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Permit Modification for the

Sutter Decarbonization Project

Yuba City, California

Submitted to

Feather River Air Quality Management District

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1.0 Air Quality

1.1.1 Introduction

This document presents the methodology and results of an analysis performed to assess potential impacts of airborne emissions from the modification and subsequent routine operation of the Sutter Energy Center, LLC (SEC) turbine efficiency and carbon dioxide (CO_2) capture and sequestration (CCS) project, which will be called the Sutter Decarbonization Project (SDP). Section 1.0 presents the introduction, applicant information, and the basic Feather River Air Quality Management District (FRAQMD) rules applicable to the turbine efficiency upgrade and sequestration project, the project description, both current and proposed, data on the emissions of criteria and air toxic pollutants from the proposed project, discusses the best available control technology evaluation for the project, applicable laws, ordinances, regulations, and standards (LORS), agency contacts, permit requirements and schedules, and contains references cited or consulted in preparing this section. Support materials are included in the following appendices:

Appendix AQ-1 – Current Title V Permit

Appendix AQ-2 – Emission Analyses and Calculations (Operation and Construction)

Appendix AQ-3 – Turbine Exhaust Stack Modifications

Appendix AQ-4 – CO_2 Capture/Sequestration System Design and Performance Data

Appendix AQ-5 – FRAQMD Permit Application Forms

1.1.2 Project Description

CCFC Sutter Energy, LLC owns and operates the Sutter Energy Center (SEC) a nominal 550 megawatt (MW) natural gas-fueled combined cycle design power plant. The existing facility utilizes two (2) Siemens Westinghouse 501F Class natural gas-fired combustion turbine generators (CTG) rated at 1,900 mmbtu/hr (million British thermal units), two (2) heat recovery steam generators (HRSG) with supplemental duct burners rated at 170 mmbtu each, one (1) steam turbine generator (STG) rated at 180 MW nominal and an air-cooled condenser (dry-cooling technology). The proposed modifications to the project are broken out into two distinct activities:

1. Turbine Efficiency Upgrade
2. Carbon Capture and Sequestration.

These modifications are discussed below.

Turbine Efficiency Upgrades

SEC is proposing to modify the existing project to allow for efficiency upgrades to the existing combustion turbine equipment that would increase the thermal performance of the SEC combustion turbines. The project is planned to be implemented in conjunction with the construction of the CCS facility during a scheduled maintenance outage. The SEC efficiency upgrade project will essentially involve the following two phases; (1) perform the required outage scheduled maintenance, and (2) perform the turbine upgrades as noted below.

The project is expected to result in the following benefits:

- Modify the existing turbines with turbine performance improvements. The turbine performance upgrade will improve efficiency by increasing the turbine firing temperature with new Low NO_x combustion hardware and redesigned turbine hardware. The existing blades would be replaced. The replacement components are considered to be functionally equivalent.
- A reduction in heat rate of approximately 240 British Thermal Units (BTU)/kilowatt hour (kwh).
- Install Low NO_x combustors with lower NO_x emissions and increased firing temperature relative to existing SEC equipment.
- Uncontrolled NO_x and CO from the turbine exhaust will decrease to approximately 9 ppmvd and 10 ppmvd (at 15% O_2) respectively at the combustion turbine exhaust flange (prior to SCR/CO catalyst control systems). Based on the current control systems, mass emissions of NOx and CO are both expected to decrease, but the facility is not claiming these reductions at this time.
- No fuel use increases are being proposed in connection with the efficiency upgrades.
- There will be no change in emissions of criteria pollutants associated with the upgrade project. The facility short-term and annual potential to emit (PTE) will remain as listed in the current Title V operating permit.

The proposed efficiency upgrade project will not result in an increase in the SEC's hourly or annual emissions above the existing permitted PTE limits and will not require any revisions to its hourly, daily, or annual emissions or operational limits to accommodate the project. As discussed in the sections below, based on the requirements of Rule 10.1(F)(2)(d) for a modification to an existing major facility, the historic actual emissions (HAE) are first calculated to determine the existing facility baseline emissions from which any increases that are emitted in major amounts are subject to the requirements of FRAQMD Rules 10.1, 10.8 and 10.10. For the attainment pollutants of CO and SO_2, the emission calculation procedures for baseline in Rule 10.1(F)(2)(d) will be used as the basis for the future projected emissions procedure as summarized in Rule 10.8 and 10.10. However, the applicant also notes that the requirements of Rules 10.8 and 10.10 will require the project baseline increase to be based on the difference between the projected future actual emissions minus the historic actuals which are then compared to the major modification thresholds in Rules 10.8 and 10.10.

The turbine efficiency upgrade project will not trigger the "modification" provisions of the major modification under Rule 10.8 (40 CFR 51.125 provisions adopted by reference) nor the Prevention of Significant Deterioration (PSD) permitting requirements under Rule 10.10 (40 CFR 52.21 provisions adopted by reference).

The proposed efficiency upgrade project will continue to incorporate Best Available Control Technology (BACT) on the turbines and duct burners in order to limit emissions of criteria pollutants to the following permit levels:

- NO_x 2.5 ppm on a 1-hour basis using SCR
- CO 4 ppm using a CO catalyst
- VOC 1 ppm using a CO catalyst
- PM10/2.5 Exclusive use of pipeline quality natural gas
- SO_x 1 ppm Exclusive use of pipeline quality natural gas

Sutter Decarbonization Project

SEC is proposing to modify the existing combustion turbine equipment to allow flue gas from the HRSGs (post-control) to be withdrawn and transferred to the decarbonization process with subsequent sequestration. The project is planned to be implemented with construction commencing on or about 2025, and commissioning and operation of the system on or about 2027. The SDP will essentially involve the following two phases: (1) perform the turbine exhaust stack modifications as noted below and (2) construct the decarbonization plant. The project is expected to capture at least 95 percent of the total CO_2e emissions associated with the operation of the SDP.

- The capture and sequestration of approximately 95% of the current PTE of CO_2 at 2,057,705 tpy will result in 1,881,306 tons of CO_2 being removed from the exhaust streams. Based on the projected operations, at 95% capture, approximately 88,199 tpy of CO_2 will be emitted.

ION Process Description

The project will use the ION Clean Energy (ION) design, which utilizes a transformational solvent to capture approximately 95% of the CO_2 in the turbine/HRSG exhaust stacks. The ION CO_2 capture system is mainly comprised of a direct contact cooler (DCC), an absorber, a stripper, pumps, various heat exchangers, and a solvent management system (see Appendix AQ-4 for the system process flow diagram). The basic process flow is as follows: First, in the DCC, recirculating process water cools the flue gas from the turbine exhaust and removes relatively clean water. The pH is balanced through caustic addition, and heat is indirectly rejected through a cooling water loop. The flue gas passes to the absorber where the ION solvent selectively absorbs CO_2 via an exothermic, reversible reaction. A two-stage water wash above the CO_2 absorption zone recovers practically all solvent vapors and maintains an overall water balance. The lower water wash stage is optimized for solvent recovery while the upper water wash is optimized for water recovery through indirect water cooling. The CO_2-rich solvent collects at the base of the absorber column, where it is then pumped through the lean-rich heat exchanger to the stripper. A portion of the rich solvent bypasses the heat exchanger and enters directly into the top of the stripper. At the bottom of the stripper, low-grade steam from the HRSG indirectly heats the solvent via the once-through thermosyphon reboilers to release CO_2 and stripping steam. The stripping steam re-condenses throughout the stripper by counter-currently contacting the hot-rich and cold-rich solvent respectively, thus evolving the remainder of absorbed CO_2 while minimizing reboiler duty. The CO_2-lean solvent recycles to the absorber, through the lean-rich heat exchanger, for further capture; the CO_2 exits the top of the stripper to the overhead condenser. A carbon filter package and electrodialysis reclaimer process a slipstream of lean solvent to remove accumulated salts, particulates, and thermal decomposition products. The CO_2 product will then be shipped offsite via a pipeline to the underground storage site approximately 10 miles southwest of the facility.

The CO_2 process island systems include the design, procurement, and installation of:

1. All flue gas handling equipment downstream of the tie-in point to the generation units HRSG stacks,
2. All solvent handling equipment including waste disposal,
3. All stripping/conditioning equipment to bring the CO_2 stream to a purity > 95%,
4. Instrument air, nitrogen, and makeup water to operate the CO_2 Island,
5. Dedicated control room and operator facilities for the CO_2 Island,
6. Steam conditioning and delivery to the CO_2 Island,
7. Heat rejection systems for the various cooling water loops, and,

8. Electrical tie-in and systems to provide the necessary power to the capture system.

The capture system is designed to be approximately 95%+ efficient in capturing CO_2 from the transferred turbine/HRSG exhaust.

Expected process parameters are as follows:

1. Exhaust from each turbine/HRSG will be captured and re-routed to the decarbonization system. The flow rate captured will be approximately 54.6 million standard cubic feet (mmscf) per hour per turbine.
2. The exhaust will be captured at a "post-control" location in the HRSG stack. The original HRSG stacks will remain in place during periods when the decarbonization system is down for maintenance and/or repair.
3. The CO_2 process has no effect on the following combustion pollutants from the turbines/HRSGs; NOx, CO, VOC, and PM10/2.5, and these pollutants will pass through the process and be emitted at the ION output stacks. The removal of water from the turbine exhaust as well as the removal of the captured CO_2 will result in a process output flow rate of approximately 51.1 mmscf per hour from each ION stack, with an approximate stack exit temperature of 110 F^o.

See Appendix AQ-4 for detailed design, operation, and performance data for the CO_2 capture and sequestration system.

Table 1 lists the current potential emissions at SEC. The proposed project will not increase any criteria pollutant emissions above the current PTE listed in Table 1. Additionally, the BACT provisions of Rule 10.1 would not be triggered for NO_x, CO, SO_2, PM10/2.5 and VOC.

TABLE 1
FRAQMD MAJOR SOURCE EMISSIONS THRESHOLDS

Pollutant	Current Facility PTE TPY	Proposed Facility Change TPY	FRAQMD Rule 10.1 Major Facility Thresholds TPY/Major Modification TPY
NO_x	205.0	-2.51	100/40
CO	483.2	-69.02	100/100
VOC	23.7	11.90	100/40
SO_x	31.5	1.56	100/40
PM10	92.4	1.04	100/15
PM2.5	92.4	1.04	100/10
CO_2e	2,057,705 tpy	-1,618,635	100,000

*There will be no changes to the existing hourly or daily emission limits for criteria pollutants. The facility is not within the boundary of the SFNA or the SBNA and is not subject to the 25 tpy increase limit is Rule 10.1 for NO_x or VOC.
Emissions in this document shall be expressed in mass units of lbs/hr, lbs/day, and tons/yr consistent with units specified in Rule 10.1. Metric units are not used in this document, or any support documents as related to GHG emissions.

FRAQMD Rules 10.1 (New Source Review), Rule 10.8 (Federal Major Modifications) Applicability and Rule 10.10 (PSD)

The following analysis demonstrates that the proposed project is a minor modification and does not trigger the major modification thresholds under FRAQMD Rule 10.1 (New Source Review), 10.8 (Federal

Major Modifications) and the major modification thresholds under the Prevention of Significant Deterioration (PSD) review requirements under FRAQMD Rule 10.10. The post-project facility short-term and annual PTE will remain as listed in the current Title V operating permit for NO_x, PM10, PM2.5 and VOCs. Emissions of CO and SO_2 will be based on the post project increases over the HAE.

The following tables present data on the criteria pollutant emissions expected from the existing and modified SEC turbines under normal and maximum operating scenarios. The emissions were based on the updated Siemens performance data for the turbines as noted in the tables below. Table 2 presents a comparison of the current permitted ppm and mass emissions limits and the post-modification proposed limits. The existing permit limits are based on the FRAQMD Title V permit. Each of the two (2) turbine/HRSGs have identical emission limits. There are no proposed changes to any of the existing emissions limits, including startup and shutdown emissions.

TABLE 2
TURBINE/HRSG PERMIT LIMIT COMPARISON (PER TURBINE/HRSG)

Pollutant	Current Permit Limit	**Post-Modification Proposed Limit**	**SEC Comments**
NO_x	2.5 ppmvd	2.5 ppmvd	**SEC is not proposing to change or modify any of these permit limits.**
CO	4 ppmvd	4 ppmvd	
VOC	1 ppmvd	1 ppmvd	
NH_3	10 ppmvd	10 ppmvd	
NO_x	19.1 lbs/hr (1 Hr Avg)	19.1 lbs/hr (1 Hr Avg)	
CO	17.53 lbs/hr (3 Hr rolling avg)	17.53 lbs/hr (3 Hr rolling avg)	
VOC	3.51 lbs/hr (3 Hr Avg)	3.51 lbs/hr (3 Hr AVG)	
SO_x	4.02 lbs/hr	4.02 lbs/hr	
PM10/2.5	11.5 lbs/hr	11.5 lbs/hr	
NOx	1,817 lbs/day	1,817 lbs/day	
CO	6,528 lbs/day	6,528 lbs/day	
VOC	158 lbs/day	158 lbs/day	
SO_x	179 lbs/day	179 lbs/day	
PM10/2.5	541 lbs/day	541 lbs/day	

All ppm values are at 15% O^2 dry.
While not listed in the permit, PM2.5 emissions are set equal to PM10.

PSD and Federal Major Source Applicability Analysis

Per FRAQMD Rule 10.1 and as noted above by reference, 40 CFR §51.165(a) and §52.21(a)(2), Major Source and PSD review are applicable only to major modifications at existing major stationary sources. A major modification is any physical change or change in the method of operation that would result in a significant emission increase of any non-attainment (NANSR) attainment (PSD) pollutant.

The following analysis, the details of which are presented in Appendix AQ-2, applies the actual to projected-actual applicability test for existing emission units under §52.21(a)(2)(iv)(c) to assess whether the proposed project would cause a significant emission increase for any PSD pollutants which includes NO_x, CO, PM10/2.5and Greenhouse Gases (GHG or CO_2e). For electric utility steam generating units, the difference between baseline actual emissions (BAE) and projected actual emissions (PAE) is compared to the PSD significance thresholds for each pollutant listed in §52.21(b)(23). Note that the combustion

turbines at SEC all qualify as electric utility steam generating units under §51.165 (a)(xx) and §52.21(b)(31) and the calculation procedures outlined in both §52.165 and §52.21 for BAE and PAE are identical.

Per FRAQMD Rule 10.1, §51.165(vi(A) and §52.21(b)(48)(i), BAE shall be calculated based on any consecutive 24-month period in the last five years which is included in Attachment AQ-2. For SEC, the following calendar years were used to calculate the BAE:

- NO_x 2021-2022
- CO 2020-2021
- SO_2 2021-2022
- PM2.5 2021-2022
- GHG 2021-2022

Emission data were obtained from annual emission reports previously submitted to the FRAQMD and greenhouse gas emission reports previously submitted to EPA. Emissions for the two calendar years from the last five years were then averaged to determine the BAE. It should be noted that the annual average emissions from both turbines were used for the BAE because of the inherent variability in the NO_x and CO emissions rates for the combustion turbines which include startup/shutdown emissions. These emissions are presented in Table 3.

TABLE 3
BASELINE ACTUAL EMISSIONS AND CURRENT PTE

Pollutant	Baseline Actual Emissions[1] (BAE) tons/yr[2]	Current Permit PTE
NO_x	68.8	205
CO	46	483.2
SO_2	4.9	31.5
PM10/2.5	14.5	92.4
VOC	3.0	23.7
GHG (CO_2e)[3]	986,589.5	NA

[1] Baseline emissions are based on the two-year average of annual emissions as noted above.

[2] Yearly emissions represent the sum of emissions from two (2) turbines/HRSG's.

[3] GHG emissions expressed in terms of CO_2e, per PSD permitting guidelines.
VOCs (as an ozone precursor) are non-attainment pollutants not subject to PSD.

Per §52.21(b)(41)(i), PAE shall be calculated based on the maximum annual emissions that SEC anticipates may occur during the five (5) years immediately following project implementation. Estimating future operations of an electric generating facility such as this depends on many variables, some of which are beyond the operators' reasonable control, including the projected demand for power, which is driven by a multitude of factors, including operating costs, the market price of electricity, and various policy assumptions, including climate change, energy storage, and renewable generation penetration. The five (5) year period is used when the proposed project will not result in an increase in capacity.

Incorporating these factors, the SEC has forecasted the expected business activity for the next five (5) years. The SDP is expected to change the incentives for facility operations with an estimated capacity factor of approximately 85 percent. While there is an anticipated increase in utilization over the future baseline period the turbine efficiency upgrade and decarbonization must be taken into account. Starting with the baseline emissions, pollutant specific emission factors were calculated and then applied to an increased future capacity projection based on fuel data derived from the 2020-2021 time period. The projected increase in fuel assumed over baseline was derived by taking the permitted limit of 35,144,000

MMBtu/yr and applying the 85% capacity factor to the permitted turbine fuel limit of 14,147,400 MMBtu/yr. Note that the permitted fuel limit is based on two turbines operating with 5,640 hours of duct burner operation in the HRSG's. The 85% capacity factor was not applied to the duct burner operations. This is presented in Table 4.

Emission factors for the existing turbines/HRSG's were calculated for each pollutant based on the applicable baseline period emissions in Table 3. Startup and shutdown data, including start and shutdown times, and NO_x and CO emissions were obtained from CEMs data summaries which are reported on a quarterly basis. Because NO_x and CO emissions are typically much higher during start-up and shutdown than during steady state operation, these periods and emissions were excluded from the database before calculating the baseline emission factors for steady state operation based on emissions divided by fuel usage. The NO_x and CO startup and shutdown emissions from the applicable baseline years were then added back into the calculation for the PAE. With the anticipated increase in capacity, the future PAE utilized the emissions associated with the smallest number of startup and shutdown events from the past five (5) years of operation, as it is expected that the turbine uptime with the 85% capacity factor would have an emissions profile based on steady state operations rather than startup and shutdown emissions. Table 4 summarizes the future PAE estimates.

Table 4
PAE BASIS SUMMARY WITH THE SDP

Combined Turbine/HRSG Heat Rate Limit	2070 mmBtu/hr-turbine/HRSG					
Projected Cumulative Future Hours (2- Turbines)	14,892 hrs					
Baseline Fuel Use (2021)	19,731,477 mmBtu/yr					
Projected Fuel Use	30,151,200 mmBtu/yr (assumes 85% future capacity)					
SU/SD Events	100					
	NO_x	**CO**	**VOC**	**SO_2**	**PM10/2.5**	**CO_2e**
Baseline lb/mmBtu	0.00714	0.00127	0.00036	0.00059	0.00171	117.01
PAE Base Load (tpy)	107.7	19.1	5.5	8.8	25.8	1,763,977
Projected SU/SD (tpy)	8.8	28.6	0.1	1.3	0.2	-
Total PAE (tpy)	116.5	47.8	17.0*	10.1	26.0	1,763,977
PAE – BAE (tpy) (Project Increase)	47.71	1.8	14.0	5.2	11.6	-898,391
PSD Major Modification Thresholds (tpy)	40	100	40	40	15/10	75,000
Over Threshold	Yes	**No**	**No**	**No**	**No/Yes***	**No**

* VOCs include 11.46 tpy VOC slip from the decarbonization process.

In calculating emission increases, §52.21(b)(41)(ii)(c) also allows that facility emissions associated with previously unused permitted generating capacity that could have been accommodated by the existing unit (and that are unrelated to the modification) may be subtracted from the PAE. In other words, if market demand were higher and the unit were available to operate at a higher capacity, those "unused" emissions would not be counted against the projected increase. SEC obtained net capacity factors for the 2020-2022 baseline period. Net capacity factors represent the amount the unit could have operated if there had been sufficient demand. Note that potential capacity excludes unit downtime, and therefore is typically less than 100%. The capacity factors are presented in Table 5 with Table 6 presenting the PAE without the inclusion of the SDP.

TABLE 5 UNUSED CAPACITY FACTORS		
Year	**Parameter[1]**	**Plant**
2020	Capacity Factor[2]	18.9%
	Potential Capacity[3]	73.7%
	Unused Capacity	54.8%
2021	Capacity Factor[2]	38.7%
	Potential Capacity[3]	72.6%
	Unused Capacity	33.9%
Average (2020-2021)	Capacity Factor[2]	28.8%
	Potential Capacity[3]	73.2%
	Unused Capacity	44.3%
2021	Capacity Factor[2]	38.7%
	Potential Capacity[3]	72.6%
	Unused Capacity	33.9%
2022	Capacity Factor[2]	55.5%
	Potential Capacity[3]	90.3%
	Unused Capacity	34.9%
Average (2021-2022)	Capacity Factor[2]	47.1%
	Potential Capacity[3]	81.5%
	Unused Capacity	34.4%

[1] Capacity Factors and Potential Capacity obtained from plant data.
[2] The capacity factor is the amount of time the unit actually operated during the given period and is dependent on market demand.
[3] Potential capacity represents the amount of time that the unit could have operated if there were sufficient demand. This excludes unit downtime, and therefore is less than 100%.

TABLE 6 UNUSED CAPACITY EMISSIONS (NO SDP)			
Pollutant	**BAE**	**Adjusted Baseline Reflecting Unused Capacity**	**Unused Capacity Emissions**
	tons/yr	tons/yr	tons/yr
NO_x	68.8	119.0	50.22
CO	45.99	116.8	70.79
SO_2	4.94	8.55	3.61
PM10/2.5	14.45	25.0	10.55
VOC[4]	2.98	5.15	2.17
CO_2e	986,590	1,706,833	720,244

Table 7 summarizes the BAE and PAE (w/SDP and adjusted to reflect unused capacity) emissions and compares the resulting net emission increases with applicable PSD significance levels for each pollutant. The unused capacity emissions were factored in Table 7 for CO, PM10, VOC and SO_2 but were technically not needed as the emissions comparisons were not above the PSD thresholds. However, these can be used for establishing the new projected emissions associated with the proposed project.

TABLE 7
PSD AIR POLLUTANT EMISSION CHANGES FOR THE SDP

Pollutant	BAE	PAE w/ SDP	Adjusted PAE (minus excluded emissions)	Change in Emissions (PAE-BAE)	Significance Threshold
	(ton/year)	(tons/year)		(tons/year)	(tons/year)
NO_2	68.8*	116.5*	66.28	-2.51*	40
CO	46.0	47.8	-23.03	-69.02	100
SO_2	4.9	10.1	6.50	1.56	40
PM10	14.5	26.0*	15.49	1.04*	15
PM2.5	14.5*	26.0*	15.49	1.04*	10
VOC	2.98	17.0	14.87	11.90	40
CO_2e	986,590	88,199	-632,045*	-1,618,635*[1]	75,000

* If unused capacity adjusted baseline (excluded emissions) is subtracted from PAE, the increase is below PSD modification thresholds. For example, PM2.5 PAE = 26.0 tpy. Unused capacity is 10.5 tpy so adjusted baseline is 25.1 tpy. Change is therefore PAE-BAE = 26.0 tpy – 25.1 tpy =10.5 tpy.

[1] Please note that the SDP will result in a net decrease in CO_2e emissions. Thus, the project will not trigger PSD for GHG. Also note that GHG cannot trigger PSD by itself.

Summary of Results

The net emission increases in Table 7 demonstrate that the proposed project will not result in significant increases per §52.21(b)(40) for any pollutant. While presented for all pollutants in Table 7, the unused capacity emissions were only required for NO_x, PM2.5 and CO_2e. The results of the actual to projected-actual test show that this project is not a major modification, and that PSD review is therefore not required. Table 8 presents the new SEC emission limits for the project. As noted previously, the emissions for NO_x, PM10/2.5 and VOCs were fully offset during the initial permitting of the project. As demonstrated using the calculation methodologies allowed under FRAQMD Rules 10.8 and 10.10, the actual emission increases would remain below the major modification emission thresholds.

Note that GHG emissions were included in this analysis even though Step 1 of the GHG Tailoring Rule applies, which states that a modification at an "anyway source" cannot trigger PSD permitting solely due to an increase in GHG emissions. In other words, GHG emissions do not need to be evaluated if the project does not exceed the significance thresholds for any other pollutants. Additionally, the SDP will result in a

net decrease in GHG emissions. Therefore, the SDP is not subject to PSD review for GHGs under federal regulations. Nevertheless, these emissions were still evaluated for the sake of completeness and are below the PSD significance thresholds.

Pollutant	TABLE 8 Post Project Emissions		
	Current Permit PTE	Baseline Actual Emissions[1] (BAE) tons/yr[2]	Post Permit Limits*
NO_x	205	68.8	116.5
CO	483.2	46	47.8
SO_2	31.5	4.9	10.1
PM10/2.5	92.4	14.5	26.0
VOC	23.7	3.0	17.0
GHG (CO_2e)[3]	NA	986,589.5	88,199

[1] Baseline emissions are based on the two-year average of annual emissions as noted above.

[2] Yearly emissions represent the sum of emissions from two (2) turbines/HRSG's.

[3] GHG emissions expressed in terms of CO_2e, per PSD permitting guidelines.

[4] VOCs (as an ozone precursor) are non-attainment pollutants not subject to PSD.

*NO_x, PM10 and VOCs were fully offset during the original permitting process

Conclusions

As set forth herein, this applicability analysis demonstrates that the upgrades are a minor modification and do not trigger further Rule 10.8 Federal Major Modifications or Rule 10.10 PSD review. The minor modifications do not increase the generation capacity, it improves the existing project's heat rate, it dramatically decreases the CO_2e emissions, and results in a decrease of uncontrolled NO_x from 25 ppm down to 9 ppm and for CO, down to 10 ppm. Any projected changes to actual emissions will be below the applicable major source thresholds.

1.1.2.1 Regulatory Items Affecting the Proposed Modifications

Table 9 presents the major polluting facility emissions thresholds applicable to the project site per Rule 10.1 (NSR), Rule 10.3 (Title V), and Rule 10.10 (PSD).

TABLE 9 MAJOR SOURCE EMISSIONS THRESHOLDS				
Pollutant	NSR Rule 10.1 (tons/year)	Title V Rule 10.3 (tons/year)	NSR Rule 10.8 (tons/year)	PSD Rule 10.10 (tons/year)
Particulate Matter (PM10)	100	100	100	15
Particulate Matter (PM2.5)	10	100	100	10
Oxides of Nitrogen (NO_x)	40	100	100	40
Volatile Organic Compounds (VOC)	100	100	100	40
Oxides of Sulfur (SO_x)	40	100	100	40
Carbon Monoxide (CO)	100	100	100	100
HAPs	10/25[1]	10/25[1]	-	-

TABLE 9 MAJOR SOURCE EMISSIONS THRESHOLDS				
Pollutant	**NSR Rule 10.1 (tons/year)**	**Title V Rule 10.3 (tons/year)**	**NSR Rule 10.8 (tons/year)**	**PSD Rule 10.10 (tons/year)**
GHG (CO_2)	-	-	**-**	**75,000**
[1] 10 tpy (tons per year) of any single HAP, or 25 tpy of any combination of HAPs. GHG based on Rule 10.11.				

The SEC facility is currently subject to the permitting requirements of Title V (Rule 10.3). In addition, the facility is considered a "major source" for NO_x, CO, PM10 and PM2.5 and is currently a minor source for VOCs and SO_2.

1.1.2.2 FRAQMD Permitting Application Forms

The FRAQMD permitting application forms are presented in Appendix AQ-5. Also included in Appendix AQ-1 is the current facility Title V Operating Permit.

1.1.2.3 Current Site

The SEC is located at 5029 South Township Road, Yuba City, CA. 95993. The facility is situated on a 16-acre site on the west side of the road approximately 6.9 miles south-southwest of the intersection of Highways 20 and 99 in Yuba City, CA. Figure 1 shows the Regional Location Map for the facility. Figure 2 shows the aerial view of the current facility, and Figure 3 shows the engineering rendering of the proposed CCS plant in addition to the existing site.

1.1.2.4 Existing Facility Operational Parameters

The existing SEC consists of the following equipment.

- Two (2) Westinghouse 501F natural gas fired turbine generators, each rated at 1,900 MMBtu/hr, with nominal MW ratings of 185 MW each,
- Two (2) Heat Recovery Steam Generators (HRSG) which contain natural gas fired duct burners, each rated at 170 MMBtu/hr.
- A condensing steam turbine 180 MW nominal capacity.
- Each turbine/HRSG (duct burners) employs add-on NO_x control systems, i.e., Selective Catalytic Reduction (SCR) systems, and,
- Each turbine/HRSG (duct burners) employs add-on CO and VOC control systems, i.e., Oxidation Catalyst (Ox Cat) systems.,

The SEC currently operates under the existing FRAQMD Title V operating permit #P13005 (currently valid till August 7, 2023). See Appendix AQ-7. The required Title V renewal application is presently being processed by the FRAQMD.

1.1.2.5 Modified Facility Operational Parameters

The proposed efficiency upgrades to the two (2) turbine/HRSG power blocks will be as follows. No other physical changes or modifications to the turbines, HRSGs (duct burners), steam turbine, or cooling tower are being requested.

- Turbine upgrades will consist of the modifications noted above in Section 1.1.2.
- Each of the exhaust stacks on the individual power blocks will be modified by adding an exhaust capture and transfer system to route post-controlled exhaust to the proposed new SDP.

Figure 1 Regional Project Location Map

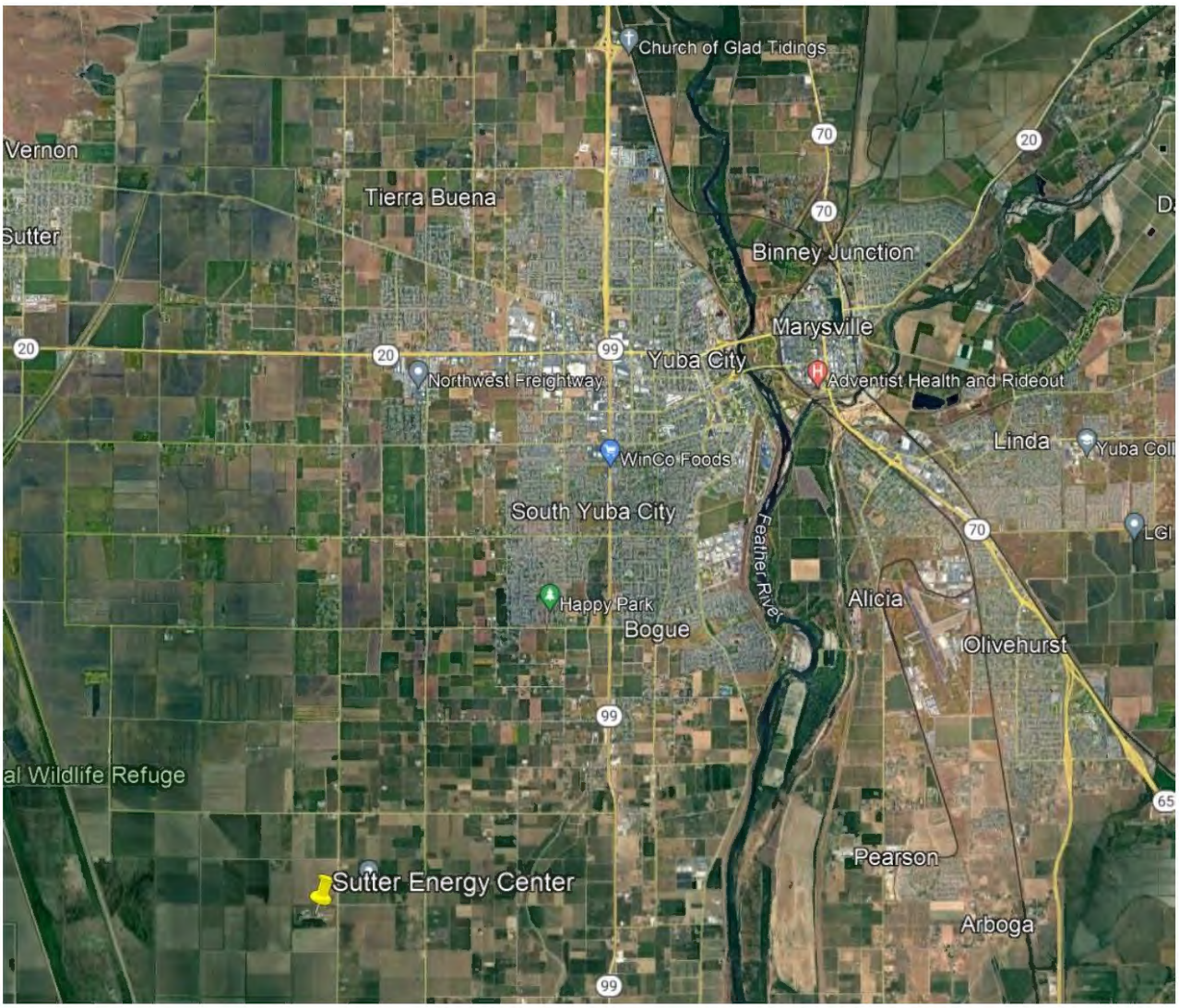

Figure 2 SEC Project Site Aerial View

Figure 3 SDP Plant Layout Rendering

1.1.2.6 Attainment Designation and Ambient Air Quality Standards

In 1970, the United States Congress instructed the EPA to establish standards for air pollutants, which were of nationwide concern. This directive resulted from the concern of the effects of air pollutants on the health and welfare of the public. The resulting Clean Air Act (CAA) set forth air quality standards to protect the health and welfare of the public. Two levels of standards were promulgated—primary standards and secondary standards. Primary national ambient air quality standards (NAAQS) are "those which, in the judgment of the administrator [of the EPA], based on air quality criteria and allowing an adequate margin of safety, are requisite to protect the public health (state of general health of community or population)." The secondary NAAQS are "those which in the judgment of the administrator [of the EPA], based on air quality criteria, are requisite to protect the public welfare and ecosystems associated with the presence of air pollutants in the ambient air." To date, NAAQS have been established for seven criteria pollutants as follows: sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sub 10-micron particulate matter (PM10), sub 2.5-micron particulate matter (PM2.5), and lead (Pb).

The criteria pollutants are those that have been demonstrated historically to be widespread and have the potential to cause adverse health impacts. EPA developed comprehensive documents detailing the basis of, or criteria for, the standards that limit the ambient concentrations of these pollutants. The State has also established California ambient air quality standards (CAAQS) that further limit the allowable concentrations of certain criteria pollutants. Review of the established air quality standards is undertaken by both EPA and the State of California on a periodic basis. As a result of the periodic reviews, the standards have been updated, i.e., amended, and additions, and deletions, over the ensuing years to the present.

Table 10 shows the current attainment status for the FRAQMD.

TABLE 10
ATTAINMENT/NONATTAINMENT STATUS OF THE FRAQMD

Pollutant	State Status	Federal Status
Ozone	NA	NA – SFNA (South Sutter County) NA – SBNA (North Sutter County)
NO_2	ATT	ATT
CO	ATT	UNC
SO_2	ATT	ATT
PM10	NA	ATT
PM2.5	ATT	Maintenance - YC/MNA ATT – Remainder of Yuba County

Source: District Attainment Status table from FRAQMD website (3/3023).
NA = nonattainment
ATT = attainment
UNC = unclassified/attainment

Based on the Table 9 above:

- NO_2 will be treated as both a nonattainment and attainment pollutant subject to both NSR and PSD
- VOC will be treated as a nonattainment pollutant subject to NSR

- PM10, PM2.5 and CO will be treated as an attainment pollutant subject to PSD
- SO_2 will be subject to minor source attainment pollutant permitting requirements or subject to NSR as a precursor.

Each federal or state ambient air quality standard is comprised of two basic elements: (1) a numerical limit expressed as an allowable concentration, and (2) an averaging time which specifies the period over which the concentration value is to be measured. Table 11 presents the current federal and state ambient quality standards.

TABLE 11
STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards Concentration	National Standards Concentration
Ozone	1-hour	0.09 ppm (180 µg/m³)	-
	8-hour	0.070 ppm (137 µg/m³)	0.070 ppm (137 µg/m³) (3-year average of annual 4th-highest daily maximum)
Carbon monoxide	8-hour	9.0 ppm (10,000 µg/m³)	9 ppm (10,000 µg/m³)
	1-hour	20 ppm (23,000 µg/m³)	35 ppm (40,000 µg/m³)
Nitrogen dioxide	Annual average	0.030 ppm (57 µg/m³)	0.053 ppm (100 µg/m³)
	1-hour	0.18 ppm (339 µg/m³)	0.100 ppm (188 µg/m³) (3-year average of annual 98th percentile daily maxima)
Sulfur dioxide	Annual average	-	0.030 ppm (80 µg/m³)[a]
	24-hour	0.04 ppm (105 µg/m³)	0.14 ppm (365 µg/m³)[a]
	3-hour	-	0.5 ppm (1,300 µg/m³)
	1-hour	0.25 ppm (655 µg/m³)	0.075 ppm (196 µg/m³) (3-year average of annual 99th percentile daily maxima)
Respirable particulate matter (10 micron)	24-hour	50 µg/m³	150 µg/m³
	Annual arithmetic mean	20 µg/m³	-
Fine particulate matter (2.5 micron)	Annual arithmetic mean	12 µg/m³	12.0 µg/m³ (3-year average)
	24-hour	-	35 µg/m³ (3-year average of annual 98th percentiles)
Sulfates	24-hour	25 µg/m³	-
Lead	30-day	1.5 µg/m³	-
	3-month rolling average	-	0.15 µg/m³

Source: CARB website 03/2023.
Notes:
The 24-hour and annual 1971 SO_2 NAAQS remain in effect until 1 year after the attainment status is designated by EPA for the 2010 NAAQS (SEC project area is still undesignated for the 2010 NAAQS but presumed to be in attainment).
µg/m³ = micrograms per cubic meter.

1.1.3 Emissions Evaluation

1.1.3.1 Criteria Pollutant Emissions and Limits

Turbine Efficiency Upgrade Project

The current facility is subject to the Title V permit to operate (P13005), issued by the FRAQMD on 08/07/18. A copy of the Title V permit is included with this application. Based on a review of this permit, the current (pre-modification) facility and turbine/HRSG PTE values are presented as follows in Table 12.

TABLE 12
PRE-MODIFICATION POTENTIAL TO EMIT

Parameter	NO_x (tpy)	CO (tpy)	VOC (tpy)	SO_2 (tpy)	PM10/2.5 (tpy)
Facility Total PTE*	205	483.2	23.7	31.5	92.4
Total ERC's Provided	205	-	23.7	-	92.4

The facility also has PTE limits for GHGs:
CO_2 2,055,559 tpy
CH_4 38.74 tpy
N_2O 3.87 tpy
CO_2e 2,057,705 tpy
*These values represent the current total facility PTE (including turbine SU/SD emissions).

The following tables present data on the criteria pollutant emissions expected from the existing and modified SEC turbines under normal and maximum operating scenarios. Table 13 presents a comparison of the current permitted ppm and mass emissions limits and the post-modification proposed limits. The existing permit limits are based on the Environmental Protection Agency Prevention of Significant Deterioration (PSD) permit and the FRAQMD Title V permit. Each turbine/HRSG has identical emission limits.

Table 13
Existing Turbine/HRSG Permit Limits (per Turbine/HRSG basis)

Parameter/Pollutant	ppm @ 15% O_2	Lbs/hr	Lbs/day	TPY*
NO_x	2.5	19.1 (1-Hr Avg)	1817	205
CO	4	34.3 (3-Hr Avg)	6528	483.2
VOC	1	3.51	158	23.7
SO_2	1	4.02	179	31.5
PM10/2.5	-	11.5	541	92.4
NH_3	10	-	-	-
CO_2	-	-	-	2,057,705

*Total facility PTE (two combined cycle turbines/HRSGs)
PM2.5 was set equal to PM10.
Values from Title V permit section V- conditions 1, 2, 3, 4

Table 14 presents data on the startup and shutdown emissions for the combustion turbines. This application does not propose any changes to the startup or shutdown time limits or mass emissions in lbs/event in the current Title V permit. SEC notes that with the SDP in operation the actual number of startup/shutdowns will decrease substantially. These potential decreases in emissions have been addressed in the emissions analysis presented in Appendix AQ-2.

TABLE 14 STARTUP AND SHUTDOWN EMISSIONS (PER TURBINE/HRSG)				
Pollutant	**Startup (lbs/hour)**	**Startup (lbs/startup)**	**Shutdown (lbs/Shutdown**	
NO_x	175	680	80	
CO	902	2514	100	
VOC	16	59	16	
SO_2	3.7	22.2	3.7	
PM10/2.5	9	54	9	
[1] Values derived from Title V permit section V - condition 2.				

Tables 15 and 16 present summaries of the actual reported emissions and operational fuel use values for the SEC for the period 2018 through 2022.

TABLE 15 SEC REPORTED ACTUAL EMISSIONS SUMMARY (TPY)[1]					
Year	**NO_x**	**CO**	**SO_2**	**VOC**	**PM10/2.5**
2018	23.3	31.7	1.3	0.9	3.9
2019	23.1	27.0	1.5	0.6	4.7
2020	34.7	43.0	2.0	1.8	5.9
2021	57.5	49.0	4.1	2.9	11.9
2022	80.1	39.0	5.8	3.1	17.0
Notes: [1] The values presented indicate the facility total emissions (turbines/duct burners). These emissions include SU/SD emissions.					

TABLE 16 TURBINES/HRSGS REPORTED FACILITY FUEL USE			
Year	**MMbtu/yr**	**MMscf/yr**	
2018	4,498,631	4,410.42	
2019	5,005,570	4,907.42	
2020	6,992,476	6,855.37	
2021	13,995,568	13,721.15	
2022	19,731,477	19,344.59	
Assumes CPUC grade natural gas at 1020 btu/scf.			

The air-cooled condenser (dry-cooling technology) as evaluated in the current Title V permit Statement of Basis and as delineated in the current Title V operating permit indicates that this process has no emissions. Table 17 indicates "0" emissions for the air-cooled condenser for the years 2018 through 2022. This table is presented in this application based solely based its presence in the current Title V permit.

TABLE 17 AIR COOLED CONDENSER POTENTIAL ACTUAL EMISSIONS	
Year	**PM10 (tpy)**
2018	0
2019	0
2020	0
2021	0
2022	0

As noted previously, the modification and operation of the proposed combustion turbine upgrades will not result in any changes to the actual short-term and annual emissions limits in the current SEC permit. The existing air-cooled condenser, and HRSG duct burners are not being modified, and no changes to the

current permit limitations are being requested for these devices. Appendix AQ-3 contains the Siemens data for the efficiency upgrades.

To demonstrate that compliance with the existing permit limits can be achieved with the upgrade package, the most recent 2022 source test results for NO_x, CO, PM10, VOC, SO_2, and NH_3 are summarized in Table 18. This data demonstrates that the facility continues, on a ppm and mass basis, to be less than the permitted PTE levels. The emissions of NO_x and CO, through review of the CEMs data, have also been below permitted levels. These values should be compared to the permit limit values presented in Table 13 above.

TABLE 18
SOURCE TEST DATA RESULTS

	Turbine/DB 1	Turbine/DB 2	Permit Limits Each Turbine/DB
PM10 (lb/hr)	3	<3	11.5
PM10 (gr/dscf)	<0.0004	<0.0004	0.3
VOC (lb/hr)	0.69	1.98	3.51
VOC (ppmvd)	0.31	0.88	1
NO_x (lb/hr)	13	13.1	19.1
NO_x (ppmvd)	2	2	2.5
CO (lb/hr)	1.7	1.0	34.3
CO (ppmvd)	0.4	0.3	4
SO_2 (lb/hr)	1.3	0.75	4.02
SO_2 (ppmvd)	0.14	0.08	1
NH_3 (lb/hr)	12	14	-
NH_3 (ppmvd)	5	6	10

All ppmvd values at 15% O_2.
gr/dscf at STP and 12% CO_2.
VOC as CH_4.

Table 19 shows the comparison of the pre- and post-facility potential emissions (including the carbon capture and sequestration emissions). Detailed emissions data on the proposed facility are presented in Appendix AQ-2. Thus, with the installation of the upgrade package on the turbines, the applicant will maintain the current permitted annual emission limits.

TABLE 19
PRE- AND POST-MODIFICATION PTE FOR SEC

Pollutant	Facility Current, tpy	Facility Proposed, tpy	Change in PTE, tpy	Offsets Provided, tpy
NO_x	205.0	116.5	-88.5	205
CO	483.2	47.8	-435.4	Not Required
VOC	23.7	11.2	12.5	23.7
SO_x	31.5	10.1	-21.4	Not Required
PM10/2.5	92.4	26.0	-66.4	92.4

The post-efficiency upgrade criteria pollutant emissions are expected to remain below current permit limits on an hourly, daily, and annual basis, which results in no additional BACT requirements. Additionally, the current hourly and daily limits are proposed to remain unchanged with the new annual emission as proposed in Table 19.

SDP Estimated Emissions

Emissions from the proposed SDP process are based on data derived from ION Clean Energy testing at test facilities in Alabama and in Norway.

The Ion technology results in the by-product production of ammonia, acetaldehyde, and formaldehyde which are emitted from the absorber stacks. Table 20 below presents the data on these three pollutants and the estimated emissions of each.

Table 20 Estimated Emissions for ION Process

Pollutant	Mol Wt	Exhaust, ppm each stack	Lb/hr, each stack	Lb/day, each stack	TPY, two stacks
NH_3	17.01	0.10	0.232	5.54	2.03
VOC (as CH_4)	16	0.60	1.308	31.39	11.46
Acetaldehyde	44.05	0.05	0.300	7.20	2.63
Formaldehyde	30.03	0.25	1.023	24.55	8.96
Total VOC	-	-	-	-	11.46
24 hrs/day and 8760 hrs/yr.					

Based on the data above, it is expected that a VOC increase of approximately 11.46 ton/yr will occur from the ION process. Ammonia emissions (non-HAP) will increase by 2.03 tpy. Emissions of known HAPs, i.e., acetaldehyde and formaldehyde will increase by 2.63 and 8.86 tpy respectively. The increase of VOC plus VOC HAPs emissions of approximately 11.46 tons per year will not exceed the major source modification levels. These emission estimates will be verified during testing at a pilot facility located at the Los Medanos Energy Center in Pittsburg, CA. The pilot facility is currently under construction and expected to be operational in fall of 2023.

The total VOC emissions from the SDP process was included in the regulatory assessment of Rules 10.1, 10.8 and 10.10. The increased emissions of acetaldehyde and formaldehyde will be addressed in a health risk assessment to be submitted pursuant to section 1.1.3.2 below.

Construction Emissions

A construction emissions evaluation will be prepared and submitted upon receipt of the construction details and schedule from the Applicant.

1.1.3.2 Hazardous Air Pollutants

A health risk assessment will be prepared and submitted upon receipt of the final design and process data for the CCS systems from the Applicant.

1.1.4 BACT Evaluation

1.1.4.1 Existing and Proposed Facility BACT

Best available control technology for the proposed modified turbines is delineated in Table 21.

TABLE 21 EXISTING AND PROPOSED BACT SUMMARY FOR SEC TURBINES			
Pollutant	**Existing/Proposed BACT Emissions Level**	**Existing BACT System(s)**	**Meets Current BACT Requirements**
NO_x	2.5/2.5 ppmvd	DLN with SCR	Yes
CO	4/4 ppmvd	CO Catalyst and Good Combustion Practices	Yes
VOC	1/1 ppmvd	Natural Gas, CO Catalyst, Good Combustion Practices	Yes
SO_x	1/1 ppmvd Pipeline quality natural gas	Natural Gas with total S <= 0.25 grs/100scf long term <=0.75 grs/100scf short term	Yes
PM10/ PM2.5	Pipeline quality natural gas	Natural Gas with total S <= 0.25 grs/100scf long term <=0.75 grs/100scf short term	Yes
Ammonia Slip	10/10 ppmvd	SCR catalyst with ammonia reactant	Yes

Best available control technology for the proposed SDP is as follows:

- None (no BACT technologies were identified for a carbon capture and sequestration process as proposed based upon the low levels of criteria and toxic pollutants).

1.1.5 Air Quality Impact Analysis

As the existing emissions of criteria pollutants will not exceed the currently permitted levels, no updates to ambient air quality impacts for comparisons with the NAAQS or CAAQS are proposed. Additionally, based on the stack characteristics on each of the amine towers, which are summarized in Table 22 and Appendix AQ-1 Table AQ-1-2, the stack height will increase from 145 feet AGL for each HRSG to 225 feet AGL for each amine tower, an increase of 80 feet. While the stack flow will remain approximately the same, the temperature will decrease to from 184 degrees to 110 degrees Fahrenheit. But with the 80foot increase in physical stack height, the decrease in plume rise from the buoyancy effects are expected to be negligible and will not result in increases to ground based concentrations.

Table 22 Summary of ION Process Parameters for SDP (per Turbine/CCS System Basis)		
Process Stream	**Process Rate**	**Flow Type**
Process Water Blowdown	81 gpm	Continuous
Flue Gas Exhaust	51.1 mmscf/hr	Continuous
Flue Gas Temperature	~110 F°	Continuous
Activated Carbon	26,000 lbs per changeout	Batch Every 1 to 2 weeks
Solvent Reclaimer Waste Brine	5 gpm	Batch For 2 weeks every 2-3 years
All data represents preliminary design data.		

1.1.6 Laws, Ordinances, Regulations, and Statutes (LORS)

Table 23 presents a summary of local, state, and federal LORS deemed applicable to the proposed modification.

TABLE 23 SUMMARY OF APPLICABLE LORS FOR AIR QUALITY	
Regulation Citation	**Compliance Strategy/Determination**
Federal Regulations	
CAAA of 1990, 40 CFR 50	SEC operations will not cause violations of state or federal AAQS.
40 CFR 52.21 (PSD)	The current facility is subject to PSD for NO2 and CO, but the upgrade modifications will not trigger the PSD major modification requirements.
40 CFR 72-75 (Acid Rain)	The current Title V permit renewal application contains the required Title IV forms and filings. Current CEMS meets all 40 CFR 72-75 requirements.
40 CFR 60 (NSPS)	SEC will determine subpart applicability and comply with all emissions, monitoring, and reporting requirements. 40 CFR 60, Subpart GG on the turbines. 40 CFR 60 subpart TTTT will not apply to the modified turbines.
40 CFR 70 (Title V)	The approved PTO for the modifications will be incorporated into the existing Title V permit.
40 CFR 63 (RMP)	SEC will evaluate and update its existing RMP as required.
40 CFR 64 (CAM Rule)	Facility will be exempt from CAM Rule provisions.
40 CFR 68 (HAPs, MACT)	SEC will determine subpart applicability and comply with all emissions, monitoring, and reporting requirements.
State Regulations (CARB)	
CHSC 44300 et seq.	SEC and FRAQMD will determine applicability and prepare inventory plans and reports as required.
CHSC 41700	FRAQMD Permit to Construct (PTC) will ensure that no public nuisance results from operation of facility.
Gov. Code 65920 et seq.	Pursuant to the Permit Streamlining Act, the applicant believes the proposed project is a “development project” as defined and is seeking approvals as applicable under the Act.
Local Regulations (FRAQMD)	
FRAQMD Rules and Regulations	Part II of the current Title 5 permit presents comprehensive data on applicable FRAQMD regulations. The facility is in compliance with these regulations. In addition, the applicable regulation and compliance analysis in the current Title 5 permit renewal application also shows a comprehensive list of all applicable regulations and compliance status. See Appendix AQ-7 for these documents.

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

This subpart applies to all turbines with a heat input in excess of 10 MMBtu/hr that commence construction or modification after February 18, 2005. The construction of the turbines commenced before February 2005, thus the project is subject to 40 CFR 60, Subpart GG. The proposed SEC upgrade project on the existing gas turbines would not trigger the requirements of 40 CFR 60, Subpart KKKK as there is no increase in the NO_x emission rate based on the efficiency upgrade modifications to the turbines. Thus, Subpart GG still applies.

NSPS Part 60 (Subpart TTTT) GHG Standards of Performance for GHG Emissions for New Stationary Sources: Electric Utility Generating Units.

In January, 2014, EPA re-proposed the standards of performance regulating CO_2 emissions from new affected fossil-fuel-fired generating units, pursuant to Section 111(b) of the CAA. These standards were adopted in final form by EPA on August 3, 2015. The new standards would be 1,100 lbs CO_2/MWh (gross energy output on a 12 operating month rolling average basis for base loaded units), while non-base load units would have to meet a clean fuels input-based standard. The determination of base versus non-base load would be on a sliding scale that considers design efficiency and power sales.

Within Subpart TTTT, base load rating is defined as maximum amount of heat input that an Electrical Generating Unit (EGU) can combust on a steady state basis at ISO conditions. For stationary combustion turbines, base load rating includes the heat input from duct burners. Each EGU is subject to the standard if it burns more than 90 percent natural gas on a 12-month rolling basis, and if the EGU supplies more than the design efficiency times the potential electric output as net-electric sales on a three (3) year rolling average basis. Affected EGUs supplying equal to or less than the design efficiency times the potential electric output as net electric sales on a three (3) year rolling average basis are considered non-base load units and are subject to a heat input limit of 120 lbs CO_2/MMBtu. Each affected 'base load' EGU is subject to the gross energy output standard of 1,000 lbs of CO_2/MWh unless the Administrator approves the EGU being subject to a net energy output standard of 1,030 lbs CO_2/MWh.

SEC believes that the turbines are exempt from Subpart TTTT based on the following:

The NSPS general provisions (40 CFR part 60.15, subpart A) provide that an existing source is considered to be a new source if it undertakes a "reconstruction," which is the replacement of components of an existing facility to an extent that (1) the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and (2) it is technologically and economically feasible to meet the applicable standards.

Per SEC, the efficiency upgrade cost per turbine is significantly less than the 50% cost threshold noted above, and as such the upgrade is not considered "reconstruction". Notwithstanding the foregoing, the SDP will result in an approximate decrease of CO_2 emissions of 95%, which will place the facility generating units well in compliance with the adopted standards.

1.1.7 Agency Jurisdiction and Contacts

Table 24 presents data on the following: (1) air quality agencies which may or will exercise jurisdiction over air quality issues resulting from the proposed power plant, (2) the most appropriate agency contact for the proposed project, (3) contact address and phone information, and (4) the agency involvement in required permits or approvals.

TABLE 24 AGENCIES, CONTACTS, JURISDICTIONAL INVOLVEMENT, REQUIRED PERMITS			
Agency	**Contact**	**Jurisdictional Area**	**Permit Status**
Feather River AQMD	Christopher D. Brown, APCO 541 Washington Ave. Yuba City, CA. 95991 530-634-7659	Issues FRAQMD Permit to Construct and Operate, Primary air regulatory and enforcement agency.	This document serves as the formal PTC application for the project.
California Air Resources Board	David Mehl Chief, Stationary Source Enforcement 1001 I St. Sacramento, Ca. 95814 916-229-0745	Oversight of FRAQMD stationary source permitting and enforcement program	CARB staff may provide comments on applicable PTC as appropriate per the FRAQMD NSR rule provisions.
Environmental Protection Agency, Region IX	Elizabeth Adams Director, Air/Radiation EPA-Region 9 75 Hawthorne St. San Francisco, Ca. 94105 415-972-3183	Oversight of all FRAQMD programs, including permitting and enforcement programs	EPA staff may provide comments on applicable PTC as appropriate per the FRAQMD NSR rule provisions.

1.1.8 Permit Requirements and Schedules

A Permit to Construct application is required in accordance with the FRAQMD rules. This document, and the FRAQMD permit application forms in Appendix AQ-5, fulfills the PTC application requirements.

1.1.9 References

California Air Resources Board (CARB). 2021. California Air Quality Data Statistics, 2018-2020 Data, ADAM Database. http://www.arb.ca.gov/adam. Air Quality Data Branch, Sacramento, CA. June.

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U.S. Environmental Protection Agency (EPA). 1995a. Compilation of Air Pollution Emission Factors, Volume I, Fifth Edition; AP-42. With Supplements.

U.S. Geological Survey (USGS), National Land Cover Database (NLCD) website. 2017a. Southern California Land Use and Land Cover (LULC). http://edcftp.cr.usgs.gov/pub/data/landcover/states.

U.S. Geological Survey (USGS), Multi-Resolution Land Characteristics Consortium (MRLC) website. 2017b. National Elevation Dataset (NED). http://www.mrlc.gov/.

Appendix AQ-1
Current Title V Permit

Feather River Air Quality Management District

Serving the Counties of Yuba and Sutter
541 Washington Avenue
Yuba City, CA 95991
(530) 634-7659 * Fax 634-7660

Christopher D. Brown, AICP
Air Pollution Control Officer

TITLE V FEDERAL OPERATING PERMIT
AND
TITLE IV ACID RAIN PERMIT

FRAQMD PERMIT - P13005

AIRS #0610113005

PERMIT ISSUED:	PERMIT LAST AMENDED:	PERMIT EXPIRES:
August 7, 2018	December 9, 2019	August 7, 2023

ISSUED TO:

CCFC Sutter Energy, LLC
Sutter Energy Center
5029 South Township Road
Yuba City, CA 95993

PLANT SITE LOCATION:

Sutter Energy Center
5029 South Township Road
Yuba City, CA 95993

RESPONSIBLE OFFICIAL:

Andrew Gundershaug
Plant Manager
(530) 821- 2072

ALTERNATE RESPONSIBLE OFFICIAL and SITE CONTACT:

Betty Chu
EHS Specialist
(530) 821-2074

Nature of Business: Electrical Power Production
SIC Code: 4911
NAICS Code: 221112

Reviewed by: _____ 12/13/19
Paul Stricklin, Air Quality Engineer — Date:

Issued by: _____ 12/16/19
Christopher D. Brown, AICP
Air Pollution Control Officer — Date:

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I. PERMIT SUMMARY

This permit shall serve as a Permit to Operate pursuant to FRAQMD Rule 4.1 (Permits Required) and FRAQMD Rule 10.3 (Federal Operating Permits).

The FRAQMD evaluated this air quality Permit to Operate for compliance with FRAQMD, State of California, and federal air quality rules and regulations. The following listed rules are those that FRAQMD found to be applicable at the time of permit review, based on the information submitted with the Title V permit application.

Citation	Description	SIP Approval Date	Federally Enforceable
FRAQMD Rule 1.1	Definitions	04-12-1982	Yes
FRAQMD Rule 1.1	Definitions (8-1-2011 amended version)	NA	No
FRAQMD Rule 1.2	Validity	04-12-1982	Yes
FRAQMD Rule 3.0	Visible Emissions	04-12-1982	Yes
FRAQMD Rule 3.2	Particulate Matter Concentration	04-12-1982	Yes
FRAQMD Rule 3.4	Separation of Emissions	04-12-1982	Yes
FRAQMD Rule 3.5	Combination of Emissions	04-12-1982	Yes
FRAQMD Rule 3.6	Sand Blasting	04-12-1982	Yes
FRAQMD Rule 3.6	Abrasive Blasting (06-1991 amended version)	NA	No
FRAQMD Rule 3.10	Sulfur Oxides	04-12-1982	Yes
FRAQMD Rule 3.11	Posting of Permit	04-12-1972	Yes
FRAQMD Rule 3.11	Reduced Sulfur Compounds	NA	No
FRAQMD Rule 3.12	Organic Solvents	04-12-1982	Yes
FRAQMD Rule 3.13	Circumvention	04-12-1982	Yes
FRAQMD Rule 3.14	Solvent Degreasing	04-12-1982	Yes
FRAQMD Rule 3.14	Surface Preparation and Clean-up	04-23-2015	Yes
FRAQMD Rule 3.14	Surface Preparation and Clean-up (08-01-2016 amended version)	NA	No
FRAQMD Rule 3.15	Architectural Coatings	05-03-1982	Yes
FRAQMD Rule 3.15	Architectural Coatings	04-23-2015	Yes

I. PERMIT SUMMARY (CONTINUED)

Citation	Description	SIP Approval Date	Federally Enforceable
FRAQMD Rule 3.16	Fugitive Dust	NA	No
FRAQMD Rule 3.23	Natural Gas-Fired Water Heaters, Small Boilers, and Process Heaters	NA	No
FRAQMD Rule 4.0	General Requirements	04-12-1982	Yes
FRAQMD Rule 4.1	Permits Required	04-12-1982	Yes
FRAQMD Rule 4.2	Existing Emission Sources	04-12-1982	Yes
FRAQMD Rule 4.3	Exemptions from Permit	04-12-1982	Yes
FRAQMD Rule 4.3	Exemptions from Permit (10-01-2007 amended version)	NA	No
FRAQMD Rule 4.4	Standards for Granting Applications	04-12-1982	Yes
FRAQMD Rule 4.4	Standards for Granting Applications (11-1993 amended version)	NA	No
FRAQMD Rule 4.5	Conditional Approval	04-12-1982	Yes
FRAQMD Rule 4.6	Standards for Authority to Construct and Permit to Operate (06-07-2004 amended version)	NA	No
FRAQMD Rule 4.7	Denial of Application	NA	No
FRAQMD Rule 4.8	Public Information	04-12-1982	Yes
FRAQMD Rule 4.9	Action on Applications	NA	No
FRAQMD Rule 4.10	Appeals	NA	No
FRAQMD Rule 4.11	State Ambient Air Quality Standards (08/1991 adopted version)	NA	No
FRAQMD Rule 4.13	Alteration of Permit	04-12-1982	Yes
FRAQMD Rule 4.14	Posting of Permit	04-12-1982	Yes
FRAQMD Rule 4.15	Transfer of Permit	04-12-1982	Yes
FRAQMD Regulation V	Hearing Board Procedures	NA	No
FRAQMD Regulation VI	Variances	NA	No

I. PERMIT SUMMARY (CONTINUED)

Citation	Description	SIP Approval Date	Federally Enforceable
FRAQMD Regulation VII	Fees (not SIP approved, but relevant parts of the regulation are applicable as part of U.S. EPA approval of the FRAQMD Title V program)	11-21-2003	Yes
FRAQMD Regulation VIII	Penalties and Abatement	NA	No
FRAQMD Rule 9.0	Enforcement	NA	No
FRAQMD Rule 9.1	Emission Monitoring	NA	No
FRAQMD Rule 9.2	Records and Reporting	NA	No
FRAQMD Rule 9.3	Tests	NA	No
FRAQMD Rule 9.4	Field Inspection	NA	No
FRAQMD Rule 9.5	Air Pollution Equipment - Scheduled Maintenance	04-12-1982	Yes
FRAQMD Rule 9.6	Equipment Breakdowns	04-12-1982	Yes
FRAQMD Rule 9.7	Permit Actions	NA	No
FRAQMD Rule 9.8	Variance Action	NA	No
FRAQMD Rule 9.9	Notice to Comply	NA	No
FRAQMD Rule 10.1	New Source Review	10-05-2015	Yes
FRAQMD Rule 10.2	Emission Reduction Credit and Banking	NA	No
FRAQMD Rule 10.3	Federal Operating Permits (not SIP approved, but is applicable as part of U.S. EPA approval of the FRAQMD Title V program)	11-21-2003	Yes
FRAQMD Rule 10.4	General Conformity	04-23-1999	Yes
FRAQMD Rule 10.6	New Source Performance Standards	NA	No
FRAQMD Rule 10.7	Toxics New Source Review	NA	No
FRAQMD Rule 10.8	Federal Major Modifications	NA	No
FRAQMD Rule 10.10	Prevention of Significant Deterioration	12-14-2015	Yes

I. PERMIT SUMMARY (CONTINUED)

Citation	Description	SIP Approval Date	Federally Enforceable
FRAQMD Rule 10.11	Permitting Requirements for Stationary Sources Emitting Greenhouse Gases	NA	No
FRAQMD Rule 10.12	Acid Deposition Control (not SIP approved, but is applicable as part of U.S. EPA approval of the FRAQMD Title V program)	NA	Yes
FRAQMD Rule 11.1 and CARB Airborne Toxic Control Measure	State of California Airborne Toxic Control Measure for Chromate Treated Cooling Towers [CCR 93103]	03-09-1989 (a)	Yes
U.S. EPA New Source Performance Standards (NSPS)	General Provisions [40 CFR Part 60 Subpart A (begin at 60.1)]	06-13-2007 (b)	Yes
U.S. EPA New Source Performance Standards (NSPS)	Standards of Performance for Stationary Gas Turbines [40 CFR Part 60 Subpart GG (begin at 60.330)]	02-24-2006 (b)	Yes
U.S. EPA	Chemical Accident Prevention Provisions [40 CFR Part 68 (begin at 68.1)]	04-09-2004 (b)	Yes
U.S. EPA	Protection of Stratospheric Ozone [40 CFR Part 82 (begin at 82.1)]	12-28-2007 (b)	Yes

(a) California Air Resources Board adoption date
(b) U.S. EPA promulgation date

Future changes in prohibitory rules may establish requirements that are more stringent. At the FRAQMD level, these requirements may supersede the conditions listed here. However, for Title V purposes, the federally enforceable requirements are those found in the Title V permit. Federally enforceable provisions of the Title V permit do not change until the Title V permit is revised.

II. FACILITY DESCRIPTION

The following facility description is for informational purposes only and does not contain any applicable requirements.

The Sutter Energy Center facility produces electricity for commercial sale. The facility is located on a 16-acre site located at 5029 South Township Road, Yuba City.
The facility operates two combined cycle power blocks. The combined cycle units consist of the following components:

- Two (2) Siemens Westinghouse Model 501F Gas Turbines, each rated at 1,900 MMBTU/hour heat input, natural gas fueled, each with a nominal rating of 185 MW and a maximum rating of 212 MW.
- Two (2) Duct burners, each rated at 170 MMBTU/hour heat input, natural gas fueled.
- Two (2) Heat recovery steam generators.
- One (1) Siemens Westinghouse Model 35-65CC Steam Turbine Generator, with a nominal rating of 180 MW nominal and a maximum rating of 212 MW.
- Two (2) Selective catalytic reduction (SCR) NOx air pollution control systems.
- Two (2) Oxidation catalyst CO and VOC air pollution control systems.

Support Equipment

- Cooling tower, dry cooling technology.

Emissions Control Technology

An oxidation catalyst system controls VOC and CO emissions from each gas turbine/duct burner combination.

Dry low NOx combustor technology control NOx emissions from each gas turbine. Low NOx burners control NOx emissions from each duct burner.

A Selective Catalytic Reduction (SCR) system controls NOx emissions from each gas turbine/duct burner combination.

III. APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL

The information and conditions specified in this section are enforceable by the FRAQMD, U.S. EPA, CARB, and the public.

1. **Permit Term**
   This permit to operate shall be valid for a term of five years from the date of issuance. Permit expiration terminates the stationary source's right to operate unless the source submits a timely and complete Title V permit application for renewal.
   [FRAQMD Rule 10.3.F.2.o]

2. **Permit Renewal**
   The permittee shall submit a standard FRAQMD application for renewal of the Title V permit, no earlier than 18 months and no later than six months before the expiration date of the current permit to operate.
   [FRAQMD Rule 10.3.D.2.b; 40 CFR 70.5(a)(1)(iii)]

3. **Administrative Permit Amendment**
   The permittee shall submit a written request to the FRAQMD for an administrative permit amendment. The permittee may implement the change addressed in the written request immediately upon submittal of the request.
   [FRAQMD Rule 10.3.D.4.a]

4. **Minor Permit Modification**
   After obtaining any required preconstruction permits, the permittee shall submit a standard FRAQMD application for each emissions unit affected by the proposed permit revision that qualifies as a minor permit modification. The emissions unit(s) affected by the proposed permit modification shall not commence operation until the FRAQMD takes final action to approve the permit revision.
   [FRAQMD Rule 10.3.D.2.d]

5. **Significant Permit Modification**
   After obtaining any required preconstruction permits, the permittee shall submit a standard FRAQMD application for each emissions unit affected by a proposed permit revision that qualifies as a significant permit modification. Upon request by the FRAQMD, the responsible official shall submit copies of the latest preconstruction permit for each affected emissions unit. The emissions unit(s) affected by the proposed permit modification shall not commence operation until the FRAQMD takes final action to issue the revised permit or until the requirements of FRAQMD Rule 10.3.D.2.c.2 are met.
   [FRAQMD Rule 10.3.D.2.c]

6. **Permit Modification for a Condition that is Not Federally Enforceable**
   For any permit modification of a condition that is not federally enforceable, an owner or operator shall submit a written request in accordance with the requirements of FRAQMD Regulation IV.
   [FRAQMD Rule 10.3.D.4.b]

III. APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL (CONTINUED)

7. **Modification, Revocation or Reopening for Cause**
The FRAQMD may modify, revoke, reopen and reissue, or terminate this permit for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated non-compliance does not stay any permit condition.
[FRAQMD Rules 10.3.E.8 and 10.3.F.2.k; 40 CFR 70.6(a)(6)(iii)]

8. **Application Content and Correctness of Applications**
When submitting an application, the permittee shall submit a complete application as outlined in FRAQMD Rule 10.3 D.3.a.

   a. Upon written request of the FRAQMD, the permittee shall supplement any complete application with additional information within the timeframe specified by the FRAQMD.
   [FRAQMD Rule 10.3.D.3.b.1]

   b. The permittee shall promptly provide additional information in writing to the FRAQMD upon discovery of submittal of any inaccurate information as part of the application or as a supplement thereto, or of any additional relevant facts previously omitted which are needed for accurate analysis of the application.
   [FRAQMD Rule 10.3.D.3.b.2.]

   c. Intentional or negligent submittal of inaccurate information shall be reason for denial of an application.
   [FRAQMD Rule 10.3.D.3.b.3.]

9. **Payment of fees**
Except as provided in the subsection below, the permittee shall pay an annual supplemental fee for a permit to operate pursuant to FRAQMD Rule 10.3.G as determined by the calculation method in FRAQMD Rule 10.3.G.3, to meet an overall fee rate of $25 per ton of fee-based potential emissions (CPI adjusted).
[FRAQMD Rule 10.3.G and 40 CFR 70.6(a)(7)]

   a. There shall not be a supplemental annual fee if the total annual fee rate paid by the source under FRAQMD Regulation VII and California Health and Safety Code Section 44380 (AB 2588 Toxic Hot Spots) equals or exceeds $25 per ton of fee-based potential emissions (CPI adjusted). Only those AB 2588 Toxic Hot Spots fees that fund direct and indirect costs associated with activities related to the operating permits program as specified in the 1990 Clean Air Act Section 502(b)(3)(A) are to be used to meet the overall fee rate of $25 per ton of fee-based potential emissions (CPI adjusted).
   [FRAQMD Rule 10.3.G.2 and 40 CFR 70.6(a)(7)]

III. APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL (CONTINUED)

10. **Right of Entry**
The permittee shall permit entry for the FRAQMD, the Executive Officer of the California Air Resources Board, the U.S. EPA Region 9 Administrator and/or their authorized representatives, upon the presentation of credentials:

a. To enter upon the premises where the emission source is located or in which any records are required to be kept under the terms and conditions of this permit;

b. At mutually agreed upon times, to have access to and copy any records required to be kept under terms and conditions of this permit;

c. To inspect any equipment, operation, or method required in this permit; and

d. To obtain samples from the emission source or require samples to be taken.
[FRAQMD Rule 10.3.F.2.j; 40 CFR 70.6(c)(2)]

11. **Compliance**
The permittee shall comply with all permit conditions.
[FRAQMD Rule 10.3.F.2.k.1; 40 CFR 70.6(a)(6)(i)]

12. **Non-Compliance**
The non-compliance with any permit condition is grounds for permit termination, revocation and reissuance, modification, enforcement action, or denial of permit renewal.
[FRAQMD Rule 10.3.F.2.k.3; 40 CFR 70.6(a)(6)(i)]

13. **Need To Halt or Reduce Activity Not a Defense**
The permittee shall not use the "need to halt or reduce a permitted activity in order to maintain compliance" as a defense for non-compliance with any permit condition.
[FRAQMD Rule 10.3.F.2.k.4; 40 CFR 70.6(a)(6)(ii)]

14. **Permit Action Does Not Stay any Permit Condition**
A pending permit action or notification of anticipated non-compliance does not stay any permit condition.
[FRAQMD Rule 10.3.F.2.k.5; 40 CFR 70.6(a)(6)(iii)]

15. **Property Rights**
The permit does not convey property rights or exclusive privilege of any sort.
[FRAQMD Rule 10.3.F.2.k.2; 40 CFR 70.6(a)(6)(iv)]

16. **Information Requested**
Within a reasonable time, the permittee shall furnish any information requested by the FRAQMD, in writing, for determining:

a. Compliance with the permit;

b. Whether or not cause exists for a permit or enforcement action; and

III. APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL (CONTINUED)

c. Upon request, the permittee shall also furnish to the permitting authority copies of records that are required by the permit. For information claimed to be confidential, the permittee may furnish such records along with a claim for confidentiality.
[FRAQMD Rule 10.3.F.2.k.6; 40 CFR 70.6(a)(6)(v)]

17. **Severability**
If any provision, clause, sentence, paragraph, section or part of these conditions for any reason is judged unconstitutional or invalid, such judgment shall not affect or invalidate the remainder of these conditions.
[FRAQMD Rules 1.2, 4.5, and 10.3.F.2.m]

18. **Emergency Provisions**

a. *Definition:* An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.
[FRAQMD Rule No. 10.3.F.2.l and 40 CFR 70.6(g)(1) SAC 98-01 §IV.B]

b. The permittee shall demonstrate an emergency through properly signed, contemporaneous operating logs, or other relevant evidence that:

i. An emergency occurred and that the permittee can identify the cause(s) of the emergency;

ii. The emissions did not exceed the following levels:

(a) 30 ppm NOx (1-hour average, corrected to 15% O_2)
(b) 20 ppm CO (1-hour average. corrected to 15% O_2)
(c) 228 lbs/hour NOx, (1-hour average)
(d) 172 lbs/hour CO (1-hour average)

iii. The permitted facility, including the air pollution control equipment and process equipment was being properly operated at the time of the malfunction;

iv. Preventative maintenance was regularly performed in a manner consistent with good practice for minimizing emissions;

v. The malfunction was not part of a recurring pattern indicative of inadequate design, operation or maintenance;

III. APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL (CONTINUED)

vi. The malfunction was not caused by improperly or inadequately designed equipment, lack of preventative maintenance, careless or improper operation, or operator error; and

vii. During the period of the malfunction, the permittee took all reasonable steps to minimize the amount and duration of emissions, including any bypass, that exceeded the emission standards of this permit. Reasonable steps to minimize emissions could include, but are not limited to, reducing production to the lowest level practicable; reducing the material feed that result in the increased emissions, and switching to alternative, less polluting fuels. Where repairs were required, the permittee made the repairs in an expeditious fashion when the operator knew or should have known that the source exceeded the applicable emission limits. Off shift labor and overtime must have been utilized to the extent practicable, to ensure that such repairs were made as expeditiously as possible.
[FRAQMD Rule No. 10.3.F.2.I.2 and 40 CFR 70.6(g)(3) SAC 98-01 §IV.B.3]

c. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.
[FRAQMD Rule No. 10.3.F.2.I.3 and 40 CFR 70.6(g)(4)]

19. **Notification and Reporting of Emergency**

a. The permittee shall notify the FRAQMD and the U.S. EPA within 48 hours of any deviation from permit requirements including those attributable to upset or breakdown conditions. Within fifteen (15) calendar days after an upset or breakdown condition, the permittee shall submit a written report to the FRAQMD, including the following:

i. Description of malfunctioning equipment or abnormal operation.

ii. The date of initial failure and the date the permittee resumed normal operations.

iii. Duration of excess emissions.

iv. An estimate of the quantity of excess emissions.

v. A statement of the cause of the deviation or failure.

vi. Methods used to restore normal operations.
[FRAQMD Rule No. 10.3.F.2.g and 40 CFR 70.6(a)(3)(iii)(B), SAC 98-01 §IV.A]

b. Upon any permit deviation resulting from upset, breakdown, malfunction or other emergency, the permittee, shall submit within fifteen (15) calendar days, contemporaneous operating logs, or other relevant evidence demonstrating that:

i. An emergency occurred.

III. APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL (CONTINUED)

ii. The permittee identifies the cause(s) of the emergency.

iii. The permittee was properly operating the facility at the time of the emergency.

iv. The permittee took all reasonable steps to minimize the emissions resulting from the emergency event.

v. In any enforcement proceeding, the permittee has the burden of proof for establishing that an emergency occurred.
[FRAQMD Rule No. 10.3.F.2.I.2 and 40 CFR 70.6(g)(2)]

20. **Monitoring Reports**

a. The permittee shall submit to the FRAQMD at least once every six months, unless required more frequently by an applicable requirement, reports of all required monitoring.

i. The permittee shall clearly identify all instances of deviations from Title V permit monitoring conditions in such reports.

b. The reporting periods for the monitoring reports shall be January 01 through June 30 and July 01 through December 31. The permittee shall submit the reports by July 31 and January 31 following each reporting period respectively.

c. The responsible official must certify all required reports and shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
[FRAQMD Rule 10.3.F.2.g.2; 40 CFR 70.6(a)(3)(iii)(A)]

21. **Annual Compliance Certification Report**

a. The permittee shall submit to the FRAQMD and U.S. EPA (Air-3, U.S. EPA Region 9) every 12 months, a certification of compliance by the responsible official with all terms and conditions contained in the Title V permit, including emission limitations, standards, and work practices.

b. The reporting period for the annual compliance certification report shall be January 01 through December 31. The permittee shall submit the report by January 31 following the reporting period.

c. The Compliance Certification Report shall include the following:

i. The identification of each term or condition of the permit that is the basis of the certification and the means of determining compliance with the term or condition;

ii. The compliance status and method(s) used to determine compliance for the current time period and over the entire reporting period and whether such method(s) provides continuous or intermittent data; and

III. APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL (CONTINUED)

iii. Any additional inspection, monitoring, or entry requirement that may be promulgated pursuant to Sections 114(a) and 504(b) of the CAA.
[FRAQMD Rule 10.3.F.2.n; 40 CFR 70.6(b)(5)]

22. **Responsible Official Shall Certify**
Any application form, report, or compliance certification submitted pursuant to these regulations shall contain certification by a responsible official of truth, accuracy, and completeness. This certification and any other certification required under this part shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
[FRAQMD Rule 10.3.D.3.a.13; 40 CFR 70.5(d)]

23. **Facility-Wide General Operating Requirements**
At all times, including periods of startup, shutdown and malfunction, the permittee shall, to the extent practicable, maintain and operate all equipment, including the associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions.
[FRAQMD Rule 4.5; 40 CFR 60.11(d)]

24. **Sampling Facilities**
The permittee shall provide source-testing ports, platforms, and access ladders that conform to the California Air Resources Board and federal Occupational Health and Safety administration standards.

a. Safe sampling platform(s),
b. Safe access to sampling platform(s),
c. Utilities for sampling and testing equipment,
d. Sampling ports adequate for test methods applicable to such facility. This includes constructing the air pollution control system such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and procedures and providing a stack or duct free of cyclonic flow during performance tests, as demonstrated by applicable test methods and procedures.
[40 CFR 60.8(e)]

25. **Visible Emissions**
Unless otherwise specified in this permit, the permittee shall not discharge into the atmosphere from any source whatsoever any contaminant, other than uncombined water vapor, for a period or periods aggregating more than three (3) minutes in any one (1) hour that is:

a. As dark or darker in shade as that designated as No. 2 (or 40% opacity) on the Ringelmann Chart, as published by the United States Bureau of Mines and as determined by U.S. EPA Method 9; or

III. APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL (CONTINUED)

b. Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection (a).
[FRAQMD Rule 3.0]

26. **Particulate Concentration**
The facility shall not emit into the atmosphere, from any source, particulate matter in excess of 0.3 grains per cubic foot of gas at standard conditions. When the source involves a combustion process, the permittee must calculate the concentration to 12 percent carbon dioxide (CO_2).
[FRAQMD Rule 3.2]

27. **Sulfur Oxides**
The facility shall not emit into the atmosphere from any single source of emissions whatsoever any sulfur oxides in excess of 0.2 percent by volume (2,000 ppm) collectively calculated as sulfur dioxide (SO_2).
[FRAQMD Rule 3.10]

28. **Circumvention**
The permittee shall not build, erect, install, or use any article, machine, equipment or other contrivance, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which would otherwise constitute a violation of the State of California Health and Safety Code or the FRAQMD Rules and Regulations. This requirement shall not apply to cases in which the only violation involved is State of California Health and Safety Code Section 41700.
[FRAQMD Rule 3.13]

29. **Surface Preparation and Clean-up**

a. This facility is subject to all applicable requirements under District Rule 3.14 Surface Preparation and Clean-up.

b. Net surface preparation and clean-up solvent usage at this facility shall not exceed 20 gallons per calendar year.

c. Material Safety Data Sheets for all VOC-containing materials (solvents, coatings, inks, resins) used at this facility shall be kept current and made available to District personnel upon request.

d. The permittee shall store all VOC-containing materials, whether in their form for intended use or as a waste or used product, including items such as cloth or paper laden with VOC-containing materials, in non-absorbent, non-leaking containers which shall be kept closed at all times, except when in-use, and disposed of in a manner to prevent the evaporation of VOCs into the atmosphere.

[FRAQMD Rule 3.14]

III. APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL (CONTINUED)

30. **Architectural Coating**
The permittee shall meet the requirements of FRAQMD Rule 3.15 when applying or contracting the application of any coating to stationary structures or their appurtenances at the site of installation, to portable buildings at the site of installation, to pavements, or to curbs.
[FRAQMD Rule 3.15]

31. **Accidental Releases**
If the permittee is subject to Section 112(r) of the federal Clean Air Act of 1990 and 40 CFR Part 68, the permittee shall:

a. Register and submit to the EPA the required data related to the risk management plan (RMP) for reducing the probability of accidental releases of any regulated substances listed pursuant to Section 112(r)(3) of the CAA as amended in 40 CFR 68.130. The list of substances, threshold quantities and accident prevention regulations promulgated under 40 CFR Part 68 do not limit in any way the general duty provisions under Section 112(r)(1) of the federal Clean Air Act of 1990;

b. Comply with the requirements of 40 CFR Part 68 no later than the latest of the following dates as provided in 68.10(a):

   i. June 21, 1999;

   ii. Three years after the date on which a regulated substance is first listed under 68.130; or

   iii. The date on which a regulated substance is first present above a threshold quantity in a process.

c. Submit any additional relevant information requested by any regulatory agency necessary to ensure compliance with the requirements of 40 CFR Part 68; and

d. Annually certify compliance with all applicable requirements of Section 112(r) of the federal Clean Air Act of 1990 as part of the required annual compliance certification.
[40 CFR Part 68]

32. **Title VI Requirements (Ozone Depleting Substances)**

a. When opening appliances containing CFCs for maintenance, service, repair, or disposal, the permittee must comply with the required practices pursuant to 40 CFR 82.156.

b. Equipment used during the maintenance, service, repair, or disposal of appliances containing CFCs must comply with the standards for recycling and recovery equipment pursuant to 40 CFR 82.158.

III. APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL (CONTINUED)

c. When performing maintenance, service, repair, or disposal of appliances containing CFCs, the permittee must be certified by an approved technician certification program pursuant to 40 CFR 82.161.
[40 CFR Part 82 Subpart F]

IV. NON-FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL

The FRAQMD bases the conditions in this section on conditions contained in previous locally issued operating permits or rules and regulations that are not part of the State Implementation Plan. Pursuant to 40 CFR 70.6(b)(2), the conditions of this section are enforceable by the FRAQMD only and shall not be enforceable by U.S. EPA or any citizen. This section is exempt from compliance certification requirements of 40 CFR 70.6, and administrative requirements for permit issuance and permit review of 40 CFR 70.7 and 70.8.

1. **Acceptance of Conditions**
   The FRAQMD deems acceptance of this Permit to Operate as acceptance of all conditions as specified. Failure to comply with any condition of this permit or the FRAQMD Rules and Regulations shall be grounds for revocation of this permit.
   [FRAQMD Rule 4.5]

2. **Right to Amend Permit**
   The FRAQMD reserves the right to amend this permit, if the need arises, in order to ensure the compliance of this facility, and/or to abate any public nuisance.
   [FRAQMD Rule 4.5]

3. **Permit Not Transferrable**
   This permit is not transferable from either one location to another, from one piece of equipment to another or from one person to another without prior FRAQMD approval. In the event a new owner assumes the control of this facility, the permittee and new owner shall notify the FRAQMD in writing within ten (10) days of the change of ownership.
   [FRAQMD Rule 4.15]

4. **Operation in Accordance with Permit Submittal**
   The permittee shall operate the equipment in compliance with all data and specifications submitted with the application under which this permit was issued. If any provision of this permit is found to be invalid, such finding shall not affect the remaining provisions of this permit.
   [FRAQMD Rule 4.5]

5. **Payment of Fees**
   The permittee shall be responsible for the payment of annual fees. In the event of facility closure or change in ownership or responsibility, the new owner shall be responsible for any outstanding and/or current fees.
   [FRAQMD Rule 7.6]

6. **Right of Entry**
   The "Right of Entry", as delineated by the California Health and Safety Code Section 41510 of Division 26, shall apply at all times. The permittee shall allow FRAQMD staff access to the plant site and pertinent records at all reasonable times for the purposes of inspections, surveys, collecting samples, obtaining data, reviewing and

IV. NON-FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL (CONTINUED)

copying air contaminant emission records, training, and otherwise conducting all necessary functions related to this permit.
[CA Health and Safety Code Section 41510]

7. **Permit Condition Familiarity**
The operating staff of this facility shall be advised of and be familiar with all the conditions contained in this permit.
[FRAQMD Rule 4.5]

8. **Maintain Equipment**
The permittee shall maintain the physical integrity of all processes and air pollution control equipment at regular intervals to insure minimal discharge of emissions. The permittee shall not operate the basic equipment without the control equipment attached and operating as designed. The permittee shall follow the equipment manufacturers' recommendations diligently.
[FRAQMD Rule 4.5]

9. **Emission Source Tests**
The FRAQMD may conduct or require emission source tests on any source at the discretion of the FRAQMD. The permittee shall conduct all tests and calculate all results in accordance with test procedures approved by the FRAQMD.
[FRAQMD Rule 9.3]

10. **Permit Required for Additions and Alterations**
The permittee shall report any additions, deletions, or alterations of the subject equipment, including a change in the method of operation or a change in the location, to the FRAQMD. Such alterations may require a new Authority to Construct permit.
[FRAQMD Rule 4.1]

11. **Copy of Permit Maintained at Facility**
The permittee shall maintain this permit or a legible copy at the site. The permit shall be made available on demand to any authorized person.
[FRAQMD Rule 4.14]

12. **Nuisance**
The facility shall not emit into the atmosphere from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
[CA Health and Safety Code Section 41700]

IV. NON-FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL (CONTINUED)

13. **Fugitive Dust**
The permittee shall take every reasonable precaution not to cause or allow the emissions of fugitive dust from being airborne beyond the property line from which the emission originates, from any construction, handling or storage activity, or any wrecking, excavation, grading, clearing of land or solid waste disposal operation. Reasonable precautions shall include, but are not limited to:

a. The use, where possible, of water or chemicals for controlling dust during the demolition of existing buildings or structures, construction operations, construction of roadways, or the clearing of land;

b. The application of asphalt, California approved oils and emulsion substances, water, or suitable chemicals on dirt roads, material stockpiles, and other surfaces which can give rise to airborne dusts; or

c. Any other means submitted in writing and approved by the FRAQMD.

[FRAQMD Rule 3.16]

14. **Surface Preparation and Clean-up**

a. This facility is subject to all applicable requirements under District Rule 3.14 – Surface Preparation and Clean-up.

b. Net surface preparation and clean-up solvent usage at this facility shall not exceed 20 gallons per calendar year.

c. The permittee shall keep current Safety Data Sheets for all VOC-containing materials (solvents, coatings, inks, resins) used at this facility and make them available to District personnel upon request.

d. The permittee shall store all VOC-containing materials, whether in their form for intended use or as a waste or used product, including items such as cloth or paper laden with VOC-containing materials, in non-absorbent, non-leaking containers which shall be kept closed at all times, except when in-use, and disposed of in a manner to prevent the evaporation of VOCs into the atmosphere.

[FRAQMD Rule 3.14]

15. **Natural Gas-Fired Water Heaters, Small Boilers, and Process Heaters**
The permittee shall not install at this facility any natural gas-fired boiler, steam generator, process heater, or water heater with a rated heat input capacity of greater than or equal to 75,000 British Thermal Units per hour (Btu/hr) and less than 1 million Btu/hr unless the unit is certified to meet the emissions requirements established in FRAQMD Rule 3.23.

[FRAQMD Rule 3.23]

IV. NON-FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL (CONTINUED)

16. **Air Toxic Hot Spots**

a. This facility is subject to Division 26, Part 6, Chapter 1 Section 44300 et. seq. of the California Health and Safety Code (Air Toxics "Hot Spots" Information and Assessment Act of 1987). The owner or operator is responsible for complying with all requirements and deadlines set forth in the regulation.

b. The FRAQMD reserves the right to require the facility to evaluate the health risk, in accordance with the AB2588 Air Toxics "Hot Spots" Emission Inventory Criteria and Guidelines Regulation, if there is a significant change in population, emissions, or emission unit(s) site location, or if new health data becomes available.

[CA Health and Safety Code Section 44300 et. seq.]

17. **Portable Engines and Portable Equipment Units**

a. The operation of portable engines and portable equipment units at the facility shall not require modification of this permit provided the permittee verify that each source is registered with the California Air Resources Board or permitted by the FRAQMD.

i. This provision shall not apply if the engine or equipment unit is operated in such a way that it supplements the stationary source operation.

ii. For the purpose of this permit, "Equipment Unit" means equipment that emits PM_{10} over and above that emitted from an associated engine.

b. Portable engines and portable equipment units registered by the California Air Resources Board shall operate pursuant to the conditions of the registration. This permit does not allow operation of the source, such that the operation invalidates the registration.

c. Portable engines and portable equipment units permitted by the FRAQMD shall operate pursuant to the conditions of the permit.

d. If a portable equipment unit will be at the facility for more than five days, the permittee shall notify the district in writing within two working days of commencing operations. The notification shall include:

i. The registration number of the equipment unit;

ii. The name and phone number of the responsible official; and

iii. The estimated time that the equipment unit will be located at the facility.

e. If the permittee utilizes a portable equipment unit, the permittee shall comply with the following recordkeeping and reporting provisions within 30 days after the end of each calendar quarter:

i. The dates in which the equipment unit was operated at the facility;

IV. NON-FEDERALLY ENFORCEABLE REQUIREMENTS - GENERAL (CONTINUED)

ii. The type and quantity of materials processed by the equipment unit; and

iii. The emissions for the project, calculated in accordance with the equipment unit's registration.

[Basis: FRAQMD Rule 4.5]

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC

The information and conditions specified in this section are enforceable by the FRAQMD, U.S. EPA, CARB, and the public.

EQUIPMENT DESCRIPTION:

Gas Turbines #1 and #2 (S-1 and S-3)

Manufacturer:	Siemens Westinghouse
Model:	501F
Type:	Combined cycle
Emission Control:	Steam injection, SCR and Oxidation catalyst
Fuel:	Natural gas
Max. Rating:	1,900 MMBTU/hour each
Net Output:	185 MW (nominal)/212 MW (maximum) each

Duct Burners #1 and #2 for the HRSGs (S-2 and S-4)

Manufacturer:	Coen
Model:	FILE# 40D-13445-1-000
Emission Control:	Low NOx combustion design, SCR and Oxidation Catalyst
Fuel:	Natural gas
Max. Rating:	170 MMBTU/hour each

Air Pollution Control Systems for (S-1 to S-4) for NOx

Manufacturer:	Cormetech
Control Device:	SCR (Anhydrous Ammonia)
Venting:	Gas Turbine #1 and Duct Burner #1 Gas Turbine #2 and Duct Burner #2

Air Pollution Control Systems for (S-1 to S-4) for VOC and CO

Manufacturer:	Camet
Control Device:	Oxidation catalyst
Venting:	Gas Turbine #1 and Duct Burner #1 Gas Turbine #2 and Duct Burner #2

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

EMISSION LIMIT REQUIREMENTS:

1. The maximum emission concentrations from each gas turbine/duct burner combination shall not exceed the following BACT limits:
[SAC 98-01 §X.E-F; 97-AFC-2C §AQ-33; FRAQMD Rule 10.1]

Pollutant	Maximum Allowable Emission Concentrations: Gas Turbine #1 and Duct Burner #1 Combination (S-1 and S-2) Gas Turbine #2 and Duct Burner #2 Combination (S-3 and S-4) (a)
VOC	1 ppmvd at 15% O_2 (b) (d)
NOx (as NO_2)	2.5 ppmvd at 15% O_2 (c)
SOx (as SO_2)	1 ppmvd at 15% O_2 (b)
CO	4 ppmvd at 15% O_2 (b)

(a) Excluding startups and shutdowns, as defined in Conditions V.13 and V.14.
(b) Based on a 3-hour rolling average, clock hour basis.
(c) Based on a 1-hour average, clock hour basis.
(d) Measured as methane.

2. The maximum hourly mass emissions from each gas turbine/duct burner combination shall not exceed the following limits:
[SAC 98-01 §X.E-G; 97-AFC-2C §AQ-32.11]

Pollutant	Maximum Allowable Mass Emissions from each of: Gas Turbine #1 and Duct Burner #1 Combination (S-1 and S-2) Gas Turbine #2 and Duct Burner #2 Combination (S-3 and S-4)			
	In all modes of operation, except startup and shutdown (lbs/hour)	Startup (lbs/hour)	Startup (lbs/startup)	Shutdown (lbs/shutdown)
VOC	3.51 (a)	16 (b)	59	16
NOx (as NO_2)	19.1 (b)	175 (b)	680	80
SOx (as SO_2)	4.02 (a)	3.7 (b)	22.2	3.7
PM_{10}	11.5 (a)	9 (b)	54	9
CO	34.3 (a)	902 (a)	2,514	100

(a) Based on 3-hour rolling average, clock hour basis.
(b) Based on 1-hour average, clock hour basis.

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

3. The maximum emissions from all of the following combined equipment shall not exceed the following limits:
[97-AFC-2C §AQ-32.12]

Pollutant	Maximum Allowable Emissions: Gas Turbine #1 and Duct Burner #1 Combination (S-1 and S-2) Gas Turbine #2 and Duct Burner #2 Combination (S-3 and S-4) (a)
VOC	158 lbs/day
NOx (as NO_2)	1,817 lbs/day
SOx (as SO_2)	179 lbs/day
PM_{10}	541 lbs/day
CO	6,528 lbs/day

(a) Including startups and shutdowns, as defined in Conditions V.13 and V.14.

4. The maximum emissions from all of the following combined equipment shall not exceed the following limits:
[97-AFC-2C §AQ-32.13-14; FRAQMD Rule 10.1]

Pollutant	Maximum Allowable Emissions: Gas Turbine #1 and Duct Burner #1 Combination (S-1 and S-2) Gas Turbine #2 and Duct Burner #2 Combination (S-3 and S-4) (a)				
	January-March (lbs/quarter)	April-June (lbs/quarter)	July-September (lbs/quarter)	October-December (lbs/quarter)	Annual (tons/year)
VOC	11,850	11,850	11,850	11,850	23.7
NOx (as NO_2)	102,500	102,500	102,500	102,500	205.0
SOx (as SO_2)	15,750	15,750	15,750	15,750	31.5
PM_{10}	46,200	46,200	46,200	46,200	92.4
CO	241,600	241,600	241,600	241,600	483.2

(a) Including startups and shutdowns, as defined in Conditions V.13 and V.14.

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

5. HAP emissions from the facility shall not equal or exceed the following limits **[FRAQMD Rule 4.5]**

Equipment	**Maximum Allowable HAP emissions:** (a) (b)	
	Single HAP	Any Combination of HAPs
Gas Turbine #1 Gas Turbine #2 Duct Burner #1 Duct Burner #2	10	25

(a) Including startups and shutdowns, as defined in Conditions V.13 and V.14.
(b) The purpose of this limitation is to qualify the gas turbines for the non-applicability of 40 CFR 63 Subpart YYYY - National Emission Standards for Hazardous Air Pollutants for Stationary Gas Turbines.

EQUIPMENT OPERATION REQUIREMENTS:

6. The facility shall install, continuously operate, and maintain the following air pollution controls to minimize emissions. These controls shall be fully operational upon startup of each Gas Turbine.
   a. Dry low-NOx burners
   b. Selective Catalytic Reduction
   c. Oxidation Catalyst System
   [SAC 98-01 §X.B]

7. All equipment, facilities, and systems installed or used to achieve compliance with the terms and conditions of this permit shall at all times be maintained in good working order and be operated as efficiently as possible so as to minimize air pollutant emissions.
   [40 CFR 60.11(d), SAC 98-01 §III]

8. Gas Turbines #1 and #2 exhaust stacks shall exhaust at a height of 145 feet or higher. The maximum diameter of each exhaust stack shall not exceed 18 feet.
   [97-AFC-2C §AQ-25]

9. The facility shall exclusively use California PUC pipeline quality natural gas as fuel.
   [SAC 98-01 §X.D]

10. The maximum heat input for each gas turbine and duct burner shall not exceed the following limits:
    [97-AFC-2C §AQ-31]

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

Equipment	Maximum Allowable Heat Input (High Heating Value [HHV] basis)		
	Hourly (MMBTU/hr)	Daily (MMBTU/day)	Yearly (MMBTU/year)
Gas Turbine #1	1,900	45,600	16,644,000
Gas Turbine #2	1,900	45,600	16,644,000
Duct Burner #1	170	4,080	928,200
Duct Burner #2	170	4,080	928,200

11. Each gas turbine shall be limited to 2,000 hours of power augmentation steam injection per calendar year:
[97-AFC-2C §AQ-32.10]

12. Each duct burner shall be limited to 5,460 hours of operation per calendar year:
[97-AFC-2C §AQ-32.9]

13. A gas turbine startup period is defined as the time period commencing with the introduction of fuel flow to the gas turbine and ending at the start of the first 1 hour period when:

    a. the NOx concentrations do not exceed 2.5 ppmvd at 15% O_2 averaged over 1 hour; and

    b. the CO concentrations do not exceed 4.0 ppmvd at 15% O_2 averaged over 1 hour.
    [SAC 98-01 §X.E-F; 97-AFC-2C §AQ-32.1]

14. A gas turbine shutdown period is defined as the time period commencing with the start of a 15 minute period during which:

    a. the 15 minute average NOx concentration exceeds 2.5 ppmvd at 15% O_2; or

    b. the 15 minute average CO concentration exceeds 4.0 ppmvd at 15% O_2;

    and ending when the fuel flow to the gas turbine is discontinued.
    [97-AFC-2C §AQ-32.3]

15. The duration of a gas turbine's startup period shall not exceed 360 consecutive minutes.
[SAC 98-01 §X.E-F; 97-AFC-2C §AQ-32.2]

16. The duration of a gas turbine's shutdown period shall not exceed 60 consecutive minutes.
[97-AFC-2C §AQ-32.4]

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

MONITORING REQUIREMENTS:

17. The permittee shall install, maintain, and operate the following continuous emissions monitoring (CEM) systems in the exhaust stack of the heat recovery steam generator:
    a. A CEM system to measure stack gas NOx concentrations. The system shall meet EPA monitoring performance specifications (40 CFR 60.13 and 40 CFR Part 60 Appendix B, Performance Specification 2);
    b. A CEM system to measure stack gas O_2 concentrations. The system shall meet EPA monitoring performance specifications (40 CFR Part 60 Appendix B, Performance Specification 3); and
    c. A CEM system to measure stack gas CO concentrations. The system shall meet EPA monitoring performance specifications (40 CFR Part 60 Appendix B, Performance Specification 4).
    [SAC 98-01 §X.H.1; 97-AFC-2C §AQ-34; 40 CFR 60 Appendix F; 40 CFR 75]

18. The NOx, CO, and O_2 CEM systems shall have the capability of recording NOx, CO and O_2 concentrations during all operating conditions, including gas turbine startups and shutdowns.
    [97-AFC-2C §AQ-34]

19. A quality assurance/quality control (QA/QC) program for the CEM system shall be developed and maintained. At a minimum, the plan shall conform to 40 CFR Part 75 Appendix B Section 1 for NOx and O_2 and 40 CFR 60 Appendix F for CO.
    [40 CFR 60.13(a), 40 CFR Appendix F and 40 CFR 75 Appendix B]

20. The permittee shall conduct a Relative Accuracy Test Audit (RATA) at least once every year.
    a. The RATA for the NOx monitor shall be conducted in accordance with 40 CFR Part 75 Appendix B Section 2.3.
        i. The RATA may be required semiannually if specified conditions in 40 CFR 75 Appendix B Section 2.3 are not met.
    b. The RATA for the O_2 monitor shall be conducted in accordance with 40 CFR Part 75 Appendix B Section 2.3.
        i. The RATA may be required semiannually if specified conditions in 40 CFR 75 Appendix B Section 2.3 are not met.
    c. The RATA for the CO monitor shall be conducted in accordance with 40 CFR Part 60 Appendix B, Performance Specification 4, Section 3.
    [40 CFR 60 Appendix F and 40 CFR 75 Appendix B; 97-AFC-2C §AQ-34;]

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

21. The permittee shall conduct a Cylinder Gas Audit (CGA) for the CO monitor in three of four calendar quarters but need not be performed in the same quarter as a RATA. The CGA shall be conducted in accordance with 40 CFR 60 Appendix F.
[40 CFR Part 60 Appendix F]

22. The permittee shall conduct a Linearity Check for the NOx and O_2 monitors in each calendar quarter. The Linearity Check shall be conducted in accordance with 40 CFR 75 Appendix B.
[40 CFR 75 Appendix B]

23. All audit gases shall have been certified by comparison to National Bureau of Standards (NBS) Standard Reference Materials, NBS/EPA Certified Reference Materials, or EPA Protocol Gases.

    a. Documentation shall be made available to the FRAQMD upon request containing gas calibration standard information, including an identification number corresponding to the gas cylinder number, gas mixture constituents and concentrations, and gas cylinder fill and expiration dates.

    b. If the gas vendor does not provide a gas cylinder expiration date, a two (2) year expiration date from the cylinder fill date shall apply.

    c. Gas calibration standards in use beyond the expiration date are a violation of this permit.
    [40 CFR 60 Appendix F and 40 CFR 75 Appendix A]

24. The permittee shall determine and report to the FRAQMD the fuel gas total sulfur and heat content by collecting and analyzing a sample on a monthly basis or by providing monthly certification of the natural gas total sulfur and/or heat content issued by the natural gas distributor.
[97-AFC-2C §AQ-29]

25. Notwithstanding the provisions of 40 CFR 60.334(h)(1) requiring the monitoring of fuel total sulfur content, the permittee may elect not to monitor the total sulfur content of the gaseous fuel combusted in the gas turbines, if the gaseous fuel is demonstrated to meet the definition of natural gas in 40 CFR 60.331(u). The owner or operator shall use one of the following sources of information to make the required demonstration:

    a. The gas quality characteristics in a current, valid purchase contract, tariff sheet, or transportation contract for the gaseous fuel, specifying that the maximum total sulfur content of the fuel is 20.0 grains/100 scf or less; or

    b. Representative fuel sampling data that show the sulfur content of the gaseous fuel does not exceed 20 grains/100 scf. At a minimum, the amount of fuel

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

sampling data specified in 40 CFR 75 Appendix D Sections 2.3.1.4 or 2.3.2.4 is required.
[NSPS GG - 40 CFR 60.334(h)(3)]

26. For those pollutants that are not directly monitored by a CEMS (VOC, SOx and PM_{10}), the hourly emissions for each turbine shall be calculated based on the most recently approved FRAQMD emission factors.

    a. The permittee may use source test results to develop new emission factors. The permittee shall submit the new emission factors to the FRAQMD for written approval prior to using.
    [97-AFC-2C §AQ-34]

EMISSION TESTING REQUIREMENTS:

27. The permittee shall conduct performance tests for VOC, NOx, SOx, PM_{10}, and CO on each gas turbine/duct burner combination every calendar year to verify compliance with Conditions V.1 and V.2 (excluding startup mode and shutdown mode mass emission limits).
[SAC 98-01 §X.C.1]

28. The permittee shall conduct a performance test for VOC on one of the gas turbine/duct burner combinations every 7 years, beginning in 2003, to verify compliance with the startup mode mass emission limits of Condition V.2.
[97-AFC-2C §AQ-35]

29. The following conditions are applicable to each performance test:

    a. Except as provided in this permit, the tests shall conform to U.S. EPA or CARB methodology and procedures. Reference test methods are California Code of Regulations Title 17 Sections 94101 et. seq., 40 CFR Part 60 Appendix A, and 40 CFR Part 51 Appendix M.

    b. At least 30 days prior to conducting a source test, the project owner shall submit to the FRAQMD and EPA (Attn: AIR 9) for their review and approval, a source test plan to allow time for the development of an approvable performance test plan. The FRAQMD shall approve any deviation from the emission testing requirements prior to testing.

    c. The permittee shall notify FRAQMD at least 7 days prior to any scheduled source test.

    d. The permittee shall submit the results of the source test to the FRAQMD within 60 days following testing.

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

e. The FRAQMD may waive annual source testing requirements upon written request and conditioned on an evaluation including, but not limited to, the maintenance of an adequate compliance margin from prior test results. **[SAC 98-01 §X.C.1; 40 CFR 60.8]**

30. The gas turbine and duct burner shall be source tested at the maximum firing capacity, defined as ≥ 90% of the heat input capacity achievable at the time of the source test, based on the current ambient and process conditions, to determine the emission rates (lbs/hour) and/or concentrations of the VOC, NOx, CO, and PM_{10}.

a. Testing for $PM_{2.5}$ shall be optional, at the discretion of the FRAQMD.

b. The permittee shall report the facility operating parameters under which the test is conducted in the test results. **[FRAQMD Rule 4.5]**

31. Each performance test shall consist of three separate runs using the applicable test method.

a. Each run shall be conducted for the time and under the conditions specified in the applicable standard.

b. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply.

c. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the permittee's control, compliance may be determined using the arithmetic mean of the results of the two other runs. **[FRAQMD Rule 4.5; 40 CFR 60.8(f)]**

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

RECORDKEEPING REQUIREMENTS:

32. The permittee shall continuously maintain the following records on site for at least five years from the date the record was created and shall be made available to the FRAQMD upon request.
[40 CFR 60.7, 40 CFR 70.6(c)(1); 97-AFC-2C §AQ-39; FRAQMD Rule 4.5]

Frequency	Information to be Recorded
Upon occurrence	a. Occurrence and duration of any: i. Startup, shutdown or malfunction of a gas turbine or duct burner and the duration of the occurrence. ii. Malfunction of the air pollution control equipment. iii. Periods during which a continuous monitoring system or monitoring device is inoperative. iv. Corrective actions taken. **[40 CFR 60.7(b)]** b. Measurements of each CEMS, recorded in a permanent form, including: i. CEMS performance evaluations. ii. CEMS or monitoring device calibration checks. iii. CEMS adjustments and maintenance; and iv. All other information required by 40 CFR 60. **[SAC 98-01 §H.2]** c. In the event of a breakdown, malfunction, or other emergency, the permittee shall retain properly signed, contemporaneous operating logs, or other relevant evidence that: i. An emergency occurred. ii. The permittee identified the cause(s) of the emergency. iii. The facility was being properly operated at the time of the emergency. iv. The permittee took all reasonable steps to minimize the emissions resulting from the emergency event. **[FRAQMD Rule 10.3.F.2.I.2.e; 40 CFR 70.6(g)(2)]**

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

Frequency	Information to be Recorded
When a source test is performed	d. Records shall be maintained of all monitoring and support information required by any applicable federal requirement, including: i. Date, place, and time of sampling. ii. The date(s) analyses were performed. iii. The company or entity that performed the analyses. iv. The analytical techniques or methods used. v. Operating conditions at the time of sampling. vi. Results of the analysis. **[FRAQMD Rule 10.3.F.2.f; 40 CFR 70.6(a)(3)(ii)]**
Hourly	e. Natural gas fuel consumption of each gas turbine and duct burner. (MMBTU/hour) f. NOx emission concentration from each gas turbine/duct burner combination. (ppmvd at 15% O_2, 1 hour average, clock hour basis) g. CO emission concentration from each gas turbine/duct burner combination. (ppmvd at 15% O_2, 3 hour rolling average, clock hour basis) h. VOC, NOx, SOx, PM_{10} and CO hourly mass emissions from Gas Turbine #1/Duct Burner #1 combination and Gas Turbine #2/Duct Burner #2 combination. (NOx lbs/hour based on 1 hour average, clock hour basis) (VOC, SOx, PM_{10}, and CO lbs/hour based on 3 hour rolling average, clock hour basis) i. For those pollutants directly monitored (NOx and CO), the hourly emissions will be from the required CEM system. ii. For those pollutants that are not directly monitored (VOC, SOx, and PM_{10}), the hourly emissions shall be calculated based on the most recently approved FRAQMD emission factors for the emission unit. i. The portion of the hour that gas turbine power augmentation steam injection was conducted for each gas turbine. j. Hourly electrical production. (MW)
Daily	k. VOC, NOx, SOx, PM_{10}, and CO daily mass emissions from Gas Turbines #1 and #2 and Duct Burners #1 and #2 combined. (lbs/day)

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

Frequency	Information to be Recorded
Quarterly	l. VOC, NOx, SOx, PM_{10}, and CO quarterly mass emissions from Gas Turbines #1 and #2 and Duct Burners #1 and #2 combined (lbs/quarter) m. The cumulative hours of startup for the calendar quarter for each gas turbine. (hours of startup/calendar quarter) n. The cumulative hours of shutdown for the calendar quarter for each gas turbine. (hours of shutdown/calendar quarter)
Yearly	o. VOC, NOx, SOx, PM_{10}, and CO annual mass emissions from Gas Turbines #1 and #2 and Duct Burners #1 and #2 combined. (tons/year) p. The cumulative hours for the calendar year that gas turbine power augmentation steam injection was conducted for each gas turbine. (hours/year) q. The cumulative hours for the calendar year that natural gas fuel was combusted in each of the duct burners.

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

REPORTING REQUIREMENTS:

33. For each calendar quarter, the facility shall submit to the FRAQMD a written report within 30 days of the end of the reporting period. Each report shall contain the following information, as specified in the table below:
[40 CFR 60.7; SAC 98-01 §X.H.4.a-b; 97-AFC-2C §AQ-40]

Frequency	Information to be Reported
Quarterly Submitted by: Jan 31 Apr 30 Jul 31 Oct 31 for the previous calendar quarter	a. Whenever a CEMS is inoperative, except for zero and span checks: i. Date and time of non-operation of the CEMS. ii. Nature of the CEMS repairs or adjustments. b. Whenever an emission occurs as measured by the required CEMS that is in excess of any emission limitation: i. The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h) and any conversion factors used. ii. Date and time of the commencement and completion of each period of excess emissions. iii. Periods of excess emissions due to startup, shutdown, and malfunction shall be specifically identified. iv. The nature and cause of any malfunction, if known, or the best possible cause of any malfunction if not specifically known. v. The corrective action taken or preventive measures adopted. c. If there were no excess emissions or the CEM system has not been inoperative, repaired, or adjusted for a calendar quarter such information shall be stated in the report. d. VOC, NOx, SOx, PM_{10} and CO hourly mass emissions from Gas Turbine #1/Duct Burner #1 combination and Gas Turbine #2/Duct Burner #2 combination. e. VOC, NOx, SOx, PM_{10} and CO daily mass emissions from Gas Turbines #1 and #2 and Duct Burners #1 and #2 combined. (lbs/day) f. For each gas turbine, the quarterly startup, shutdown, and operating hours. i. Include duration of each startup and shutdown, ii. Include rolling 12-month average for duration of startups and shutdowns. g. Hourly steam production to the steam turbine (lb steam/hour) h. Hourly steam injection to each gas turbine (lb steam/hour) i. Hourly electrical production (MW)

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

Frequency	Information to be Reported
Quarterly Submitted by: Jan 31 Apr 30 Jul 31 Oct 31 for the previous calendar quarter	**Report in 4th quarter report only** j. VOC, NOx, SOx, PM_{10} and quarterly and annual mass emissions from Gas Turbines #1 and #2 and Duct Burners #1 and #2 combined. (lb/quarter, tons/year) k. For each gas turbine and each duct burner, the hourly, daily, and yearly fuel use. (MMBTU/time period [HHV]) l. For each gas turbine, the quarterly and yearly number of power augmentation steam injection hours.

PERMIT SHIELD:

34. Compliance with the specified conditions of the Title V permit shall be deemed compliance with the following subsumed requirements:
[U.S. EPA Title V White Paper Number 2 for Improved Implementation of the Part 70 Operating Permits Program]

Title V Permit Condition	Subsumed requirement
V.2	FRAQMD Rule 3.2 - Particulate Matter Concentration
V.2, V.9	FRAQMD Rule 3.10 - Sulfur Oxides
V.1, V.2, V.32, V.33	40 CFR 60 Subpart Db - NSPS for Small Industrial - Commercial - Institutional Steam Generating Units (amended 06-13-2007)
V.1, V.2, V.9	40 CFR 60 Subpart GG - Standards of Performance for Stationary Gas Turbines (amended 02-24-2006)
V.32, V.33	40 CFR 60.7(c) – Notification and Recordkeeping, semi-annual excess emissions reporting and monitoring report to the Subsumed requirements. (amended 02-12-1999)

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

ACID RAIN PERMIT:

The FRAQMD issues the requirements specified under this subsection in accordance with Title IV and Title V of the federal Clean Air Act, and the requirements are enforceable by the FRAQMD, the U.S. EPA and the public.

35. The permittee shall comply with all the applicable requirements of the Acid Rain Permit Application located in Attachment D of this permit.
[FRAQMD Rule 10.12]

36. This permit incorporates the definitions of terms in 40 CFR §72.2.
[FRAQMD Rule 10.12]

37. The Acid Rain Permit Application contained in Attachment D shall be in effect until the expiration of this permit.
[FRAQMD Rule 4.5]

38. A timely renewal application is an application that the FRAQMD receives at least six months prior to the permit expiration date.
[FRAQMD Rule 4.5]

39. The Title V permit shall take precedence in the event of conflicting requirements between the Acid Rain Permit Application and the Title V permit conditions.

PREVENTION OF SIGNIFICANT DETERIORATION:

The FRAQMD issues the requirements specified under this subsection in accordance with Title 40 of the Code of Federal Regulations Part 52.21, and the requirements are enforceable by the FRAQMD, the U.S. EPA and the public.

40. The permittee shall comply with all applicable requirements of the Approval to Construct/Modify a Stationary Source, hereby known as a Prevention of Significant Deterioration (PSD) permit, located in Attachment E of this permit.
[FRAQMD Rule 10.10, 40 CFR 52.21]

41. This permit incorporates the definitions of terms in 40 CFR §52.21.
[FRAQMD Rule 10.10, 40 CFR 52.21]

42. The PSD permit contained in Attachment E shall be in effect until the time specified in Condition I of the permit.
[FRAQMD Rule 10.10, 40 CFR 52.21]

43. The Title V permit shall take precedence in the event of conflicting requirements between the PSD permit conditions and the Title V permit conditions.

V. FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

EMISSION REDUCTION CREDIT (ERC) REQUIREMENTS:

45. The permittee shall surrender (and has surrendered - See Conditions V.46-V.48) ERCs to the FRAQMD to offset the following amount of emissions: **[97-AFC-2C §AQ-41]**

Equipment: Gas Turbines #1 and #2 Duct Burners #1 and #2	**Amount of Emission Offsets for which ERCs are to be Surrendered (lbs/quarter)**			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
VOC	11,850	11,850	11,850	11,850
NOx	102,500	102,500	102,500	102,500
PM_{10}	46,200	46,200	46,200	46,200

46. The following VOC ERCs have been surrendered to the FRAQMD to comply with the VOC emission offset requirements, as stated in Condition V.45:

See Attachment A

47. The following NOx ERCs have been surrendered to the FRAQMD to comply with the NOx emission offset requirements, as stated in Condition V.45:

See Attachment B

48. The following PM_{10} ERCs have been surrendered to the FRAQMD to comply with the PM_{10} emission offset requirements, as stated in Condition V.45:

See Attachment C

VI. NON-FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC

The information and conditions specified in this section are enforceable by the FRAQMD only.

EMISSION LIMIT REQUIREMENTS:

1. The concentration of ammonia (NH_3) emissions from each gas turbine/duct burner combination shall not exceed the following limit:
[97-AFC-2C §AQ-37; FRAQMD Rule 4.5]

Pollutant	Maximum Allowable Emission Concentration from each of: Gas Turbine #1 and Duct Burner #1 Combination and Gas Turbine #2 and Duct Burner #2 Combination
Ammonia (NH_3)	10 ppmv at 15% O_2 (a) (b)

(a) Excluding startups and shutdowns, as defined in Conditions V.13 and V.14.
(b) Based on source testing conducted, as required in VI.4.

2. The maximum hourly mass emissions from each gas turbine/duct burner combination shall not exceed the following limit:
[97-AFC-2C §AQ-37; FRAQMD Rule 4.5]

Pollutant	Maximum Allowable Hourly Mass Emissions from each of: Gas Turbine #1 and Duct Burner #1 Combination and Gas Turbine #2 and Duct Burner #2 Combination
Ammonia (NH_3)	25 lbs/hour (a) (b)

(a) Excluding startups and shutdowns, as defined in Conditions V.13 and V.14.
(b) Based on 3-hour rolling average, clock hour basis.

3. The potential to emit (PTE) for greenhouse gases (GHGs) at the Sutter Energy Center facility is shown below.

[FRAQMD Rule 10.11, 40 CFR 52.21]

Sutter Energy Center Greenhouse Gas Potential to Emit	
GHG Pollutant	**Facility PTE (tons/year)** (a)
CO_2	2,055,559
CH_4	38.74
N_2O	3.87
Total CO_2e	**2,057,682**

(a) Calculated using natural gas factors from U.S. EPA's Emissions Factors for Greenhouse Gas Inventories (11-19-2015)

VI. NON-FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

EMISSION TESTING REQUIREMENTS

4. The permittee shall perform an ammonia (NH_3) source test of the gas turbine and duct burner combinations every year to verify compliance to verify compliance with Conditions VI.1 and VI.2 above.
   a. The permittee shall submit a source test plan to the FRAQMD for approval at least 30 days prior to the scheduled test date.
   b. The permittee shall notify the FRAQMD at least 7 days prior to the source testing date.
   c. During the source test(s), the facility shall operate the gas turbine and duct burner combination at the maximum firing capacity, defined as ≥ 90% of the heat input capacity achievable at the time of the source test, based on the current ambient and process conditions. The permittee shall report the ambient and process conditions used to determine the maximum firing capacity in the test report.
   d. The permittee shall submit the source test results to the FRAQMD within 60 days after the completion of the source test.
   e. The FRAQMD may waive annual source testing requirements for ammonia upon written request and conditioned on an evaluation including, but not limited to, the maintenance of an adequate compliance margin from prior test results.
   [97-AFC-2C §AQ-36; FRAQMD Rules 4.5 and 9.3]

RECORDKEEPING REQUIREMENTS:

5. The permittee shall continuously maintain the following records on site for at least five years from the date the record was created and the records shall be made available to the FRAQMD upon request.
   [FRAQMD Rule 4.5]

Frequency	Information to be Recorded
Hourly	a. Ammonia injection rate to each of the SCR systems. (lbs/hour)

VI. NON-FEDERALLY ENFORCEABLE REQUIREMENTS - EQUIPMENT SPECIFIC (CONTINUED)

REPORTING REQUIREMENTS:

6. For each calendar quarter, the facility shall submit to the FRAQMD a written report within 30 days of the end of the reporting period. Each report shall contain the following information, as specified in the table below:
[FRAQMD Rule 4.5]

Frequency	Information to be Reported
Quarterly Submitted by: Jan 31 Apr 30 Jul 31 Oct 31 for the previous calendar quarter	a. Ammonia injection rate to each of the SCR systems. (lbs/hour)

VII. INSIGNIFICANT EMISSION UNITS

Insignificant emissions units may be supplemented, replaced, or modified with identical or non-identical equipment without notice provided that the New Source Review permitting requirements for the equipment have not changed, as defined in current FRAQMD or federal rules.

EXEMPT EQUIPMENT	EQUIPMENT DESCRIPTION	BASIS FOR EXEMPTION
Utility carts, man-lifts, fork lifts, on-road vehicles, skid steer loaders	Vehicles and Mobile Equipment	Rule 4.3.a and 4.3.g
Ammonia Tank 12,000 gallon (regulated only for RMP CAA §112r) 19.5% anhydrous	Any valves, flanges, and unvented (except for emergency pressure relief valves) pressure vessels	Rule 4.3.h Rule 10.3 Attachment 1 – B.1
Air conditioning and office heating	HVAC equipment < 60,000,000 BTU/hr	Rule 4.3.d and 4.3.e Rule 10.3 Attachment 1 - B.2.d
Air cooling system	Air intake chiller < 10,000 gpm	Rule 4.3.d Rule 10.3 Attachment 1 - B.3
Turbine lube oil tanks	Turbine lube oil tanks (vapor pressure < 1.5 psig)	Rule 4.3.h Rule 10.3 Attachment 1 - B.7.d
Various oil tanks, vessels, pipelines	Turbine lube and transformer oil	Rule 4.3.h Rule 10.3 Attachment 1 – B.8
Natural gas supply lines, valves, flanges, compressors.	Any valves, flanges, and unvented (except for emergency pressure relief valves) pressure vessels	Rule 4.3.h Rule 10.3 Attachment 1 – B.11
Solvent cleaning tank	< 55 gallon capacity	Rule 4.3.h Rule 10.3 Attachment 1 - B.15
Brazing, welding, soldering associated with maintenance.	Maintenance equipment	Rule 4.3.h Rule 10.3 Attachment 1 – B.17
Electric water boiler	Electric water recycling boiler	Rule 4.3.h Rule 10.3 Attachment 1 – B.1

VIII. ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE

Acronyms, abbreviations and units of measure used in this permit are defined as follows:

CAA
The federal Clean Air Act

CARB
California Air Resources Board

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

CO
Carbon monoxide

CO_2
Carbon dioxide

ERC
Emission Reduction Credits

FRAQMD
Feather River Air Quality Management District

Federally Enforceable
All limitations and conditions which are enforceable by the Administrator of the U.S. EPA including those requirements developed pursuant to 40 CFR Part 51, Subpart I (NSR), Part 52.21 (PSD), Part 60 (NSPS), Part 61 (NESHAPs), Part 63 (HAP) and Part 72 (Permits Regulation, Acid Rain), including limitations and conditions contained in operating permits issued under a U.S. EPA approved program that have been incorporated into the California SIP.

GHGs
Greenhouse gases – The air pollutant defined in 40 CFR 86.1818-11(a) as the aggregate group of six greenhouse gases: Carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

HAP
Hazardous Air Pollutant – Any air pollutant listed in or pursuant to Section 112(b) of the CAA.

VIII. ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE (CONTINUED)

NESHAP
National Emission Standards for Hazardous Air Pollutants (see 40 CFR Parts 61 and 63).

NOx
Nitrogen oxides

NSPS
New Source Performance Standards. U.S. EPA standards for emissions from new stationary sources. Mandated by Title I, Section 111 of the federal Clean Air Act and implemented by 40 CFR Part 60.

O_2
Oxygen

PM
Particulate matter

PM_{10}
Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns.

PSD
Prevention of Significant Deterioration is a construction permitting program for new major facilities and major modifications to existing major facilities located in areas classified as attainment or in areas that are unclassifiable for any criteria air pollutant.

ROG
Reactive organic gases

SIP
State Implementation Plan. CARB and FRAQMD programs and regulations approved by U.S. EPA and developed in order to attain the National Air Ambient Quality Standards. Mandated by Title I of the federal Clean Air Act.

SO_2
Sulfur dioxide

Title V

VIII. ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE (CONTINUED)

Title V of the federal Clean Air Act. Title V requires the FRAQMD to operate a federally enforceable operating permit program for major stationary sources and other specified sources.

U.S. EPA
The federal Environmental Protection Agency

VOC
Volatile Organic Compounds

UNITS OF MEASURE:

bhp	=	Brake horsepower
BTU	=	British Thermal Unit
cfm	=	cubic feet per minute
g	=	grams
gal	=	gallon
gpm	=	gallons per minute
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inch
kg	=	kilogram
max	=	maximum
m2	=	square meter
min	=	minute
mm	=	millimeter
MM	=	million
ppmv	=	parts per million by volume
ppmw	=	parts per million by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
quarter	=	calendar quarter
scfm	=	standard cubic feet per minute
yr	=	calendar year

ATTACHMENT A
VOC ERCS PROVIDED

The following VOC ERCs have been provided to the FRAQMD to comply with the requirements of Condition V.45:

ERC Certificate	Face Value of VOC ERC Certificates Surrendered (lbs/quarter)				IPTR (a)	Offset Ratio	Value Applied to the Project VOC Emission Liability (lbs/quarter)			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4			Qtr 1	Qtr 2	Qtr 3	Qtr 4
98001-01P Bio Fuel	4,522	4,582	2,521	5,054	NA	1.2	3,768	3,818	2,100	4,211
98001-02P Bio Fuel	0	0	4,413	0	NA	1.2	0	0	3,677	0
98002-00P Bio Fuel	2,512	1,625	7,286	2,807	NA	1.2	2,093	1,354	6,071	2,339
98003-00P Bio Fuel	3,320	4,826	3	5,711	NA	1.2	2,766	4,021	2	4,759
98005-00P Bio Fuel	2,814	1,821	0	650	NA	1.2	2,345	1,517	0	541
98010-00P Bio Fuel	581	376	0	0	NA	1.2	484	313	0	0
98012-00P Bio Fuel	0	993	0	0	NA	1.2	0	827	0	0
94-1-00P Rosboro	473	0	0	0	NA	1.2	394	0	0	0
						Total:	11,850	11,850	11,850	11,850

(a) IPTR: Inter-Pollutant Trading Ratio

ATTACHMENT B
NOx ERCS PROVIDED

The following NOx ERCs (or inter-pollutant traded VOC ERCs) have been provided to the FRAQMD to comply with the requirements of Condition V.45:

ERC Certificate	Face Value of NOx/VOC ERC Certificates Surrendered (lbs/quarter)				IPTR (a)	Offset Ratio	Value Applied to the Project NOx Emission Liability (lbs/quarter)			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4			Qtr 1	Qtr 2	Qtr 3	Qtr 4
98001-01P Bio Fuel NOx	3,798	3,282	1,528	4,245	NA	1.2	3,165	2,735	1,273	3,537
98001-02P Bio Fuel NOx	0	0	2,697	0	NA	1.2	0	0	2,247	0
98002-00P Bio Fuel NOx	2,110	1,365	5,094	2,358	NA	1.2	1,758	1,137	4,245	1,965
98002-00P Bio Fuel VOC	0	0	884	0	2.0	1.2	0	0	368	0
98003-00P Bio Fuel NOx	6,265	4,054	1,106	7,002	NA	1.2	5,220	3,378	921	5,835
98003-00P Bio Fuel VOC	4,138	0	1,313	0	2.0	1.2	1,724	0	547	0
98005-00P Bio Fuel NOx	2,364	1,529	417	2,642	NA	1.2	1,970	1,274	347	2,201
98005-00P Bio Fuel VOC	0	0	497	0	2.0	1.2	0	0	207	0
98010-00P Bio Fuel NOx	488	316	86	546	NA	1.2	406	263	71	455
98010-00P Bio Fuel VOC	0	0	103	0	2.0	1.2	0	0	42	0

ATTACHMENT B
NOx ERCS PROVIDED
(CONTINUED)

ERC Certificate	Face Value of NOx/VOC ERC Certificates Surrendered (lbs/quarter)				IPTR (a)	Offset Ratio	Value Applied to the Project NOx Emission Liability (lbs/quarter)			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4			Qtr 1	Qtr 2	Qtr 3	Qtr 4
98012-00P Bio Fuel NOx	3,249	2,103	573	3,632	NA	1.2	2,707	1,752	477	3,026
98012-00P Bio Fuel VOC	3,868	0	683	0	2.0	1.2	1,611	0	284	0
98021-00P Bio Fuel NOx	1,726	1117	305	1,929	NA	1.2	1,438	930	254	1,607
98021-00P Bio Fuel VOC	2,054	0	363	0	2.0	1.2	855	0	151	0
98022-00P Bio Fuel NOx	3,249	2,103	573	3,632	NA	1.2	2,707	1,752	477	3,026
98022-00P Bio Fuel VOC	3,868	0	683	0	2.0	1.2	1,611	0	284	0
98023-00P Bio Fuel NOx	3,249	2,103	573	3,632	NA	1.2	2,707	1,752	477	3,026
98023-00P Bio Fuel VOC	3,868	0	683	0	2.0	1.2	1,611	0	284	0
98024-00P Bio Fuel NOx	3,249	2,103	573	3,632	NA	1.2	2,707	1,752	477	3,026
98024-00P Bio Fuel VOC	3,868	0	683	0	2.0	1.2	1,611	0	284	0
98025-00P Bio Fuel NOx	3,249	2,103	573	3,632	NA	1.2	2,707	1,752	477	3,026

ATTACHMENT B
NOx ERCS PROVIDED
(CONTINUED)

ERC Certificate	Face Value of NOx/VOC ERC Certificates Surrendered (lbs/quarter)				IPTR (a)	Offset Ratio	Value Applied to the Project NOx Emission Liability (lbs/quarter)			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4			Qtr 1	Qtr 2	Qtr 3	Qtr 4
98025-00P Bio Fuel VOC	3,868	0	683	0	2.0	1.2	1,611	0	284	0
98027-00P Bio Fuel NOx	912	590	161	1,019	NA	1.2	760	491	134	849
98027-00P Bio Fuel VOC	1,085	0	192	0	2.0	1.2	452	0	80	0
98028-00P Bio Fuel NOx	1,452	940	256	1,623	NA	1.2	1,210	783	213	1,352
98028-00P Bio Fuel VOC	483	0	305	0	2.0	1.2	201	0	127	0
98-101-00P Tri Union NOx	3,334	3,371	3,408	3,408	NA	1.2	2,778	2,809	2,840	2,840
992024-00P Tri Union NOx	16,986	16,986	16,986	16,986	NA	1.2	14,155	14,155	14,155	14,155
992024-00P Tri Union VOC	0	0	261	0	2.0	1.2	0	0	108	0
95-1-00P Atlantic Oil NOx	10,955	10,955	10,955	10,955	NA	1.2	9,129	9,129	9,129	9,129
95-1-00P Atlantic Oil VOC	0	0	2,526	0	2.0	1.2	0	0	1,052	0
9902005-00P Atlantic Oil NOx	5,683	5,683	5,683	5,683	NA	1.2	4,735	4,735	4,735	4,735

ATTACHMENT B
NOx ERCS PROVIDED
(CONTINUED)

ERC Certificate	Face Value of NOx/VOC ERC Certificates Surrendered (lbs/quarter)				IPTR (a)	Offset Ratio	Value Applied to the Project NOx Emission Liability (lbs/quarter)			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4			Qtr 1	Qtr 2	Qtr 3	Qtr 4
9902005-00P Atlantic Oil VOC	0	0	53	0	2.0	1.2	0	0	22	0
9902029-00P Atlantic Oil NOx	3,648	3,648	3,648	3,648	NA	1.2	3,040	3,040	3,040	3,040
9902029-00P Atlantic Oil VOC	0	0	39	0	2.0	1.2	0	0	16	0
9902030-00P Atlantic Oil NOx	4,536	4,536	4,536	4,536	NA	1.2	3,780	3,780	3,780	3,780
9902030-00P Atlantic Oil VOC	0	0	65	0	2.0	1.2	0	0	27	0
94-1-00P Rosboro NOx	21,134	21,134	21,134	18,850	NA	1.2	17,611	17,611	17,611	15,708
94-1-00P Rosboro VOC	1,760	0	1,920	0	2.0	1.2	733	0	800	0
06-5-99-1 Tri Union Colusa APCD NOx	6,280	6,280	6,280	6,280	NA	1.2	5,233	5,233	5,233	5,233
06-5-99-1 Tri Union Colusa APCD VOC	0	0	140	0	2.0	1.2	0	0	58	0
EC-0002 Holly Sugar Glenn APCD NOx	0	0	24,000	0	NA	1.5	0	0	16,000	0

ATTACHMENT B
NO_X ERCS PROVIDED
(CONTINUED)

ERC Certificate	Face Value of NOx/VOC ERC Certificates Surrendered (lbs/quarter)				IPTR (a)	Offset Ratio	Value Applied to the Project NOx Emission Liability (lbs/quarter)			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4			Qtr 1	Qtr 2	Qtr 3	Qtr 4
EC-0058 Spreckles YSAQMD NOx	103	3,632	0	0	NA	1.5	68	2,421	0	0
EC-0059 Spreckles YSAQMD NOx	279	23,107	1,205	8,646	NA	1.5	186	15,404	803	5,764
EC-0060 Spreckles YSAQMD NOx	328	6,649	8,698	7,778	NA	1.5	218	4,432	5,798	5,185
EC-0061 Spreckles YSAQMD NOx	128	0	3,392	0	NA	1.5	85	0	2,261	0
						Total:	102,500	102,500	102,500	102,500

(a) IPTR: Inter-Pollutant Trading Ratio

ATTACHMENT C
PM_{10} ERCS PROVIDED

The following PM_{10} ERCs have been provided to the FRAQMD to comply with the requirements of Condition V.45:

ERC Certificate	Face Value of PM_{10} ERC Certificates Surrendered (lbs/quarter)				IPTR (a)	Offset Ratio	Value Applied to the Project PM_{10} Emission Liability (lbs/quarter)			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4			Qtr 1	Qtr 2	Qtr 3	Qtr 4
98001-01P Bio Fuel	5,087	5,683	3,387	5,685	NA	1.2	4,239	4,735	2,822	4,737
98001-02P Bio Fuel	0	0	5,884	0	NA	1.2	0	0	4,903	0
98002-00P Bio Fuel	2,826	1,828	10,801	3,158	NA	1.2	2,355	1,523	9,000	2,631
98003-00P Bio Fuel	8,390	5,429	1,481	9,378	NA	1.2	6,991	4,524	1234	7,815
98005-00P Bio Fuel	3,166	2,048	559	3,538	NA	1.2	2,638	1,706	465	2,948
98010-00P Bio Fuel	654	423	115	731	NA	1.2	545	352	95	609
98012-00P Bio Fuel	4,352	2,816	768	4,864	NA	1.2	3,626	2,346	640	4,053
98021-00P Bio Fuel	2,311	1,495	408	2,583	NA	1.2	1,925	1,245	340	2,152
98022-00P Bio Fuel	4,352	2,816	768	4,864	NA	1.2	3,626	2,346	640	4,053
98023-00P Bio Fuel	4,352	2,816	768	4,864	NA	1.2	3,626	2,346	640	4,053
98024-00P Bio Fuel	4,352	2,816	768	4,864	NA	1.2	3,626	2,346	640	4,053
98025-00P Bio Fuel	4,352	2,816	768	4,864	NA	1.2	3,626	2,346	640	4,053
98027-00P Bio Fuel	1,221	790	215	1,365	NA	1.2	1,017	658	179	1,137
98028-00P Bio Fuel	1,945	1,258	343	2,174	NA	1.2	1,620	1,048	285	1,811
94-1-00P Rosboro	8,058	14,638	13,561	2,484	NA	1.2	6,715	12,198	11,300	2,070

ATTACHMENT C
PM_{10} ERCS PROVIDED
(CONTINUED)

ERC Certificate	Face Value of PM_{10} ERC Certificates Surrendered (lbs/quarter)				IPTR (a)	Offset Ratio	Value Applied to the Project PM_{10} Emission Liability (lbs/quarter)			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4			Qtr 1	Qtr 2	Qtr 3	Qtr 4
06-5-99-1 Tri Union Colusa APCD	31	31	31	31	NA	1.2	25	25	25	25
EC-0060 Spreckles YSAQMD	0	9,684	18,528	0	NA	1.5	0	6,456	12,352	0
						Total:	46,200	46,200	46,200	46,200

(a) IPTR: Inter-Pollutant Trading Ratio

Appendix AQ-2
Emissions Quantification

Baseline Emissions

Pollutant	2018	2019	2020	2021	2022	2-year Average	
	TPY	TPY	TPY	TPY	TPY	TPY	Averaging Years
NOx	23.3	23.1	34.7	57.5	80.1	68.8	2021-2022
CO	31.7	27.0	43.0	49.0	39.0	46.0	2020-2021
VOC	0.9	0.6	1.8	2.9	3.1	3.0	2021-2022
SO2	1.3	1.5	2.0	4.1	5.8	4.9	2021-2022
PM10/2.5	3.9	4.7	5.9	11.9	17.0	14.5	2021-2022
GHG (CO_2e)	263190.0	292848.0	409090.0	818802.0	1154377.0	986589.5	2021-2022

Notes:

1. Baseline emissions are based on the reported annual emissions for the 2018-2022 calendar years.
2. Yearly emissions represent the sum of emissions from both (2) combustion turbine/HRSGs.
3. Criteria pollutant emissions are taken from the facility's Annual Emission Reports submitted to the FRAQMD.
4. Greenhouse Gas (GHG) emissions calculated based on a natural gas composite factor of 117.0087 lb CO2e/mmbtu and annual fuel use.
5. GHG emissions factors and GWP values from 40 CFR 98 (FR 74 No. 209, 10-30-09) Tables C-1, C-2, and A-1.

BAE and PAE Evaluation (Turbines/DBs only)

BAE

Pre-FD3X mods, each turbine rated at: 2070 mmbtu/hr Current TV Permit (FRAQMD Permit-P13005, 8-7-2018)

Cumulative Data for 2 Turbines CT+DB

	NOx	CO	SO2	VOC	PM10/2.5	CO2e	Events	Hrs/Yr
BAE 2018 TPY	23.34	31.69	1.32	0.9	3.9	263190	67	333.6
BAE 2018 lb/yr	46680	63380	2640	1800	7800	526380000		
BAE mmbtu/yr	4498631	4498631	4498631	4498631	4498631	4498631		
SUSD lb/yr	14545	54520	120	1340	255	-		
Steady State lb/yr	32135	8860	2520	460	7545	-		
SUSD mmbtu/yr	690552	690552	690552	690552	690552	690552		
Steady State mmbtu /yr	3808079	3808079	3808079	3808079	3808079	-		
Steady State lb/mmbtu	0.0084	0.0023	0.0006	0.0004	0.0017	117.01		
BAE 2019 TPY	23.1	26.99	1.45	0.6	4.7	292848	79	238.6
BAE 2019 lb/yr	46200	53980	2900	1200	9400	585696000		
BAE mmbtu/yr	5005570	5005570	5005570	5005570	5005570	5005570		
SUSD lb/yr	8650.6	42048	72.1	971.7	232.4	-		
Steady State lb/yr	37549.4	11932	2827.9	228.3	9167.6			
SUSD mmbtu/yr	493902	493902	493902	493902	493902	-		
Steady State mmbtu /yr	4511668	4511668	4511668	4511668	4511668	-		
Steady State lb/mmbtu	0.0083	0.003	0.0006	0.0002	0.0019	117.01		
BAE 2020 TPY	34.71	42.95	2.03	1.8	5.9	409090	227	305.2
BAE 2020 lb/yr	69420	85900	4060	3600	11800	818180000		
BAE mmbtu/yr	6992476	6992476	6992476	6992476	6992476	6992476		
SUSD lb/yr	18621.3	76044.5	164	2292.5	475.8	-		
Steady State lb/yr	50798.7	9855.5	3896	1307.5	11324.2	-		
SUSD mmbtu/yr	631764	631764	631764	631764	631764	-		
Steady State mmbtu /yr	6360712	6360712	6360712	6360712	6360712	-		
Steady State lb/mmbtu	0.0080	0.0015	0.0006	0.0005	0.0017	117.01		
BAE 2021 TPY	57.47	49.02	4.08	2.9	11.9	818802	489	444.5
BAE 2021 lb/yr	114940	98040	8160	5800	23800	1637604000		
BAE mmbtu/yr	13995568	13995568	13995568	13995568	13995568	13995568		
SUSD lb/yr	23330.9	85134.1	240.2	3390.7	628.2	-		
Steady State lb/yr	91609.1	12905.9	7919.8	2409.3	23171.8	-		
SUSD mmbtu/yr	920115	920115	920115	920115	920115	-		
Steady State mmbtu /yr	13075453	13075453	13075453	13075453	13075453	-		
Steady State lb/mmbtu	0.0070	0.0010	0.0006	0.0004	0.0017	117.01		
BAE 2022 TPY	80.1	39	5.8	3.1	17	1154377	688	407.2
BAE 2022 lb/yr	160200	78000	11600	6200	34000	2308754000		
BAE mmbtu/yr	19731477	19731477	19731477	19731477	19731477	19731477		
SUSD lb/yr	22641.4	61841.1	202.5	2922.7	518	-		
Steady State lb/yr	137558.6	16158.9	11397.5	3277.3	33482	-		
SUSD mmbtu/yr	842904	842904	842904	842904	842904	-		
Steady State mmbtu /yr	18888573	18888573	18888573	18888573	18888573	-		
Steady State lb/mmbtu	0.0073	0.0009	0.0006	0.0003	0.0017	117.01		

BAE Emissions Factors based on the 2 yrs chosen per pollutant.			
	Period	**EF**	
NOx	2021-22	0.00714	lb/mmbtu
CO	2020-21	0.00127	lb/mmbtu
SO2	2021-22	0.00059	lb/mmbtu
PM2.5/2.5	2021-22	0.00171	lb/mmbtu
GHG	2021-22	117.01	lb/mmbtu
VOC	2021-22	0.000364	lb/mmbtu

SUSD data, i.e., emissions, # of events, and hours derived from CEMS data.
BAE emissons derived from the annual emissions reports and CEMS data.
BAE fuel data derived from DAHS fuel meter data and gas analysis data.

			PAE			
2026 PAE						
Assumptions:						
GT Post-no change in heat rate:	2070	mmbtu/hr per turbine				
# Turbines:	2					
Projected Annual Hrs:	14892	Cumulative total for 2 turbines				
Projected annual fuel:	30,151,200	mmbtu/yr for 2 turbines		at 85% capacity		
	NOx	**CO**	**VOC**	**SO2**	**PM10/2.5**	**GHG***
	TPY	**TPY**	**TPY**	**TPY**	TPY	TPY
PAE	107.7	19.1	5.5	8.8	25.8	1763976.8
PAE SUSD	8.8	28.6	0.1	1.3	0.2	
PAE CCS VOC Slip			11.46			
Total PAE	116.5	47.8	17.0	10.1	26.0	88198.8
BAE	68.785	45.99	3.00	4.94	14.45	986589.5

Unused Capacity

Year	Parameter[1]	Plant
2020	Capacity Factor[3]	18.9%
	Potential Capacity[4]	73.7%
	Unused Capacity	54.8%
2021	Capacity Factor[3]	38.7%
	Potential Capacity[4]	72.6%
	Unused Capacity	33.9%
Average	Capacity Factor[3]	28.8%
	Potential Capacity[4]	73.2%
	Unused Capacity	44.3%

Year	Parameter[1]	Plant
2021	Capacity Factor[3]	38.7%
	Potential Capacity[4]	72.6%
	Unused Capacity	33.9%
2022	Capacity Factor[3]	55.5%
	Potential Capacity[4]	90.3%
	Unused Capacity	34.9%
Average	Capacity Factor[3]	47.1%
	Potential Capacity[4]	81.5%
	Unused Capacity	34.4%

Pollutant	Baseline Emissions[2]	Potential Emissions	Unused Capacity Emissions
	tons/yr	tons/yr	tons/yr
CO	45.99	116.78	70.79
SO_x	4.94	8.55	3.61
NO_x	68.79	119.00	50.22
PM10/PM2.5	14.45	25.00	10.55
VOC	2.98	5.15	2.17
GHG (CO2e)	986,589.50	1,706,833	720,244

Notes:

1. Capacity Factors and Potential Capacity obtained from plant data.
2. Baseline emissions are based on the two year average annual emissions
3. The capacity factor is the amount of time the unit actually operated during the given period, and is dependent on market demand.
4. Potential capacity represents the amount of time that the unit could have operated if there were sufficient demand. This excludes unit downtime, and therefore is less than 100%.

Actual to Projected Actual Emissions Summary

Pollutant	BAE[1]	PAE[2]	Increase	PSD/NSR Significant	Over PSD/NSR Threshold?	Comments
	TPY	tpy	tons/yr	tons/year		
CO	46.0	47.8	1.78	100	No	Below threshold, no further analysis
SO_x	4.9	10.1	5.16	40	No	Below threshold, no further analysis
NO_x	68.8	116.5	47.71	40	Yes	Below threshold, no further analysis
PM10	14.5	26.0	11.59	15	No	Below threshold, no further analysis
PM2.5	14.5	26.0	11.59	10	Yes	Below threshold, no further analysis
VOC	3.0	17.0	14.07	40	No	Below threshold, no further analysis
GHG (CO_2e)	986,590	88,199	-898,391	75,000	No	Below threshold, no further analysis

Factoring in Unused Capacity Emissions[4]

Pollutant	Unused Capacity[5]	Adjusted Baseline Emissions	New Projected Actual Emissions	Increase	Over PSD Threshold?	Comments
	tons/yr	tons/yr	tons/yr	tons/yr		
CO	70.79	46.0	-23.03	-69.02	No	If unused capacity is added to baseline, the increase is below PSD thresholds
SOx	3.61	4.9	6.50	1.56	No	If unused capacity is added to baseline, the increase is below PSD thresholds
NOx	50.22	68.8	66.28	-2.51	No	If unused capacity is added to baseline, the increase is below PSD thresholds
PM10	10.55	14.5	15.49	1.04	No	If unused capacity is added to baseline, the increase is below PSD thresholds
PM2.5	10.55	14.5	15.49	1.04	No	If unused capacity is added to baseline, the increase is below PSD thresholds
VOC	2.17	3.0	14.87	11.90	Yes	If unused capacity is added to baseline, the increase is below PSD thresholds
GHG (CO_2e)	720,244	986,590	-632,045.02	-1,618,635	No	If unused capacity is added to baseline, the increase is below PSD thresholds

Notes:

1. Baseline emissions are based on the 2 year average annual emissions in Table 1
2. Projected actuals are based on Ventx expected business activity for the next five years which assumes 85% capacity
3. PSD significant emission rates per 40 CFR 52.21(b)(23)(i), except for GHG which is per Step 2 of the vacated GHG Tailoring Rule.

Table AQ-1-2 SEC ION Process Emissions Estimates

FRAQMD STP	1 ATM	60 F	
ft3/lb-mol	379.46	379460000	
Ops Schedule, hr/day	24		
Ops Schedule, hr/yr	8760		
	All data represents preliminary design values.		
Process Release Stream	**1103**	**2103**	
NH3, ppm	0.1	0.1	MW = 17
VOC, ppm	0.6	0.6	MW = 16 (as CH4)
Acetaldehyde, ppm	0.05	0.05	MW = 44.05
Formaldehyde, ppm	0.25	0.25	MW = 30.03
mmscf/hr	51.7	51.7	
scf/hr (Ion stack outlet)	51700000	51700000	Inflow from each turbine ~= 54.6 mmscf/hr (at stack conditions)
Emissions Estimates			
NH3, lbs/hr	0.232	0.232	
NH3, lbs/yr	2029.0	2029.0	
NH3, tpy	1.01	1.01	
	Total, tpy	*2.03*	(ammonia is not a HAP)
VOC, lbs/hr	1.308	1.308	
VOC, lbs/yr	11457.8	11457.8	
VOC, tpy	5.73	5.73	
	Total, tpy	*11.46*	(incl's Formaldehyde and Acetaldehyde
Acetaldehyde, lbs/hr	0.300	0.300	
Acetaldehyde, lbs/yr	2628.7	2628.7	
Acetaldehyde, tpy	1.31	1.31	Federal HAP
	Total, tpy	*2.63*	
Formaldehyde, lbs/hr	1.023	1.023	
Formaldehyde, lbs/yr	8960.3	8960.3	
Formaldehyde, tpy	4.48	4.48	Federal HAP
	Total VOC, tpy	*11.46*	(incl's Formaldehyde and Acetaldehyde
	Total HAPs, tpy	*7.11*	

CO2 PTE Estimates (EPA Acid Rain Default Factor)

Max SEC mmbtu/yr	35144400	Condition V. 10, T5 Permit P13005
CO2 EF, lbs/mmbtu	118.23	Acid Rain Default Factor
CO2 PTE, tpy	2077561	Current Permit Limit = 2055559 tpy
ION Process Capture %	95	
	0.95	
Estimated CO2 Reduction, tpy	1973683	

Actual annual CO2 reductions will depend upon dispatch, fuel use, hours, load, etc.

CO2 PTE Reduction Estimates based on the Current PTO Limit

Current CO2 PTO limit, tpy:	2055559		Current Permit Limit = 2055559 tpy
ION Process Capture Fraction	0.95		
Estimated CO2 Reduction, tpy	1952781		
Assumed District CO2 EF:	116.978	lbs/mmbtu	

Actual annual CO2 reductions will depend upon dispatch, fuel use, hours, load, etc.

Table AQ-1-3 Pre and Post-Modification Turbine HAP Emissions

Calculation of Hazardous and Toxic Pollutant Potential Emissions from Combustion Turbines

# of Units:	2
Fuel HHV:	1033 btu/scf
Mult Factor:	1.033

Pollutant	EF Source	Uncontrolled Emission Factor, lb/MMscf	CO Catalyst Control Multiplier	Single Turbine Maximum Hourly Emissions, lb/hr	Single Turbine Maximum Daily Emissions, lb/day	Single Turbine Annual Emissions, lb/yr	All Turbines Maximum Hourly Emissions, lb/hr	All Turbines Maximum Daily Emissions, lb/day	All Turbines Annual Emissions, lb/yr	All Turbines Annual Emissions, tons/yr	Federal HAP
Acetaldehyde	EPA	0.04540	2.00E-01	0.0188	0.4367	154.4584	0.0376	0.8734	308.9169	0.1545	Yes
Acrolein	EPA	0.00848	2.00E-01	0.0035	0.0816	28.8504	0.0070	0.1631	57.7008	0.0289	Yes
Ammonia		(3)		25.0000	600.00	219000.00	50.0000	1200.00	438000.00	219.00	No
Benzene	EPA	0.10500	2.00E-01	0.0435	1.0100	357.2276	0.0869	2.0199	714.4553	0.3572	Yes
1,3-Butadiene	EPA	0.00044	2.00E-01	0.0002	0.0042	1.4901	0.0004	0.0084	2.9803	0.0015	Yes
Ethylbenzene	EPA	0.02630	2.00E-01	0.0109	0.2530	89.4770	0.0218	0.5059	178.9540	0.0895	Yes
Formaldehyde	SJVAPCD	0.71000	2.00E-01	0.2939	6.8293	2415.5393	0.5879	13.6586	4831.0786	2.4155	Yes
Hexane	CATEF	0.25900	2.00E-01	0.1072	2.4912	881.1615	0.2145	4.9825	1762.3230	0.8812	Yes
Naphthalene	EPA	0.00140	2.00E-01	0.0006	0.0135	4.7630	0.0012	0.0269	9.5261	0.0048	Yes
PAHs as (BaP)	EPA	0.00230	2.00E-01	0.0010	0.0221	7.8250	0.0019	0.0442	15.6500	0.0078	Yes
Propylene oxide	EPA	0.00292	2.00E-01	0.0012	0.0281	9.9343	0.0024	0.0562	19.8687	0.0099	Yes
Toluene	EPA	0.09560	2.00E-01	0.0396	0.9195	325.2473	0.0792	1.8391	650.4945	0.3252	Yes
Xylene	EPA	0.05590	2.00E-01	0.0231	0.5377	190.1812	0.0463	1.0754	380.3624	0.1902	Yes
*		0.00000	0.00E+00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
*		0.00000	0.00E+00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
*		0.00000	0.00E+00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
*		0.00000	0.00E+00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
*		0.00000	0.00E+00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
*		0.00000	0.00E+00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
*		0.00000	0.00E+00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
*		0.00000	0.00E+00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
*		0.00000	0.00E+00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
*		0.00000	0.00E+00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
*		0.00000	0.00E+00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
				0							
								Federal HAPs, tons/yr:		4.47	

Notes:

(1) EPA AP-42, Section 3.1 Background Document, Table 3.4-1 All Loads, 4/2000.
CARB CATEF, and SJVAPCD Toxics Profile #162, 3/2017 (@1000 btu/scf).
* Ref: AP-42, Section 3.1, April 2000, subsection 3.1.4.3, Catalytic Reduction Systems.

(2) Based on maximum hourly turbine/DB fuel use: (Permit limit data, 100% load)	2.0039E+00	mmscf/hr
Based on a maximum daily turbine/DB fuel use: (Permit limit data, 100% load)	4.8094E+01	mmscf/day
Based on maximum annual turbine/DB fuel use:	2.0039	mmscf/hr (permit limit data)
(Permit limit data, 100% load)	1.7011E+04	mmscf/yr (permit limit data)

(3) Permit limit at 10 ppmvd at 15% O2
(4) Actual ammonia slip emissions are <=15 lbs/hr. (2022 Source Tests)
(5) Gas HHV from 2022 Source Tests

CO Catalyst HAP Control Efficiencies*

	Control Frac.	Multiplier
Organic HAPs	0.80	0.20

Each Turbine	24.0	Max hrs/day
Each Turbine	8760.0	Max Hrs/yr

Heat Rate data based upon current T5 permit equipment ratings (Condition V.10).

Appendix AQ-3
Turbine Upgrade Support Data

Appendix AQ-4
Decarbonization System Design and Performance Data

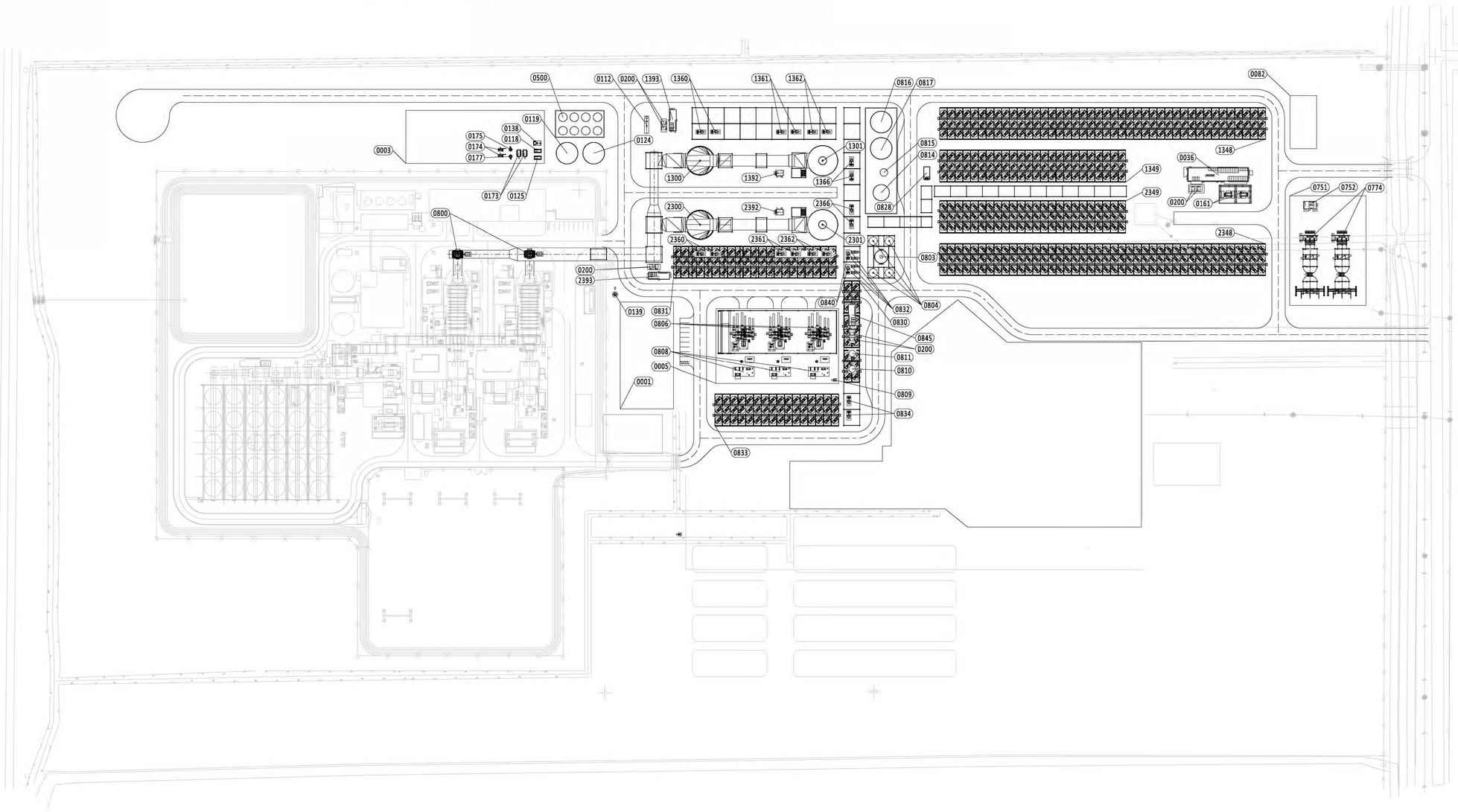
Figure AQ-4-1

Next page

LEGEND:

0001	ADMIN/CONTROL/WAREHOUSE BUILDING
0003	WATER TREATMENT BUILDING
0005	CO2 COMPRESSOR/DEHYDRATION BUILDING
0036	MEDIUM VOLTAGE ELECTRICAL ENCLOSURE
0082	COMPRESSED CO2 METERING/PIGGING YARD
0112	OIL/WATER SEPARATOR
0118	DEMINERALIZED WATER PUMP SKID
0119	DEMINERALIZED WATER STORAGE TANK
0124	SERVICE WATER STORAGE TANK
0125	SERVICE WATER PUMP SKID
0138	POTABLE WATER TEMPERING SKID
0139	SANITARY LIFT STATION
0161	AUXILIARY TRANSFORMER
0173	INSTRUMENT AIR COMPRESSOR
0174	DESICCANT AIR DRYER
0175	DRY AIR RECEIVER
0177	WET AIR RECEIVER
0200	TRANSFORMERS
0500	WATER TREATMENT CHEMICAL TANKS
0751	15kV SWITCHYARD
0752	15kV SWITCHYARD CONTROL ENCLOSURE
0774	15kV TRANSFORMERS
0800	FLUE GAS BLOWER
0803	STRIPPER
0804	REBOILER
0806	CO2 COMPRESSOR
0808	CO2 DEHYDRATION UNIT
0809	TEG MAKE-UP PUMP
0810	TEG STORAGE TANK
0811	TEG WASTEWATER STORAGE TANK
0814	UPPER WATER WASH SURGE TANK
0815	SOLVENT MAKE-UP TANK
0816	MAINTENANCE TANK
0817	WASHDOWN TANK
0828	SOLVENT WASTEWATER DRAINS SUMP
0830	OHD AIR COOLED HEAT EXCHANGER
0831	SOLVENT TRIM AIR COOLED HEAT EXCHANGER
0832	LEAN-RICH HEAT EXCHANGER
0833	CO2 COMPRESSOR AIR COOLED HEAT EXCHANGER
0834	CO2 COMPRESSOR COOLING WATER PUMP
0840	CONDENSATE RETURN PUMP
0845	ELECTRICAL ENCLOSURE
1300	DIRECT CONTACT COOLER
1301	CO2 ABSORBER
1348	DCC AIR COOLED HEAT EXCHANGER
1349	UWW AIR COOLED HEAT EXCHANGER
1360	DCC COOLING WATER PUMP
1361	LOWER WATER WASH PUMP
1362	RICH SOLUTION PUMP
1366	UPPER WATER WASH PUMP
1392	ABSORBER CEMS ENCLOSURE
1393	CCU ELECTRICAL ENCLOSURE
2300	DIRECT CONTACT COOLER
2301	CO2 ABSORBER
2348	DCC AIR COOLED HEAT EXCHANGER
2349	UWW AIR COOLED HEAT EXCHANGER
2360	DCC COOLING WATER PUMP
2361	LOWER WATER WASH PUMP
2362	RICH SOLUTION PUMP
2366	UPPER WATER WASH PUMP
2392	ABSORBER CEMS ENCLOSURE
2393	CCU ELECTRICAL ENCLOSURE

Figure AQ-4-1



100 0 100 200
SCALE IN FEET
SCALE: 1" = 100'-0"

PLANT NORTH

STATE PLANE COORDINATES NOTE:

TO CONVERT PROJECT COORDINATES TO CALIFORNIA ZONE 2 STATE PLANE COORDINATES, ROTATE PROJECT BEARINGS COUNTER CLOCKWISE 0°4'43" AND TRANSLATE THE NORTHEAST PROPERTY CORNER (PROJECT COORDINATES N. 5,000 E. 4,900) TO N. 2,145,951.92 E. 6,649,743.03.

- PRELIMINARY -
NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DRAWN	CHECKED	ENGINEER	PROJECT ENGINEER	PROJECT MANAGER
A	03-15-2023	ISSUED FOR REVIEW	AJS	SKS	SLH	SLH	JAJ

DRAWN BY	DATE
A. SPIER	03-15-2023
CHECKED BY	DATE
S. SUNBY	03-15-2023
ENGINEER	DATE
S. HERBERT	03-15-2023
PROJECT ENGINEER	DATE
S. HERBERT	03-15-2023
PROJECT MANAGER	DATE
J. JURGENSMEYER	03-15-2023

PROFESSIONAL ENGINEER STAMP

Kiewit

CALPINE®

Sutter Energy Center
Yuba City, CA

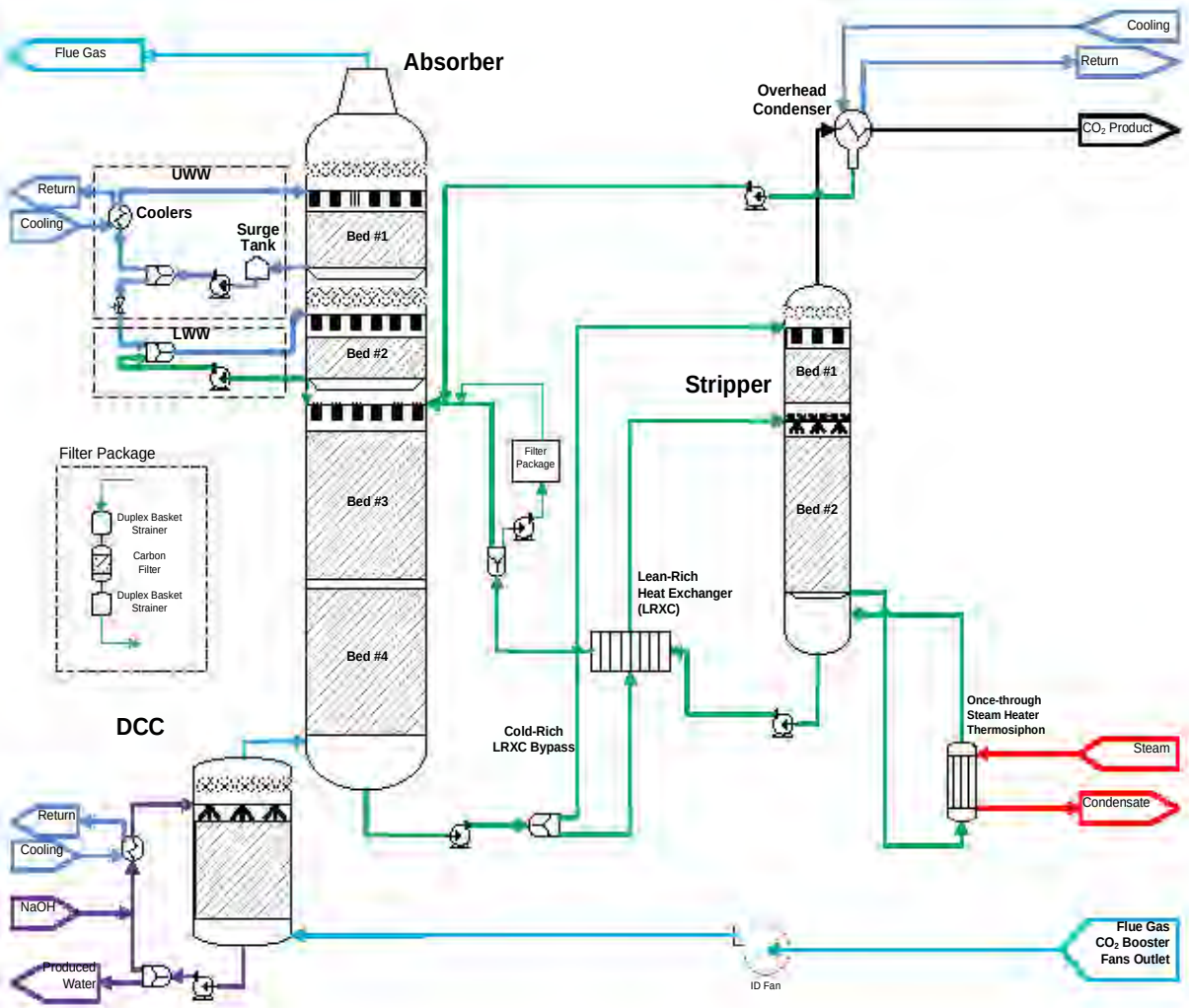
PLOT PLAN

SCALE	SHEET NO.	REVISION
1" = 100'	01	A

DWG. NO. ST-GNL-DE-G01-0001

Figure AQ-4-2

Preliminary SDP Process Flow Diagram (per Turbine CCS System)



Appendix AQ-5
FRAQMD Permit Application Forms

Feather River Air Quality Management District

Application for Authority to Construct / Permit to Operate

Cover Form – all applications

Serving Sutter and Yuba Counties

541 Washington Avenue
Yuba City, CA 95991
(530) 634-7659
FAX (530) 634-7660
www.fraqmd.org

Christopher D. Brown AICP
Air Pollution Control Officer

Filing Fee $156 (non-refundable and to be submitted with this application)

Additional fees will be assessed pursuant to District Rule 7.7 at an hourly rate to cover costs of assessment, processing, and evaluation of the application. Inspections of the site and Hearing Board costs are additional. These fees do not include State costs incurred pursuant to Section 44380 of the California Health and Safety Code. Fees are subject to change. If you store blank forms, please check with the District for updated information before filing.

DIRECTIONS: Please provide all information requested in this application. Fill in the information exactly as you would like it to appear on the permit (including punctuation, capitalization, and abbreviations). If applicable, please complete the associated supplemental form for each piece of equipment or process and attach it to this application. If there is no supplemental form, please describe your project and attach extra pages, as necessary. **Incomplete applications will delay processing**. Construction must not be started until the Authority to Construct has been issued.

SECTION I COMPANY / OWNERSHIP INFORMATION

FRAQMD PERMIT # (if existing):	P13005				
COMPANY NAME (as it will appear on the permit):	CCFC Sutter Energy, LLC				
COMPANY CONTACT:	Andrew Gundershaug	TITLE:	General Plant Manager		
PHONE:	530-821-2072	FAX:		E-MAIL:	agundershaug@calpine.com

SECTION II FACILITY INFORMATION

FACILITY NAME (if different than Company Name):	Calpine Sutter Energy Center				
FACILITY LOCATION / ADDRESS:	5029 South Township Road				
CITY:	Yuba City	STATE:	CA	ZIP CODE:	95993
ON-SITE CONTACT:	Andrew Gundershaug	TITLE:	General Plant Manager		
PHONE:	530-821-2072	FAX:		E-MAIL:	agundershaug@calpine.com

SECTION III PERMIT TO OPERATE MAILING / BILLING INFORMATION

NOTE: THIS IS WHERE ALL ANNUAL RENEWAL INVOICES AND PERMIT RENEWALS WILL BE MAILED TO					
MAILING NAME:	Calpine Sutter Energy Center				
MAILING ADDRESS:	5029 South Township Road				
CITY:	Yuba City	STATE:	CA	ZIP CODE:	95993
MAILING CONTACT:	Andrew Gundershaug	TITLE:	General Plant Manager		
PHONE:	530-821-2072	FAX:		E-MAIL:	agundershaug@calpine.com

SECTION IV CONTRACTOR INFORMATION (for Authority to Construct Permits)

COMPANY NAME:	N/A				
MAILING ADDRESS:					
CITY:		STATE:		ZIP CODE:	
MAILING CONTACT:		TITLE:			
PHONE:		FAX:		E-MAIL:	
IS THE CONTRACTOR ACCEPTING BILLING FOR THE AUTHORITY TO CONSTRUCT INVOICES?			☐ Yes	☑ No	

FOR FRAQMD USE ONLY

RECEIPT #: _____ DATE: _____ RECEIVED BY: _____ FACILITY ID: _____ A/C#: _____

Application for Authority to Construct / Permit to Operate – Cover Form

SECTION V CONSTRUCTION SCHEDULE & SCOPE OF WORK

ESTIMATED START DATE:	TBD	ESTIMATED COMPLETION DATE:	TBD

OR

IF THE EQUIPMENT HAS ALREADY BEEN INSTALLED, ENTER THE DATE INSTALLED:	N/A

DESCRIBE THE SCOPE OF THE WORK TO BE PERFORMED AND LIST EQUIPMENT TO BE CONSTRUCTED, MODIFIED, OR PUT UNDER PERMIT. ATTACH FEATHER RIVER AQMD SUPPLEMENTAL FORM(S) AND SUPPORTING DOCUMENTATION AS NECESSARY. THE DISTRICT RESERVES THE RIGHT TO REQUEST ADDITIONAL INFORMATION IF NEEDED.

Construction and operation of the ION Carbon Capture and Sequestration System.
Unit 1 and Unit 2 Turbine upgrade modifications as described in the attached documents.

SECTION VI CONFIDENTIAL INFORMATION

All information submitted to obtain an Authority to Construct/Permit to Operate is considered public information as defined by California Government Code section 6254.7 unless specifically marked as a trade secret by the applicant. Each document containing trade secrets must be separated from all non-privileged documents. Each document, which is claimed to contain trade secrets, must indicate each section or paragraph that contains trade secret information and must have attached a declaration stating with specificity the reason this document contains trade secret information. All emission data is subject to disclosure regardless of any claim of trade secret.

Acknowledgement [AG] (Please Initial) Are Trade Secret documents included with this application? ☐ Y ☑ N

SECTION VII NEAREST SCHOOL

If the emission source is within 1,000 feet of a school site and the application will result in an increase in hazardous air emissions, a public notice will be required at the expense of the applicant. (CH&S 42301.6)

"School" means any public or private school used for purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in private homes. (CH&S 42301.9(a))

Pursuant to 42301.6(f) of the California Health and Safety Code, I hereby certify that the emission source(s) in this permit application:

(Initial appropriate box)

[ ] **Is within 1,000 feet of the outer boundary of a school.**

[X] **Is not within 1,000 feet of the outer boundary of a school.**

NEAREST SCHOOL AND DISTANCE (IN FEET) NAME: Barry Elem. School / 19000 / FEET

SECTION VIII APPLICANT CERTIFICATION STATEMENT

Applicant agrees to defend (with legal counsel reasonably acceptable to FRAQMD), indemnify and hold harmless FRAQMD, its officers, employees, and agents, from and against any and all claims, losses, costs, damages, injuries (including injury to or death), expenses and liabilities of every kind, nature and description (including incidental and consequential damages, court costs, attorneys' fees, litigation expenses and fees of expert consultants or expert witnesses incurred in the connection therewith and costs of investigation) that arise out of, pertain to, or relate to, directly or indirectly, in whole or in part, this permit and/or the application or issuance thereof. To the extent that FRAQMD is required to use any of its resources to respond to such claim, action, or proceeding, Applicant will reimburse FRAQMD upon demand and upon presentation of an invoice describing the work done, the time spent on such work, and the hourly rate for such work by the employee or agent of FRAQMD.

I certify under penalty of perjury under the laws of the State of California, based on information and belief formed after reasonable inquiry, that the information contained in this application, composed of the forms and attachments, is true, accurate, and complete, and that I am the responsible official.

RESPONSIBLE OFFICIAL OR AUTHORIZED AGENT SIGNATURE: Andy Gundershaug

NAME (PRINTED): Andrew Gundershaug TITLE: General Plant Manager DATE: 5/18/2023