit operating hour average NOx emission rates immediately preceding that unit operating hour. Calculate the rolling average if a valid NOx emission rate is obtained for at least 3 of the 4 hours. For the purposes of this subpart, a "30-day rolling average NOx emission rate" is the arithmetic average of all hourly NOx emission data in ppm or ng/J (lb/MWh) measured by the continuous emission monitoring equipment for a given day and the twenty-nine unit operating days immediately preceding that unit operating day. A new 30-day average is calculated each unit operating day as the average of all hourly NOx emissions rates for the preceding 30 unit operating days if a valid NOx emission rate is obtained for at least 75 percent of all operating hour. ~~An hour of excess emissions shall be defined as any operating hour in which 4-hour rolling average NOx concentration exceeds applicable emissions limit in §60.332(a)(l}, and a period of monitor downtime shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NOx, CO or O2. The 4-hour rolling average is the arithmetic average of the average NOx concentration measured by the CEMS for a given hour (corrected to 15 percent O2) and the three unit operating hour average NOx concentrations immediately preceding that unit operating hour.~~ [40 CFR 64 and 40 CFR ~~60.334(j)(l)(iii)~~ 60.4380(b)(1)] Federally Enforceable Through Title V Permit

Permit condition #20 modification justification:
The prior NSPS, 40 CFR Subpart GG (section 60.330 through 60.335), does not apply to the modified system. NSPS 40 CFR Subpart KKKK (sections 60.4300 through 60.4420) applies to stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005. The condition was revised to reflect the new NSPS. Specifically, 40 CFR §60.334(j)(1)(iii) was updated to current applicable Rule §60.4380(b)(1).

C. Permit condition #21 modifications:

21. The owner or operator shall submit reports of NOx excess emissions and monitor downtime, in accordance with 40 CFR 60.7(c) on a semiannual basis. Excess emissions shall be reported for all periods of unit operation, including startup, shutdown and malfunction~~, for any 4-consecutive rolling average that exceeds the NOx limit under 40 CFR 60.332(a)(l).~~ For the purpose of reports required under 40 CFR 60.7(c), periods of excess emissions and monitor downtime that shall be reported are defined in 40 CFR ~~60.3340~~ 60.4380. All reports· required under 40 CFR 60.7(c) shall be postmarked by the 30th day following the end of each six-month period. [40 CFR ~~60.3340~~ 60.4395, ~~40 CFR 60.334 (j)(5)~~ and District Rule 4703] Federally Enforceable Through Title V Permit

Permit condition #21 modification justification:
The prior NSPS, 40 CFR Subpart GG (section 60.330 through 60.335), does not apply to the modified system. NSPS 40 CFR Subpart KKKK (sections 60.4300 through 60.4420) applies to stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005. The condition was revised to reflect the new NSPS. Specifically, §60.334 was updated to §§60.4380 and 60.4395.

D. Permit condition #22 modifications:

22. If the total duration of NOx excess emissions for the reporting period is less than 1 percent of the total operating time for the reporting period and CEMS downtime for the reporting period is less than 5 percent of the total operating time for the reporting period, only the summary report form in §60.7(d) shall be submitted and the excess emission report described in §60.7(c) need not be submitted unless requested by the EPA or the Air District. [40 CFR ~~60.334~~ 60.4345, and 40 CFR 60.7(c) and (d)] Federally Enforceable Through Title V Permit

Permit condition #22 modification justification:
The prior NSPS, 40 CFR Subpart GG (section 60.330 through 60.335), does not apply to the modified system. NSPS 40 CFR Subpart KKKK (sections 60.4300 through 60.4420) applies to stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005. The condition was revised to reflect the new NSPS. Specifically, §60.334 was updated to §§60.4380 and 60.4395.

E. Permit condition #26 modifications:

26. CTG shall be fired exclusively on natural gas, consisting primarily of methane and ethane, with a sulfur content no greater than 0.25 grains of sulfur compounds (as S) per 100 dry scf of natural gas. [40 CFR ~~60.333(b)~~ 60.4330(a)(2), District NSR Rule, PSD SJ 01-01] Federally Enforceable Through Title V Permit

Permit condition #26 modification justification:
The prior NSPS, 40 CFR Subpart GG (section 60.330 through 60.335), does not apply to the modified system. NSPS 40 CFR Subpart KKKK (sections 60.4300 through 60.4420) applies to stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005. The condition was revised to reflect the new NSPS. Specifically, §60.333(b) updated to §60.4330(a)(2).

F. Permit condition #27 modifications:

27. The sulfur content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods 04084, 05504, 06228, or Gas Processors Association Standard 2377. If sulfur content is less than 0.25 gr/100 scf for 8 consecutive weeks, then the Monitoring frequency shall be every six (6) months. If any six (6) month monitoring show an exceedance, weekly monitoring shall resume. [40 CFR ~~60.334(h)(1) & (3)~~ 60.4360 and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

Permit condition #27 modification justification:
The prior NSPS, 40 CFR Subpart GG (section 60.330 through 60.335), does not apply to the modified system. NSPS 40 CFR Subpart KKKK (sections 60.4300 through 60.4420) applies to stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005. The condition was revised to reflect the new NSPS. Specifically, §60.334(h)(1)&(3) updated to §60.4360.

G. Permit condition #28 modifications:

28. Sulfur compound emissions shall not exceed 0.015% by volume at 15% oxygen, on a dry basis averaged over 15 consecutive minutes and 0.06 lb/MMBtu. [~~40 CFR 60.333(a);~~ 40 CFR 60.4330(a)(2); County Rule 407 (Kern)] Federally Enforceable Through Title V Permit

Permit condition #28 modification justification:
The prior NSPS, 40 CFR Subpart GG (section 60.330 through 60.335), does not apply to the modified system. NSPS 40 CFR Subpart KKKK (sections 60.4300 through 60.4420) applies to stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005. Subpart KKKK contains different limitations for SOx. Compliance can be achieved by combusting pipeline quality natural gas. Specifically, §60.333(a) was replaced with 60.4330(a)(2).

H. Permit condition #30 modifications:

~~30. Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703] Federally Enforceable Through Title V Permit~~

Permit condition #30 modification justification:
Removed reduced load period definition as this is not applicable to the combined cycled configuration of the plant. The CTGs no longer operate in simple cycle mode. This condition was placed on the permit when simple cycle mode was used utilized and is no longer the case.

I. Permit condition #33 modifications:

33. The HHV and LHV of the fuel combusted shall be determined using ASTM 3588, ASTM 1826, or ASTM 1945. [~~40 CFR 60.332(a) and (b) and~~ District Rule 4703] Federally Enforceable Through Title V Permit

Permit condition #33 modification justification:
The prior NSPS, 40 CFR Subpart GG (section 60.330 through 60.335), does not apply to the modified system. NSPS 40 CFR Subpart KKKK (sections 60.4300 through 60.4420) applies to stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005. The condition was revised to reflect the new NSPS. Reference to §60.332(a) and (b) was removed.

J. Permit condition #34 modifications:

34. An owner or operator of any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. [~~40 CFR 60.335(b)(3) and~~ 40 CFR 60.4400 and District Rule 4703] Federally Enforceable Through Title V Permit

Permit condition #34 modification justification:
The prior NSPS, 40 CFR Subpart GG (section 60.330 through 60.335), does not apply to the modified system. NSPS 40 CFR Subpart KKKK (sections 60.4300 through 60.4420) applies to stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005. The condition was revised to reflect the new NSPS. Specific changes were replacing reference to §60.335(b)(3) with § 60.4400.

K. Permit condition #47 modifications:

47. The following test methods shall be used PM10: EPA method 5 (front half and back halt) or 201A, NOx: EPA Method 7E or 20, CO: EPA method 1 0 or 1 OB, O2: EPA Method 3, 3A, or 20, VOC: EPA method 1 8 or 25, ammonia: BAAQMD ST-18, and fuel gas sulfur content: ASTM 03246 or ASTM 06228. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [40 CFR ~~60.335(a) & (c)~~ 60.4400, District Rules 1081, 4001, 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

Permit condition #47 modification justification:
The prior NSPS, 40 CFR Subpart GG (section 60.330 through 60.335), does not apply to the modified system. NSPS 40 CFR Subpart KKKK (sections 60.4300 through 60.4420) applies to stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005. The condition was revised to reflect the new NSPS. §60.335(a)&(c) was replace by the current applicable NSPS §60.4400.

L**.** Permit condition #72 modifications:

72. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR Part 60, Subpart KKKK ~~60.332 (a)(l) and (b), 60.333 (a) and (b), 60.334 (c), h(l), h(3) and (j), and 60.335 (a), (b)(3), and (c)~~; District Rule 4703 (as amended 09/20/07), Sections 5.1.3, 5.2, 5.3, 6.1 , 6.3.1 , 6.3.3, 6.4.1, 6.4.2, 6.4.3, and 6.4.5 as of the date of permit issuance. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

Permit condition #72 modification justification:
The prior NSPS, 40 CFR Subpart GG (section 60.330 through 60.335), does not apply to the modified system. NSPS 40 CFR Subpart KKKK (sections 60.4300 through 60.4420) applies to stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005. The condition was revised to reflect the new NSPS. Reference to sections §60.332 (a)(l) and (b), 60.333 (a) and (b), §60.334 (c), h(l), h(3) and (j), and §60.335 (a), (b)(3), and (c) are replaced with Subpart KKKK only.

M**.** Permit condition #30 addition:

*****New condition #30 to track annual emissions and compare to PAE values.
30. If the emission unit's actual emissions exceed any of the following: NOx - 122,200 lb/year, CO - 124,600 lb/year, SOx – 15,600 lb/year, VOC – 48,120 lb/year and PM – 142,200 lb/year, *(From **Appendix K**)* the permittee must report to the District the annual NOx, CO, SOx, VOC and PM emissions as calculated pursuant to paragraph 40 CFR 51.165(a)(6)(iii) and any other information that the owner or operator wishes to include in the report (e.g., an explanation as to why the emissions differ from the preconstruction projection. Such information must be submitted to the District for a period of 10 calendar years beginning the year of operation under ATCs S-3746-1-13 and '-2-13 and shall be submitted within 60 days of the end of each calendar year. [District Rule 2201]

*****The original condition #30 was deleted, which is discussed above. Replacing condition #30 with this condition allows for the original PTO condition numbering to remain the same.

40 CFR Part 60, Subpart TTTT, Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units

This subpart applies to electric generating units that have commenced construction after January 8, 2014 or modification after June 18, 2014. Section 60.5509(a) clarifies that steam generating units, IGCC, or stationary combustion turbines that commenced construction after January 8, 2014 or commenced reconstruction after June 18, 2014. The requirements also apply to steam generating units or IGCC that commenced modification after June 18, 2014. The equipment in this project are stationary combustion turbines. Therefore, we only look to see if the project is commencing construction or reconstruction. As this is an existing facility, this project is not commencing construction. Reconstruction is defined in Section 60.15 as replacement of components such that the fixed capital cost of the new components exceeds 50% of the cost to construct a new facility. The applicant has stated that this project cost is ~ $30 million while the cost for a new facility would be similar to original building costs of ~$393 million. The cost of this project is well below the 50% criteria for a reconstruction. Therefore, this subpart is not applicable. No further discussion is needed.

Rule 4002 National Emission Standards for Hazardous Air Pollutants (NESHAPs)

This rule incorporates NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, CFR and the NESHAPs from Part 63, Chapter I, Subchapter C, Title 40, CFR; and applies to all sources of hazardous air pollution listed in 40 CFR Part 61 or 40 CFR Part 63.

40 CFR Part 63, Subpart YYYY, National Emission Standard for Hazardous Air Pollutants (NESHAP) for Combustion Turbines

Subpart YYYY establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emissions from stationary combustion turbines located at major sources of HAP emissions. This subpart applies to any existing, new, or reconstructed stationary combustion turbine located at a major source of HAP emissions. A stationary combustion turbine is existing if you commenced construction or reconstruction of the stationary combustion turbine on or before January 14, 2003. A change in ownership of an existing stationary combustion turbine does not make that stationary combustion turbine a new or reconstructed stationary combustion turbine.

Existing stationary combustion turbines do not have to meet the requirements of this subpart and of subpart A. No initial notification is necessary for any existing stationary combustion turbine, even if a new or reconstructed turbine in the same category would require an initial notification.

Sunrise was constructed prior to January 14, 2003 and has not undergone a reconstruction as defined in subpart A. Therefore, Sunrise does not have to meet the requirements of this subpart. No further discussion is required.

40 CFR Part 64, Compliance Assurance Monitoring

The Compliance Assurance Monitoring (CAM) regulation applies to emission units at a major stationary source required to obtain a Title V permit, which use control equipment to achieve a specified emission limit. The section is intended to provide “reasonable assurance” that the control systems are operating properly to maintain compliance with the emission limits. CAM is applicable to the turbine because the potential to emit for the stationary source exceeds the major source thresholds (25 tons per year for ROC or NOx, and 100 tons per year for PM, SOx, or CO) for NOx and CO. However, based on section 64.2(b)(1)(vi), NOx and CO emission are exempt from CAM since the Part 70 permit for the turbine already requires a continuous compliance determination method for both NOx and CO. The turbines have a CEM already which complies with this requirement.

40CFR Part 75, Continuous Emission Monitoring (CEMS)

The turbines combusts only gas, it is only required to monitor NOx and CO2 (or O2) and have the choice of monitoring SOx or may use fuel flow monitoring and default sulfur emission factors to calculate emissions. Additionally subpart C of this part contains requirements for operating and maintaining the CEMS to ensure that accurate, valid data is collected. The CEMS is required to be initially certified and requires recertification if certain modifications are made. Required QA activities include linearity checks, 7-day calibration error tests, and relative accuracy test audits (RATA). Linearity and calibration error tests ensure that the monitors are measuring emissions accurately. RATA compare the CEMS readings to the results determined using a source test. The RATA must be conducted annually except in certain situations where the turbine does not operate for more than 168 hours per calendar quarter. Finally, this part contains requirements for substituting data in a conservative manner for any hour when the CEMS does not record valid data, and these requirements are specified in the proposed permit conditions. Additionally the facility is required to operate according to an approved CEMS protocol, which will contain the above requirements and specific procedures in detail.

Rule 4101 Visible Emissions

Rule 4101 states that no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity). As the CTGs are fired solely on natural gas, visible emissions are not expected to exceed Ringelmann 1 or 20% opacity. Also, based on past inspections of the facility continued compliance is expected.

Rule 4102 Nuisance

Rule 4102 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. The facility is located in a sparsely populated oilfield, approximately 1.3 miles SW of the junction of State Route 33 and Shale Road, 3 miles northwest of Fellows, CA and 2.5 miles south of Derby Acres, CA. Nuisance complaints are not expected from properly operated combustion equipment fired exclusively on low-sulfur natural gas; therefore, operation of the CTGs is not expected to result in nuisance complaints.

California Health and Safety Code, Section 41700

District Policy APR 1905 – *Risk Management Policy for Permitting New and Modified Sources* specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification of an existing source shall not result in an increase in cancer risk greater than the District's significance level (20 in a million) and shall not result in acute and/or chronic risk indices greater than 1.

An HRA is not required for a project with a total facility prioritization score of less than or equal to one. According to the Technical Services Memo for this project, the total facility prioritization score including this project was less than or equal to one.

The resulting prioritization score for this project is shown below.

Health Risk Assessment Summary	
	Worst Case Potential
Prioritization Score	0.7

In accordance with District policy APR 1905, no further analysis is required to determine the impact from this project and compliance with the District's Risk Management Policy is expected.

Compliance with District Rule 4102 requirements is expected.

See ***Appendix E***: Health Risk Assessment Summary

Rule 4201 Particulate Matter Concentration

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot.

The PM exhaust concentration for the CTGs was determined at a worst-case condition. The worst-case condition is 100% load and 30°F. All PM emitted is expected to be 10 microns or smaller.

Summary of PM gr/scf:

PM Emissions = 17.8 lb/hr
H_2O = 9.48%
Exhaust Gas Flow, scfm (wet) = 806,500
Exhaust Gas Flow, dscfm = 806,500 * [(100-9.48)/100] = 730,044

Grain Loading = (17.8 lb/hr x 1 hour/60 min x 7000 grains/lb) / 730,044 scfm = 0.0028 gr/dscf

As shown above, PM emissions for the CTGs will be less than 0.1 gr/dscf. Compliance is expected.

District Rule 4202 Particulate Matter Emission Rate

Rule 4202 establishes PM emission limits as a function of process weight rate in tons/hr. Gas and liquid fuels are excluded from the definition of process weight. Therefore, Rule 4202 does not apply to the CTG's.

District Rule 4301 Fuel Burning Equipment

Rule 4301 limits air contaminant emissions from fuel burning equipment as defined in the rule. Section 3.1 defines fuel burning equipment as "any furnace, boiler, apparatus, stack, and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer".

The CTG/HRSGs fail to meet the Rule 4301 definition of fuel burning equipment because they primarily (both initially and chiefly) produce power mechanically, i.e. the products of combustion pass across the power turbine blades which causes the turbine shaft to rotate, and not through indirect heat transfer. The turbine shaft is coupled to an electrical generator shaft which is rotated to produce electricity.

Because the CTGs primarily produce power by mechanical means, it does not meet the definition of fuel burning equipment. Rule 4301 does not apply to the affected equipment.

District Rule 4703 Stationary Gas Turbines

Rule 4703 limits NOx and CO emissions from stationary gas turbines. For CTG's rated greater than 10 MW with SCR, the NOx and CO emission limits (three-hour rolling average) are:

NOx ppmvd @ 15% O_2 for CTG, with SCR = 9 x (EFF/25)

Where EFF is the higher of EFF1 or EFF2.

EFF1 is the demonstrated percent efficiency of the gas turbine at peak load for that facility, calculated as follows:

EFF1 = 3412 Btu/kW hr/actual heat rate @ HHV Btu/kW hr) x 100%

And

EFF2 is the EFFmfr, which is the manufacturer's continuous rated percent efficiency with air pollution control equipment at LHV, converted to HHV.

EFF2 = EFFmfr x (LHV/HHV),

where the typical LHV/HHV ratio for natural gas = 0.9

EFF1 must be demonstrated for the proposed modified turbine once it is operated. EFF1 results in a slightly higher allowable NOx emission rate if the CTG operates more efficiently than the manufacturer's continuous rated percent efficiency.

The manufacturer's percent efficiency will be based on a peak load (100%) of 9,584 Btu/kW-hr, which occurs at 115ºF, and is calculated as follows:

Manufacturer's heat rate = 9,584 Btu/kW-hr @ LHV/(0.9 LHV/HHV)
= 10,649 Btu/kW-hr @ HHV

EFF2 = (3412 Btu/kW hr / 10,649 Btu/kW-hr @ HHV) x 100%
= 32%

SCR NOx Limit = 9 x (30.57/25)
= 11.5 ppmvd @ 15% O_2

During normal operation, the CTGs will have a NOx emission rate of 2.0 ppmvd @ 15% O_2, which is well below the limit allowed by Rule 4703.

CO emission limits are as follows:

General Electric Frame 7: 25 ppmvd @ 15% O_2

The CTGs have a CO emission rate of 4 ppmvd @ 15% O_2 (3-hour average), except during startup and shutdown. This is lower than the 25 ppmvd allowed by Rule 4703.

Rule 4703 requires that the operator install equipment that monitors the control system operating parameters, the elapsed time of operation, and a NOx CEM that meets the requirements in 40 CFR Part 60 Appendix 6, Spec 2 and the operator to maintain such records for at least two years. Prior to issuance of the Permit to Operate, Sunrise must submit information that correlates the control system operating parameters to the NOx emission rate, to be used when the CEM is down or not operating properly, as required by section 6.2.5 of Rule 4703.

Sunrise must maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local time, start-up and stop time, length and reason for reduced load periods, total hours of operation, and the type and quantity of fuel used as required by Rule 4703 section 6.2.6. This information shall be available for inspection at any time for two years from the date of entry.

Sunrise must demonstrate compliance annually with the NOx and CO emission limits and determine the demonstrated percent efficiency (EFF) of the stationary gas turbine, using the following test methods:

- Oxides of nitrogen emissions for compliance tests shall be determined by using EPA Method 7E or EPA Method 20.
- Carbon monoxide emissions for compliance tests shall be determined by using EPA Test Methods 10 or 10B.

- Oxygen content of the exhaust gas shall be determined by using EPA Methods 3, 3A, or 20.
- HHV and LHV of gaseous fuels shall be determined by using ASTM D3588-91, ASTM 1826-88, or ASTM 1945-81.

Demonstrated percent efficiency of the stationary gas turbine shall be determined using the facility instrumentation for gas turbine fuel consumption and power output. Power output values used to determine gas turbine efficiency shall be the electrical power output of the gas turbine. Compliance with this rule is expected.

District Rule 4801 Sulfur Compounds

Rule 4801 limits sulfur compound emissions to 0.2% (2,000 ppm) dry volume. The CTG SOx emissions are based on combusting natural gas consisting principally of methane with a fuel S content of 0.25 gr/100 scf and a heating value of 1038 Btu/scf. This fuel sulfur content results in a SOx emission concentration of 11 ppmvd @ 15% O_2. Therefore, SOx emissions are not expected to exceed 2,000 ppmvd, and compliance with this rule is expected.

California Health & Safety Code 42301.6 (School Notice)

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

California Environmental Quality Act (CEQA)

CEQA requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The District adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities;
- Identify the ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

Greenhouse Gas (GHG) Significance Determination

District is a Responsible Agency

It is determined that another agency has prepared an environmental review document for the project. The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CEQA Guidelines §15381). As a Responsible Agency, the District is limited to mitigating or avoiding impacts for which it has statutory authority. The District does not have statutory authority for regulating greenhouse gas emissions. The District has determined that the applicant is responsible for implementing greenhouse gas mitigation measures, if any, imposed by the Lead Agency.

District CEQA Findings:

The California Energy Commission (CEC) is the public agency having principal responsibility for approving the project for the Sunrise Power Company and as such is the Lead Agency for CEQA for this ATC project. The CEC has the exclusive power to certify all thermal electric power plants greater than 50 MW in the State of California (Public Resources Code § 25500).

The CEC determined that their power plant site certification program has been certified by the Secretary of Natural Resources as a certified regulatory program (CEQA Guidelines, section 1525(j)). Pursuant to CEQA Guidelines section 15250, the District is a Responsible Agency for the ATC project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CEQA Guidelines § 15381). The District prepared an engineering evaluation (this document) conferring the rights and privileges of an Authority to Construct upon certification by the CEC, where the CEC certificate contains the conditions set forth in this engineering evaluation (20 CCR § 1744.5 and Rule 2201 § 5.8.8).

Indemnification Agreement/Letter of Credit Determination:

According to District Policy APR 2010 (CEQA Implementation Policy), when the District is the Lead or Responsible Agency for CEQA purposes, an indemnification agreement and/or a letter of credit may be required. The decision to require an indemnity agreement and/or a letter of credit is based on a case-by-case analysis of a particular project's potential for litigation risk, which in turn may be based on a project's potential to generate public concern, its potential for significant impacts, and the project proponent's ability to pay for the costs of litigation without a letter of credit, among other factors.

The criteria pollutant emissions and toxic air contaminant emissions associated with the proposed project are not significant, and there is minimal potential for public concern for this particular facility/operation. Therefore, an Indemnification Agreement and/or a Letter of Credit will not be required for this project in the absence of expressed public concern.

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period, issue ATCs S-3746-1-13 and '-2-13 subject to the permit conditions on the attached draft ATC in ***Appendix A***.

X. Billing Information

Annual Permit Fees			
Permit Number	**Fee Schedule**	**Fee Description**	**Annual Fee**
S-3746-1-13	3020-08 B	190 MW	$15,843
S-3746-2-13	3020-08 B	190 MW	$15,843

APPENDIXES:

A: Draft Authorities to Construct
B: Current Permits to Operate
C: BACT Guideline
D: Top-Down BACT Analysis
E: Health Risk Assessment Summary
F: Quarterly Net Emissions Change
G: Compliance Certification
H: PAE Calculations
I: BAE Calculations
J: UBC Calculations
K: SB 288 AE Calculations
L: Quarterly Calculations

APPENDIX A

Draft Authorities to Construct

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: S-3746-1-13 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: SUNRISE POWER CO
MAILING ADDRESS: 12857 SUNRISE POWER RD
FELLOWS, CA 93224

LOCATION: 12857 SUNRISE POWER RD
FELLOWS, CA 93224

SECTION: SW23 **TOWNSHIP:** 31S **RANGE:** 22E

EQUIPMENT DESCRIPTION:
MODIFICATION OF 160 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #1 CONSISTING OF GENERAL ELECTRIC FRAME 7FA, NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW-NOX (DLN) COMBUSTORS, HEAT RECOVERY STEAM GENERATOR WITH DUCT FIRING, SCR, AND OXIDATION CATALYSTS (585 MW TOTAL PLANT NOMINAL RATING): INCREASE NOMINAL RATING TO 190 MW BY RETROFIT WITH IMPROVED DLN COMBUSTORS AND UPGRADE MARK VIE TURBINE CONTROL SYSTEM SO THAT THE NEW TOTAL PLANT NOMINAL RATING WILL BE 635 MW

CONDITIONS

1. While dormant, the fuel line shall be physically disconnected from the unit. [District Rule 2080] Federally Enforceable Through Title V Permit
2. Permittee shall submit written notification to the District upon designating the unit as dormant or active. [District Rule 2080] Federally Enforceable Through Title V Permit
3. While dormant, normal source testing shall not be required. [District Rule 2080] Federally Enforceable Through Title V Permit
4. Upon recommencing operation of this unit, normal source testing shall resume. [District Rule 2080] Federally Enforceable Through Title V Permit
5. Any source testing required by this permit shall be performed within 60 days of recommencing operation of this unit, regardless of whether the unit remains active or is again designated as dormant. [District Rule 2080] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585

6. Records of all dates and times that this unit is designated as dormant or active, and copies of all corresponding notices to the District, shall be maintained, retained for a period of at least five years, and made available for District inspection upon request. [District Rule 1070] Federally Enforceable Through Title V Permit

7. Combustion turbine generator (CTG) and electrical generator lube oil vents shall be equipped with mist eliminators to maintain visible emissions from lube oil vents no greater than 5% opacity, except for three minutes in any hour. [District Rule 2201] Federally Enforceable Through Title V Permit

8. CTG shall be equipped with continuously recording fuel gas flowmeter. [District Rule 2201] Federally Enforceable Through Title V Permit

9. CTG exhaust after the SCR unit shall be equipped with continuously recording emissions monitors dedicated to this unit for NOx, CO, and O2. Continuous emissions monitors shall meet the requirements of 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, and shall be capable of monitoring emissions during startups and shutdowns as well as normal operating conditions. If relative accuracy of CEM(s) cannot be demonstrated during startup conditions, CEM results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits. [40 CFR 60.4340(b) District Rules 1080, 2201 and 4703, 40 CFR 64, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

10. CTG shall be equipped with a continuously recording emission monitor preceding the SCR module measuring NOx concentration for the purposes of calculating ammonia slip. Permittee shall check, record, and quantify the calibration drift (CD) at two concentration values at least once daily (approximately 24 hours). The calibration shall be adjusted whenever the daily zero or high-level CD exceeds 5%. If either the zero or high-level CD exceeds 5% for five consecutive daily periods, the analyzer shall be deemed out-of-control. If either the zero or high-level CD exceeds 10% during any CD check, analyzer shall be deemed out-of-control. If the analyzer is out-of-control, the permittee shall take appropriate corrective action and then repeat the CD check. [District Rule 2201, and 40 CFR 64] Federally Enforceable Through Title V Permit

11. The facility shall maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080] Federally Enforceable Through Title V Permit

12. Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit

13. {2255} The owner or operator shall be required to conform to the compliance testing and sampling procedures described in District Rule 1081 (as amended 12/16/93). [District Rule 1081] Federally Enforceable Through Title V Permit

14. CEM cycling times shall be those specified in 40 CFR, Part 51, Appendix P, Sections 3.4, 3.4.1 and 3.4.2, or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080, and 40 CFR 64] Federally Enforceable Through Title V Permit

15. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NOx, CO, and O2 analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081] Federally Enforceable Through Title V Permit

16. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080] Federally Enforceable Through Title V Permit

17. Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

18. The owner/operator shall perform a relative accuracy test audit (RATA) as specified by 40 CFR Part 60, Appendix F, 5.11, at least once every four calendar quarters. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080] Federally Enforceable Through Title V Permit

19. Operators of CEM systems installed at the direction of the APCO shall submit a written report for each calendar quarter to the APCO and EPA (Attn: AIR-5). The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred; And reports on opacity monitors giving the number of three minute periods during which the average opacity exceeded the standard for each hour of operation. The averaged may be obtained by integration over the averaging period or by arithmetically averaging a minimum of four equally spaced instantaneous opacity measurements per minute. Any time exempted shall be considered before determining the excess averages of opacity. [40 CFR 64, District Rule 1080 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

20. An excess emissions is any unit operating period in which the 4-hour or 30-day rolling average NOx emission rate exceeds the applicable emission limit in §60.4320. For the purposes of this subpart, a "4-hour rolling average NOx emission rate" is the arithmetic average of the average NOx emission rate in ppm or ng/J (lb/MWh) measured by the continuous emission monitoring equipment for a given hour and the three unit operating hour average NOx emission rates immediately preceding that unit operating hour. Calculate the rolling average if a valid NOx emission rate is obtained for at least 3 of the 4 hours. For the purposes of this subpart, a "30-day rolling average NOx emission rate" is the arithmetic average of all hourly NOx emission data in ppm or ng/J (lb/MWh) measured by the continuous emission monitoring equipment for a given day and the twenty-nine unit operating days immediately preceding that unit operating day. A new 30-day average is calculated each unit operating day as the average of all hourly NOx emissions rates for the preceding 30 unit operating days if a valid NOx emission rate is obtained for at least 75 percent of all operating hour. [40 CFR 64 and 40 CFR 60.4380(b)(1)] Federally Enforceable Through Title V Permit

21. The owner or operator shall submit reports of NOx excess emissions and monitor downtime, in accordance with 40 CFR 60.7(c) on a semi annual basis. Excess emissions shall be reported for all periods of unit operation, including startup, shutdown and malfunction. For the purpose of reports required under 40 CFR 60.7(c), periods of excess emissions and monitor downtime that shall be reported are defined in 40 CFR 60.334(j). All reports required under 40 CFR 60.7(c) shall be postmarked by the 30th day following the end of each six-month period. [40 CFR 60.4395 and District Rule 4703] Federally Enforceable Through Title V Permit

22. If the total duration of NOx excess emissions for the reporting period is less than 1 percent of the total operating time for the reporting period and CEMS downtime for the reporting period is less than 5 percent of the total operating time for the reporting period, only the summary report form in §60.7(d) shall be submitted and the excess emission report described in §60.7(c) need not be submitted unless requested by the EPA or the Air District. [40 CFR 60.4345, and 40 CFR 60.7(c) and (d)] Federally Enforceable Through Title V Permit

23. Ammonia injection grid shall be equipped with operational ammonia flowmeter and injection pressure indicator. [District Rule 2201] Federally Enforceable Through Title V Permit

24. Permittee shall monitor and record exhaust gas temperature at selective catalytic reduction and oxidation catalyst inlets. [District Rule 2201] Federally Enforceable Through Title V Permit

25. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

26. CTG shall be fired exclusively on natural gas, consisting primarily of methane and ethane, with a sulfur content no greater than 0.25 grains of sulfur compounds (as S) per 100 dry scf of natural gas. [40 CFR 60.4330(a)(2), District Rule 2201, PSD SJ 01-01] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

27. The sulfur content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377. If sulfur content is less than 0.25 gr/100 scf for 8 consecutive weeks, then the Monitoring frequency shall be every six (6) months. If any six (6) month monitoring show an exceedance, weekly monitoring shall resume. [40 CFR 60.4360 and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

28. Sulfur compound emissions shall not exceed 0.015% by volume at 15% oxygen, on a dry basis averaged over 15 consecutive minutes and 0.06 lb/MMBtu. [40 CFR 60.4330(a)(2); County Rule 407 (Kern)] Federally Enforceable Through Title V Permit

29. Startup is defined as the period beginning with turbine initial firing. Shutdown is defined by the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Startup and shutdown durations shall not exceed 60 minutes for a hot startup, 128 minutes for a warm startup, and 230 minutes for a cold startup, and one hour for a shutdown, per occurrence. [District Rules 2201, 4001 & 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

30. If the total actual emissions from both units (S-3746-1, '-2) combined exceed any of the following: NOx - 122,200 lb/year, VOC - 48,120 lb/year or PM - 142,200 lb/year, the permittee must report to the District the annual NOx, VOC and PM emissions as calculated pursuant to paragraph 40 CFR 51.165(a)(6)(iii) and any other information that the owner or operator wishes to include in the report (e.g., an explanation as to why the emissions differ from the preconstruction projection. Such information must be submitted to the District for a period of 10 calendar years beginning the year of operation under ATCs S-3746-1-13 and '-2-13 and shall be submitted within 60 days of the end of each calendar year. [District Rule 2201] Federally Enforceable Through Title V Permit

31. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rule 4703] Federally Enforceable Through Title V Permit

32. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703] Federally Enforceable Through Title V Permit

33. The HHV and LHV of the fuel combusted shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [District Rule 4703] Federally Enforceable Through Title V Permit

34. An owner or operator of any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. [40 CFR 60.4400 and District Rule 4703] Federally Enforceable Through Title V Permit

35. Ammonia shall be injected when the selective catalytic reduction system catalyst temperature exceeds 500 degrees F. Permittee shall monitor and record catalyst temperature during periods of startup. [District Rule 2201] Federally Enforceable Through Title V Permit

36. During startup or shutdown of any gas turbine engine(s), combined emissions from both gas turbine engines (S-3746-1 and -2) heat recovery steam generator exhausts shall not exceed either of the following: NOx (as NO2) - 700 lb or CO - 1,580 lb, in any one hour. If any CTG is in either startup or shutdown mode during any portion of a clock hour, the facility will be subject to the aforementioned limits during that clock hour. [District Rule 2201] Federally Enforceable Through Title V Permit

37. Emission rates from each CTG, except during startup and/or shutdown, shall not exceed any of the following: PM10 - 17.8 lb/hr, SOx (as SO2) - 1.58 lb/hr, NOx (as NO2) - 16.74 lb/hr and 2.0 ppmvd @ 15% O2, VOC - 5.84 lb/hr and 2.0 ppmvd @ 15% O2, CO - 20.38 lb/hr and 4 ppmvd @ 15% O2, ammonia - 10 ppmvd @ 15%O2. NOx (as NO2) ppmvd and lb/hr limits are a one-hour rolling average. Ammonia emission limit is a twenty-four hour rolling average. All other ppmvd and lb/hr limits are three-hour rolling averages. If a CTG is in either startup or shutdown mode during any portion of a clock hour, that unit will not be subject to the aforementioned limits during that clock hour. [40 CFR 60.4320(a), District Rules 2201, 4001, 4703, and PSD SJ 01-01]

38. Emission rates from each CTG shall not exceed any of the following: PM10 - 432.0 lb/day, SOx (as SO2) - 37.4 lb/day, NOx (as NO2) - 1,127.3 lb/day, VOC (as methane) - 211.5 lb/day, or CO -2,301.8 lb/day. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

39. Emission rates from both CTGs (S-3746-1 and -2) shall not exceed any of the following: PM10 - 863.9 lb/day, SOx (as SO2) - 74.2 lb/day, NOx (as NO2) - 2,254.5 lb/day, VOC (as methane) - 423.1 lb/day, or CO - 4,604.5 lb/day. [District Rule 2201 and PSD SJ 01-01]

40. Annual emissions from both CTGs calculated on a twelve consecutive month rolling basis shall not exceed any of the following: PM10 - 269,442 lb/year, SOx (as SO2) - 23,434 lb/year, NOx (as NO2) - 311,197 lb/year, VOC - 87,606 lb/year, or CO - 505,211 lb/year. [District Rule 2201 and PSD SJ 01-01]

41. Each one-hour period in a one-hour rolling average will commence on the hour. Each one-hour period in a three-hour rolling average will commence on the hour. The three-hour average will be compiled from the three most recent one-hour periods. Each one-hour period in a twenty-four-hour average for ammonia slip will commence on the hour. The twenty-four-hour average will be calculated starting and ending at twelve-midnight. [District Rule 2201 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

42. Daily emissions will be compiled for a twenty-four period starting and ending at twelve-midnight. Each calendar month in a twelve-consecutive-month rolling emissions will commence at the beginning of the first day of the month. The twelve-consecutive-month rolling emissions total to determine compliance with annual emissions will be compiled from the twelve most recent calendar months. [District Rule 2201 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

43. Ammonia slip limit shall be measured using the following calculation procedure: ammonia slip ppmv @ 15% O2 = ((a-(bxc/1,000,000)) x 1,000,000 / b) x d, where a = ammonia injection rate(lb/hr)/17(lb/lb. mol), b = dry exhaust gas flow rate (lb/hr)/(29(lb/lb. mol), c = change in measured NOx concentration ppmv at 15% O2 across catalyst, and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip. Alternatively, permittee may utilize a continuous in-stack ammonia monitor, acceptable to the District, to monitor compliance. At least 60 days prior to using a NH3 CEM, the permittee must submit a monitoring plan for District review and approval. [District Rule 4102]

44. Short term emission limits (lb/hr and ppmv @ 15% O2) shall be measured annually by District witnessed in-situ sampling of exhaust gases by a qualified independent source test firm at full load conditions as follows - NOx: ppmvd @ 15% O2 and lb/hr, CO: ppmvd @ 15% O2 and lb/hr, VOC: ppmvd @ 15% O2 and lb/hr, PM10: lb/hr, and ammonia: ppmvd @ 15% O2. Sample collection to demonstrate compliance with ammonia emission limit shall be based on three consecutive test runs of thirty minutes each. [District Rules 1081 and 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

45. Startup NOx, CO, and VOC mass emission limits shall be measured for one of the CTGs (S-3746-1, or -2) at least every seven years by District witnessed in situ sampling of exhaust gases by a qualified independent source test firm. [District Rule 1081] Federally Enforceable Through Title V Permit

46. The District and the EPA must be notified 30 days prior to any source test, and a source test plan must be submitted for approval 15 days prior to testing. Official test results and field data collected by source tests required by conditions on this permit shall be submitted to the District within 60 days of testing. [District Rule 1081 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

47. The following test methods shall be used PM10: EPA method 5 (front half and back half) or 201A, NOx: EPA Method 7E or 20, CO: EPA method 10 or 10B, O2: EPA Method 3, 3A, or 20, VOC: EPA method 18 or 25, ammonia: BAAQMD ST-1B, and fuel gas sulfur content: ASTM D3246 or ASTM D6228. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [40 CFR 60.4400, District Rules 1081, 4001, 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

48. Results of the CEM system shall be averaged over a three hour period, using consecutive 15-minute sampling periods in accordance with either EPA Method 7E or EPA Method 20 for NOx, EPA Test Methods 10 or 10B for CO, or EPA Methods 3, 3A, or 20 for O2, or, if continuous emission monitors are used, all applicable requirements of CFR 60.13. [40 CFR 60.13 and District Rule 4703] Federally Enforceable Through Title V Permit

49. The permittee shall maintain hourly records of NOx, CO, and ammonia emission concentrations (ppmv @ 15% O2), and hourly, daily, and twelve month rolling average records of NOx and CO emissions. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

50. The permittee shall maintain records of SOx lb/hr, lb/day, and lb/twelve month rolling average emission. SOx emissions shall be based on fuel use records, natural gas sulfur content, and mass balance calculations. [District Rule 2201] Federally Enforceable Through Title V Permit

51. {2251} The owner or operator shall, upon written notice from the APCO, provide a summary of the data obtained from the CEM systems. This summary of data shall be in the form and the manner prescribed by the APCO. [District Rule 1080, 7.1] Federally Enforceable Through Title V Permit

52. The owner or operator shall maintain records that contain the following: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments, any periods during which a continuous monitoring system or monitoring device is inoperative, maintenance of any CEM system that has been installed pursuant to District Rule 1080 (as amended 12/17/92), and emission measurements. [40 CFR 60.7(b), 40 CFR 60.8(d), District Rules 1080 and 2201, 40 CFR 64 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

53. APCO or an authorized representative shall be allowed to inspect, as he or she determines to be necessary, the monitoring devices required by this rule to ensure that such devices are functioning properly. [District Rule 1080, 11.0 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

54. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, and duration of each start-up and each shutdown time period. [District Rule 4703] Federally Enforceable Through Title V Permit

55. All records required to be maintained by this permit shall be maintained for a period of five years and shall be made readily available for District inspection upon request. [District Rules 2201 and 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

56. The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR Part 75. [40 CFR Part 75] Federally Enforceable Through Title V Permit

57. The emissions measurements recorded and reported in accordance with 40 CFR Part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program. [40 CFR Part 75] Federally Enforceable Through Title V Permit

58. The owners and operators of each source and each affected unit at the source shall: (i) hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR Part 73.34(c)) not less than the total annual emissions of sulfur dioxide for the previous calendar year from the unit; and (ii) comply with the applicable Acid Rain emissions limitations for sulfur dioxide. [40 CFR Part 73] Federally Enforceable Through Title V Permit

59. Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act. [40 CFR Part 77] Federally Enforceable Through Title V Permit

60. An affected unit shall be subject to the sulfur dioxide requirements starting on the later of January 1, 2000, or the deadline for monitoring certification under 40 CFR part 75, an affected unit under 40 CFR Part 72.6(a)(3) that is not a substitution or compensating unit. [40 CFR Part 72, 40 CFR Part 75] Federally Enforceable Through Title V Permit

61. Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program. [40 CFR Part 72] Federally Enforceable Through Title V Permit

62. An allowance shall not be deducted in order to comply with the requirements under 40 CFR Part 73, prior to the calendar year for which the allowance was allocated. [40 CFR Part 73] Federally Enforceable Through Title V Permit

63. An allowance allocated by the Administrator under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Acid Rain permit application, the Acid Rain permit, or the written exemption under 40 CFR Part 72.7 and Part 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization. [40 CFR Part 72] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

64. An allowance allocated by the Administrator under the Acid Rain Program does not constitute a property right. [40 CFR Part 72] Federally Enforceable Through Title V Permit

65. The owners and operators of the source and each affected unit at the source shall comply with the applicable Acid Rain emissions limitation for nitrogen oxides. [40 CFR Part 72] Federally Enforceable Through Title V Permit

66. The designated representative of an affected unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR Part 77. [40 CFR Part 77] Federally Enforceable Through Title V Permit

67. The owners and operators of an affected unit that has excess emissions in any calendar year shall: (i) pay without demand the penalty required, and pay up on demand the interest on that penalty; and (ii) comply with the terms of an approved offset plan, as required by 40 CFR Part 77. [40 CFR Part 77] Federally Enforceable Through Title V Permit

68. The owners and operators of the each affected unit at the source shall keep on site the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority: (i) The certificate of representation for the designated representative for the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR Part 72.24; provided that the certificate and documents shall be retained on site beyond such five-year period until such documents are superceded because of the submission of a new certificate of representation changing the designated representative. [40 CFR Part 72] Federally Enforceable Through Title V Permit

69. The owners and operators of each affected unit at the source shall keep on site each of the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority; (ii) All emissions monitoring information, in accordance with 40 CFR Part 75; (iii) Copies of all reports, compliance certifications and other submissions and all records made or required under the Acid Rain Program; (iv) Copies of all documents used to complete an Acid Rain permit application and any other submission that demonstrates compliance with the requirements of the Acid Rain Program. [40 CFR Part 72, 40 CFR Part 75] Federally Enforceable Through Title V Permit

70. The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR Part 75 Subpart I. [40 CFR Part 75] Federally Enforceable Through Title V Permit

71. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: Rule 407 (Kern) as of the date of permit issuance. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

72. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR Part 60, Subpart KKKK ; District Rule 4703 (as amended 09/20/07), Sections 5.1.3, 5.2, 5.3, 6.1, 6.3.1, 6.3.3, 6.4.1, 6.4.2, 6.4.3, and 6.4.5 as of the date of permit issuance. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

73. {2282} Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.7(b), 60.8, 60.8(d), 60.13, and 60.13(b); District Rules 1080 (as amended 12/17/92), Sections 6.3, 6.4, 6.5, 7.0, 7.1, 7.2, 7.3, 8.0, 9.0, 10.0, and 11.0; and 1081 (as amended 12/16/93) as of the date of permit issuance. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: S-3746-2-13 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: SUNRISE POWER CO
MAILING ADDRESS: 12857 SUNRISE POWER RD
FELLOWS, CA 93224

LOCATION: 12857 SUNRISE POWER RD
FELLOWS, CA 93224

SECTION: SW23 **TOWNSHIP:** 31S **RANGE:** 22E

EQUIPMENT DESCRIPTION:
MODIFICATION OF 160 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #1 CONSISTING OF GENERAL ELECTRIC FRAME 7FA, NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW-NOX (DLN) COMBUSTORS, HEAT RECOVERY STEAM GENERATOR WITH DUCT FIRING, SCR, AND OXIDATION CATALYSTS (585 MW TOTAL PLANT NOMINAL RATING): INCREASE NOMINAL RATING TO 190 MW BY RETROFIT WITH IMPROVED DLN COMBUSTORS AND UPGRADE MARK VIE TURBINE CONTROL SYSTEM SO THAT THE NEW TOTAL PLANT NOMINAL RATING WILL BE 635 MW

CONDITIONS

1. While dormant, the fuel line shall be physically disconnected from the unit. [District Rule 2080] Federally Enforceable Through Title V Permit
2. Permittee shall submit written notification to the District upon designating the unit as dormant or active. [District Rule 2080] Federally Enforceable Through Title V Permit
3. While dormant, normal source testing shall not be required. [District Rule 2080] Federally Enforceable Through Title V Permit
4. Upon recommencing operation of this unit, normal source testing shall resume. [District Rule 2080] Federally Enforceable Through Title V Permit
5. Any source testing required by this permit shall be performed within 60 days of recommencing operation of this unit, regardless of whether the unit remains active or is again designated as dormant. [District Rule 2080] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585

6. Records of all dates and times that this unit is designated as dormant or active, and copies of all corresponding notices to the District, shall be maintained, retained for a period of at least five years, and made available for District inspection upon request. [District Rule 1070] Federally Enforceable Through Title V Permit

7. Combustion turbine generator (CTG) and electrical generator lube oil vents shall be equipped with mist eliminators to maintain visible emissions from lube oil vents no greater than 5% opacity, except for three minutes in any hour. [District Rule 2201] Federally Enforceable Through Title V Permit

8. CTG shall be equipped with continuously recording fuel gas flowmeter. [District Rule 2201] Federally Enforceable Through Title V Permit

9. CTG exhaust after the SCR unit shall be equipped with continuously recording emissions monitors dedicated to this unit for NOx, CO, and O2. Continuous emissions monitors shall meet the requirements of 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, and shall be capable of monitoring emissions during startups and shutdowns as well as normal operating conditions. If relative accuracy of CEM(s) cannot be demonstrated during startup conditions, CEM results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits. [40 CFR 60.4340(b) District Rules 1080, 2201 and 4703, 40 CFR 64, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

10. CTG shall be equipped with a continuously recording emission monitor preceding the SCR module measuring NOx concentration for the purposes of calculating ammonia slip. Permittee shall check, record, and quantify the calibration drift (CD) at two concentration values at least once daily (approximately 24 hours). The calibration shall be adjusted whenever the daily zero or high-level CD exceeds 5%. If either the zero or high-level CD exceeds 5% for five consecutive daily periods, the analyzer shall be deemed out-of-control. If either the zero or high-level CD exceeds 10% during any CD check, analyzer shall be deemed out-of-control. If the analyzer is out-of-control, the permittee shall take appropriate corrective action and then repeat the CD check. [District Rule 2201, and 40 CFR 64] Federally Enforceable Through Title V Permit

11. The facility shall maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080] Federally Enforceable Through Title V Permit

12. Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit

13. {2255} The owner or operator shall be required to conform to the compliance testing and sampling procedures described in District Rule 1081 (as amended 12/16/93). [District Rule 1081] Federally Enforceable Through Title V Permit

14. CEM cycling times shall be those specified in 40 CFR, Part 51, Appendix P, Sections 3.4, 3.4.1 and 3.4.2, or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080, and 40 CFR 64] Federally Enforceable Through Title V Permit

15. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NOx, CO, and O2 analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081] Federally Enforceable Through Title V Permit

16. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080] Federally Enforceable Through Title V Permit

17. Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

18. The owner/operator shall perform a relative accuracy test audit (RATA) as specified by 40 CFR Part 60, Appendix F, 5.11, at least once every four calendar quarters. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080] Federally Enforceable Through Title V Permit

19. Operators of CEM systems installed at the direction of the APCO shall submit a written report for each calendar quarter to the APCO and EPA (Attn: AIR-5). The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred; And reports on opacity monitors giving the number of three minute periods during which the average opacity exceeded the standard for each hour of operation. The averaged may be obtained by integration over the averaging period or by arithmetically averaging a minimum of four equally spaced instantaneous opacity measurements per minute. Any time exempted shall be considered before determining the excess averages of opacity. [40 CFR 64, District Rule 1080 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

20. An excess emissions is any unit operating period in which the 4-hour or 30-day rolling average NOx emission rate exceeds the applicable emission limit in §60.4320. For the purposes of this subpart, a "4-hour rolling average NOx emission rate" is the arithmetic average of the average NOx emission rate in ppm or ng/J (lb/MWh) measured by the continuous emission monitoring equipment for a given hour and the three unit operating hour average NOx emission rates immediately preceding that unit operating hour. Calculate the rolling average if a valid NOx emission rate is obtained for at least 3 of the 4 hours. For the purposes of this subpart, a "30-day rolling average NOx emission rate" is the arithmetic average of all hourly NOx emission data in ppm or ng/J (lb/MWh) measured by the continuous emission monitoring equipment for a given day and the twenty-nine unit operating days immediately preceding that unit operating day. A new 30-day average is calculated each unit operating day as the average of all hourly NOx emissions rates for the preceding 30 unit operating days if a valid NOx emission rate is obtained for at least 75 percent of all operating hour. [40 CFR 64 and 40 CFR 60.4380(b)(1)] Federally Enforceable Through Title V Permit

21. The owner or operator shall submit reports of NOx excess emissions and monitor downtime, in accordance with 40 CFR 60.7(c) on a semi annual basis. Excess emissions shall be reported for all periods of unit operation, including startup, shutdown and malfunction. For the purpose of reports required under 40 CFR 60.7(c), periods of excess emissions and monitor downtime that shall be reported are defined in 40 CFR 60.334(j). All reports required under 40 CFR 60.7(c) shall be postmarked by the 30th day following the end of each six-month period. [40 CFR 60.4395 and District Rule 4703] Federally Enforceable Through Title V Permit

22. If the total duration of NOx excess emissions for the reporting period is less than 1 percent of the total operating time for the reporting period and CEMS downtime for the reporting period is less than 5 percent of the total operating time for the reporting period, only the summary report form in §60.7(d) shall be submitted and the excess emission report described in §60.7(c) need not be submitted unless requested by the EPA or the Air District. [40 CFR 60.4345, and 40 CFR 60.7(c) and (d)] Federally Enforceable Through Title V Permit

23. Ammonia injection grid shall be equipped with operational ammonia flowmeter and injection pressure indicator. [District Rule 2201] Federally Enforceable Through Title V Permit

24. Permittee shall monitor and record exhaust gas temperature at selective catalytic reduction and oxidation catalyst inlets. [District Rule 2201] Federally Enforceable Through Title V Permit

25. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

26. CTG shall be fired exclusively on natural gas, consisting primarily of methane and ethane, with a sulfur content no greater than 0.25 grains of sulfur compounds (as S) per 100 dry scf of natural gas. [40 CFR 60.4330(a)(2), District Rule 2201, PSD SJ 01-01] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

27. The sulfur content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377. If sulfur content is less than 0.25 gr/100 scf for 8 consecutive weeks, then the Monitoring frequency shall be every six (6) months. If any six (6) month monitoring show an exceedance, weekly monitoring shall resume. [40 CFR 60.4360 and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

28. Sulfur compound emissions shall not exceed 0.015% by volume at 15% oxygen, on a dry basis averaged over 15 consecutive minutes and 0.06 lb/MMBtu. [40 CFR 60.4330(a)(2); County Rule 407 (Kern)] Federally Enforceable Through Title V Permit

29. Startup is defined as the period beginning with turbine initial firing. Shutdown is defined by the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Startup and shutdown durations shall not exceed 60 minutes for a hot startup, 128 minutes for a warm startup, and 230 minutes for a cold startup, and one hour for a shutdown, per occurrence. [District Rules 2201, 4001 & 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

30. If the total actual emissions from both units (S-3746-1, '-2) combined exceed any of the following: NOx - 122,200 lb/year, VOC - 48,120 lb/year or PM - 142,200 lb/year, the permittee must report to the District the annual NOx, VOC and PM emissions as calculated pursuant to paragraph 40 CFR 51.165(a)(6)(iii) and any other information that the owner or operator wishes to include in the report (e.g., an explanation as to why the emissions differ from the preconstruction projection. Such information must be submitted to the District for a period of 10 calendar years beginning the year of operation under ATCs S-3746-1-13 and '-2-13 and shall be submitted within 60 days of the end of each calendar year. [District Rule 2201] Federally Enforceable Through Title V Permit

31. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rule 4703] Federally Enforceable Through Title V Permit

32. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703] Federally Enforceable Through Title V Permit

33. The HHV and LHV of the fuel combusted shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [District Rule 4703] Federally Enforceable Through Title V Permit

34. An owner or operator of any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. [40 CFR 60.4400 and District Rule 4703] Federally Enforceable Through Title V Permit

35. Ammonia shall be injected when the selective catalytic reduction system catalyst temperature exceeds 500 degrees F. Permittee shall monitor and record catalyst temperature during periods of startup. [District Rule 2201] Federally Enforceable Through Title V Permit

36. During startup or shutdown of any gas turbine engine(s), combined emissions from both gas turbine engines (S-3746-1 and -2) heat recovery steam generator exhausts shall not exceed either of the following: NOx (as NO2) - 700 lb or CO - 1,580 lb, in any one hour. If any CTG is in either startup or shutdown mode during any portion of a clock hour, the facility will be subject to the aforementioned limits during that clock hour. [District Rule 2201] Federally Enforceable Through Title V Permit

37. Emission rates from each CTG, except during startup and/or shutdown, shall not exceed any of the following: PM10 - 17.8 lb/hr, SOx (as SO2) - 1.58 lb/hr, NOx (as NO2) - 16.74 lb/hr and 2.0 ppmvd @ 15% O2, VOC - 5.84 lb/hr and 2.0 ppmvd @ 15% O2, CO - 20.38 lb/hr and 4 ppmvd @ 15% O2, ammonia - 10 ppmvd @ 15%O2. NOx (as NO2) ppmvd and lb/hr limits are a one-hour rolling average. Ammonia emission limit is a twenty-four hour rolling average. All other ppmvd and lb/hr limits are three-hour rolling averages. If a CTG is in either startup or shutdown mode during any portion of a clock hour, that unit will not be subject to the aforementioned limits during that clock hour. [40 CFR 60.4320(a), District Rules 2201, 4001, 4703, and PSD SJ 01-01]

38. Emission rates from each CTG shall not exceed any of the following: PM10 - 432.0 lb/day, SOx (as SO2) - 37.4 lb/day, NOx (as NO2) - 1,127.3 lb/day, VOC (as methane) - 211.5 lb/day, or CO -2,301.8 lb/day. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

39. Emission rates from both CTGs (S-3746-1 and -2) shall not exceed any of the following: PM10 - 863.9 lb/day, SOx (as SO2) - 74.2 lb/day, NOx (as NO2) - 2,254.5 lb/day, VOC (as methane) - 423.1 lb/day, or CO - 4,604.5 lb/day. [District Rule 2201 and PSD SJ 01-01]

40. Annual emissions from both CTGs calculated on a twelve consecutive month rolling basis shall not exceed any of the following: PM10 - 269,442 lb/year, SOx (as SO2) - 23,434 lb/year, NOx (as NO2) - 311,197 lb/year, VOC - 87,606 lb/year, or CO - 505,211 lb/year. [District Rule 2201 and PSD SJ 01-01]

41. Each one-hour period in a one-hour rolling average will commence on the hour. Each one-hour period in a three-hour rolling average will commence on the hour. The three-hour average will be compiled from the three most recent one-hour periods. Each one-hour period in a twenty-four-hour average for ammonia slip will commence on the hour. The twenty-four-hour average will be calculated starting and ending at twelve-midnight. [District Rule 2201 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

42. Daily emissions will be compiled for a twenty-four period starting and ending at twelve-midnight. Each calendar month in a twelve-consecutive-month rolling emissions will commence at the beginning of the first day of the month. The twelve-consecutive-month rolling emissions total to determine compliance with annual emissions will be compiled from the twelve most recent calendar months. [District Rule 2201 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

43. Ammonia slip limit shall be measured using the following calculation procedure: ammonia slip ppmv @ 15% O2 = ((a-(bxc/1,000,000)) x 1,000,000 / b) x d, where a = ammonia injection rate(lb/hr)/17(lb/lb. mol), b = dry exhaust gas flow rate (lb/hr)/(29(lb/lb. mol), c = change in measured NOx concentration ppmv at 15% O2 across catalyst, and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip. Alternatively, permittee may utilize a continuous in-stack ammonia monitor, acceptable to the District, to monitor compliance. At least 60 days prior to using a NH3 CEM, the permittee must submit a monitoring plan for District review and approval. [District Rule 4102]

44. Short term emission limits (lb/hr and ppmv @ 15% O2) shall be measured annually by District witnessed in-situ sampling of exhaust gases by a qualified independent source test firm at full load conditions as follows - NOx: ppmvd @ 15% O2 and lb/hr, CO: ppmvd @ 15% O2 and lb/hr, VOC: ppmvd @ 15% O2 and lb/hr, PM10: lb/hr, and ammonia: ppmvd @ 15% O2. Sample collection to demonstrate compliance with ammonia emission limit shall be based on three consecutive test runs of thirty minutes each. [District Rules 1081 and 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

45. Startup NOx, CO, and VOC mass emission limits shall be measured for one of the CTGs (S-3746-1, or -2) at least every seven years by District witnessed in situ sampling of exhaust gases by a qualified independent source test firm. [District Rule 1081] Federally Enforceable Through Title V Permit

46. The District and the EPA must be notified 30 days prior to any source test, and a source test plan must be submitted for approval 15 days prior to testing. Official test results and field data collected by source tests required by conditions on this permit shall be submitted to the District within 60 days of testing. [District Rule 1081 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

47. The following test methods shall be used PM10: EPA method 5 (front half and back half) or 201A, NOx: EPA Method 7E or 20, CO: EPA method 10 or 10B, O2: EPA Method 3, 3A, or 20, VOC: EPA method 18 or 25, ammonia: BAAQMD ST-1B, and fuel gas sulfur content: ASTM D3246 or ASTM D6228. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [40 CFR 60.4400, District Rules 1081, 4001, 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

48. Results of the CEM system shall be averaged over a three hour period, using consecutive 15-minute sampling periods in accordance with either EPA Method 7E or EPA Method 20 for NOx, EPA Test Methods 10 or 10B for CO, or EPA Methods 3, 3A, or 20 for O2, or, if continuous emission monitors are used, all applicable requirements of CFR 60.13. [40 CFR 60.13 and District Rule 4703] Federally Enforceable Through Title V Permit

49. The permittee shall maintain hourly records of NOx, CO, and ammonia emission concentrations (ppmv @ 15% O2), and hourly, daily, and twelve month rolling average records of NOx and CO emissions. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

50. The permittee shall maintain records of SOx lb/hr, lb/day, and lb/twelve month rolling average emission. SOx emissions shall be based on fuel use records, natural gas sulfur content, and mass balance calculations. [District Rule 2201] Federally Enforceable Through Title V Permit

51. {2251} The owner or operator shall, upon written notice from the APCO, provide a summary of the data obtained from the CEM systems. This summary of data shall be in the form and the manner prescribed by the APCO. [District Rule 1080, 7.1] Federally Enforceable Through Title V Permit

52. The owner or operator shall maintain records that contain the following: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments, any periods during which a continuous monitoring system or monitoring device is inoperative, maintenance of any CEM system that has been installed pursuant to District Rule 1080 (as amended 12/17/92), and emission measurements. [40 CFR 60.7(b), 40 CFR 60.8(d), District Rules 1080 and 2201, 40 CFR 64 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

53. APCO or an authorized representative shall be allowed to inspect, as he or she determines to be necessary, the monitoring devices required by this rule to ensure that such devices are functioning properly. [District Rule 1080, 11.0 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

54. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, and duration of each start-up and each shutdown time period. [District Rule 4703] Federally Enforceable Through Title V Permit

55. All records required to be maintained by this permit shall be maintained for a period of five years and shall be made readily available for District inspection upon request. [District Rules 2201 and 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

56. The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR Part 75. [40 CFR Part 75] Federally Enforceable Through Title V Permit

57. The emissions measurements recorded and reported in accordance with 40 CFR Part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program. [40 CFR Part 75] Federally Enforceable Through Title V Permit

58. The owners and operators of each source and each affected unit at the source shall: (i) hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR Part 73.34(c)) not less than the total annual emissions of sulfur dioxide for the previous calendar year from the unit; and (ii) comply with the applicable Acid Rain emissions limitations for sulfur dioxide. [40 CFR Part 73] Federally Enforceable Through Title V Permit

59. Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act. [40 CFR Part 77] Federally Enforceable Through Title V Permit

60. An affected unit shall be subject to the sulfur dioxide requirements starting on the later of January 1, 2000, or the deadline for monitoring certification under 40 CFR part 75, an affected unit under 40 CFR Part 72.6(a)(3) that is not a substitution or compensating unit. [40 CFR Part 72, 40 CFR Part 75] Federally Enforceable Through Title V Permit

61. Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program. [40 CFR Part 72] Federally Enforceable Through Title V Permit

62. An allowance shall not be deducted in order to comply with the requirements under 40 CFR Part 73, prior to the calendar year for which the allowance was allocated. [40 CFR Part 73] Federally Enforceable Through Title V Permit

63. An allowance allocated by the Administrator under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Acid Rain permit application, the Acid Rain permit, or the written exemption under 40 CFR Part 72.7 and Part 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization. [40 CFR Part 72] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

64. An allowance allocated by the Administrator under the Acid Rain Program does not constitute a property right. [40 CFR Part 72] Federally Enforceable Through Title V Permit

65. The owners and operators of the source and each affected unit at the source shall comply with the applicable Acid Rain emissions limitation for nitrogen oxides. [40 CFR Part 72] Federally Enforceable Through Title V Permit

66. The designated representative of an affected unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR Part 77. [40 CFR Part 77] Federally Enforceable Through Title V Permit

67. The owners and operators of an affected unit that has excess emissions in any calendar year shall: (i) pay without demand the penalty required, and pay up on demand the interest on that penalty; and (ii) comply with the terms of an approved offset plan, as required by 40 CFR Part 77. [40 CFR Part 77] Federally Enforceable Through Title V Permit

68. The owners and operators of the each affected unit at the source shall keep on site the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority: (i) The certificate of representation for the designated representative for the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR Part 72.24; provided that the certificate and documents shall be retained on site beyond such five-year period until such documents are superceded because of the submission of a new certificate of representation changing the designated representative. [40 CFR Part 72] Federally Enforceable Through Title V Permit

69. The owners and operators of each affected unit at the source shall keep on site each of the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority; (ii) All emissions monitoring information, in accordance with 40 CFR Part 75; (iii) Copies of all reports, compliance certifications and other submissions and all records made or required under the Acid Rain Program; (iv) Copies of all documents used to complete an Acid Rain permit application and any other submission that demonstrates compliance with the requirements of the Acid Rain Program. [40 CFR Part 72, 40 CFR Part 75] Federally Enforceable Through Title V Permit

70. The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR Part 75 Subpart I. [40 CFR Part 75] Federally Enforceable Through Title V Permit

71. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: Rule 407 (Kern) as of the date of permit issuance. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

72. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR Part 60, Subpart KKKK ; District Rule 4703 (as amended 09/20/07), Sections 5.1.3, 5.2, 5.3, 6.1, 6.3.1, 6.3.3, 6.4.1, 6.4.2, 6.4.3, and 6.4.5 as of the date of permit issuance. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

73. {2282} Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.7(b), 60.8, 60.8(d), 60.13, and 60.13(b); District Rules 1080 (as amended 12/17/92), Sections 6.3, 6.4, 6.5, 7.0, 7.1, 7.2, 7.3, 8.0, 9.0, 10.0, and 11.0; and 1081 (as amended 12/16/93) as of the date of permit issuance. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

APPENDIX B

Current Permits to Operate

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: S-3746-1-12 **EXPIRATION DATE:** 06/30/2023

SECTION: SW23 **TOWNSHIP:** 31S **RANGE:** 22E

EQUIPMENT DESCRIPTION:
160 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #1 CONSISTING OF GENERAL ELECTRIC FRAME 7FA, NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW-NOX COMBUSTORS, HEAT RECOVERY STEAM GENERATOR WITH DUCT FIRING, SCR, AND OXIDATION CATALYSTS (585 MW TOTAL PLANT NOMINAL RATING)

PERMIT UNIT REQUIREMENTS

1. While dormant, the fuel line shall be physically disconnected from the unit. [District Rule 2080]
2. Permittee shall submit written notification to the District upon designating the unit as dormant or active. [District Rule 2080]
3. While dormant, normal source testing shall not be required. [District Rule 2080]
4. Upon recommencing operation of this unit, normal source testing shall resume. [District Rule 2080]
5. Any source testing required by this permit shall be performed within 60 days of recommencing operation of this unit, regardless of whether the unit remains active or is again designated as dormant. [District Rule 2080]
6. Records of all dates and times that this unit is designated as dormant or active, and copies of all corresponding notices to the District, shall be maintained, retained for a period of at least five years, and made available for District inspection upon request. [District Rule 1070]
7. Combustion turbine generator (CTG) and electrical generator lube oil vents shall be equipped with mist eliminators to maintain visible emissions from lube oil vents no greater than 5% opacity, except for three minutes in any hour. [District NSR Rule] Federally Enforceable Through Title V Permit
8. CTG shall be equipped with continuously recording fuel gas flowmeter. [District NSR Rule] Federally Enforceable Through Title V Permit
9. CTG exhaust after the SCR unit shall be equipped with continuously recording emissions monitors dedicated to this unit for NOx, CO, and O2. Continuous emissions monitors shall meet the requirements of 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, and shall be capable of monitoring emissions during startups and shutdowns as well as normal operating conditions. If relative accuracy of CEM(s) cannot be demonstrated during startup conditions, CEM results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits. [40 CFR 60.334(c), District Rules 1080, 2201 and 4703, 40 CFR 64, and PSD SJ 01-01] Federally Enforceable Through Title V Permit
10. CTG shall be equipped with a continuously recording emission monitor preceding the SCR module measuring NOx concentration for the purposes of calculating ammonia slip. Permittee shall check, record, and quantify the calibration drift (CD) at two concentration values at least once daily (approximately 24 hours). The calibration shall be adjusted whenever the daily zero or high-level CD exceeds 5%. If either the zero or high-level CD exceeds 5% for five consecutive daily periods, the analyzer shall be deemed out-of-control. If either the zero or high-level CD exceeds 10% during any CD check, analyzer shall be deemed out-of-control. If the analyzer is out-of-control, the permittee shall take appropriate corrective action and then repeat the CD check. [District NSR Rule, and 40 CFR 64] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

11. The facility shall maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080] Federally Enforceable Through Title V Permit

12. Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit

13. The owner or operator shall be required to conform to the compliance testing and sampling procedures described in District Rule 1081 (as amended 12/16/93). [District Rule 1081] Federally Enforceable Through Title V Permit

14. CEM cycling times shall be those specified in 40 CFR, Part 51, Appendix P, Sections 3.4, 3.4.1 and 3.4.2, or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080, and 40 CFR 64] Federally Enforceable Through Title V Permit

15. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NOx, CO, and O2 analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081] Federally Enforceable Through Title V Permit

16. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080] Federally Enforceable Through Title V Permit

17. Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080] Federally Enforceable Through Title V Permit

18. The owner/operator shall perform a relative accuracy test audit (RATA) as specified by 40 CFR Part 60, Appendix F, 5.11, at least once every four calendar quarters. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080] Federally Enforceable Through Title V Permit

19. Operators of CEM systems installed at the direction of the APCO shall submit a written report for each calendar quarter to the APCO and EPA (Attn: AIR-5). The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred; And reports on opacity monitors giving the number of three minute periods during which the average opacity exceeded the standard for each hour of operation. The averaged may be obtained by integration over the averaging period or by arithmetically averaging a minimum of four equally spaced instantaneous opacity measurements per minute. Any time exempted shall be considered before determining the excess averages of opacity. [40 CFR 64, District Rule 1080 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

20. An hour of excess emissions shall be defined as any operating hour in which 4-hour rolling average NOx concentration exceeds applicable emissions limit in §60.332(a)(1), and a period of monitor downtime shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NOx, CO or O2. The 4-hour rolling average is the arithmetic average of the average NOx concentration measured by the CEMS for a given hour (corrected to 15 percent O2) and the three unit operating hour average NOx concentrations immediately preceding that unit operating hour. [40 CFR 64 and 40 CFR 60.334(j)(1)(iii)] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

21. The owner or operator shall submit reports of NOx excess emissions and monitor downtime, in accordance with 40 CFR 60.7(c) on a semi annual basis. Excess emissions shall be reported for all periods of unit operation, including startup, shutdown and malfunction, for any 4-consecutive rolling average that exceeds the NOx limit under 40 CFR 60.332(a)(1). For the purpose of reports required under 40 CFR 60.7(c), periods of excess emissions and monitor downtime that shall be reported are defined in 40 CFR 60.334(j). All reports required under 40 CFR 60.7(c) shall be postmarked by the 30th day following the end of each six-month period. [40 CFR 60.334(j), 40 CFR 60.334 (j)(5) and District Rule 4703] Federally Enforceable Through Title V Permit

22. If the total duration of NOx excess emissions for the reporting period is less than 1 percent of the total operating time for the reporting period and CEMS downtime for the reporting period is less than 5 percent of the total operating time for the reporting period, only the summary report form in §60.7(d) shall be submitted and the excess emission report described in §60.7(c) need not be submitted unless requested by the EPA or the Air District. [40 CFR 60.334(j), and 40 CFR 60.7(c) and (d)] Federally Enforceable Through Title V Permit

23. Ammonia injection grid shall be equipped with operational ammonia flowmeter and injection pressure indicator. [District NSR Rule] Federally Enforceable Through Title V Permit

24. Permittee shall monitor and record exhaust gas temperature at selective catalytic reduction and oxidation catalyst inlets. [District NSR Rule] Federally Enforceable Through Title V Permit

25. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

26. CTG shall be fired exclusively on natural gas, consisting primarily of methane and ethane, with a sulfur content no greater than 0.25 grains of sulfur compounds (as S) per 100 dry scf of natural gas. [40 CFR 60.333(b), District NSR Rule, PSD SJ 01-01] Federally Enforceable Through Title V Permit

27. The sulfur content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377. If sulfur content is less than 0.25 gr/100 scf for 8 consecutive weeks, then the Monitoring frequency shall be every six (6) months. If any six (6) month monitoring show an exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(1) & (3) and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

28. Sulfur compound emissions shall not exceed 0.015% by volume at 15% oxygen, on a dry basis averaged over 15 consecutive minutes. [40 CFR 60.333(a); County Rule 407 (Kern)] Federally Enforceable Through Title V Permit

29. Startup is defined as the period beginning with turbine initial firing. Shutdown is defined by the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Startup and shutdown durations shall not exceed 60 minutes for a hot startup, 128 minutes for a warm startup, and 230 minutes for a cold startup, and one hour for a shutdown, per occurrence. [District Rules 2201, 4001 & 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

30. Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703] Federally Enforceable Through Title V Permit

31. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rule 4703] Federally Enforceable Through Title V Permit

32. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703] Federally Enforceable Through Title V Permit

33. The HHV and LHV of the fuel combusted shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.332(a) and (b) and District Rule 4703] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

34. An owner or operator of any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. [40 CFR 60.335(b)(3) and District Rule 4703] Federally Enforceable Through Title V Permit

35. Ammonia shall be injected when the selective catalytic reduction system catalyst temperature exceeds 500 degrees F. Permittee shall monitor and record catalyst temperature during periods of startup. [District NSR Rule] Federally Enforceable Through Title V Permit

36. During startup or shutdown of any gas turbine engine(s), combined emissions from both gas turbine engines (S-3746-1 and -2) heat recovery steam generator exhausts shall not exceed any of the following: NOx (as NO2) - 700 lb and CO - 1,580 lb, in any one hour. If any CTG is in either startup or shutdown mode during any portion of a clock hour, the facility will be subject to the aforementioned limits during that clock hour. [District NSR Rule] Federally Enforceable Through Title V Permit

37. Emission rates from each CTG, except during startup and/or shutdown, shall not exceed any of the following: PM10 - 17.8 lb/hr, SOx (as SO2) - 1.55 lb/hr, NOx (as NO2) - 15.96 lb/hr and 2.0 ppmvd @ 15% O2, VOC - 5.51 lb/hr and 2.0 ppmvd @ 15% O2, CO - 19.22 lb/hr and 4 ppmvd @ 15% O2, ammonia - 10 ppmvd @ 15%O2. NOx (as NO2) ppmv and lb/hr limits are a one-hour rolling average. Ammonia emission limit is a twenty-four hour rolling average. All other ppmvd and lb/hr limits are three-hour rolling averages. If a CTG is in either startup or shutdown mode during any portion of a clock hour, that unit will not be subject to the aforementioned limits during that clock hour. [40 CFR 60.332(a)(1), District Rules 2201, 4001, 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

38. Emission rates from each CTG shall not exceed any of the following: PM10 - 461.2 lb/day, SOx (as SO2) - 37.2 lb/day, NOx (as NO2) - 1,170.9 lb/day, VOC - 220.6 lb/day, and CO - 2,443.4 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit

39. Emission rates from both CTGs (S-3746-1 and -2) shall not exceed any of the following: PM10 - 922.3 lb/day, SOx (as SO2) - 74.4 lb/day, NOx (as NO2) - 2,341.8 lb/day, VOC - 441.2 lb/day, and CO - 4,886.8 lb/day. [District NSR Rule and PSD SJ 01-01] Federally Enforceable Through Title V Permit

40. Annual emissions from both CTGs calculated on a twelve consecutive month rolling basis shall not exceed any of the following: PM10 - 269,651 lb/year , SOx (as SO2) - 24,259 lb/year, NOx (as NO2) - 311,337 lb/year, VOC - 87,674 lb/year, and CO - 507,978 lb/year. [District NSR Rule and PSD SJ 01-01] Federally Enforceable Through Title V Permit

41. Each one-hour period in a one-hour rolling average will commence on the hour. Each one-hour period in a three-hour rolling average will commence on the hour. The three-hour average will be compiled from the three most recent one-hour periods. Each one-hour period in a twenty-four-hour average for ammonia slip will commence on the hour. The twenty-four-hour average will be calculated starting and ending at twelve-midnight. [District NSR Rule and PSD SJ 01-01] Federally Enforceable Through Title V Permit

42. Daily emissions will be compiled for a twenty-four period starting and ending at twelve-midnight. Each calendar month in a twelve-consecutive-month rolling emissions will commence at the beginning of the first day of the month. The twelve-consecutive-month rolling emissions total to determine compliance with annual emissions will be compiled from the twelve most recent calendar months. [District NSR Rule and PSD SJ 01-01] Federally Enforceable Through Title V Permit

43. Ammonia slip limit shall be measured using the following calculation procedure: ammonia slip ppmv @ 15% O2 = ((a-(bxc/1,000,000)) x 1,000,000 / b) x d, where a = ammonia injection rate(lb/hr)/17(lb/lb. mol), b = dry exhaust gas flow rate (lb/hr)/(29(lb/lb. mol), c = change in measured NOx concentration ppmv at 15% O2 across catalyst, and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip. Alternatively, permittee may utilize a continuous in-stack ammonia monitor, acceptable to the District, to monitor compliance. At least 60 days prior to using a NH3 CEM, the permittee must submit a monitoring plan for District review and approval. [District Rule 4102] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

44. Short term emission limits (lb/hr and ppmv @ 15% O2) shall be measured annually by District witnessed in-situ sampling of exhaust gases by a qualified independent source test firm at full load conditions as follows - NOx: ppmvd @ 15% O2 and lb/hr, CO: ppmvd @ 15% O2 and lb/hr, VOC: ppmvd @ 15% O2 and lb/hr, PM10: lb/hr, and ammonia: ppmvd @ 15% O2. Sample collection to demonstrate compliance with ammonia emission limit shall be based on three consecutive test runs of thirty minutes each. [District Rules 1081 and 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

45. Startup NOx, CO, and VOC mass emission limits shall be measured for one of the CTGs (S-3746-1, or -2) at least every seven years by District witnessed in situ sampling of exhaust gases by a qualified independent source test firm. [District Rule 1081] Federally Enforceable Through Title V Permit

46. The District and the EPA must be notified 30 days prior to any source test, and a source test plan must be submitted for approval 15 days prior to testing. Official test results and field data collected by source tests required by conditions on this permit shall be submitted to the District within 60 days of testing. [District Rule 1081 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

47. The following test methods shall be used PM10: EPA method 5 (front half and back half) or 201A, NOx: EPA Method 7E or 20, CO: EPA method 10 or 10B, O2: EPA Method 3, 3A, or 20, VOC: EPA method 18 or 25, ammonia: BAAQMD ST-1B, and fuel gas sulfur content: ASTM D3246 or ASTM D6228. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [40 CFR 60.335(a) & (c), District Rules 1081, 4001, 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

48. Results of the CEM system shall be averaged over a three hour period, using consecutive 15-minute sampling periods in accordance with either EPA Method 7E or EPA Method 20 for NOx, EPA Test Methods 10 or 10B for CO, or EPA Methods 3, 3A, or 20 for O2, or, if continuous emission monitors are used, all applicable requirements of CFR 60.13. [40 CFR 60.13 and District Rule 4703] Federally Enforceable Through Title V Permit

49. The permittee shall maintain hourly records of NOx, CO, and ammonia emission concentrations (ppmv @ 15% O2), and hourly, daily, and twelve month rolling average records of NOx and CO emissions. [District NSR Rule] Federally Enforceable Through Title V Permit

50. The permittee shall maintain records of SOx lb/hr, lb/day, and lb/twelve month rolling average emission. SOx emissions shall be based on fuel use records, natural gas sulfur content, and mass balance calculations. [District NSR Rule] Federally Enforceable Through Title V Permit

51. The owner or operator shall, upon written notice from the APCO, provide a summary of the data obtained from the CEM systems. This summary of data shall be in the form and the manner prescribed by the APCO. [District Rule 1080, 7.1] Federally Enforceable Through Title V Permit

52. The owner or operator shall maintain records that contain the following: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments, any periods during which a continuous monitoring system or monitoring device is inoperative, maintenance of any CEM system that has been installed pursuant to District Rule 1080 (as amended 12/17/92), and emission measurements. [40 CFR 60.7(b), 40 CFR 60.8(d), District Rules 1080 and 2201, 40 CFR 64 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

53. APCO or an authorized representative shall be allowed to inspect, as he or she determines to be necessary, the monitoring devices required by this rule to ensure that such devices are functioning properly. [District Rule 1080, 11.0 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

54. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, and duration of each start-up and each shutdown time period. [District Rule 4703] Federally Enforceable Through Title V Permit

55. All records required to be maintained by this permit shall be maintained for a period of five years and shall be made readily available for District inspection upon request. [District Rules 2201 and 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

56. The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR Part 75. [40 CFR Part 75] Federally Enforceable Through Title V Permit

57. The emissions measurements recorded and reported in accordance with 40 CFR Part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program. [40 CFR Part 75] Federally Enforceable Through Title V Permit

58. The owners and operators of each source and each affected unit at the source shall: (i) hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR Part 73.34(c)) not less than the total annual emissions of sulfur dioxide for the previous calendar year from the unit; and (ii) comply with the applicable Acid Rain emissions limitations for sulfur dioxide. [40 CFR Part 73] Federally Enforceable Through Title V Permit

59. Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act. [40 CFR Part 77] Federally Enforceable Through Title V Permit

60. An affected unit shall be subject to the sulfur dioxide requirements starting on the later of January 1, 2000, or the deadline for monitoring certification under 40 CFR part 75, an affected unit under 40 CFR Part 72.6(a)(3) that is not a substitution or compensating unit. [40 CFR Part 72, 40 CFR Part 75] Federally Enforceable Through Title V Permit

61. Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program. [40 CFR Part 72] Federally Enforceable Through Title V Permit

62. An allowance shall not be deducted in order to comply with the requirements under 40 CFR Part 73, prior to the calendar year for which the allowance was allocated. [40 CFR Part 73] Federally Enforceable Through Title V Permit

63. An allowance allocated by the Administrator under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Acid Rain permit application, the Acid Rain permit, or the written exemption under 40 CFR Part 72.7 and Part 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization. [40 CFR Part 72] Federally Enforceable Through Title V Permit

64. An allowance allocated by the Administrator under the Acid Rain Program does not constitute a property right. [40 CFR Part 72] Federally Enforceable Through Title V Permit

65. The owners and operators of the source and each affected unit at the source shall comply with the applicable Acid Rain emissions limitation for nitrogen oxides. [40 CFR Part 72] Federally Enforceable Through Title V Permit

66. The designated representative of an affected unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR Part 77. [40 CFR Part 77] Federally Enforceable Through Title V Permit

67. The owners and operators of an affected unit that has excess emissions in any calendar year shall: (i) pay without demand the penalty required, and pay up on demand the interest on that penalty; and (ii) comply with the terms of an approved offset plan, as required by 40 CFR Part 77. [40 CFR Part 77] Federally Enforceable Through Title V Permit

68. The owners and operators of the each affected unit at the source shall keep on site the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority: (i) The certificate of representation for the designated representative for the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR Part 72.24; provided that the certificate and documents shall be retained on site beyond such five-year period until such documents are superceded because of the submission of a new certificate of representation changing the designated representative. [40 CFR Part 72] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

69. The owners and operators of each affected unit at the source shall keep on site each of the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority; (ii) All emissions monitoring information, in accordance with 40 CFR Part 75; (iii) Copies of all reports, compliance certifications and other submissions and all records made or required under the Acid Rain Program; (iv) Copies of all documents used to complete an Acid Rain permit application and any other submission that demonstrates compliance with the requirements of the Acid Rain Program. [40 CFR Part 72, 40 CFR Part 75] Federally Enforceable Through Title V Permit

70. The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR Part 75 Subpart I. [40 CFR Part 75] Federally Enforceable Through Title V Permit

71. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: Rule 407 (Kern) as of the date of permit issuance. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

72. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.332 (a)(1) and (b), 60.333 (a) and (b), 60.334 (c), h(1), h(3) and (j), and 60.335 (a), (b)(3), and (c); District Rule 4703 (as amended 09/20/07), Sections 5.1.3, 5.2, 5.3, 6.1, 6.3.1, 6.3.3, 6.4.1, 6.4.2, 6.4.3, and 6.4.5 as of the date of permit issuance. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

73. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.7(b), 60.8, 60.8(d), 60.13, and 60.13(b); District Rules 1080 (as amended 12/17/92), Sections 6.3, 6.4, 6.5, 7.0, 7.1, 7.2, 7.3, 8.0, 9.0, 10.0, and 11.0; and 1081 (as amended 12/16/93) as of the date of permit issuance. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: S-3746-2-12 **EXPIRATION DATE:** 06/30/2023

SECTION: SW23 **TOWNSHIP:** 31S **RANGE:** 22E

EQUIPMENT DESCRIPTION:
160 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #2 CONSISTING OF GENERAL ELECTRIC FRAME 7FA, NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW-NOX COMBUSTORS, HEAT RECOVERY STEAM GENERATOR WITH DUCT FIRING, SCR, AND OXIDATION CATALYSTS (585 MW TOTAL PLANT NOMINAL RATING)

PERMIT UNIT REQUIREMENTS

1. While dormant, the fuel line shall be physically disconnected from the unit. [District Rule 2080]
2. Permittee shall submit written notification to the District upon designating the unit as dormant or active. [District Rule 2080]
3. While dormant, normal source testing shall not be required. [District Rule 2080]
4. Upon recommencing operation of this unit, normal source testing shall resume. [District Rule 2080]
5. Any source testing required by this permit shall be performed within 60 days of recommencing operation of this unit, regardless of whether the unit remains active or is again designated as dormant. [District Rule 2080]
6. Records of all dates and times that this unit is designated as dormant or active, and copies of all corresponding notices to the District, shall be maintained, retained for a period of at least five years, and made available for District inspection upon request. [District Rule 1070]
7. Combustion turbine generator (CTG) and electrical generator lube oil vents shall be equipped with mist eliminators to maintain visible emissions from lube oil vents no greater than 5% opacity, except for three minutes in any hour. [District NSR Rule] Federally Enforceable Through Title V Permit
8. CTG shall be equipped with continuously recording fuel gas flowmeter. [District NSR Rule] Federally Enforceable Through Title V Permit
9. CTG exhaust after the SCR unit shall be equipped with continuously recording emissions monitors dedicated to this unit for NOx, CO, and O2. Continuous emissions monitors shall meet the requirements of 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, and shall be capable of monitoring emissions during startups and shutdowns as well as normal operating conditions. If relative accuracy of CEM(s) cannot be demonstrated during startup conditions, CEM results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits. [40 CFR 60.334(c), District Rules 1080, 2201 and 4703, 40 CFR 64, and PSD SJ 01-01] Federally Enforceable Through Title V Permit
10. CTG shall be equipped with a continuously recording emission monitor preceding the SCR module measuring NOx concentration for the purposes of calculating ammonia slip. Permittee shall check, record, and quantify the calibration drift (CD) at two concentration values at least once daily (approximately 24 hours). The calibration shall be adjusted whenever the daily zero or high-level CD exceeds 5%. If either the zero or high-level CD exceeds 5% for five consecutive daily periods, the analyzer shall be deemed out-of-control. If either the zero or high-level CD exceeds 10% during any CD check, analyzer shall be deemed out-of-control. If the analyzer is out-of-control, the permittee shall take appropriate corrective action and then repeat the CD check. [District NSR Rule, and 40 CFR 64] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

11. The facility shall maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080] Federally Enforceable Through Title V Permit

12. Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit

13. The owner or operator shall be required to conform to the compliance testing and sampling procedures described in District Rule 1081 (as amended 12/16/93). [District Rule 1081] Federally Enforceable Through Title V Permit

14. CEM cycling times shall be those specified in 40 CFR, Part 51, Appendix P, Sections 3.4, 3.4.1 and 3.4.2, or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080, and 40 CFR 64] Federally Enforceable Through Title V Permit

15. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NOx, CO, and O2 analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081] Federally Enforceable Through Title V Permit

16. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080] Federally Enforceable Through Title V Permit

17. Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080] Federally Enforceable Through Title V Permit

18. The owner/operator shall perform a relative accuracy test audit (RATA) as specified by 40 CFR Part 60, Appendix F, 5.11, at least once every four calendar quarters. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080] Federally Enforceable Through Title V Permit

19. Operators of CEM systems installed at the direction of the APCO shall submit a written report for each calendar quarter to the APCO and EPA (Attn: AIR-5). The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred; And reports on opacity monitors giving the number of three minute periods during which the average opacity exceeded the standard for each hour of operation. The averaged may be obtained by integration over the averaging period or by arithmetically averaging a minimum of four equally spaced instantaneous opacity measurements per minute. Any time exempted shall be considered before determining the excess averages of opacity. [40 CFR 64, District Rule 1080 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

20. An hour of excess emissions shall be defined as any operating hour in which 4-hour rolling average NOx concentration exceeds applicable emissions limit in §60.332(a)(1), and a period of monitor downtime shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NOx, CO or O2. The 4-hour rolling average is the arithmetic average of the average NOx concentration measured by the CEMS for a given hour (corrected to 15 percent O2) and the three unit operating hour average NOx concentrations immediately preceding that unit operating hour. [40 CFR 64 and 40 CFR 60.334(j)(1)(iii)] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

21. The owner or operator shall submit reports of NOx excess emissions and monitor downtime, in accordance with 40 CFR 60.7(c) on a semi annual basis. Excess emissions shall be reported for all periods of unit operation, including startup, shutdown and malfunction, for any 4-consecutive rolling average that exceeds the NOx limit under 40 CFR 60.332(a)(1). For the purpose of reports required under 40 CFR 60.7(c), periods of excess emissions and monitor downtime that shall be reported are defined in 40 CFR 60.334(j). All reports required under 40 CFR 60.7(c) shall be postmarked by the 30th day following the end of each six-month period. [40 CFR 60.334(j), 40 CFR 60.334 (j)(5) and District Rule 4703] Federally Enforceable Through Title V Permit

22. If the total duration of NOx excess emissions for the reporting period is less than 1 percent of the total operating time for the reporting period and CEMS downtime for the reporting period is less than 5 percent of the total operating time for the reporting period, only the summary report form in §60.7(d) shall be submitted and the excess emission report described in §60.7(c) need not be submitted unless requested by the EPA or the Air District. [40 CFR 60.334(j), and 40 CFR 60.7(c) and (d)] Federally Enforceable Through Title V Permit

23. Ammonia injection grid shall be equipped with operational ammonia flowmeter and injection pressure indicator. [District NSR Rule] Federally Enforceable Through Title V Permit

24. Permittee shall monitor and record exhaust gas temperature at selective catalytic reduction and oxidation catalyst inlets. [District NSR Rule] Federally Enforceable Through Title V Permit

25. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

26. CTG shall be fired exclusively on natural gas, consisting primarily of methane and ethane, with a sulfur content no greater than 0.25 grains of sulfur compounds (as S) per 100 dry scf of natural gas. [40 CFR 60.333(b), District NSR Rule, PSD SJ 01-01] Federally Enforceable Through Title V Permit

27. The sulfur content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377. If sulfur content is less than 0.25 gr/100 scf for 8 consecutive weeks, then the Monitoring frequency shall be every six (6) months. If any six (6) month monitoring show an exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(1) & (3) and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

28. Sulfur compound emissions shall not exceed 0.015% by volume at 15% oxygen, on a dry basis averaged over 15 consecutive minutes. [40 CFR 60.333(a); County Rule 407 (Kern)] Federally Enforceable Through Title V Permit

29. Startup is defined as the period beginning with turbine initial firing. Shutdown is defined by the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Startup and shutdown durations shall not exceed 60 minutes for a hot startup, 128 minutes for a warm startup, and 230 minutes for a cold startup, and one hour for a shutdown, per occurrence. [District Rules 2201, 4001 & 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

30. Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703] Federally Enforceable Through Title V Permit

31. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rule 4703] Federally Enforceable Through Title V Permit

32. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703] Federally Enforceable Through Title V Permit

33. The HHV and LHV of the fuel combusted shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.332(a) and (b) and District Rule 4703] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

34. An owner or operator of any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. [40 CFR 60.335(b)(3) and District Rule 4703] Federally Enforceable Through Title V Permit

35. Ammonia shall be injected when the selective catalytic reduction system catalyst temperature exceeds 500 degrees F. Permittee shall monitor and record catalyst temperature during periods of startup. [District NSR Rule] Federally Enforceable Through Title V Permit

36. During startup or shutdown of any gas turbine engine(s), combined emissions from both gas turbine engines (S-3746-1 and -2) heat recovery steam generator exhausts shall not exceed any of the following: NOx (as NO2) - 700 lb and CO - 1,580 lb, in any one hour. If any CTG is in either startup or shutdown mode during any portion of a clock hour, the facility will be subject to the aforementioned limits during that clock hour. [District NSR Rule] Federally Enforceable Through Title V Permit

37. Emission rates from each CTG, except during startup and/or shutdown, shall not exceed any of the following: PM10 - 17.8 lb/hr, SOx (as SO2) - 1.55 lb/hr, NOx (as NO2) - 15.96 lb/hr and 2.0 ppmvd @ 15% O2, VOC - 5.51 lb/hr and 2.0 ppmvd @ 15% O2, CO - 19.22 lb/hr and 4 ppmvd @ 15% O2, ammonia - 10 ppmvd @ 15%O2. NOx (as NO2) ppmv and lb/hr limits are a one-hour rolling average. Ammonia emission limit is a twenty-four hour rolling average. All other ppmvd and lb/hr limits are three-hour rolling averages. If a CTG is in either startup or shutdown mode during any portion of a clock hour, that unit will not be subject to the aforementioned limits during that clock hour. [40 CFR 60.332(a)(1), District Rules 2201, 4001, 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

38. Emission rates from each CTG shall not exceed any of the following: PM10 - 461.2 lb/day, SOx (as SO2) - 37.2 lb/day, NOx (as NO2) - 1,170.9 lb/day, VOC - 220.6 lb/day, and CO - 2,443.4 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit

39. Emission rates from both CTGs (S-3746-1 and -2) shall not exceed any of the following: PM10 - 922.3 lb/day, SOx (as SO2) - 74.4 lb/day, NOx (as NO2) - 2,341.8 lb/day, VOC - 441.2 lb/day, and CO - 4,886.8 lb/day. [District NSR Rule and PSD SJ 01-01] Federally Enforceable Through Title V Permit

40. Annual emissions from both CTGs calculated on a twelve consecutive month rolling basis shall not exceed any of the following: PM10 - 269,651 lb/year , SOx (as SO2) - 24,259 lb/year, NOx (as NO2) - 311,337 lb/year, VOC - 87,674 lb/year, and CO - 507,978 lb/year. [District NSR Rule and PSD SJ 01-01] Federally Enforceable Through Title V Permit

41. Each one-hour period in a one-hour rolling average will commence on the hour. Each one-hour period in a three-hour rolling average will commence on the hour. The three-hour average will be compiled from the three most recent one-hour periods. Each one-hour period in a twenty-four-hour average for ammonia slip will commence on the hour. The twenty-four-hour average will be calculated starting and ending at twelve-midnight. [District NSR Rule and PSD SJ 01-01] Federally Enforceable Through Title V Permit

42. Daily emissions will be compiled for a twenty-four period starting and ending at twelve-midnight. Each calendar month in a twelve-consecutive-month rolling emissions will commence at the beginning of the first day of the month. The twelve-consecutive-month rolling emissions total to determine compliance with annual emissions will be compiled from the twelve most recent calendar months. [District NSR Rule and PSD SJ 01-01] Federally Enforceable Through Title V Permit

43. Ammonia slip limit shall be measured using the following calculation procedure: ammonia slip ppmv @ 15% O2 = ((a-(bxc/1,000,000)) x 1,000,000 / b) x d, where a = ammonia injection rate(lb/hr)/17(lb/lb. mol), b = dry exhaust gas flow rate (lb/hr)/(29(lb/lb. mol), c = change in measured NOx concentration ppmv at 15% O2 across catalyst, and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip. Alternatively, permittee may utilize a continuous in-stack ammonia monitor, acceptable to the District, to monitor compliance. At least 60 days prior to using a NH3 CEM, the permittee must submit a monitoring plan for District review and approval. [District Rule 4102] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

44. Short term emission limits (lb/hr and ppmv @ 15% O2) shall be measured annually by District witnessed in-situ sampling of exhaust gases by a qualified independent source test firm at full load conditions as follows - NOx: ppmvd @ 15% O2 and lb/hr, CO: ppmvd @ 15% O2 and lb/hr, VOC: ppmvd @ 15% O2 and lb/hr, PM10: lb/hr, and ammonia: ppmvd @ 15% O2. Sample collection to demonstrate compliance with ammonia emission limit shall be based on three consecutive test runs of thirty minutes each. [District Rules 1081 and 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

45. Startup NOx, CO, and VOC mass emission limits shall be measured for one of the CTGs (S-3746-1, or -2) at least every seven years by District witnessed in situ sampling of exhaust gases by a qualified independent source test firm. [District Rule 1081] Federally Enforceable Through Title V Permit

46. The District and the EPA must be notified 30 days prior to any source test, and a source test plan must be submitted for approval 15 days prior to testing. Official test results and field data collected by source tests required by conditions on this permit shall be submitted to the District within 60 days of testing. [District Rule 1081 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

47. The following test methods shall be used PM10: EPA method 5 (front half and back half) or 201A, NOx: EPA Method 7E or 20, CO: EPA method 10 or 10B, O2: EPA Method 3, 3A, or 20, VOC: EPA method 18 or 25, ammonia: BAAQMD ST-1B, and fuel gas sulfur content: ASTM D3246 or ASTM D6228. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [40 CFR 60.335(a) & (c), District Rules 1081, 4001, 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

48. Results of the CEM system shall be averaged over a three hour period, using consecutive 15-minute sampling periods in accordance with either EPA Method 7E or EPA Method 20 for NOx, EPA Test Methods 10 or 10B for CO, or EPA Methods 3, 3A, or 20 for O2, or, if continuous emission monitors are used, all applicable requirements of CFR 60.13. [40 CFR 60.13 and District Rule 4703] Federally Enforceable Through Title V Permit

49. The permittee shall maintain hourly records of NOx, CO, and ammonia emission concentrations (ppmv @ 15% O2), and hourly, daily, and twelve month rolling average records of NOx and CO emissions. [District NSR Rule] Federally Enforceable Through Title V Permit

50. The permittee shall maintain records of SOx lb/hr, lb/day, and lb/twelve month rolling average emission. SOx emissions shall be based on fuel use records, natural gas sulfur content, and mass balance calculations. [District NSR Rule] Federally Enforceable Through Title V Permit

51. The owner or operator shall, upon written notice from the APCO, provide a summary of the data obtained from the CEM systems. This summary of data shall be in the form and the manner prescribed by the APCO. [District Rule 1080, 7.1] Federally Enforceable Through Title V Permit

52. The owner or operator shall maintain records that contain the following: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments, any periods during which a continuous monitoring system or monitoring device is inoperative, maintenance of any CEM system that has been installed pursuant to District Rule 1080 (as amended 12/17/92), and emission measurements. [40 CFR 60.7(b), 40 CFR 60.8(d), District Rules 1080 and 2201, 40 CFR 64 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

53. APCO or an authorized representative shall be allowed to inspect, as he or she determines to be necessary, the monitoring devices required by this rule to ensure that such devices are functioning properly. [District Rule 1080, 11.0 and PSD SJ 01-01] Federally Enforceable Through Title V Permit

54. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, and duration of each start-up and each shutdown time period. [District Rule 4703] Federally Enforceable Through Title V Permit

55. All records required to be maintained by this permit shall be maintained for a period of five years and shall be made readily available for District inspection upon request. [District Rules 2201 and 4703, and PSD SJ 01-01] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

56. The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR Part 75. [40 CFR Part 75] Federally Enforceable Through Title V Permit

57. The emissions measurements recorded and reported in accordance with 40 CFR Part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program. [40 CFR Part 75] Federally Enforceable Through Title V Permit

58. The owners and operators of each source and each affected unit at the source shall: (i) hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR Part 73.34(c)) not less than the total annual emissions of sulfur dioxide for the previous calendar year from the unit; and (ii) comply with the applicable Acid Rain emissions limitations for sulfur dioxide. [40 CFR Part 73] Federally Enforceable Through Title V Permit

59. Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act. [40 CFR Part 77] Federally Enforceable Through Title V Permit

60. An affected unit shall be subject to the sulfur dioxide requirements starting on the later of January 1, 2000, or the deadline for monitoring certification under 40 CFR part 75, an affected unit under 40 CFR Part 72.6(a)(3) that is not a substitution or compensating unit. [40 CFR Part 72, 40 CFR Part 75] Federally Enforceable Through Title V Permit

61. Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program. [40 CFR Part 72] Federally Enforceable Through Title V Permit

62. An allowance shall not be deducted in order to comply with the requirements under 40 CFR Part 73, prior to the calendar year for which the allowance was allocated. [40 CFR Part 73] Federally Enforceable Through Title V Permit

63. An allowance allocated by the Administrator under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Acid Rain permit application, the Acid Rain permit, or the written exemption under 40 CFR Part 72.7 and Part 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization. [40 CFR Part 72] Federally Enforceable Through Title V Permit

64. An allowance allocated by the Administrator under the Acid Rain Program does not constitute a property right. [40 CFR Part 72] Federally Enforceable Through Title V Permit

65. The owners and operators of the source and each affected unit at the source shall comply with the applicable Acid Rain emissions limitation for nitrogen oxides. [40 CFR Part 72] Federally Enforceable Through Title V Permit

66. The designated representative of an affected unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR Part 77. [40 CFR Part 77] Federally Enforceable Through Title V Permit

67. The owners and operators of an affected unit that has excess emissions in any calendar year shall: (i) pay without demand the penalty required, and pay up on demand the interest on that penalty; and (ii) comply with the terms of an approved offset plan, as required by 40 CFR Part 77. [40 CFR Part 77] Federally Enforceable Through Title V Permit

68. The owners and operators of the each affected unit at the source shall keep on site the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority: (i) The certificate of representation for the designated representative for the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR Part 72.24; provided that the certificate and documents shall be retained on site beyond such five-year period until such documents are superceded because of the submission of a new certificate of representation changing the designated representative. [40 CFR Part 72] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

69. The owners and operators of each affected unit at the source shall keep on site each of the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority; (ii) All emissions monitoring information, in accordance with 40 CFR Part 75; (iii) Copies of all reports, compliance certifications and other submissions and all records made or required under the Acid Rain Program; (iv) Copies of all documents used to complete an Acid Rain permit application and any other submission that demonstrates compliance with the requirements of the Acid Rain Program. [40 CFR Part 72, 40 CFR Part 75] Federally Enforceable Through Title V Permit

70. The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR Part 75 Subpart I. [40 CFR Part 75] Federally Enforceable Through Title V Permit

71. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: Rule 407 (Kern) as of the date of permit issuance. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

72. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.332 (a)(1) and (b), 60.333 (a) and (b), 60.334 (c), h(1), h(3) and (j), and 60.335 (a), (b)(3), and (c); District Rule 4703 (as amended 09/20/07), Sections 5.1.3, 5.2, 5.3, 6.1, 6.3.1, 6.3.3, 6.4.1, 6.4.2, 6.4.3, and 6.4.5 as of the date of permit issuance. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

73. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.7(b), 60.8, 60.8(d), 60.13, and 60.13(b); District Rules 1080 (as amended 12/17/92), Sections 6.3, 6.4, 6.5, 7.0, 7.1, 7.2, 7.3, 8.0, 9.0, 10.0, and 11.0; and 1081 (as amended 12/16/93) as of the date of permit issuance. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

APPENDIX C

BACT Guideline

Back

Best Available Control Technology (BACT) Guideline 3.4.2
Last Update: 10/1/2002

Gas Turbine - = or > 50 MW, Uniform Load, with Heat Recovery

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
CO	6.0 ppmv @ 15% O2 (Oxidation catalyst, or equal)	4.0 ppmv @ 15% O2 (Oxidation catalyst, or equal)	
NOx	2.5 ppmv dry @ 15% O2 (1-hr average, excluding startup and shutdown), (Selective catalytic reduction, or equal)	2.0 ppmv dry @ 15% O2 (1-hr average, excluding startup and shutdown), (Selective catalytic reduction, or equal)	
PM10	Air inlet filter cooler, lube oil vent coalescer and natural gas fuel, or equal		
SOx	1. PUC-regulated natural gas or 2. Non-PUC-regulated gas with no more that 0.75 grains S/100 dscf, or equal.		
VOC	2.0 ppmv @ 15% O2	1.5 ppmv @ 15% O2	

*** Applicability lowered to > 50 MW pursuant to CARB Guidance for Permitting Electrical Generation Technologies. Change effective 10/1/02. Corrected error in applicability to read 50 MW not 50 MMBtu/hr effective 4/1/03.*

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in s a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is requried for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

This is a Summary Page for this Class of Source. For background information, see Permit Specific BACT Determinations on Details Page.

APPENDIX D

Top-Down BACT Analysis

Top-Down BACT Analysis

From the above analysis, only NOx and PM_{10} emissions trigger BACT, although, the applicant is proposing BACT for also SOx, CO and VOCs emissions.

In accordance with the District BACT policy, information from SJVAPCD BACT Guideline 3.4.2, which is included as ***Appendix C*** will be utilized.

1. BACT Analysis for NO_X Emissions:

a. Step 1 - Identify all control technologies

For NO_X Emissions BACT Guideline 3.4.2 identifies the following options:

NOx:
Achieved in Practice: 2.5 ppmv dry @ 15% O2 (1-hr average, excluding startup and shutdown), (Selective catalytic reduction, or equal)

Technologically Feasible: 2.0 ppmv dry @ 15% O2 (1-hr average, excluding startup and shutdown), (Selective catalytic reduction, or equal)

b. Step 2 - Eliminate technologically infeasible options

All control options listed in Step 1 are technologically infeasible.

c. Step 3 - Rank remaining options by control effectiveness

The ranking is as follows:

NOx: 2.0 ppmv dry @ 15% O2 (1-hr average, excluding startup and shutdown), (Selective catalytic reduction, or equal)

2.5 ppmv dry @ 15% O2 (1-hr average, excluding startup and shutdown), (Selective catalytic reduction, or equal)

d. Step 4 - Cost Effectiveness Analysis

The applicant has proposed the strictest control option under consideration. Therefore, a cost effectiveness analysis is not required.

e. Step 5 - Select BACT

BACT for NOx is the following, which is also proposed by the applicant. Therefore, BACT will be satisfied.

NOx: 2.0 ppmv dry @ 15% O2 (1-hr average, excluding startup and shutdown), (Selective catalytic reduction, or equal)

2. BACT Analysis for PM_{10} Emissions:

a. Step 1 - Identify all control technologies

For PM_{10} Emissions BACT Guideline 3.4.2 identifies the following option:

PM_{10}:
Achieved in Practice: Air inlet filter cooler, lube oil vent coalescer and natural gas fuel, or equal

Technologically Feasible: No listing

b. Step 2 - Eliminate technologically infeasible options

The control option listed in Step 1 is technologically infeasible.

c. Step 3 - Rank remaining options by control effectiveness

The applicant is proposing to use the following controls, which are also the highest ranked options in step 1.

PM_{10}: Air inlet filter cooler, lube oil vent coalescer and natural gas fuel, or equal

d. Step 4 - Cost Effectiveness Analysis

The applicant has proposed the strictest control options under consideration. Therefore, a cost effectiveness analysis is not required.

e. Step 5 - Select BACT

BACT for PM_{10} are the following controls, which are also proposed by the applicant. Therefore, BACT will be satisfied.

PM_{10}: Air inlet filter cooler, lube oil vent coalescer and natural gas fuel, or equal

APPENDIX E

Health Risk Assesment Summary

San Joaquin Valley Air Pollution Control District
Risk Management Review and Ambient Air Quality Analysis

To:	Robert C Rinaldi – Permit Services
From:	Chris J Alvara – Technical Services
Date:	September 01, 2021
Facility Name:	SUNRISE POWER CO
Location:	12857 SUNRISE POWER RD, FELLOWS
Application #(s):	S-3746-1-13, -2-13
Project #:	S-1204133

1. Summary

1.1 RMR

Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required	Special Permit Requirements
1-13	0.35	0.00	N/A[1]	N/A[1]	No	Yes
2-13	0.35	0.00	N/A[1]	N/A[1]	No	Yes
Project Totals	0.70	0.00	0.00	0.00E+00		
Facility Totals	<1	0.04	0.00	4.80E-07		

Notes:
1. Since there is only an increase in hourly emission rates and not annual, the project will only evaluate the Acute Hazard Index (short term health risk).

1.2 AAQA

Pollutant	Air Quality Standard (State/Federal)				
	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass		Pass		
NO_x	Pass				Pass
SO_x	Pass	Pass		Pass	Pass
PM10				Pass	Pass
PM2.5				Pass	Pass

Notes:
1. Results were taken from the attached AAQA Report.
2. The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2) unless otherwise noted below.
3. Modeled PM10 concentrations were below the District SIL for non-fugitive sources of 5 $\mu g/m^3$ for the 24-hour average concentration and 1 $\mu g/m^3$ for the annual concentration.
4. Modeled PM2.5 concentrations were below the District SIL for non-fugitive sources of 1.2 $\mu g/m^3$ for the 24-hour average concentration and 0.2 $\mu g/m^3$ for the annual concentration.

To ensure that human health risks will not exceed District allowable levels; the following shall be included as requirements for:

Unit # 1-13, 2-13

1. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction.

2. Project Description

Technical Services received a request on September 01, 2021 to perform a Risk Management Review (RMR) and Ambient Air Quality Analysis (AAQA) for the following:

- Unit -1-13: MODIFICATION OF 160 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #1 CONSISTING OF GENERAL ELECTRIC FRAME 7FA, NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW-NOX (DLN) COMBUSTORS, HEAT RECOVERY STEAM GENERATOR WITH DUCT FIRING, SCR, AND OXIDATION CATALYSTS (585 MW TOTAL PLANT NOMINAL RATING): INCREASE NOMINAL RATING TO 190 MW BY REPLACING COMBUSTOR AND TURBINE SECTIONS, WHICH WILL UPGRADE DLN COMBUSTION SYSTEM, AND UPGRADE MARK VIE TURBINE CONTROL SYSTEM SO THAT THE NEW TOTAL PLANT NOMINAL RATING WILL BE 635 MW
- Unit -2-13: MODIFICATION OF 160 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #1 CONSISTING OF GENERAL ELECTRIC FRAME 7FA, NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW-NOX (DLN) COMBUSTORS, HEAT RECOVERY STEAM GENERATOR WITH DUCT FIRING, SCR, AND OXIDATION CATALYSTS (585 MW TOTAL PLANT NOMINAL RATING): INCREASE NOMINAL RATING TO 190 MW BY REPLACING COMBUSTOR AND TURBINE SECTIONS, WHICH WILL UPGRADE DLN COMBUSTION SYSTEM, AND UPGRADE MARK VIE TURBINE CONTROL SYSTEM SO THAT THE NEW TOTAL PLANT NOMINAL RATING WILL BE 635 MW

3. RMR Report

3.1 Analysis

The District performed an analysis pursuant to the District's Risk Management Policy for Permitting New and Modified Sources (APR 1905, May 28, 2015) to determine the possible cancer and non-cancer health impact to the nearest resident or worksite. This policy requires that an assessment be performed on a unit by unit basis, project basis, and on a facility-wide basis. If a preliminary prioritization analysis demonstrates that:

- A unit's prioritization score is less than the District's significance threshold and;
- The project's prioritization score is less than the District's significance threshold and;
- The facility's total prioritization score is less than the District's significance threshold

Then, generally no further analysis is required.

The District's significant prioritization score threshold is defined as being equal to or greater than 1.0. If a preliminary analysis demonstrates that either the unit's or the project's or the facility's

total prioritization score is greater than the District threshold, a screening or a refined assessment is required

If a refined assessment is greater than one in a million but less than 20 in one million for carcinogenic impacts (Cancer Risk) and less than 1.0 for the Acute and Chronic hazard indices(Non-Carcinogenic) on a unit by unit basis, project basis and on a facility-wide basis the proposed application is considered less than significant. For unit's that exceed a cancer risk of 1 in one million, Toxic Best Available Control Technology (TBACT) must be implemented.

Toxic emissions for this project were calculated using the following methods:

- Toxic emissions for this proposed unit were calculated using Natural Gas Fired Tubrine emission factors based on AP-42 Chapter 3.1 Stationary Gas Turbines.

These emissions were input into the San Joaquin Valley APCD's Hazard Assessment and Reporting Program (SHARP). In accordance with the District's Risk Management Policy, risks from the proposed unit's toxic emissions were prioritized using the procedure in the 2016 CAPCOA Facility Prioritization Guidelines. The prioritization score for this proposed facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined health risk assessment was required.

The AERMOD model was used, with the parameters outlined below and meteorological data for 2004-2008 from Fellows (rural dispersion coefficient selected) to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the SHARP Program, which then used the Air Dispersion Modeling and Risk Tool (ADMRT) of the Hot Spots Analysis and Reporting Program Version 2 (HARP 2) to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Source Process Rates					
Unit ID	**Process ID**	**Process Material**	**Process Units**	**Hourly Process Rate**	**Annual Process Rate**
1-13	1	Natural Gas	MMscf	1.897E-06	N/A
2-13	1	Natural Gas	MMscf	1.897E-06	N/A

Point Source Parameters						
Unit ID	**Unit Description**	**Release Height (m)**	**Temp. (°K)**	**Exit Velocity (m/sec)**	**Stack Diameter (m)**	**Vertical/ Horizontal/ Capped**
1-13	Gas Turbine	45.72	369	17.83	5.79	Vertical
2-13	Gas Turbine	45.72	369	17.83	5.79	Vertical

4. AAQA Report

The District modeled the impact of the proposed project on the National Ambient Air Quality Standard (NAAQS) and/or California Ambient Air Quality Standard (CAAQS) in accordance with District Policy APR-1925 (Policy for District Rule 2201 AAQA Modeling) and EPA's Guideline for Air Quality Modeling (Appendix W of 40 CFR Part 51). The District uses a progressive three level approach to perform AAQAs. The first level (Level 1) uses a very conservative approach. If this

analysis indicates a likely exceedance of an AAQS or Significant Impact Level (SIL), the analysis proceeds to the second level (Level 2) which implements a more refined approach. For the 1-hour NO_2 standard, there is also a third level that can be implemented if the Level 2 analysis indicates a likely exceedance of an AAQS or SIL.

The modeling analyses predicts the maximum air quality impacts using the appropriate emissions for each standard's averaging period. Required model inputs for a refined AAQA include background ambient air quality data, land characteristics, meteorological inputs, a receptor grid, and source parameters including emissions. These inputs are described in the sections that follow.

Ambient air concentrations of criteria pollutants are recorded at monitoring stations throughout the San Joaquin Valley. Monitoring stations may not measure all necessary pollutants, so background data may need to be collected from multiple sources. The following stations were used for this evaluation:

Monitoring Stations				
Pollutant	**Station Name**	**County**	**City**	**Measurement Year**
CO	Arvin - Di Giorgio	Kern	Arvin	2018
NOx	Bakersfield-California Avenue	Kern	Bakersfield	2018
PM10	Bakersfield-California Avenue	Kern	Bakersfield	2018
PM2.5	BAKERSFIELD - SOUTHEAST (PLANZ)	Kern	Bakersfield	2018
SOx	Fresno - Garland	Fresno	Fresno	2018

Technical Services performed modeling for directly emitted criteria pollutants with the emission rates below:

Emission Rates (lbs/hour)						
Unit ID	**Process**	**NOx**	**SOx**	**CO**	**PM10**	**PM2.5**
1-13	1	0.78	0.03	1.16	0.00	0.00
2-13	1	0.78	0.03	1.16	0.00	0.00

Emission Rates (lbs/year)						
Unit ID	**Process**	**NOx**	**SOx**	**CO**	**PM10**	**PM2.5**
1-13	1	0.00	0.00	10,162	0.00	0.00
2-13	1	0.00	0.00	10,162	0.00	0.00

The AERMOD model was used to determine if emissions from the project would cause or contribute to an exceedance of any state of federal air quality standard. The parameters outlined below and meteorological data for 2004-2008 from Fellows (rural dispersion coefficient selected) were used for the analysis:

The following parameters were used for the review:

Point Source Parameters						
Unit ID	**Unit Description**	**Release Height (m)**	**Temp. (°K)**	**Exit Velocity (m/sec)**	**Stack Diameter (m)**	**Vertical/ Horizontal/ Capped**
1-13	Gas Turbine	45.72	369	17.83	5.79	Vertical
2-13	Gas Turbine	45.72	369	17.83	5.79	Vertical

5. Conclusion

5.1 RMR

The cumulative acute and chronic indices for this facility, including this project, are below 1.0; and the cumulative cancer risk for this facility, including this project, is less than 20 in a million. In addition, the cancer risk for each unit in this project is less than 1.0 in a million. **In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).**

To ensure that human health risks will not exceed District allowable levels; the permit requirements listed on page 1 of this report must be included for this proposed unit.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

5.2 AAQA

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

6. Attachments

A. Modeling request from the project engineer

B. Additional information from the applicant/project engineer

C. Prioritization score w/ toxic emissions summary

D. Facility Summary

E. AAQA results

APPENDIX F

Quarterly Net Emissions Change

Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

QNEC = PE2 - PE1, where:

QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr.
PE2 = Post-Project Potential to Emit for each emissions unit, lb/qtr.
PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr.

Using the values in Sections VII.C.2 and VII.C.1 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

$PE2_{quarterly}$ = $PE2_{annual}$ ÷ 4 quarters/year
= 134,721 lb PM_{10}/year ÷ 4 qtr/year
= 33,680 lb PM_{10}/qtr

$PE1_{quarterly}$ = $PE1_{annual}$ ÷ 4 quarters/year
= 134,826 lb PM_{10}/year ÷ 4 qtr/year
= 33,707 lb PM_{10}/qtr

Quarterly NEC [QNEC] for Each CTG S-3746-1 & '-2			
Pollutant	**PE2 (lb/qtr)**	**PE1 (lb/qtr)**	**QNEC (lb/qtr)**
NO_X	38,900	38,917	-17
SO_X	2,930	3,032	-102
PM_{10}	33,680	33,707	-27
CO	63,125	63,497	-372
VOC	10,951	10,959	-8

APPENDIX G

Compliance Certification

San Joaquin Valley Air Pollution Control District

TITLE V MODIFICATION - COMPLIANCE CERTIFICATION FORM

I. TYPE OF PERMIT ACTION (Check appropriate box)

☐ ADMINISTRATIVE AMENDMENT ☒ MINOR MODIFICATION ☐ SIGNIFICANT MODIFICATION

COMPANY NAME: Sunrise Power Company, LLC	FACILITY ID: S-3746
1. Type of Organization: ☒ Corporation ☐ Sole Ownership ☐ Government ☐ Partnership ☐ Utility	
2. Owner's Name: Sunrise Power Company, LLC	
3. Agent to the Owner: ERM-West, Inc.	

II. COMPLIANCE CERTIFICATION (Read each statement carefully and initial **applicable** circles for confirmation):

(DK) Based on information and belief formed after reasonable inquiry, the equipment identified in this application will continue to comply with the applicable federal requirement(s).

(DK) Based on information and belief formed after reasonable inquiry, the equipment identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis.

(DK) Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.

(DK) Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true, accurate, and complete.

(DK) For minor modifications, this application meets the criteria for use of minor permit modification procedures pursuant to District Rule 2520.

I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

Signature of Responsible Official

10/20/2020
Date

David King
Name of Responsible Official (please print)

Plant Manger
Title of Responsible Official (please print)

APPENDIX H

Projected Actual Emissions (PAE)

The Projected Actual Emissions (PAE) are summarized below. The applicant has provided emissions projections (next page) based on historical operation data and future operational projections. The projections are shown on the next page. The projected emissions in tons/yr is multiplied by 2,000 lb/ton to determine the lb/yr emissions.

PAE for Turbines	
Pollutant	**PAE (lb/yr)**
NO_x	122,200
VOC	48,200
PM_{10}	142,200
$PM_{2.5}$	142,200

NOx: 61.1 tons/yr. x 2,000 lb/ton = 122,200 lb/yr.

VOC: 24.1 tons/yr. x 2,000 lb/ton = 48,200 lb/yr.

PM_{10}: 71.1 tons/yr. x 2,000 lb/ton = 142,200 lb/yr.

$PM_{2.5}$: 71.1 tons/yr. x 2,000 lb/ton = 142,200 lb/yr.

Table 2: Post Uprate - Projected Actuals Emissions & Project Emissions Increase (Two 12 Months BAE)

GT - 1	Sunrise Annual Emission Calculations				Annual CF 86%		GT Starts 220		Duct Burner Usage 50%			
		NOx		CO		SOx		VOC		PM		
	Starts	lb/SU -SD	Tons/yr	lb/SU -SD	Tons/yr	lb/SU -SD	Tons/yr	lb/SU -SD	Tons/yr	lb/SU -SD	Tons/yr
Cold Start /SD - 5 hr	52.00	113.40	2.9	195.24	5.1	2.25	0.1	4.93	0.1	16.8	0.4
Warm Start / SD - 3 hr	84.00	44.10	1.9	38.28	1.6	2.19	0.1	4.64	0.2	19.0	0.8
Hot Start /SD - 2 hr	84.00	36.68	1.5	36.44	1.5	1.29	0.1	4.71	0.2	8.0	0.3
Total			6.3		8.2		0.2		0.5		1.6

GT - 2	Sunrise Annual Emission Calculations				Annual CF #REF!		GT Starts #REF!		Duct Burner Usage #REF!			
		NOx		CO		SOx		VOC		PM		
	Starts	lb/SU -SD	Tons/yr	lb/SU -SD	Tons/yr	lb/SU -SD	Tons/yr	lb/SU -SD	Tons/yr	lb/SU -SD	Tons/yr
Cold Start /SD - 2 hr	52.00	36.7	1.0	36.4	0.9	1.3	0.0	4.7	0.1	8.0	0.2
Warm Start / SD - 2 hr	84.00	36.7	1.5	36.4	1.5	1.3	0.1	4.7	0.2	8.0	0.3
Hot Start /SD - 2 hr	84.00	36.7	1.5	36.4	1.5	1.3	0.1	4.7	0.2	8.0	0.3
Total			4.0		4.0		0.1		0.5		0.9

GT-1 & GT-2	Hours	Lb/hr	Tons/yr	Lb/hr	Tons/yr	Lb/hr	Tons/yr	Lb/hr	Tons/yr	Lb/hr	Tons/yr
Operation w/ DB	3596.8	14.1	25.3	17.3	31.1	1.9	3.5	6.0	10.8	17.9	32.2
Operation wo/ DB	4077.5	12.4	25.4	9.3	19.0	1.9	4.0	6.0	12.2	17.9	36.5
Total			50.7		50.1		7.4		23.0		68.7

Total GT-1 & GT-2											
	Projected Annual Emissionin Tons		61.1		62.3		7.8		24.1		71.1
	12 Mo	BAE	50.9		14.7		6.4		20.0		59.5
	Max Mo	UBC 1	14.3		7.8		1.3		6.6		20.8
	Starts	UBC 2	8.4		6.2		0.3		0.4		1.9
	PEI=PAE-BAE-UBC1-UBC2		-12.5		33.6		-0.2		-2.9		-11.1
	Annual Permit Limits Tons		155.7		254.0		12.1		43.8		134.8

Note

Assume both units start Unit 1 is lead unit Unit 2 is lag Unit

Operation emission rate (lb/hr) is for 2 GT's operating

UBC1 Unused Baseline Capacity - Difference of maximum month vs actual normal monthly emissions, 24 month period.

UBC2 Unused Baseline Capacity - Difference of actual starts during 24 month baseline versus project 220 starts.

CEMS Average Data

CEMS Fuel Flow and Source Test MDL applied

CEMS Fuel Flow and Source Test Rate Applied

Source test value. No increase due to higher operating temperature and catalyst conversion.

Annual emissions +4.5% based on fuel use

Modeled Emissions Rate

Revised 2-2022

APPENDIX I

Baseline Actual Emissions (BAE)

The Baseline Actual Emissions (BAE) are summarized below. The applicant has provided historical operation emissions data (next page) from the CEMS for each of turbines for the last 5 years. The baseline for each of the criteria pollutants was determined separately. The baselines are show in the spreadsheet on the next page.

BAE for Turbines	
Pollutant	**BAE (lb/yr)**
NO_x	101,701
VOC	40,042
PM_{10}	118,930
$PM_{2.5}$	118,930

From the second table on the following pages, the 24 month BAE are highlighted in the spreadsheet. The emissions from those periods are summed up for each pollutant and each turbine. The result is listed on the "24 Month Period Lbs" row. The BAE for the turbines are then calculated as below for each referenced pollutant in the table, above

NOx: (93,375.72/2) + (110,025.54/2) = 101,701 lb/yr

VOC: (41,013.7/2) + (39,071.2/2) = 40,042 lb/yr

PM_{10}: (105,518.40/2) + (132,341.71/2) = 118,930 lb/yr

$PM_{2.5}$: (105,518.40/2) + (132,341.71/2) = 118,930 lb/yr

Attachment A - Baseine Actual Emissions - Continuous 24 Month Period

	Month, Year	UNIT 1					UNIT 2					
	Totals	CO	NOx	SO2	PM	VOC	CO	NOx	SO2	PM	VOC	Comments
2016	April	509.5	3,678.4	499.9	5,433.0	919.4	579.6	3,979.2	475.4	3,735.0	794.7	
	May	522.5	4,199.5	579.5	6,330.6	1,071.3	537.6	4,536.3	557.9	4,391.6	934.4	
	June	895.8	4,576.5	669.3	2,566.8	111.6	783.0	5,100.2	655.6	7,453.6	109.6	
	July	1,128.7	4,952.6	733.6	2,821.6	122.7	1,096.0	5,596.8	730.3	8,283.9	121.8	
	August	1,231.7	5,441.7	759.3	2,928.2	127.3	1,645.8	5,799.5	755.3	8,593.9	126.4	
	September	1,047.2	4,842.3	714.1	2,754.8	119.8	1,027.6	5,431.7	708.8	8,045.7	118.3	
	October	1,200.8	5,053.9	744.9	2,862.3	124.4	1,632.5	5,654.5	737.3	8,371.3	123.1	
	November	828.4	4,480.8	654.2	2,526.0	109.8	1,256.3	4,589.5	577.0	6,558.1	96.4	
	December	1,066.6	4,263.7	581.6	2,243.0	97.5	1,442.8	4,644.7	560.0	6,381.0	93.8	
2017	January	968.8	4,950.7	613.9	2,360.6	102.6	1,430.9	4,957.6	591.4	6,745.2	99.2	
	February	906.0	2,199.8	226.4	870.5	37.8	1,199.0	2,130.6	200.7	2,274.5	33.4	
	March	1,143.9	2,508.6	229.3	894.1	38.9	1,069.3	2,449.0	198.8	2,253.4	33.1	
	April	1,145.9	2,464.6	219.9	849.8	36.9	870.7	2,239.3	186.1	2,108.0	31.0	HGP Maintenance - Burner Change Out
	May	1,222.0	3,719.0	439.2	1,690.2	73.5	153.8	140.2	5.7	64.4	0.9	HGP Maintenance - Burner Change Out
	June	1,067.9	4,470.0	554.7	7,635.5	1,955.4	525.7	4,766.3	520.4	4,879.3	1,742.6	
	July	1,563.3	4,940.4	725.0	9,948.5	2,547.8	1,251.4	5,961.9	715.9	6,679.9	2,385.7	
	August	1,665.7	4,753.8	701.4	9,614.1	2,462.2	1,193.2	5,855.4	701.5	6,551.5	2,339.8	
	September	1,302.0	4,265.1	601.9	8,279.1	2,120.2	1,226.8	5,310.0	612.3	5,729.6	2,046.3	
	October	1,647.2	4,835.8	707.9	9,697.2	2,483.4	1,006.0	5,785.7	694.2	6,493.1	2,319.0	
	November	1,595.1	4,649.8	683.5	9,362.1	2,397.6	752.8	5,582.1	672.9	6,296.3	2,248.7	
	December	1,622.5	4,843.0	692.6	9,509.7	2,435.4	964.2	5,943.6	673.7	6,301.3	2,250.5	
2018	January	304.5	623.0	75.0	1,026.6	262.9	966.5	3,098.5	316.9	2,954.5	1,055.2	Annual outage - Routine
	February	-	-	-	-	-	1,563.8	4,964.0	523.4	4,892.2	1,747.2	Major Maintenance On GT-1 Rotor
	March	939.5	1,699.5	162.3	2,245.6	575.1	1,341.1	5,643.0	623.9	5,833.8	2,083.5	Major Maintenance On GT-1 Rotor
	April	1,683.1	4,641.7	475.6	6,501.6	1,665.0	1,357.5	3,844.9	450.1	4,205.6	1,502.0	
	May	1,689.4	4,414.1	420.1	5,780.7	1,480.4	1,586.8	3,564.3	388.6	3,635.4	1,298.4	
	June	1,314.9	4,346.4	452.5	1,061.9	1,592.8	1,019.2	3,538.9	414.1	1,241.2	1,448.1	
	July	1,466.7	4,651.4	501.3	1,176.1	1,764.2	1,164.7	3,707.8	491.1	1,472.7	1,718.1	
	August	1,858.1	4,283.9	445.0	1,041.0	1,561.5	1,168.7	3,294.3	399.7	1,200.4	1,400.4	
	September	1,920.0	5,402.7	637.3	1,499.1	2,248.6	1,140.8	4,598.9	636.3	1,911.6	2,230.2	
	October	2,338.93	5,340.76	603.99	1,411.8	2,117.7	1,451.9	4,643.3	589.8	1,771.4	2,066.6	
	November	1,782.90	4,339.46	658.34	1,545.7	2,318.5	1,172.4	4,701.3	654.6	1,964.2	2,291.6	
	December	820.27	4,769.50	618.65	1,448.2	2,172.3	673.3	5,401.5	627.6	1,887.0	2,201.5	
2019	January	1,337.32	4,074.91	502.24	1,174.9	1,762.4	1,711.0	4,326.2	485.8	1,457.4	1,700.3	
	February	-	-	-	-	-	-	-	-	-	-	Major Maintenance on Steam Turbine Generator
	March	-	-	-	-	-	-	-	-	-	-	Major Maintenance on Steam Turbine Generator
	April	-	-	-	-	-	-	-	-	-	-	Major Maintenance on Steam Turbine Generator
	May	-	-	-	-	-	-	-	-	-	-	Major Maintenance on Steam Turbine Generator
	June	1,295.02	847.55	66.50	581.12	234.7	640.8	709.6	51.7	477.4	182.3	Major Maintenance on Steam Turbine Generator
	July	1,901.84	5,589.02	648.14	6,709.18	2,272.5	1,497.8	4,525.1	629.5	5,778.2	2,206.2	
	August	2,416.37	6,150.09	707.51	7,372.43	2,497.1	1,929.5	5,721.4	696.5	6,423.4	2,452.6	
	September	2,456.35	5,759.28	662.73	6,857.71	2,322.8	1,618.6	3,685.7	547.3	5,019.3	1,916.5	
	October	2,713.92	5,704.03	617.60	6,400.08	2,167.8	2,251.1	4,737.9	658.7	6,038.6	2,305.7	
	November	2,777.82	6,396.06	745.38	7,732.94	2,619.2	1,883.2	5,700.0	692.7	6,368.7	2,431.7	
	December	2,588.71	5,894.58	720.11	7,455.89	2,525.4	2,008.7	4,983.1	716.5	6,567.1	2,507.4	
2020	January	2,220.6	5,275.0	665.2	5,773.5	2,331.6	2183.2	4434.4	660.8	6064.0	2315.3	
	February	2,576.7	5,050.0	570.6	4,989.9	2,015.1	1819.9	3743.5	577.6	5309.9	2027.4	
	March	1,162.5	2,815.5	306.5	2,660.8	1,074.6	905.8	1211.3	138.5	1267.7	484.0	Annual outage - Routine
	April	2,109.8	4,060.1	391.6	3,397.1	1,371.9	3029.9	3896.7	484.8	4471.2	1707.2	
	May	2,131.2	2,469.5	233.0	2,021.9	816.5	2170.5	1882.4	240.5	2206.2	842.4	
	June	3,341.8	5,191.8	544.7	5,626.3	1,814.9	3440.4	4327.5	529.7	4506.5	1767.2	
	July	3,053.9	5,630.7	669.6	6,952.2	2,242.6	3463.4	5688.3	668.5	5716.4	2241.7	
	August	3,215.1	4,894.0	539.2	5,604.5	1,807.9	3343.4	4260.9	517.1	4397.5	1724.5	
	September	2,384.5	4,975.6	585.1	6,061.4	1,955.3	3584.4	4648.0	663.9	5673.9	2225.0	

Attachment A - Baseine Actual Emissions - Continuous 24 Month Period

	Month, Year	UNIT 1						UNIT 2					
	Totals	CO	NOx	SO2	PM	VOC		CO	NOx	SO2	PM	VOC	Comments
	October	2,838.1	5,261.1	609.4	5,318.2	2,045.5		4021.0	5412.8	660.8	5620.0	2203.9	
	November	2,308.2	5,263.3	625.3	5,438.3	2,091.7		2759.5	5324.1	625.4	5326.2	2088.7	
	December	1,724.6	4,169.7	524.5	4,558.0	1,753.1		1870.0	4538.5	527.2	4481.7	1757.5	
	January	2,364.2	4,652.7	543.7	4,709.4	1,811.3		2610.4	5480.3	560.3	4766.9	1869.4	
2021	February	2,040.6	3,349.2	341.5	2,977.2	1,145.1		2737.2	3495.6	354.0	3027.9	1187.4	
	March	3,629.3	6,121.3	629.1	5,452.5	2,097.1		1106.5	1674.1	188.4	1599.3	627.2	Annual outage - Routine
	Maximum Month Lbs	**2,338.9**	**5,441.7**	**759.3**	**9,948.5**	**2,619.2**		**1,711.0**	**5,961.9**	**755.3**	**8,593.9**	**2,507.4**	
	24 Month Period Lbs	**32,337.2**	**93,375.72**	**12,569.34**	**105,518.40**	**41,013.7**		**26,530.6**	**110,025.54**	**12,995.19**	**132,341.71**	**39,071.2**	
	Tons Per Unit	**16.2**	**46.7**	**6.3**	**52.8**	**20.5**		**13.3**	55.0	6.5	66.2	**19.5**	

Facility 1 Year Baseline Actual Emissions Based on 24 Month Period				
CO	NOx	SO2	PM	VOC
14.7	**50.9**	**6.4**	**59.5**	**20.0**

Notes:

1. Maximum month in 24-month period for each pollutant is shown in red text.

For example, the maximum month in 24-month period for Unit 1, CO pollutant is 3341.8 lbs (in October 2018).

2. Cells shaded in yellow show the 24-month period with maximum emissions for CO.
3. Green shaded cells show updated data for VOCs
4. **Green shaded wit hblue bold text updated February 2022 24 month continuous period within 5 year period ending Mach 2021. NOx, SOx, PM.**

General Steps:

1. 24-Month Period - Maximum Emissions Tables: The maximum emissions in 24-month period was determined for each pollutant.
2. 24-Month Period - The time period for the maximum emissions for each pollutant was identified and then used to determine the maximum emissions in the Actual Emissions tables.
3. Actual Emissions Tables: The maximum emissions in the Actual Emissions table were then inputted to the PAE table. Actual emissions were used for the outage month of February.

References:

District APR 1150 Policy: Implementation of Rule 2201 for SB288 Major Modification and Federal Major Modifications

APPENDIX J

UBC Calculations

The Unused Baseline Capacity (UBC) are summarized below. The applicant has provided historical operation emissions data from the CEMS for each of turbines for the last 5 years as the baseline actual emissions. The applicant has provided the projected actual emissions based on usage projections. The emissions that a unit could have accommodated during the baseline period can be subtracted from the projected actual emissions when calculating the increase in emissions. The unused baseline capacity are calculated using the data on the next pages. A sample calculation and the final values are shown below.

UBC for Turbines	
Pollutant	**UBC (lb/yr)**
NO_x	45,400
VOC	14,000
PM_{10}	45,400
$PM_{2.5}$	45,400

NOx: (14.3 ton + 8.4 ton) x 2000 lb/ton = 45,400 lb/yr

VOC: (6.6 ton + 0.4 ton) x 2000 lb/ton = 14,000 lb/yr

PM_{10}: (20.8 ton + 1.9 ton) x 2000 lb/ton = 45,400 lb/yr

$PM_{2.5}$: (20.8 ton + 1.9 ton) x 2000 lb/ton = 45,400 lb/yr

Using the CEMS data from the table on the next page. The NOx emissions for the first year of Unit 1 are calculated by adding the monthly NOx emissions. This gives the first year emissions in tons. The emissions from the second year are calculated by adding the monthly NOx emissions from the second year. These emissions are averaged and added to the emissions that were calculated from Unit 2. The next table lists the startup emissions that the facility could have started. The startup emissions are added to the CEMS data to find the UBC.

Sample NOx calculation:

UBC = Unit 1 (1^{st} yr ton + 2^{nd} yr ton) /2 + Unit 2 (1^{st} yr ton + 2^{nd} yr ton) / 2 + startup emissions ton/yr

= (6.2 + 11.2) /2 + (7.3 + 3.8) /2 + 8.4

= 8.7 + 5.6 + 8.4

= 14.3+8.4 ton/yr

Attachment B - Unused Baseline Capacity - Continuous 24 Month Period

	UNIT 1						Unit 2					
	CEMS			Emissions Factor from Source Testing 2019			CEMS			Emissions Factor from Source Testing		
	CO	NOx	SO2	PM	VOC		CO	NOx	SO2	PM	VOC
Month 1	2,034.5	**1,242.2**	**259.4**	**3,617.9**	0.0	Month 1	744.5	**1,425.5**	**279.9**	**4,202.3**	0.0
Month 2	1,432.9	**865.2**	**179.8**	**7,381.7**	0.0	Month 2	512.0	**861.7**	**197.4**	**1,140.3**	0.0
Month 3	1,195.0	**489.1**	**90.0**	**7,126.9**	0.0	Month 3	641.7	**365.1**	**99.7**	**310.0**	0.0
Month 4	0.0	**0.0**	**25.7**	**7,020.3**	346.7	Month 4	0.0	**162.4**	**25.0**	**0.0**	301.2
Month 5	0.0	**599.4**	**0.0**	**7,193.7**	122.1	Month 5	0.0	**530.2**	**0.0**	**548.2**	54.8
Month 6	1,271.0	**387.8**	**45.2**	**7,086.2**	296.4	Month 6	1,185.3	**307.4**	**46.4**	**222.6**	590.9
Month 7	775.6	**960.9**	**14.4**	**7,422.5**	451.4	Month 7	459.6	**1,372.4**	**18.0**	**2,035.8**	201.7
Month 8	673.2	**1,178.0**	**105.0**	**7,705.5**	0.0	Month 8	517.8	**1,317.2**	**178.3**	**2,212.9**	75.7
Month 9	1,037.0	**491.0**	**177.7**	**7,587.9**	93.8	Month 9	484.2	**1,004.3**	**195.3**	**1,848.7**	0.0
Month 10	691.8	**3,241.9**	**145.4**	**9,078.0**	287.6	Month 10	705.0	**3,831.3**	**163.9**	**6,319.4**	192.1
Month 11	743.8	**2,933.1**	**0.0**	**9,054.4**	604.1	Month 11	958.2	**3,512.9**	**0.0**	**6,340.5**	480.0
Month 12	716.5	**0.0**	**0.0**	**0.0**	1,544.6	Month 12	746.8	**0.0**	**0.0**	**0.0**	2,023.4
tpy	**5.3**	**6.2**	**0.5**	**40.1**	**1.9**	**tpy**	**3.5**	**7.3**	**0.6**	**12.6**	**2.0**
Month 13	1,001.6	**0.0**	**0.0**	**0.0**	1,247.3	Month 13	0.0	**0.0**	**0.0**	**0.0**	800.2
Month 14	0.0	**0.0**	**0.0**	**0.0**	1,802.7	Month 14	147.2	**0.0**	**0.0**	**0.0**	1,665.0
Month 15	1,399.4	**687.9**	**0.0**	**0.0**	0.0	Month 15	369.9	**0.0**	**0.0**	**1,914.0**	0.0
Month 16	655.8	**1,176.6**	**34.3**	**334.4**	376.6	Month 16	353.5	**106.5**	**39.3**	**2,042.4**	265.7
Month 17	649.6	**605.9**	**57.9**	**1,669.4**	811.3	Month 17	124.2	**651.9**	**53.8**	**2,864.3**	782.9
Month 18	1,024.0	**791.9**	**157.4**	**251.3**	663.9	Month 18	691.8	**176.2**	**143.0**	**2,100.8**	282.4
Month 19	872.2	**598.7**	**51.3**	**586.4**	573.7	Month 19	546.3	**379.8**	**61.1**	**2,297.6**	303.5
Month 20	480.9	**4,818.7**	**75.8**	**438.8**	527.5	Month 20	542.3	**18.3**	**82.3**	**2,292.6**	418.7
Month 21	418.9	**5,441.7**	**66.7**	**8,921.9**	866.1	Month 21	570.2	**2,863.4**	**81.6**	**5,639.4**	749.9
Month 22	0.0	**3,742.2**	**684.2**	**9,948.5**	807.9	Month 22	259.1	**997.9**	**438.4**	**3,701.7**	638.0
Month 23	556.0	**3,742.2**	**759.3**	**7,702.9**	1,474.1	Month 23	538.6	**318.9**	**231.8**	**2,760.1**	1,320.0
Month 24	1,518.7	**800.0**	**597.0**	**3,446.9**	522.1	Month 24	1,037.7	**2,116.9**	**131.3**	**4,388.3**	1,880.2
tpy	**4.3**	**11.2**	**0.8**	**15.7**	**4.8**		**2.6**	**3.8**	**0.6**	**15.0**	**4.6**
2 Year Average tons	**4.8**	**8.7**	**0.7**	**27.9**	**3.4**		**3.0**	**5.6**	**0.6**	**13.8**	**3.3**
				UBC -24 Months (Combined - tpy)			**7.8**	**14.3**	**1.3**	**20.8**	**6.6**

Annual outage - Routine

Major Maintenance

Maximum Month

Monthly values in Lbs

tpy = Tons per year

Green numbers represent update data for VOCs through March 2021.

Blue bold values updated within the previous 60 month period ending March 2021.

Attchment C - Market Change Emissions - Continuous 24 Month BAE Period

	CO[1]	NOx[1]	SO2[1]	PM[3]	VOC[4]
Base Line Starts*	137	75	75	86	114
Projected Starts*	220	220	220	220	220
Increase Over Baseline*	83	145	145	134	106
Average Emissions Estimate (lb/Event)**	74.7	57.6	1.9	14.3	4.0
Emissions Over Baseline Starts lbs/yr*	6,198	8,359	270	1,914	423
Facility tpy	6.2	8.4	0.3	1.9	0.4

* Per Turbine

Red numbers are updated VOC data through March 2021.

(1) Based on startup CEMS data

(2) Based on high average lb/hr CEMS

(3) Based on fuel use and emissions rate determined by source testing normal operation w/DB On

(4) Based on fuel use and source testing emissions rates during BAE period.

tpy: tons per year

Red numbers are updated for VOC data through March 2021.

APPENDIX K

SB – 288 Actual Emissions Calculations

The project Net Emissions Increase (NEI) is the total of emission increases for every permit unit addressed in this project and is calculated as follows:

NEI = ∑(PE2 – AE)

Where: PE2 = The sum of all the PE2s for each permit unit in this project
AE = Actual emissions, as of a particular date, shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a consecutive 24-month period which precedes the particular date and which is representative of normal source operation. The reviewing authority shall allow the use of a different time period upon a determination that it is more representative of normal source operation

PE2:

The PE2 for both CTGs was generated the calculations section.

AE:

Sunrise provided the actual emissions from the turbines (shown on the following pages). Sunrise has proposed to use the preceding 24 months from application submittal as the normal operation timeframe. Sunrise is notified by the Cal-ISO when power is needed for the grid. Sunrise has estimated that they will provide power similar to how they have been for the last few years. Therefore using the previous 24 months (March 2021 – April 2019) as more representative is acceptable. The emissions from the 24 month period for both turbines were added to determine the annual actual emissions AE for the project. The AE operation period is highlighted in the spreadsheets on the next pages and summarized below..

NOx: (105,520/2) + (90,081/2) = 97,801 lb/yr

SOx: (11,947/2) + (11,390/2) = 11,669 lb/yr.

PM_{10}: (114,651/2) + (101,108/2) = 107,880 lb/yr.

VOC: (41,013.7/2) + (39,071.2/2) = 40,042 lb/yr.

SB 288 Major Modification Calculation and Determination					
Pollutant	**PE2 (lb/year)**	**AE (lb/yr)**	**NEI (lb/yr)**	**Thresholds (lb/yr)**	**SB 288 Major Modification?**
NO_x	311,197	97,801	213,396	50,000	Yes
SO_x	23,434	11,669	11,765	80,000	No
PM_{10}	269,429	107,880	161,549	30,000	Yes
VOC	87,605	40,042	47,563	50,000	No

VOC Calculations - SB 288 actual emissions

	Unit 1				Unit 2				Combined			
	Month	usage	24-mo avg			Month	usage	24-mo avg			Month	usage	24-mo avg	
	april	919.4				april	794.7				april	1714.1		
	may	1071.3				may	934.4				may	2005.7		
	june	111.6				june	109.6				june	221.2		
	july	122.7				july	121.8				july	244.5		
	august	127.3				august	126.4				august	253.7		
	september	119.8				september	118.3				september	238.1		
	october	124.4				october	123.1				october	247.5		
	november	109.8				november	96.4				november	206.2		
2016	december	97.5			2016	december	93.8			2016	december	191.3		
	january	102.6				january	99.2				january	201.8		
	february	37.8				february	33.4				february	71.2		
	march	38.9				march	33.1				march	72		
	april	36.9				april	31				april	67.9		
	may	73.5				may	0.9				may	74.4		
	june	1955.4				june	1742.6				june	3698		
	july	2547.8				july	2385.7				july	4933.5		
	august	2462.2				august	2339.8				august	4802		
	september	2120.2				september	2046.3				september	4166.5		
	october	2483.4				october	2319				october	4802.4		
	november	2397.6				november	2248.7				november	4646.3		
2017	december	2435.4			2017	december	2250.5			2017	december	4685.9		
	january	262.9				january	1055.2				january	1318.1		
	february	0				february	1747.2				february	1747.2		
	march	575.1	487			march	2083.5	375			march	2658.6	862	
	april	1665	456			april	1502	346			april	3167	802	
	may	1480.4	439			may	1298.4	331			may	2778.8	769	
	june	1592.8	377			june	1448.1	275			june	3040.9	652	
	july	1764.2	308			july	1718.1	209			july	3482.3	517	
	august	1561.5	249			august	1400.4	155			august	2961.9	404	
	september	2248.6	160			september	2230.2	67			september	4478.8	227	
	october	2117.7	77			october	2066.6	14			october	4184.3	63	
	november	2318.5	15			november	2291.6	105			november	4610.1	120	
2018	december	2172.3	102		2018	december	2201.5	193		2018	december	4373.8	294	
	january	1762.4	171			january	1700.3	260			january	3462.7	430	
	february	0	169			february	0	258			february	0	427	
	march	0	168			march	0	257			march	0	424	
	april	0	166			april	0	255			april	0	422	
	may	0	163			may	0	255			may	0	418	
	june	234.7	91			june	182.3	190			june	417	282	
	july	2272.5	80			july	2206.2	183			july	4478.7	263	
	august	2497.1	81			august	2452.6	188			august	4949.7	269	
	september	2322.8	90			september	1916.5	182			september	4239.3	272	
	october	2167.8	77			october	2305.7	182			october	4473.5	258	
	november	2619.2	86			november	2431.7	189			november	5050.9	275	
2019	december	2525.4	90		2019	december	2507.4	200		2019	december	5032.8	290	
	january	2331.6	176			january	2315.3	253			january	4646.9	428	
	february	2015.1	260			february	2027.4	264			february	4042.5	524	
	march	1074.6	280			march	484	198			march	1558.6	478	
	april	1371.9	268			april	1707.2	206			april	3079.1	474	
	may	816.5	241			may	842.4	187			may	1658.9	428	
	june	1814.9	250			june	1767.2	200			june	3582.1	450	
	july	2242.6	270			july	2241.7	222			july	4484.3	492	
	august	1807.9	280			august	1724.5	236			august	3532.4	516	
	september	1955.3	268			september	2225	235			september	4180.3	503	
	october	2045.5	265			october	2203.9	241			october	4249.4	506	
	november	2091.7	255			november	2088.7	233			november	4180.4	488	
2020	december	1753.1	238		2020	december	1757.5	214		2020	december	3510.6	452	
	january	1811.3	240			january	1869.4	221			january	3680.7	461	
	february	1145.1	288			february	1187.4	271			february	2332.5	558	
2021	march	2097.1	375		2021	march	627.2	297		2021	march	2724.3	672	**AE**
	Average	1333.843	41014			Average	1331.05	39071			Average	2664.893		**40042**

SOx Calculations - SB 288 actual emissions

	Unit 1					Unit 2					Combined		
	Month	usage	24-mo avg			Month	usage	24-mo avg			Month	usage	24-mo avg
	april	499.9				april	475.4				april	975.3	
	may	579.5				may	557.9				may	1137.4	
	june	669.3				june	655.6				june	1324.9	
	july	733.6				july	730.3				july	1463.9	
	august	759.3				august	755.3				august	1514.6	
	septembe	714.1				septembe	708.8				septembe	1422.9	
	october	744.9				october	737.3				october	1482.2	
	november	654.2				november	577				november	1231.2	
2016	december	581.6			2016	december	560			2016	december	1141.6	
	january	613.9				january	591.4				january	1205.3	
	february	226.4				february	200.7				february	427.1	
	march	229.3				march	198.8				march	428.1	
	april	219.9				april	186.1				april	406	
	may	439.2				may	5.7				may	444.9	
	june	554.7				june	520.4				june	1075.1	
	july	725				july	715.9				july	1440.9	
	august	701.4				august	701.5				august	1402.9	
	septembe	601.9				septembe	612.3				septembe	1214.2	
	october	707.9				october	694.2				october	1402.1	
	november	983.5				november	672.9				november	1656.4	
2017	december	692.6			2017	december	673.7			2017	december	1366.3	
	january	75				january	316.9				january	391.9	
	february	0				february	523.4				february	523.4	83
	march	162.3	34			march	623.9	49			march	786.2	81
	april	475.6	33			april	450.1	48			april	925.7	68
	may	420.1	26			may	388.6	41			may	808.7	49
	june	452.5	17			june	414.1	31			june	866.6	29
	july	501.3	8			july	491.1	21			july	992.4	1
	august	445	5			august	399.7	6			august	844.7	5
	septembe	637.3	9			septembe	636.3	3			septembe	1273.6	17
	october	603.99	14			october	589.9	3			october	1193.89	14
	november	658.34	14			november	654.6	1			november	1312.94	9
2018	december	618.65	13		2018	december	627.6	3		2018	december	1246.25	18
	january	502.24	17			january	485.8	1			january	988.04	36
	february	0	27			february	0	9			february	0	54
	march	0	36			march	0	18			march	0	71
	april	0	46			april	0	25			april	0	90
	may	0	64			may	0	26			may	0	129
	june	66.5	84			june	51.7	45			june	118.2	136
	july	648.14	87			july	629.5	49			july	1277.64	136
	august	707.51	87			august	696.5	49			august	1404.01	136
	septembe	662.73	85			septembe	547.3	52			septembe	1210.03	142
	october	617.6	88			october	658.7	53			october	1276.3	151
	november	745.38	98			november	692.7	52			november	1438.08	148
2019	december	720.11	97		2019	december	716.5	51		2019	december	1436.61	109
	january	665.2	73			january	660.8	36			january	1326	83
	february	570.6	49			february	577.6	34			february	1148.2	97
	march	306.5	43			march	138.5	54			march	445	99
	april	391.6	46			april	484.8	53			april	876.4	113
	may	233	54			may	240.5	59			may	473.5	104
	june	544.7	50			june	529.7	54			june	1074.4	90
	july	669.6	43			july	668.5	47			july	1338.1	81
	august	539.2	39			august	517.1	42			august	1056.3	82
	septembe	585.1	41			septembe	663.9	41			septembe	1249	79
	october	609.4	41			october	660.8	38			october	1270.2	82
	november	625.3	43			november	625.4	39			november	1250.7	90
2020	december	524.5	47		2020	december	527.2	43		2020	december	1051.7	85
	january	543.7	45			january	560.3	40			january	1104	56	
	february	341.5	31			february	354	25			february	695.5	22	**AE**
2021	march	629.1	4		2021	march	188.4	17		2021	march	817.5	20	**11669**
	Average	502.1898	11947			Average	492.06	11390			Average	994.2498		

NOx Calculations - SB 288 actual emissions

	Unit 1					Unit 2					Combined			
	Month	usage	24-mo avg			Month	usage	24-mo avg			Month	usage	24-mo avg	
	april	3678.4				april	3979.2				april	7657.6		
	may	4199.5				may	4536.3				may	8735.8		
	june	4576.5				june	5100.2				june	9676.7		
	july	4952.6				july	5596.8				july	10549.4		
	august	5441.7				august	5799.5				august	11241.2		
	septembe	4842.3				septembe	5431.7				septembe	10274		
	october	5053.9				october	5654.5				october	10708.4		
	november	4480.8				november	4589.5				november	9070.3		
2016	december	4263.7			2016	december	4644.7			2016	december	8908.4		
	january	4950.7				january	4957.6				january	9908.3		
	february	2199.8				february	2130.6				february	4330.4		
	march	2508.6				march	2449				march	4957.6		
	april	2464.6				april	2239.3				april	4703.9		
	may	3719				may	140.2				may	3859.2		
	june	4470				june	4766.3				june	9236.3		
	july	4940.4				july	5961.9				july	10902.3		
	august	4753.8				august	5855.4				august	10609.2		
	septembe	4265.1				septembe	5310				septembe	9575.1		
	october	4835.8				october	5785.7				october	10621.5		
	november	4649.8				november	5582.1				november	10231.9		
2017	december	4843			2017	december	5943.6			2017	december	10786.6		
	january	623				january	3098.5				january	3721.5		
	february	0				february	4964				february	4964		
	march	1699.5	219			march	5643	559			march	7342.5	340	
	april	4641.7	179			april	3844.9	553			april	8486.6	374	
	may	4414.1	170			may	3564.3	513			may	7978.4	342	
	june	4346.4	180			june	3538.9	448			june	7885.3	268	
	july	4651.4	192			july	3707.8	369			july	8359.2	177	
	august	4283.9	241			august	3294.3	265			august	7578.2	24	
	septembe	5402.7	217			septembe	4598.9	230			septembe	10001.6	13	
	october	5340.76	205			october	4643.3	188			october	9984.06	18	
	november	4339.46	211			november	4701.3	193			november	9040.76	19	
2018	december	4769.5	190		2018	december	5401.5	224		2018	december	10171	34	
	january	4074.91	227			january	4326.2	198			january	8401.11	29	
	february	0	318			february	0	109			february	0	209	
	march	0	423			march	0	7			march	0	416	
	april	0	526			april	0	86			april	0	612	
	may	0	681			may	0	92			may	0	773	
	june	847.55	832			june	709.6	261			june	1557.15	1093	
	july	5589.02	804			july	4525.1	321			july	10114.12	1126	
	august	6150.09	746			august	5721.4	327			august	11871.49	1073	
	septembe	5759.28	684			septembe	3685.7	394			septembe	9444.98	1078	
	october	5704.03	648			october	4737.9	438			october	10441.93	1086	
	november	6396.06	575			november	5700	433			november	12096.06	1008	
2019	december	5894.58	531		2019	december	4983.1	473		2019	december	10877.68	1004	
	january	5275	337			january	4434.4	417			january	9709.4	755	
	february	5050	127			february	3743.5	468			february	8793.5	595	
	march	2815.5	81			march	1211.3	653			march	4026.8	734	
	april	4060.1	105			april	3896.7	651			april	7956.8	756	
	may	2469.5	186			may	1882.4	721			may	4351.9	907	
	june	5191.8	151			june	4327.5	688			june	9519.3	839	
	july	5630.7	110			july	5688.3	606			july	11319	715	
	august	4894	84			august	4260.9	565			august	9154.9	650	
	septembe	4975.6	102			septembe	4648	563			septembe	9623.6	665	
	october	5261.1	105			october	5412.8	531			october	10673.9	637	
	november	5263.3	67			november	5324.1	505			november	10587.4	572	
2020	december	4169.7	92		2020	december	4538.5	541		2020	december	8708.2	633	
	january	4652.7	68			january	5480.3	493			january	10133	561	
	february	3349.2	72			february	3495.6	347			february	6844.8	276	**AE**
2021	march	6121.3	327		2021	march	1674.1	278		2021	march	7795.4	49	**97801**
	Average	4069.957	105520			Average	4031.037	90081			Average	8100.994		

PM10 Calculations - SB 288 actual emissions

	Unit 1					Unit 2					Combined		
	Month	usage	24-mo avg			Month	usage	24-mo avg			Month	usage	24-mo avg
	april	5433				april	3735				april	9168	
	may	6330.6				may	4391.6				may	10722.2	
	june	2566.8				june	7453.6				june	10020.4	
	july	2821.6				july	8283.9				july	11105.5	
	august	2928.2				august	8593.9				august	11522.1	
	septembe	2754.8				septembe	8045.7				septembe	10800.5	
	october	2862.3				october	8371.3				october	11233.6	
	november	2526				november	6558.1				november	9084.1	
2016	december	2243			2016	december	6381			2016	december	8624	
	january	2360.6				january	6745.2				january	9105.8	
	february	870.5				february	2274.5				february	3145	
	march	894.1				march	2253.4				march	3147.5	
	april	849.8				april	2108				april	2957.8	
	may	1690.2				may	64.4				may	1754.6	
	june	7635.5				june	4879.3				june	12514.8	
	july	9948.5				july	6679.9				july	16628.4	
	august	9614.1				august	6551.5				august	16165.6	
	septembe	8279.1				septembe	5729.6				septembe	14008.7	
	october	9697.2				october	6493.1				october	16190.3	
	november	9362.1				november	6296.3				november	15658.4	
2017	december	9509.7			2017	december	6301.3			2017	december	15811	
	january	1026.6				january	2954.5				january	3981.1	
	february	0				february	4892.2				february	4892.2	
	march	2245.6	323			march	5833.8	1266			march	8079.4	1589
	april	6501.6	368			april	4205.6	1285			april	10707.2	1653
	may	5780.7	345			may	3635.4	1254			may	9416.1	1599
	june	1061.9	282			june	1241.2	995			june	2303.1	1277
	july	1176.1	213			july	1472.7	711			july	2648.8	925
	august	1041	135			august	1200.4	403			august	2241.4	538
	septembe	1499.1	82			septembe	1911.6	148			septembe	3410.7	230
	october	1411.8	22			october	1771.4	127			october	3183.2	105
	november	1545.7	19			november	1964.2	319			november	3509.9	338
2018	december	1448.2	52		2018	december	1887	506		2018	december	3335.2	558
	january	1174.9	101			january	1457.4	726			january	2632.3	828
	february	0	138			february	0	821			february	0	959
	march	0	175			march	0	915			march	0	1090
	april	0	210			april	0	1003			april	0	1213
	may	0	281			may	0	1006			may	0	1286
	june	581.12	575			june	477.4	1189			june	1058.52	1764
	july	6709.18	710			july	5778.2	1226			july	12487.38	1936
	august	7372.43	803			august	6423.4	1232			august	13795.83	2035
	septembe	6857.71	862			septembe	5019.3	1261			septembe	11877.01	2124
	october	6400.08	1000			october	6038.6	1280			october	12438.68	2280
	november	7732.94	1068			november	6368.7	1277			november	14101.64	2345
2019	december	7455.89	1153		2019	december	6567.1	1266		2019	december	14022.99	2419
	january	5773.5	955			january	6064	1137			january	11837.5	2092
	february	4989.9	747			february	5309.9	1119			february	10299.8	1867
	march	2660.8	730			march	1267.7	1310			march	3928.5	2040
	april	3397.1	859			april	4471.2	1298			april	7868.3	2158
	may	2021.9	1016			may	2206.2	1358			may	4228.1	2374
	june	5626.3	826			june	4506.5	1222			june	10132.8	2048
	july	6952.2	585			july	5716.4	1045			july	12668.6	1630
	august	5604.5	395			august	4397.5	912			august	10002	1307
	septembe	6061.4	205			septembe	5673.9	755			septembe	11735.3	960
	october	5318.2	42			october	5620	595			october	10938.2	637
	november	5438.3	120			november	5326.2	455			november	10764.5	335
2020	december	4558	250		2020	december	4481.7	347		2020	december	9039.7	97
	january	4709.4	397			january	4766.9	209			january	9476.3	188
	february	2977.2	521			february	3027.9	83			february	6005.1	438
2021	march	5452.5	748		2021	march	1599.3	16		2021	march	7051.8	732
	Average	4029.024	114651			Average	4228.767	101108			Average	8257.791	

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APPENDIX L

Quarterly Emission Calculations

Sunrise Power Company Emission Calculations

Assumptions and Emissions Calculation Methodology:

1. For the proposed project with 182 startups per year, a ratio of 1.82 (Proposed Starts/Current Starts = 182 starts/100 starts = 1.82) was applied to the current first case startup and shutdown operating scenario.
2. Start-up and shut down hours per quarter are as follows: Q1 = 180; Q2 = 171; Q3 = 39; Q4 = 180
3. The number of starts and shut downs were taken from the 2001 permit application and ratioed to get the breakdown of cold, warm and hot starts for the 182 starts per year.
4. For annual data, startup emissions for VOC, NOx and CO in lb/event were calculated using startup source test data and minutes per event specified in the 2001 application.
5.Startup emissions for SOx and PM10 were developed from the 2001 permit application. For PM10 maximum daily emissions, the maximum emissions per any startup event were used. For annual PM the startup emissions the cold start lb/hr were taken and used to determine lb/event. Cold Start = lb/hr/60 min/hr x 230 minutes per startup.
6. For SOx startup emissions, the hourly rate from the 2001 application was used and adjusted for higher fuel flow of modified unit and used to determine lb/event. Cold Start = (1.55 lb/hr x 1.078)/60 minutes x 230 min/event.
7. Hot start PM10 in lb/hr assumed to be the same as cold start lb/hr. Shut down PM10 was set as equal to CTG PM10 without duct firing.
8. Quarterly and annual emissions are based on the hypothetical operating schedules as shown in the Scenario # 1 table in the attached Excel file (Opg Scenario tab).
9. The proposed project emission rates are based on projected emission rates for VOC. CTG data used for unfired and 2.0 ppmv used for fired duct burner.
10. The current permit emission concentration limits will remain unchanged as they represent best available control technology (BACT) and we are not proposing any limits on the types of operation.
11. For Maximum Daily Emissions ONLY, NOx, CO and VOC cold start-up emissions per event were taken from the 2001 permit application. Emissions for both units assume just 1 unit goes through a shutdown but allocated to each un

Maximum Turbine Daily Emissions

Pollutant	Startup Emissions (lb/event)	Shutdown Emissions (lb/event)	Max Emissions lb/hr @ 100% Load	Emissions @ baseload operation	Daily Emissions (per CTG)	Combined Daily Emissions for CTGs	Current Pemit Limit	Difference	Daily Emission Limit (1/2 of shutdown emissions)
PM10	85.3	13.4	17.80	341.17	439.87	866.3	922.34	-56.04	433.2
SOx	6.4	1.55	1.58	30.19	38.14	74.7	74.4	0.30	37.4
NOx	750.00	115	16.74	320.76	1,185.76	2256.5	2341.82	-85.32	1,128.3
VOC	85.00	30	5.84	111.84	226.84	423.7	441.22	-17.54	211.8
CO	1750.00	325	20.38	390.62	2,465.62	4606.2	4886.78	-280.58	2,303.1

1st and 4th Quarter: Hourly Emission Rates @ 100% Load, 30°F

	PM10	SOx	NOx	VOC	CO
Mass Emission Rates w/Duct Burner Firing (per turbine, lb/hr)	17.80	1.58	16.74	5.84	20.38
Source - Mass Emission Rates w/Duct Burner	Combustion Turbine/Duct Burner Model - Case 36	Calculated based on 0.25 gr/100 scf	Combustion Turbine/Duct Burner Model - Case 36	Combustion Turbine/Duct Burner Model - Case 36	Combustion Turbine/Duct Burner Model - Case 36
Mass Emission Rates without Duct Burner Firing (per turbine, lb/hr)	13.40	1.36	14.36	2.85	17.49
Source - Mass Emission Rates without Duct Burner	Combustion Turbine/Duct Burner Model - Case 37	Calculated based on 0.25 gr/100 scf	Combustion Turbine/Duct Burner Model - Case 37	Combustion Turbine/Duct Burner Model - Case 37	Combustion Turbine/Duct Burner Model - Case 37

2nd Quarter: Hourly Emission Rates @ 100% Load, 65°F

	PM10	SOx	NOx	VOC	CO
Mass Emission Rates w/Duct Burner Firing (per turbine, lb/hr)	17.51	1.52	16.15	5.63	19.66
Source - Mass Emission Rates w/Duct Burner	Combustion Turbine/Duct Burner Model - Case 19	Calculated based on 0.25 gr/100 scf	Combustion Turbine/Duct Burner Model - Case 19	Combustion Turbine/Duct Burner Model - Case 19	Combustion Turbine/Duct Burner Model - Case 19
Mass Emission Rates without Duct Burner Firing (per turbine, lb/hr)	12.16	1.27	13.41	2.71	16.33
Source - Mass Emission Rates without Duct Burner	Combustion Turbine/Duct Burner Model - Case 20	Calculated based on 0.25 gr/100 scf	Combustion Turbine/Duct Burner Model - Case 20	Combustion Turbine/Duct Burner Model - Case 20	Combustion Turbine/Duct Burner Model - Case 20

3rd Quarter: Hourly Emission Rates @ 100% Load, 115°F

	PM10	SOx	NOx	VOC	CO
Mass Emission Rates w/Duct Burner Firing (per turbine, lb/hr)	16.95	1.45	15.44	5.38	18.80
Source - Mass Emission Rates w/Duct Burner	Combustion Turbine/Duct Burner Model - Case 3	Calculated based on 0.25 gr/100 scf	Combustion Turbine/Duct Burner Model - Case 3	Combustion Turbine/Duct Burner Model - Case 3	Combustion Turbine/Duct Burner Model - Case 3
Mass Emission Rates without Duct Burner Firing (per turbine, lb/hr)	11.68	1.18	12.52	2.56	15.24
Source - Mass Emission Rates without Duct Burner	Combustion Turbine/Duct Burner Model - Case 4	Calculated based on 0.25 gr/100 scf	Combustion Turbine/Duct Burner Model - Case 4	Combustion Turbine/Duct Burner Model - Case 4	Combustion Turbine/Duct Burner Model - Case 4