From: Forsythe, William
To: Bradley, Joanne
Cc: Curiel, Mihaela; Kott, Bob; Ulmer, Andrew; Garner, Matt; Wallace, Petra; Joel Ledesma - DWR (joel.ledesma@water.ca.gov)
Subject: [EXTERNAL] RE: CAISO/DOE Data Request - Roseville Energy Park
Date: Monday, November 22, 2021 7:36:48 PM
Attachments: image003.png
image004.jpg
GE TM2500 Initial CT Run Times and Emission Calcs ROSE FINAL.xlsx

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Joanne,
See Roseville's response below. Please let us know if you need any additional information. The attached spreadsheet summarizes the commissioning activities of the units.
Bill

From: Bradley, Joanne
Sent: Wednesday, November 3, 2021 11:33 AM
To: 'WForsythe@roseville.ca.us' <WForsythe@roseville.ca.us>
Cc: 'MCuriel@roseville.ca.us' <MCuriel@roseville.ca.us>; Kott, Bob <RKott@caiso.com>; Ulmer, Andrew <aulmer@caiso.com>
Subject: CAISO/DOE Data Request - Roseville Energy Park
Importance: High

Dear Bill:

The U.S. Department of Energy has directed the CAISO to report specific information in connection with DOE's September 10, 2021 emergency order under Federal Power Act Section 202(c), which applied to the units at the Roseville Energy Park (hereinafter the Covered Resource). The CAISO is working to submit a report with responsive information no later than December 1, 2021. We are coordinating this reporting effort with the California Energy Commission and California Air Resource Board. We request that you provide the following information no later than November 23, 2021.

For each date from September 10, 2021 up to and including November 9, 2021, on which the Covered Resource operated, please provide for each Covered Resource unit,

(1) The hours of operation, as well as the hours in which any permit limit was exceeded; and

The Covered Resources were directed by CAISO for commissioning only. There are no hours of Operation as described in the DOE Waiver. No permit limits were exceeded.

(2) A description of each permit term that was exceeded and the manner in which such exceedance occurred. If none, please so state.

None.

Please also include the following information in an Excel spreadsheet for each date from September 10, 2021 up to and including November 9, 2021 for each Covered Resource unit:

- Actual emissions data in pounds per hour for each Covered Resource unit, for each hour of operations, for CO, NOx, PM2.5, PM10, volatile organic compounds (VOC), and SO2;

  N/A
- For each category of emissions, please provide permitted operating/emission limits.

  N/A
- For each category of emissions, any actual incremental emissions above the permit limits, (if units are not equipped with continuous emission monitoring systems, please calculate actual emissions using source test data);

  N/A
- Stack parameters for each Covered Resource unit: stack height, exit diameter, exit gas temperature, and exit velocity (or volumetric flow rate). Temperature and velocity should reflect values applicable to operations above permit limits;

- The hours that each Covered Resource unit operated in excess of permit limits or operated without otherwise-required permits.

  N/A

Please let me know if you have any immediate questions. I will follow-up on November 9 to ensure you do not have any outstanding questions and again on November 16 to ensure you can provide the requested data on or before November 23.

Thank you in advance for your attention and response to this request.

Joanne Bradley (JB)
Account Manager

jbradley@caiso.com
916-847-9386
250 Outcropping Way, Folsom, CA 95630

Units Hours

	Commissioning Hours	Operating Hours *(CAISO Directed for Grid Emergency)*
CT5	43.7	0
CT6	13.1	0

Note: Placer County permits allow 160 hours of commissioning hours for each unit

Emissions

	NOx (lbs)	CO (lbs)	VOC (lbs)	PM10 (lbs)	SO2 (lbs)
CT5	1,206.0	3,018.5	379.9	174.7	1.4
CT6	354.4	783.6	113.8	52.3	0.4
Roseville Energy Park Q3 2021 Emis	9,598.4	3,347.0	3,443.1	2,114.2	1,031.6
Site Total Q3 Emissions	11,158.9	7,149.1	3,936.9	2,341.2	1,033.5
Q3 Permit Allowance	17,646.0	28,515.0	6,672.0	19,168.0	3,709.0

Note: Placer County permit emission limts are aggregated and include REP, CT5, and CT6.

Exhaust Stack Dimensions

Stack height	26.1	ft
Exit dimensions (rectangular)	8.1 x 11.6	ft
Exit gas temperature	1045	F
Exit velocity (volumetric flow rate)	99.74	kg/s

CT5 = North Unit
CT6 = South Unit

CT 5 and CT6 Run Times (based on breaker opening/closing)

	CT5 Close	CT5 Open	Total (HH:MM)	Total (hours)
9/15/2021	--	--	0	0.00
9/15/2021	23:13	0:00	0:47	0.78
9/16/2021	0:00	1:16	1:16	1.27
9/16/2021	15:36	15:57	0:21	0.35
9/17/2021	3:53	6:28	2:35	2.58
9/17/2021	13:48	14:19	0:31	0.52
9/17/2021	14:32	15:58	1:26	1.43
9/18/2021	3:24	12:11	8:47	8.78
9/19/2021	5:53	15:35	9:42	9.70
9/20/2021	2:57	9:09	6:12	6.20
9/21/2021	7:55	15:56	8:01	8.02
9/22/2021	--	--	0	0.00
			39:38:00	**39.63**
Starts			9	
Shutdowns			9	

	CT6 Close	CT6 Open	Total (HH:MM)	Total (hours)
9/15/2021	--	--	0	0.00
9/16/2021	15:06	15:34	0:28	0.47
9/17/2021	3:00	3:33	0:33	0.55
9/17/2021	3:53	4:34	0:41	0.68
9/17/2021	4:51	5:01	0:10	0.17
9/17/2021	14:10	14:59	0:49	0.82
9/20/2021	9:12	10:52	1:40	1.67
9/22/2021	7:58	15:06	7:08	7.13
			11:29:00	**11.48**
Starts			7	
Shutdowns			7	

CT 5 and CT6 Run Times (DWR Inspector Observed)

	CT5 Start	CT5 Stop	Total (HH:MM)	Total (hours)
9/15/2021	12:00	13:30	1:30	1.50
9/15/2021	21:15	0:00	2:45	2.75
9/16/2021	0:00	1:15	1:15	1.25
9/16/2021	15:40	16:00	0:20	0.33
9/17/2021	3:50	6:30	2:40	2.67
9/17/2021	13:45	14:20	0:35	0.58
9/17/2021	14:30	16:00	1:30	1.50
9/18/2021	3:30	12:30	9:00	9.00
9/19/2021	5:50	15:30	9:40	9.67
9/20/2021	3:00	9:10	6:10	6.17
9/21/2021	8:00	16:00	8:00	8.00
9/22/2021	7:00	7:15	0:15	0.25
			43:40:00	**43.67**
Starts			11	
Shutdowns			11	

	CT6 Start	CT6 Stop	Total (HH:MM)	Total (hours)
9/15/2021	14:30	16:00	1:30	1.50
9/16/2021	15:00	15:30	0:30	0.50
9/17/2021	3:00	3:30	0:30	0.50
9/17/2021	3:50	4:30	0:40	0.67
9/17/2021	4:50	5:00	0:10	0.17
9/17/2021	14:00	15:00	1:00	1.00
9/20/2021	9:15	11:00	1:45	1.75
9/22/2021	8:00	15:00	7:00	7.00
			13:05:00	**13.08**
Starts			8	
Shutdowns			8	

Testing Step Hours

	A	B	C	D	Total Hour	Δ	Testing Notes:
9/15/2021	1.50	-	-	-	1.50	-	Started but gas pressure skid settings needed to be adjusted shut down
9/15/2021	-	2.00	0.75	-	2.75	0.00	Started; synced to grid near midnight, shutdown due to water leak
9/16/2021	-	-	1.25	-	1.25	-	Troubleshooting DeMin Water Injection leak
9/16/2021	-	-	0.33	-	0.33	(0.00)	Troubleshooting DeMin Water Injection leak
9/17/2021	-	-	2.67	-	2.67	0.00	Troubleshooting AVR
9/17/2021	-	-	0.58	-	0.58	(0.00)	Troubleshooting AVR
9/17/2021	-	-	1.50	-	1.50	-	Troubleshooting AVR
9/18/2021	-	-	9.00	-	9.00	-	Water Ratio setup
9/19/2021	-	-	-	9.67	9.67	0.00	Performance and Emissions testing bad emissions instruments
9/20/2021	-	-	-	6.17	6.17	0.00	Performance and Emissions testing; data got corrupted
9/21/2021	-	-	-	8.00	8.00	-	Performance and Emissions testing
9/22/2021	-	0.25	-	-	0.25	0.00	Start up check
	1.50	2.25	16.08	23.84	43.67	0.00	

	A	B	C	D	Total Hour	Δ	
9/15/2021	1.50	-	-	-	1.50	-	Started but gas pressure skid settings needed to be adjusted shut down
9/16/2021	-	0.50	-	-	0.50	(0.00)	Sync Check troubleshooting
9/17/2021	-	-	0.50	-	0.50	-	Troubleshooting DeMin Water Injection leak
9/17/2021	-	-	0.67	-	0.67	0.00	
9/17/2021	-	-	0.17	-	0.17	0.00	
9/17/2021	-	-	1.00	-	1.00	-	Troubleshooting DeMin Water Injection leak
9/20/2021	-	-	-	1.75	1.75	-	Performance and Emissions testing
9/22/2021	-	-	-	7.00	7.00	(0.00)	Performance and Emissions testing
	1.50	0.50	2.34	8.75	13.09	0.01	

Run Steps

A	Full Speed No load and first fire
B	Fire unit: perform sync checks, no unit load
C	Sync to Grid: Setup up power, tune AVR, Tune Water injection
D	Performance Test & Emissions Testing

CT5 Commissioning Hours	43.67
CT5 Permit Allowable Commissioning Hours	160
Permit Excedence	**No**

CT6 Commissioning Hours	13.08
CT6 Permit Allowable Commissioning Hours	160
Permit Excedence	**No**

Assumptions

1. Normal Startup is 10 min startup per Policy Paper # 157 - Figure 3. Normal Shutdown is 9 min. The Estimated Emissions for each Startup and Shut Down event are as follows:

Emission Rates

Parameter	Start	Shut Down	Sum
NOx lbs/event	3.1	3.4	6.5
CO lbs/event	19.4	21.6	41
Duration, min	10	9	19

2. Initial Startup on Both units have extended FSNL Operation for AVR Commissioning and Pre-synch Checks. Estimated Emissions at FSNL are as follows:

Parameter	Value	Units
NOx ppm @ 15% O2	56	ppm
CO ppm @ 15% O2	577	ppm
NOx mass rate	8.4	lb/hr
CO mass rate	53	lb/hr

3. Baseload Emissions prior to Source Testing assumes no Water Injection / NOx abatement. Estimated Emissions at Baseload without Water Injection are as follows:

Parameter	Value	Units
NOx mass rate	33.7	lb/hr
CO mass rate	126.7	lb/hr

4. Baseload Emissions during and after Source Testing are based on actual data collected during Compliance Source Test.

Parameter	CT 5 Value	CT6 Value	Units
NOx mass rate	23.56	23.64	lb/hr
CO mass rate	13.87	6.06	lb/hr

5. Estimated Emssions for other Poluntants are based on the following Emission Rates:

Parameter	Value	Units
VOC mass rate	8.7	lb/hr
PM10 mass rate	4.0	lb/hr
SO2	0.033	lb/hr

	CT 5					CT 6				
Emissions calculations for Commissioning of each unit (lbs):	**NOx (lbs)**	**CO (lbs)**	**VOC (lbs)**	**PM10 (lbs)**	**SO2 (lbs)**	**NOx (lbs)**	**CO (lbs)**	**VOC (lbs)**	**PM10 (lbs)**	**SO2 (lbs)**
Start up and Shutdowns	71.5	451.0				52.0	328.0			
FSNL - Run Steps A and B	31.5	198.8				16.8	106.0			
Baseload operation prior to Source Testing - Run Step C	541.4	2038.1				78.8	296.6			
Baseload Operation During Source Testing - Run Step D	561.7	330.7				206.9	53.0			
Total	1206.0	3018.5	379.9	174.7	1.4	354.4	783.6	113.8	52.3	0.4

	NOx (lbs)	CO (lbs)	VOC (lbs)	PM10 (lbs)	SO2 (lbs)
Roseville Energy Park Q3 2021 Emissions	9598.4	3347.0	3443.1	2114.2	1031.6
CDWR CT5 Emissions	1206.0	3018.5	379.9	174.7	1.4
CDWR CT6 Emissions	354.4	783.6	113.8	52.3	0.4
Total Site Emissions for Q3 2021	**11,158.9**	**7,149.1**	**3,936.9**	**2,341.2**	**1,033.5**
Placer County Permit Allowance	**17,646**	**28,515**	**6,672**	**19,168**	**3,709**
Exceed Permits	**No**	**No**	**No**	**No**	**No**

Each Unit is allowed up to 160 hours for Commissioning by Placer County

The combined total emissions from all units at the Roseville Energy Park site is the following:

Pollutant	Quarter 1 (lbs)	Quarter 2 (lbs)	Quarter 3 (lbs)	Quarter 4 (lbs)	Annual (tons/year)
NOx	15,546	13,412	17,646	15,572	31.09
CO	27,121	33,872	28,515	30,202	59.86
VOCs	5,832	7,455	6,672	6,890	13.42
PM10	17,673	15,513	19,168	19,158	35.76
SOx	3,400	2,893	3,709	3,663	6.83

Table 1 – Roseville Energy Park Quarterly and Annual Emission Limits

Pollutant	Quarter 1 (lbs)	Quarter 2 (lbs)	Quarter 3 (lbs)	Quarter 4 (lbs)	Annual (tons/year)
NOx	15,546	13,412	17,646	15,572	31.09
CO	27,121	33,872	28,515	30,202	59.86
VOCs	5,832	7,455	6,672	6,890	13.42
PM_{10}	17,673	15,513	19,168	19,158	35.76
SOx	3,400	2,893	3,709	3,663	6.83

Stack parameters for each Covered Resource unit:

Stack height	26.1	ft
Exit dimensions (rectangular)	8.1 x 11.6	ft
Exit gas temperature	1045	F
Exit velocity (volumetric flow rate)	99.74	kg/s

Placer County Air Pollution Control District
110 Maple Street
Auburn, California 95603
(530) 745-2330 - Fax (530) 745-2373

Authority to Construct / Temporary Permit to Operate

ISSUED TO:
ROSEVILLE ENERGY PARK
5120 PHILLIP RD
ROSEVILLE, CA 95747

PERMIT NUMBER: AC-REPR-21C

FACILITY LOCATION:
ROSEVILLE ENERGY PARK
5120 PHILLIP RD
ROSEVILLE, CA 95747

VALID FROM:
09/13/2021 - 9/30/2022

Bruce Springsteen for

Erik C. White
Air Pollution Control Officer

09/13/2021
Issue Date

PROCESS DESCRIPTION: COMBUSTION TURBINE GENERATOR #3

EQUIPMENT

No.	Equipment	Rating
1	Combustion Turbine Generator (CTG) #3, Manufacturer: General Electric, Model: TM2500-G4; Serial # [TBD], Natural Gas Fired, Simple Cycle with Single Annular Combustors with Water Injection, Heat Input Rating (HHV) 366.1 MMBtu/hr; Nominal MW Rating: 33.6 MW	366.1 MMBtu/hr
2	Selective Catalytic Reduction (SCR) with Integrated Ammonia Injection System, Manufacturer: [TBD], Serial Number: [TBD]	--
3	Carbon Monoxide (CO) Oxidation Catalyst, Manufacturer: [TBD], Serial Number: [TBD]	--
4	Continuous Emissions Monitoring System (CEMS)	--

TOTAL RATINGS – MMBtu/hr- 366.1.

CONDITIONS FOR COMMISSIONING

1. The commissioning period commences when all mechanical and electrical systems are installed, or when a gas turbine is first fired, whichever comes first. The period ends when the plant has completed performance testing and is available for commercial operation.

2. Roseville Electric shall minimize emissions of carbon monoxide and nitrogen oxides from the CTG to the maximum extent possible during the commissioning period.

3. The CTG exhaust stack shall be designed and constructed such that it includes permanent provisions, consistent with the United States Environmental Protection Agency's (U.S. EPA) Method 1 design requirements, to allow the adequate collection of stack gas samples. Access ladders and/or stairs and platforms shall allow easy access to the sampling locations.

4. Roseville Electric shall submit design details for the SCR system, oxidation catalyst system, and continuous emissions monitoring system to the District at least 30 days prior to commencement of construction of these components.

5. At the earliest feasible time, in accordance with the recommendations of the equipment manufacturer and construction contractor, the selective catalytic reduction system and carbon monoxide catalyst air pollution control equipment shall be installed, adjusted and operated to minimize emissions of NOx, CO, and VOCs from the combustion turbine.

6. Roseville Electric shall submit a plan to the District prior to first firing the CTG describing the procedures to be followed during the commissioning of the gas turbine. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not be limited to, the initial tuning of the combustors, the installation and operation of the required emission control systems, the installation, calibration, and testing of the CO and NOx continuous emission monitors, and any activities requiring the firing of the CTG without abatement by their respective oxidation catalysts and/or SCR System.

7. During the commissioning period, Roseville Electric shall demonstrate compliance with Conditions 9, 10, and 11, through the use of properly operated and maintained continuous emission monitors and plant data monitoring recorders for the following parameters and emission concentrations:
    a. firing hours
    b. fuel flow rates
    c. turbine water injection rates
    d. stack gas nitrogen oxide emission concentrations,
    e. stack gas carbon monoxide emission concentrations
    f. stack gas oxygen concentrations.

    The monitored parameters shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation) for the CTG. Roseville Electric shall use approved methods to calculate heat input rates, nitrogen dioxide mass emission rates, carbon monoxide mass emission rates, and NOx and CO

emission concentrations, summarized for each clock hour and each calendar day. Roseville Electric shall retain records on site for at least 5 years from the date of entry and make such records available to District personnel upon request.

8. Roseville Electric shall install, calibrate, and operate the District-approved continuous monitors specified in Condition 7 prior to first firing of the CTG. After first firing of the turbine, Roseville Electric shall adjust the detection range of these continuous emission monitors as necessary to accurately measure the resulting range of CO and NOx emission concentrations. The instruments shall operate at all times of operation of the CTG including start-up, shutdown, upset, and malfunction, except as allowed by District Rule 404, Upset Conditions, Breakdown or Scheduled Maintenance. If necessary to comply with this requirement, Roseville Electric shall install dual-span monitors. The type, specifications, and location of these monitors shall be subject to District review and approval.

9. The total number of firing hours of each gas turbine without abatement of NOx emissions by the SCR system and/or abatement of the CO emissions by the oxidation catalyst system shall not exceed 160 hours during the commissioning period. Such operation shall only be limited to such discrete commissioning activities that can only be properly executed without the air pollution control equipment. Upon completion of these activities, Roseville Electric shall provide written notice to the District and the unused balance of the 160 firing hours without abatement shall expire. The total operating days during commissioning shall not exceed 21 calendar days.

10. The total mass emissions of each regulated pollutant that are emitted by the CTG during the commissioning period shall accrue towards the quarterly emission limits specified in Condition 48.

11. Within 60 days after start-up, Roseville Electric shall conduct District approved source tests on the CTG to determine compliance with the emission limitations specified in Condition 44. The source tests shall determine NOx, CO, and VOC emissions during peak load firing conditions (100% load plus or minus 25%). The source test shall include a minimum of three compliance runs, with a minimum run time of 30 minutes. Before the execution of the source tests, Roseville Electric shall submit to the District a detailed source test plan designed to satisfy the requirements of this Part. The District will notify Roseville Electric of any necessary modifications to the plan; otherwise, the plan shall be deemed approved. Roseville Electric shall incorporate the District comments into the test plan. Roseville Electric shall notify the District prior to the planned source testing date. Roseville Electric shall submit the source test results for the CTG to the District within 60 days of the source testing date.

OPERATING CONDITIONS

12. Roseville Electric shall fire the CTG exclusively on pipeline-quality natural gas with a maximum sulfur content of 0.5 grains per 100 standard cubic feet. To demonstrate compliance with this limit, the operator of the CTG shall possess a current, valid purchase contract, tariff sheet, or transportation contract for the fuel, specifying the total sulfur content. PG&E monthly sulfur data may be used provided that such data can be demonstrated to be representative of the gas delivered to Roseville Energy Park. Alternatively, the operator may choose to sample and analyze the gas from each supply source at least monthly to determine the sulfur content of the gas.

13. Roseville Electric shall not operate the unit such that the heat input rate to the CTG exceeds 366.1 MMBtu (HHV) per hour.

14. Roseville Electric shall not operate the unit such that the heat input rate to the CTG exceeds 73,220 MMBtu (HHV) per calendar quarter.

15. Roseville Electric shall not operate the unit such that the heat input rate to the CTG exceeds 73,220 MMBtu (HHV) per calendar year

16. Roseville Electric shall not operate the CTG such that the hours of operation exceed 200 hours per calendar quarter.

17. Roseville Electric shall not operate the CTG such that the hours of operation exceed 200 hours per year.

18. Roseville Electric shall ensure that the CTG is abated by the properly operated and properly maintained SCR system and oxidation catalyst system whenever fuel is combusted at the source and that the corresponding SCR catalyst bed has reached its minimum operating temperature.

19. Roseville Electric shall install, maintain, and operate continuous plant monitors and a continuous emissions monitoring system (CEMS) during all hours of operation, including gas turbine startup and shutdown periods. The following parameters shall be monitored under this section:

    a. Firing hours, turbine water injection rates, and fuel flow rates for the CTG

    b. Oxygen concentration, nitrogen oxides concentration, and carbon monoxide concentration at the exhaust point of the CTG

    c. Ammonia (NH_3) injection rate at the SCR system

    Roseville Electric shall record the above parameters at least every 15 minutes (excluding normal calibration periods) and shall summarize all of the above parameters for each clock hour. Roseville Electric shall use the parameters measured above and District approved calculation methods to calculate the following CTG parameters

    d. Heat input rate

    e. The concentration of NOx and CO, corrected to 15% O_2 (corrected), and the mass emission rates of NOx and CO for the CTG

20. Startup is defined as the period beginning with turbine light-off (firing) until the CTG meets the concentration and mass emission limits in Condition 44. Shutdown is defined as the period beginning with initiation of the CTG shutdown sequence and ending with cessation of firing of the gas turbine engine or fuel shutoff. Startup and shutdown durations shall not exceed 30 minutes and 15 minutes, respectively, per occurrence.

21. Roseville Electric shall limit the total CTG startup events to no more than 4 startups per day, 40 startups per calendar quarter, and 40 startups per calendar year.

22. Roseville Electric shall limit the total CTG shutdown events to no more than 4 shutdowns per day, 40 shutdowns per calendar quarter, and 40 shutdowns per calendar year.

23. Roseville Electric shall ensure that Roseville Energy Park complies with the requirements to hold SO_2 allowances in 40 CFR 72.9(c)(1).

REPORTING AND RECORDKEEPING

24. Roseville Electric shall notify the District within 24 hours of operating the CTG for any reason, including, but not limited to: commissioning activities, maintenance and testing/tuning activities, emissions testing activities, operation of the turbine for the production of electrical power, etc.

25. Roseville Electric shall submit a CEMS QA/QC plan to the District for approval. Approval should also be required for any future changes to the plan.

26. For each calendar day, Roseville Electric shall calculate and record the total firing hours, the average hourly fuel flow rates, turbine water injection rates, CTG power production rates, and regulated pollutant concentration and emission rates. The data should be recorded as specified below:

    a. Heat input rate for every clock hour and the average hourly heat input rate for every rolling 3-hour period

    b. The average NOx mass emission rate (as NO_2), CO mass emission rate, and corrected NOx and CO emission concentrations, for every clock hour.

    c. On an hourly basis, the cumulative total NOx mass emissions (as NO_2) and the cumulative total CO mass emissions, for each calendar day for all CTGs and heat recovery steam generator (HRSG) duct burners operated at Roseville Energy Park.

    d. For each calendar day, the average hourly heat input rates, corrected NOx and CO emission concentrations, and NOx and CO mass emission rates of the CTG.

    e. For each calendar month, the cumulative total NOx mass emissions and cumulative total CO mass emissions, for each calendar quarter and the previous consecutive twelve-month period for all CTGs and HRSG duct burners operated at Roseville Energy Park.

27. Roseville Electric shall calculate and record on a daily basis, the volatile organic compound (VOC) mass emissions, fine particulate matter (PM_{10}) mass emissions (including condensable particulate matter), and sulfur oxides (SOx) mass emissions (as SO_2) from the CTG and all permitted CTGs and HRSG duct burners at Roseville Energy Park. Roseville Electric shall use the actual heat input rates measured pursuant to Condition 19, actual gas turbine start-up times, actual gas turbine shutdown times, and District-approved emission factors developed pursuant to source testing under Condition 40 to calculate these emissions. Roseville Electric shall present the calculated emissions in the following format:

    a. For each calendar day, VOC, PM_{10}, and SOx emissions, summarized for each CTG.

    b. On a monthly basis, the cumulative total VOC, PM_{10}, and SOx mass emissions, for each calendar quarter and calendar year for all CTGs and HRSG duct burners operated at Roseville Energy Park.

28. Roseville Electric shall ensure compliance with the continuous emission monitoring requirements of 40 CFR Part 60 and 40 CFR Part 75.

29. Roseville Electric shall submit all reports to the District (including, but not limited to quarterly CEM reports, excess emissions reports, equipment upset/breakdown reports, etc.) as required by District Rules and Regulations.

30. All records which are required to be maintained by this permit shall be maintained for a period of five years and shall be made readily available for District inspection upon request. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P. paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the CARB, and the U.S. EPA.

31. Roseville Electric shall notify the District of any violations of these permit conditions. Notification shall be submitted in a timely manner, in accordance with all applicable District Rules and Regulations. Notwithstanding the notification and reporting requirements given in any District Rule or Regulation Roseville Electric shall submit written notification (email or facsimile is acceptable) to the District within 96 hours of the violation of any permit condition.

32. The following records shall be kept: occurrence, duration, and type of any startup, shutdown, or malfunction; performance testing, evaluations, calibrations, checks, adjustments, any period during which a continuous monitoring system or monitoring device was inoperative, maintenance of any continuous emission monitor emission measurements, total daily and rolling twelve month average hours of operation, hourly quantity of fuel used, and gross three hour average operating load.

33. Roseville Electric shall notify the District of any breakdown condition as soon as reasonably possible, but no later than two District business hours after its detection.

34. The District shall be notified in writing within seven calendar days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations.

35. Calibration Gas Audits (CGAs) of the continuous emissions monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with U.S. EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District.

36. Roseville Electric shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emissions monitoring equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F.

37. Roseville Electric shall submit a written report to the District for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective emission standard; applicable time and date of each period during which the CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred.

38. Roseville Electric shall provide the District with a written emission statement showing actual emissions of VOCs and NOx. Pursuant to District Rule 503, Roseville Electric shall submit this emission statement on a form or in a format specified by the District. The statement shall contain the following information:

    a. Actual emissions of VOCs and NOx, in tons per year, for the calendar year prior to the preparation of the emission statement; and

    b. Information regarding seasonal or diurnal peaks in the emission of affected pollutants; and

    c. Certification by a responsible official of Roseville Electric that the information contained in the emission statement is accurate to the best knowledge of the individual certifying the emission statement.

39. Roseville Electric shall maintain an Operating Compliance Plan for the new CTG which will assure that the air pollution control equipment will be properly maintained and that necessary operational procedures are in place to continuously achieve compliance with this permit. The Operating Compliance Plan shall include a description of the process monitoring program and devices to be used.

    a. The plan shall specify the frequency of surveillance checks that will be made of process monitoring devices and indicators to determine continued operation within permit limits. A record or log of individual surveillance checks shall be kept to document performance of the surveillance.

b. The plan shall include the frequency and methods of calibrating the process monitoring devices.

c. The plan shall specify for each emission control device:

   i. Operation and maintenance procedures that will demonstrate continuous operation of the emission control device during emission producing operations; and

   ii. Records that must be kept to document the performance of required periodic maintenance procedures.

d. The plan shall identify what records will be kept to comply with air pollution control requirements and regulations and the specific format of the records. These records shall include at least the Recordkeeping information required by this permit. The information must include emission monitoring evaluations, calibration checks and adjustments, and maintenance performed on such monitoring systems.

e. The plan shall be submitted to the District no later than 30 days after startup of the CTG. The plan must be implemented upon approval by the District Air Pollution Control Officer.

f. The plan shall be resubmitted to the District for approval upon any changes to compliance procedures described in the plan, or upon the request of the District.

PERFORMANCE TESTING

40. On an annual basis, and within fourteen (14) months of the previous source test, Roseville Electric shall conduct District approved source testing on the CTG to determine compliance with the emission limitations specified in Conditions 44. The source tests shall determine concentrations and mass emissions of NOx, CO, VOC, and NH_3. Fuel-based emission factors (lbs/MMBtu) for VOCs, SOx (as SO_2) and PM_{10} shall be established using the annual source test data. The source tests shall be performed while the CTG is operating at peak load firing conditions (100% load plus or minus 25%). The source tests shall include a minimum of three compliance runs, with a minimum run time of 30 minutes each.

41. Roseville Electric shall test for (as a minimum): water content, stack gas flow rate, oxygen concentration, NOx concentration and mass emissions (as NO_2), CO concentration and mass emissions, VOC concentration and mass emissions, fuel sulfur content and from it, SOx mass emissions (as SO_2), and total fine particulate matter emissions (PM_{10}), including condensable particulate matter. All testing shall be performed using U.S. EPA approved test methods. Alternative test methods can be used with explicit approval of the District. Roseville Electric shall submit the source test results to the District within 60 days of conducting the tests.

42. Before the execution of the source tests, Roseville Electric shall submit to the District a source test protocol detailing the proposed scope and source test methods. The protocol shall be submitted to the District no later than thirty (30) days prior to the scheduled test

date. The District will notify Roseville Electric of any necessary modifications to the plan; otherwise, the plan shall be deemed approved. Roseville Electric shall incorporate the District comments into the test plan.

43. On an annual basis, Roseville Electric shall verify the accuracy of the CEMS by conducting a relative accuracy test audit (RATA). The RATA shall satisfy the applicable performance specification requirements in Appendix B of 40 CFR Part 60 as well as the quality assurance and quality control procedures of 40 CFR Part 75. Roseville Electric shall submit the RATA results to the District within 60 days of conducting the tests.

EMISSION LIMITATIONS

44. Roseville Electric shall ensure that the CTG complies with emission limits established in (a) through (g) below. The limits in (a) through (e) do not apply during a gas turbine startup or shutdown, as defined in Condition 20.
    a. NOx mass emissions (calculated as NO_2) at the exhaust of the CTG shall not exceed 2.71 pounds per hour.
    b. The NOx emission concentration at the exhaust of the CTG shall not exceed 2.5 ppmv, on a dry basis, corrected to 15% O2, averaged over any 1-hour period.
    c. CO mass emissions at the exhaust of the CTG shall not exceed 2.64 pounds per hour.
    d. The CO emission concentration at the exhaust of the CTG shall not exceed 4.0 ppmv, on a dry basis, corrected to 15% O2 averaged over any rolling 3-hour period.
    e. VOC mass emissions (calculated as CH_4) at the exhaust of the CTG shall not exceed 0.66 pounds per hour.
    f. PM_{10} mass emissions at the exhaust of the CTG shall not exceed 4.0 pounds per hour.
    g. SOx mass emissions (calculated as SO_2) at the exhaust of the CTG shall not exceed 0.20 pounds per hour.

45. Roseville Electric shall ensure that the mass emissions at the exhaust of the CTG during startup and shutdown do not exceed the limits established below.
    a. NOx (calculated as NO_2)
        i. 3.10 pounds per startup.
        ii. 3.40 pounds per shutdown.
        iii. 6.50 pounds during any hour with startup and/or shutdown.
    b. CO
        i. 19.40 pounds per startup.
        ii. 21.60 pounds per shutdown.

iii. 41.00 pounds during any hour with startup and/or shutdown.

c. VOC (calculated as CH_4)

i. 0.80 pounds of VOC per startup.

ii. 0.90 pounds of VOC per shutdown.

iii. 1.70 pounds of VOC during any hour with startup and/or shutdown.

46. Roseville Electric shall ensure that the quarterly emissions from the CTG, including emissions generated during gas turbine startups, shutdowns, and malfunctions, do not exceed the limits established in (a) through (e) below. Compliance with mass emissions of VOCs, PM_{10}, and SOx shall be demonstrated by using the heat input-based emission factors established in Condition 40 multiplied by the CTG's quarterly fuel consumption or heat input.

a. NOx mass emissions (calculated as NO_2) at the exhaust of the CTG shall not exceed 802 pounds per quarter.

b. CO mass emissions at the exhaust of the CTG shall not exceed 2,168 pounds per quarter.

c. VOC mass emissions (calculated as CH_4) at the exhaust of the CTG shall not exceed 200 pounds per quarter.

d. PM_{10} mass emissions at the exhaust of the CTG shall not exceed 844 pounds per quarter.

e. SOx mass emissions (calculated as SO_2) at the exhaust of the CTG shall not exceed 56 pounds per quarter.

47. Roseville Electric shall ensure that the annual emissions from the CTG, including emissions generated during gas turbine startups, shutdowns, and malfunctions, do not exceed the limits established in (a) through (e) below. Compliance with mass emissions of VOCs, PM_{10}, and SOx shall be demonstrated by using the heat input-based emission factors established in Condition 40 multiplied by the CTG's annual fuel consumption or heat input.

a. NOx mass emissions (calculated as NO_2) at the exhaust of the CTG shall not exceed 0.40 tons per year.

b. CO mass emissions at the exhaust of the CTG shall not exceed 1.08 tons per year.

c. VOC mass emissions (calculated as CH_4) at the exhaust of the CTG shall not exceed 0.10 tons per year.

d. PM_{10} mass emissions at the exhaust of the CTG shall not exceed 0.42 tons per year.

e. SOx mass emissions (calculated as SO_2) at the exhaust of the CTG shall not exceed 0.03 tons per year.

48. Roseville Electric shall ensure that the quarterly emissions from all permitted stationary sources, including all four CTGs, all duct burners from the two HRSGs, and the water cooling towers, do not exceed the limits established in **Table 1** below. Compliance with

mass emissions of VOCs, PM_{10}, and SOx shall be demonstrated by using the heat input-based emission factors established in Condition 40 multiplied by the applicable fuel consumption or heat input. (Basis: Offsets)

Table 1 – Roseville Energy Park Quarterly and Annual Emission Limits

Pollutant	Quarter 1 (lbs)	Quarter 2 (lbs)	Quarter 3 (lbs)	Quarter 4 (lbs)	Annual (tons/year)
NOx	15,546	13,412	17,646	15,572	31.09
CO	27,121	33,872	28,515	30,202	59.86
VOCs	5,832	7,455	6,672	6,890	13.42
PM_{10}	17,673	15,513	19,168	19,158	35.76
SOx	3,400	2,893	3,709	3,663	6.83

49. No emissions are permitted, from any source, which are a nuisance per District Rule 205, Nuisance.

50. Stack emission opacity as dark or darker than Ringelmann No. 1 (20% opacity) for period or periods aggregating more than three (3) minutes in any one hour is prohibited and is in violation of District Rule 202, Visible Emissions.

51. Particulate matter emissions shall not exceed 0.1 grains per cubic foot of gas calculated at 12 percent CO at standard conditions per District Rule 207, Particulate Matter.

52. Sulfur compound emissions calculated as SO_2 shall not exceed 0.2 percent by volume per District Rule 210, Specific Contaminants.

53. Ammonia emission concentrations at the exhaust of the CTG shall not exceed 10.0 ppmv, on a dry basis, corrected to 15% O2.

54. Compliance with the ammonia concentration limit in Condition 53 shall be demonstrated by using the following calculation procedure:

    Ammonia slip ppmv @ 15% O_2 = ((a-(bxc / 1,000,000)) x 1,000,000 / b) x d.

    where:

    a = ammonia injection rate (lb/hr) / 17 (lb/lb.mol.),

    b = dry exhaust gas flow rate (lb/hr) / 29 (lb/lb.mol.),

    c = change in measured NOx concentration ppmv at 15% O_2 across catalyst,

    d = correction factor

    The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip.

55. The SCR system's catalyst shall be replaced, repaired, or otherwise reconditioned within 24 months of the ammonia slip exceeding 7.0 ppm @ 15% O_2, as determined by an annual source test.

TITLE V CONDITION

56. Roseville Electric shall file a complete application for a Significant Modification to the existing Roseville Energy Park Title V permit pursuant to Rule 507, Federal Operating Permit Program, by no later than 12 months after commencing operation of the CTG.

GENERAL CONDITIONS

57. Authorization to construct the equipment listed and as prescribed in the approved plans and specifications is hereby granted, subject to the specified permit conditions. The construction and operation of listed equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted in the conditions. Deviation from the approved plans is not permissible without first securing approval for the changes from the District's Air Pollution Control Officer. (Rule 501)

58. This permit shall be maintained on the premises of the subject equipment. (Rule 501)

59. The authorized District agents shall have the right of entry to any premises on which an air pollution emission source is located for the purpose of inspecting such source, including securing samples of emissions therefrom, or any records required to be maintained therewith by the District. (Rule 402)

60. In the event of any violation of the District Rules and Regulations, Roseville Electric shall take action to end such violation. (Rule 502)

61. Roseville Electric shall notify the District within two hours of any upset conditions, breakdown or scheduled maintenance which cause emissions in excess of limits established by District Rules and Regulations. (Rule 404)

62. Any alteration of the subject equipment, including a change in the method of operation, shall be reported to the District. Such alterations may require an Authority to Construct Permit. (Rule 501)

63. Exceeding any of the limiting condition is prohibited without prior application for, and the subsequent granting of a permit modification pursuant to District Rule 501, General Permit Requirements, Section 400.

64. In the event of a change of ownership, an application must be submitted to the Distrcit. Upon any change in control or ownership of facilities constructed, operated, or modified

under authority of this permit, the requirements contained in this Authority to Construct shall be binding on all subsequent owners and operators. (Rule 501)

65. Compliance of the permitted facility is required with the provisions of the AB2588 "Air Toxics `Hot Spots' Information and Assessment Act" of 1987 (Health and Safety Code Sections 44300 et seq.).

66. Performance Test Requirements: If the District finds that additional performance tests are required to determine compliance with District Rules and Regulations and/or conditions of this Authority to Construct, reasonable written notice shall be provided to Roseville Electric. The performance tests shall be subject to the following restrictions (Rule 501):

    a. At least thirty (30) days prior to the actual testing, a written test plan shall be submitted to the District detailing the sampling methods, analytical methods or detection principles to be used. The prior written approval of the District is required for the use of alternate test methods.

    b. The District may require, upon reasonable written notice, the conduct by Roseville Electric of such emissions testing or analysis as may be deemed necessary by the District to demonstrate compliance with District Rules and/or state or federal regulations and the limiting conditions of this permit.

    c. Testing shall be conducted in accordance with 40 CFR 60, Appendix A, Methods, or equivalent methods approved by the State of California Air Resources Board (CARB) by reference in Title 17 of the California Administrative Code, or other methods specified by Roseville Electric and approved in writing by the District. Independent testing contractors and analytical laboratories shall be CARB certified for the test or analysis conducted. Particulate matter testing, if requested, shall include both filterable and condensed particulate matter (e.g. Method 5 modified to include impinger catch).

    d. A report of the testing shall be submitted to the District no later than sixty (60) days after the source test is performed.

67. The applicant/Permittee has an obligation to defend and indemnify the District against third party challenges in accordance with District Rule 411.

Placer County Air Pollution Control District
110 Maple Street
Auburn, California 95603
(530) 745-2330 - Fax (530) 745-2373

Authority to Construct / Temporary Permit to Operate

ISSUED TO:
ROSEVILLE ENERGY PARK
5120 PHILLIP RD
ROSEVILLE, CA 95747

PERMIT NUMBER: AC-REPR-21D

FACILITY LOCATION:
ROSEVILLE ENERGY PARK
5120 PHILLIP RD
ROSEVILLE, CA 95747

VALID FROM:
09/13/2021 - 9/30/2022

Bruce Springsteen for

Erik C. White
Air Pollution Control Officer

09/13/2021
Issue Date

PROCESS DESCRIPTION: COMBUSTION TURBINE GENERATOR #4

EQUIPMENT

No.	Equipment	Rating
1	Combustion Turbine Generator (CTG) #4, Manufacturer: General Electric, Model: TM2500-G4; Serial # [TBD], Natural Gas Fired, Simple Cycle with Single Annular Combustors with Water Injection, Heat Input Rating (HHV) 366.1 MMBtu/hr; Nominal MW Rating: 33.6 MW	366.1 MMBtu/hr
2	Selective Catalytic Reduction (SCR) with Integrated Ammonia Injection System, Manufacturer: [TBD], Serial Number: [TBD]	--
3	Carbon Monoxide (CO) Oxidation Catalyst, Manufacturer: [TBD], Serial Number: [TBD]	--
4	Continuous Emissions Monitoring System (CEMS)	--

TOTAL RATINGS – MMBtu/hr- 366.1.

CONDITIONS FOR COMMISSIONING

1. The commissioning period commences when all mechanical and electrical systems are installed, or when a gas turbine is first fired, whichever comes first. The period ends when the plant has completed performance testing and is available for commercial operation.

2. Roseville Electric shall minimize emissions of carbon monoxide and nitrogen oxides from the CTG to the maximum extent possible during the commissioning period.

3. The CTG exhaust stack shall be designed and constructed such that it includes permanent provisions, consistent with the United States Environmental Protection Agency's (U.S. EPA) Method 1 design requirements, to allow the adequate collection of stack gas samples. Access ladders and/or stairs and platforms shall allow easy access to the sampling locations.

4. Roseville Electric shall submit design details for the SCR system, oxidation catalyst system, and continuous emissions monitoring system to the District at least 30 days prior to commencement of construction of these components.

5. At the earliest feasible time, in accordance with the recommendations of the equipment manufacturer and construction contractor, the selective catalytic reduction system and carbon monoxide catalyst air pollution control equipment shall be installed, adjusted and operated to minimize emissions of NOx, CO, and VOCs from the combustion turbine.

6. Roseville Electric shall submit a plan to the District prior to first firing the CTG describing the procedures to be followed during the commissioning of the gas turbine. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not be limited to, the initial tuning of the combustors, the installation and operation of the required emission control systems, the installation, calibration, and testing of the CO and NOx continuous emission monitors, and any activities requiring the firing of the CTG without abatement by their respective oxidation catalysts and/or SCR System.

7. During the commissioning period, Roseville Electric shall demonstrate compliance with Conditions 9, 10, and 11, through the use of properly operated and maintained continuous emission monitors and plant data monitoring recorders for the following parameters and emission concentrations:
    a. firing hours
    b. fuel flow rates
    c. turbine water injection rates
    d. stack gas nitrogen oxide emission concentrations,
    e. stack gas carbon monoxide emission concentrations
    f. stack gas oxygen concentrations.

    The monitored parameters shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation) for the CTG. Roseville Electric shall use approved methods to calculate heat input rates, nitrogen dioxide mass emission rates, carbon monoxide mass emission rates, and NOx and CO

emission concentrations, summarized for each clock hour and each calendar day. Roseville Electric shall retain records on site for at least 5 years from the date of entry and make such records available to District personnel upon request.

8. Roseville Electric shall install, calibrate, and operate the District-approved continuous monitors specified in Condition 7 prior to first firing of the CTG. After first firing of the turbine, Roseville Electric shall adjust the detection range of these continuous emission monitors as necessary to accurately measure the resulting range of CO and NOx emission concentrations. The instruments shall operate at all times of operation of the CTG including start-up, shutdown, upset, and malfunction, except as allowed by District Rule 404, Upset Conditions, Breakdown or Scheduled Maintenance. If necessary to comply with this requirement, Roseville Electric shall install dual-span monitors. The type, specifications, and location of these monitors shall be subject to District review and approval.

9. The total number of firing hours of each gas turbine without abatement of NOx emissions by the SCR system and/or abatement of the CO emissions by the oxidation catalyst system shall not exceed 160 hours during the commissioning period. Such operation shall only be limited to such discrete commissioning activities that can only be properly executed without the air pollution control equipment. Upon completion of these activities, Roseville Electric shall provide written notice to the District and the unused balance of the 160 firing hours without abatement shall expire. The total operating days during commissioning shall not exceed 21 calendar days.

10. The total mass emissions of each regulated pollutant that are emitted by the CTG during the commissioning period shall accrue towards the quarterly emission limits specified in Condition 48.

11. Within 60 days after start-up, Roseville Electric shall conduct District approved source tests on the CTG to determine compliance with the emission limitations specified in Condition 44. The source tests shall determine NOx, CO, and VOC emissions during peak load firing conditions (100% load plus or minus 25%). The source test shall include a minimum of three compliance runs, with a minimum run time of 30 minutes. Before the execution of the source tests, Roseville Electric shall submit to the District a detailed source test plan designed to satisfy the requirements of this Part. The District will notify Roseville Electric of any necessary modifications to the plan; otherwise, the plan shall be deemed approved. Roseville Electric shall incorporate the District comments into the test plan. Roseville Electric shall notify the District prior to the planned source testing date. Roseville Electric shall submit the source test results for the CTG to the District within 60 days of the source testing date.

OPERATING CONDITIONS

12. Roseville Electric shall fire the CTG exclusively on pipeline-quality natural gas with a maximum sulfur content of 0.5 grains per 100 standard cubic feet. To demonstrate compliance with this limit, the operator of the CTG shall possess a current, valid purchase contract, tariff sheet, or transportation contract for the fuel, specifying the total sulfur content. PG&E monthly sulfur data may be used provided that such data can be demonstrated to be representative of the gas delivered to Roseville Energy Park. Alternatively, the operator may choose to sample and analyze the gas from each supply source at least monthly to determine the sulfur content of the gas.

13. Roseville Electric shall not operate the unit such that the heat input rate to the CTG exceeds 366.1 MMBtu (HHV) per hour.

14. Roseville Electric shall not operate the unit such that the heat input rate to the CTG exceeds 73,220 MMBtu (HHV) per calendar quarter.

15. Roseville Electric shall not operate the unit such that the heat input rate to the CTG exceeds 73,220 MMBtu (HHV) per calendar year

16. Roseville Electric shall not operate the CTG such that the hours of operation exceed 200 hours per calendar quarter.

17. Roseville Electric shall not operate the CTG such that the hours of operation exceed 200 hours per year.

18. Roseville Electric shall ensure that the CTG is abated by the properly operated and properly maintained SCR system and oxidation catalyst system whenever fuel is combusted at the source and that the corresponding SCR catalyst bed has reached its minimum operating temperature.

19. Roseville Electric shall install, maintain, and operate continuous plant monitors and a continuous emissions monitoring system (CEMS) during all hours of operation, including gas turbine startup and shutdown periods. The following parameters shall be monitored under this section:

    a. Firing hours, turbine water injection rates, and fuel flow rates for the CTG

    b. Oxygen concentration, nitrogen oxides concentration, and carbon monoxide concentration at the exhaust point of the CTG

    c. Ammonia (NH_3) injection rate at the SCR system

    Roseville Electric shall record the above parameters at least every 15 minutes (excluding normal calibration periods) and shall summarize all of the above parameters for each clock hour. Roseville Electric shall use the parameters measured above and District approved calculation methods to calculate the following CTG parameters

    d. Heat input rate

    e. The concentration of NOx and CO, corrected to 15% O_2 (corrected), and the mass emission rates of NOx and CO for the CTG

20. Startup is defined as the period beginning with turbine light-off (firing) until the CTG meets the concentration and mass emission limits in Condition 44. Shutdown is defined as the period beginning with initiation of the CTG shutdown sequence and ending with cessation of firing of the gas turbine engine or fuel shutoff. Startup and shutdown durations shall not exceed 30 minutes and 15 minutes, respectively, per occurrence.

21. Roseville Electric shall limit the total CTG startup events to no more than 4 startups per day, 40 startups per calendar quarter, and 40 startups per calendar year.

22. Roseville Electric shall limit the total CTG shutdown events to no more than 4 shutdowns per day, 40 shutdowns per calendar quarter, and 40 shutdowns per calendar year.

23. Roseville Electric shall ensure that Roseville Energy Park complies with the requirements to hold SO_2 allowances in 40 CFR 72.9(c)(1).

REPORTING AND RECORDKEEPING

24. Roseville Electric shall notify the District within 24 hours of operating the CTG for any reason, including, but not limited to: commissioning activities, maintenance and testing/tuning activities, emissions testing activities, operation of the turbine for the production of electrical power, etc.

25. Roseville Electric shall submit a CEMS QA/QC plan to the District for approval. Approval should also be required for any future changes to the plan.

26. For each calendar day, Roseville Electric shall calculate and record the total firing hours, the average hourly fuel flow rates, turbine water injection rates, CTG power production rates, and regulated pollutant concentration and emission rates. The data should be recorded as specified below:

    a. Heat input rate for every clock hour and the average hourly heat input rate for every rolling 3-hour period

    b. The average NOx mass emission rate (as NO_2), CO mass emission rate, and corrected NOx and CO emission concentrations, for every clock hour.

    c. On an hourly basis, the cumulative total NOx mass emissions (as NO_2) and the cumulative total CO mass emissions, for each calendar day for all CTGs and heat recovery steam generator (HRSG) duct burners operated at Roseville Energy Park.

    d. For each calendar day, the average hourly heat input rates, corrected NOx and CO emission concentrations, and NOx and CO mass emission rates of the CTG.

    e. For each calendar month, the cumulative total NOx mass emissions and cumulative total CO mass emissions, for each calendar quarter and the previous consecutive twelve-month period for all CTGs and HRSG duct burners operated at Roseville Energy Park.

27. Roseville Electric shall calculate and record on a daily basis, the volatile organic compound (VOC) mass emissions, fine particulate matter (PM_{10}) mass emissions (including condensable particulate matter), and sulfur oxides (SOx) mass emissions (as SO_2) from the CTG and all permitted CTGs and HRSG duct burners at Roseville Energy Park. Roseville Electric shall use the actual heat input rates measured pursuant to Condition 19, actual gas turbine start-up times, actual gas turbine shutdown times, and District-approved emission factors developed pursuant to source testing under Condition 40 to calculate these emissions. Roseville Electric shall present the calculated emissions in the following format:

    a. For each calendar day, VOC, PM_{10}, and SOx emissions, summarized for each CTG.

    b. On a monthly basis, the cumulative total VOC, PM_{10}, and SOx mass emissions, for each calendar quarter and calendar year for all CTGs and HRSG duct burners operated at Roseville Energy Park.

28. Roseville Electric shall ensure compliance with the continuous emission monitoring requirements of 40 CFR Part 60 and 40 CFR Part 75.

29. Roseville Electric shall submit all reports to the District (including, but not limited to quarterly CEM reports, excess emissions reports, equipment upset/breakdown reports, etc.) as required by District Rules and Regulations.

30. All records which are required to be maintained by this permit shall be maintained for a period of five years and shall be made readily available for District inspection upon request. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P. paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the CARB, and the U.S. EPA.

31. Roseville Electric shall notify the District of any violations of these permit conditions. Notification shall be submitted in a timely manner, in accordance with all applicable District Rules and Regulations. Notwithstanding the notification and reporting requirements given in any District Rule or Regulation Roseville Electric shall submit written notification (email or facsimile is acceptable) to the District within 96 hours of the violation of any permit condition.

32. The following records shall be kept: occurrence, duration, and type of any startup, shutdown, or malfunction; performance testing, evaluations, calibrations, checks, adjustments, any period during which a continuous monitoring system or monitoring device was inoperative, maintenance of any continuous emission monitor emission measurements, total daily and rolling twelve month average hours of operation, hourly quantity of fuel used, and gross three hour average operating load.

33. Roseville Electric shall notify the District of any breakdown condition as soon as reasonably possible, but no later than two District business hours after its detection.

34. The District shall be notified in writing within seven calendar days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations.

35. Calibration Gas Audits (CGAs) of the continuous emissions monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with U.S. EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District.

36. Roseville Electric shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emissions monitoring equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F.

37. Roseville Electric shall submit a written report to the District for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective emission standard; applicable time and date of each period during which the CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred.

38. Roseville Electric shall provide the District with a written emission statement showing actual emissions of VOCs and NOx. Pursuant to District Rule 503, Roseville Electric shall submit this emission statement on a form or in a format specified by the District. The statement shall contain the following information:

    a. Actual emissions of VOCs and NOx, in tons per year, for the calendar year prior to the preparation of the emission statement; and

    b. Information regarding seasonal or diurnal peaks in the emission of affected pollutants; and

    c. Certification by a responsible official of Roseville Electric that the information contained in the emission statement is accurate to the best knowledge of the individual certifying the emission statement.

39. Roseville Electric shall maintain an Operating Compliance Plan for the new CTG which will assure that the air pollution control equipment will be properly maintained and that necessary operational procedures are in place to continuously achieve compliance with this permit. The Operating Compliance Plan shall include a description of the process monitoring program and devices to be used.

    a. The plan shall specify the frequency of surveillance checks that will be made of process monitoring devices and indicators to determine continued operation within permit limits. A record or log of individual surveillance checks shall be kept to document performance of the surveillance.

b. The plan shall include the frequency and methods of calibrating the process monitoring devices.

c. The plan shall specify for each emission control device:

   i. Operation and maintenance procedures that will demonstrate continuous operation of the emission control device during emission producing operations; and

   ii. Records that must be kept to document the performance of required periodic maintenance procedures.

d. The plan shall identify what records will be kept to comply with air pollution control requirements and regulations and the specific format of the records. These records shall include at least the Recordkeeping information required by this permit. The information must include emission monitoring evaluations, calibration checks and adjustments, and maintenance performed on such monitoring systems.

e. The plan shall be submitted to the District no later than 30 days after startup of the CTG. The plan must be implemented upon approval by the District Air Pollution Control Officer.

f. The plan shall be resubmitted to the District for approval upon any changes to compliance procedures described in the plan, or upon the request of the District.

PERFORMANCE TESTING

40. On an annual basis, and within fourteen (14) months of the previous source test, Roseville Electric shall conduct District approved source testing on the CTG to determine compliance with the emission limitations specified in Conditions 44. The source tests shall determine concentrations and mass emissions of NOx, CO, VOC, and NH_3. Fuel-based emission factors (lbs/MMBtu) for VOCs, SOx (as SO_2) and PM_{10} shall be established using the annual source test data. The source tests shall be performed while the CTG is operating at peak load firing conditions (100% load plus or minus 25%). The source tests shall include a minimum of three compliance runs, with a minimum run time of 30 minutes each.

41. Roseville Electric shall test for (as a minimum): water content, stack gas flow rate, oxygen concentration, NOx concentration and mass emissions (as NO_2), CO concentration and mass emissions, VOC concentration and mass emissions, fuel sulfur content and from it, SOx mass emissions (as SO_2), and total fine particulate matter emissions (PM_{10}), including condensable particulate matter. All testing shall be performed using U.S. EPA approved test methods. Alternative test methods can be used with explicit approval of the District. Roseville Electric shall submit the source test results to the District within 60 days of conducting the tests.

42. Before the execution of the source tests, Roseville Electric shall submit to the District a source test protocol detailing the proposed scope and source test methods. The protocol shall be submitted to the District no later than thirty (30) days prior to the scheduled test

date. The District will notify Roseville Electric of any necessary modifications to the plan; otherwise, the plan shall be deemed approved. Roseville Electric shall incorporate the District comments into the test plan.

43. On an annual basis, Roseville Electric shall verify the accuracy of the CEMS by conducting a relative accuracy test audit (RATA). The RATA shall satisfy the applicable performance specification requirements in Appendix B of 40 CFR Part 60 as well as the quality assurance and quality control procedures of 40 CFR Part 75. Roseville Electric shall submit the RATA results to the District within 60 days of conducting the tests.

EMISSION LIMITATIONS

44. Roseville Electric shall ensure that the CTG complies with emission limits established in (a) through (g) below. The limits in (a) through (e) do not apply during a gas turbine startup or shutdown, as defined in Condition 20.
    a. NOx mass emissions (calculated as NO_2) at the exhaust of the CTG shall not exceed 2.71 pounds per hour.
    b. The NOx emission concentration at the exhaust of the CTG shall not exceed 2.5 ppmv, on a dry basis, corrected to 15% O2, averaged over any 1-hour period.
    c. CO mass emissions at the exhaust of the CTG shall not exceed 2.64 pounds per hour.
    d. The CO emission concentration at the exhaust of the CTG shall not exceed 4.0 ppmv, on a dry basis, corrected to 15% O2 averaged over any rolling 3-hour period.
    e. VOC mass emissions (calculated as CH_4) at the exhaust of the CTG shall not exceed 0.66 pounds per hour.
    f. PM_{10} mass emissions at the exhaust of the CTG shall not exceed 4.0 pounds per hour.
    g. SOx mass emissions (calculated as SO_2) at the exhaust of the CTG shall not exceed 0.20 pounds per hour.

45. Roseville Electric shall ensure that the mass emissions at the exhaust of the CTG during startup and shutdown do not exceed the limits established below.
    a. NOx (calculated as NO_2)
        i. 3.10 pounds per startup.
        ii. 3.40 pounds per shutdown.
        iii. 6.50 pounds during any hour with startup and/or shutdown.
    b. CO
        i. 19.40 pounds per startup.
        ii. 21.60 pounds per shutdown.

iii. 41.00 pounds during any hour with startup and/or shutdown.

c. VOC (calculated as CH_4)

i. 0.80 pounds of VOC per startup.

ii. 0.90 pounds of VOC per shutdown.

iii. 1.70 pounds of VOC during any hour with startup and/or shutdown.

46. Roseville Electric shall ensure that the quarterly emissions from the CTG, including emissions generated during gas turbine startups, shutdowns, and malfunctions, do not exceed the limits established in (a) through (e) below. Compliance with mass emissions of VOCs, PM_{10}, and SOx shall be demonstrated by using the heat input-based emission factors established in Condition 40 multiplied by the CTG's quarterly fuel consumption or heat input.

a. NOx mass emissions (calculated as NO_2) at the exhaust of the CTG shall not exceed 802 pounds per quarter.

b. CO mass emissions at the exhaust of the CTG shall not exceed 2,168 pounds per quarter.

c. VOC mass emissions (calculated as CH_4) at the exhaust of the CTG shall not exceed 200 pounds per quarter.

d. PM_{10} mass emissions at the exhaust of the CTG shall not exceed 844 pounds per quarter.

e. SOx mass emissions (calculated as SO_2) at the exhaust of the CTG shall not exceed 56 pounds per quarter.

47. Roseville Electric shall ensure that the annual emissions from the CTG, including emissions generated during gas turbine startups, shutdowns, and malfunctions, do not exceed the limits established in (a) through (e) below. Compliance with mass emissions of VOCs, PM_{10}, and SOx shall be demonstrated by using the heat input-based emission factors established in Condition 40 multiplied by the CTG's annual fuel consumption or heat input.

a. NOx mass emissions (calculated as NO_2) at the exhaust of the CTG shall not exceed 0.40 tons per year.

b. CO mass emissions at the exhaust of the CTG shall not exceed 1.08 tons per year.

c. VOC mass emissions (calculated as CH_4) at the exhaust of the CTG shall not exceed 0.10 tons per year.

d. PM_{10} mass emissions at the exhaust of the CTG shall not exceed 0.42 tons per year.

e. SOx mass emissions (calculated as SO_2) at the exhaust of the CTG shall not exceed 0.03 tons per year.

48. Roseville Electric shall ensure that the quarterly emissions from all permitted stationary sources, including all four CTGs, all duct burners from the two HRSGs, and the water cooling towers, do not exceed the limits established in **Table 1** below. Compliance with

mass emissions of VOCs, PM_{10}, and SOx shall be demonstrated by using the heat input-based emission factors established in Condition 40 multiplied by the applicable fuel consumption or heat input. (Basis: Offsets)

Table 1 – Roseville Energy Park Quarterly and Annual Emission Limits

Pollutant	Quarter 1 (lbs)	Quarter 2 (lbs)	Quarter 3 (lbs)	Quarter 4 (lbs)	Annual (tons/year)
NOx	15,546	13,412	17,646	15,572	31.09
CO	27,121	33,872	28,515	30,202	59.86
VOCs	5,832	7,455	6,672	6,890	13.42
PM_{10}	17,673	15,513	19,168	19,158	35.76
SOx	3,400	2,893	3,709	3,663	6.83

49. No emissions are permitted, from any source, which are a nuisance per District Rule 205, Nuisance.

50. Stack emission opacity as dark or darker than Ringelmann No. 1 (20% opacity) for period or periods aggregating more than three (3) minutes in any one hour is prohibited and is in violation of District Rule 202, Visible Emissions.

51. Particulate matter emissions shall not exceed 0.1 grains per cubic foot of gas calculated at 12 percent CO at standard conditions per District Rule 207, Particulate Matter.

52. Sulfur compound emissions calculated as SO_2 shall not exceed 0.2 percent by volume per District Rule 210, Specific Contaminants.

53. Ammonia emission concentrations at the exhaust of the CTG shall not exceed 10.0 ppmv, on a dry basis, corrected to 15% O2.

54. Compliance with the ammonia concentration limit in Condition 53 shall be demonstrated by using the following calculation procedure:

    Ammonia slip ppmv @ 15% O_2 = ((a-(bxc / 1,000,000)) x 1,000,000 / b) x d.

    where:

    a = ammonia injection rate (lb/hr) / 17 (lb/lb.mol.),

    b = dry exhaust gas flow rate (lb/hr) / 29 (lb/lb.mol.),

    c = change in measured NOx concentration ppmv at 15% O_2 across catalyst,

    d = correction factor

    The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip.

55. The SCR system's catalyst shall be replaced, repaired, or otherwise reconditioned within 24 months of the ammonia slip exceeding 7.0 ppm @ 15% O_2, as determined by an annual source test.

TITLE V CONDITION

56. Roseville Electric shall file a complete application for a Significant Modification to the existing Roseville Energy Park Title V permit pursuant to Rule 507, Federal Operating Permit Program, by no later than 12 months after commencing operation of the CTG.

GENERAL CONDITIONS

57. Authorization to construct the equipment listed and as prescribed in the approved plans and specifications is hereby granted, subject to the specified permit conditions. The construction and operation of listed equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted in the conditions. Deviation from the approved plans is not permissible without first securing approval for the changes from the District's Air Pollution Control Officer. (Rule 501)

58. This permit shall be maintained on the premises of the subject equipment. (Rule 501)

59. The authorized District agents shall have the right of entry to any premises on which an air pollution emission source is located for the purpose of inspecting such source, including securing samples of emissions therefrom, or any records required to be maintained therewith by the District. (Rule 402)

60. In the event of any violation of the District Rules and Regulations, Roseville Electric shall take action to end such violation. (Rule 502)

61. Roseville Electric shall notify the District within two hours of any upset conditions, breakdown or scheduled maintenance which cause emissions in excess of limits established by District Rules and Regulations. (Rule 404)

62. Any alteration of the subject equipment, including a change in the method of operation, shall be reported to the District. Such alterations may require an Authority to Construct Permit. (Rule 501)

63. Exceeding any of the limiting condition is prohibited without prior application for, and the subsequent granting of a permit modification pursuant to District Rule 501, General Permit Requirements, Section 400.

64. In the event of a change of ownership, an application must be submitted to the Distrcit. Upon any change in control or ownership of facilities constructed, operated, or modified

under authority of this permit, the requirements contained in this Authority to Construct shall be binding on all subsequent owners and operators. (Rule 501)

65. Compliance of the permitted facility is required with the provisions of the AB2588 "Air Toxics `Hot Spots' Information and Assessment Act" of 1987 (Health and Safety Code Sections 44300 et seq.).

66. Performance Test Requirements: If the District finds that additional performance tests are required to determine compliance with District Rules and Regulations and/or conditions of this Authority to Construct, reasonable written notice shall be provided to Roseville Electric. The performance tests shall be subject to the following restrictions (Rule 501):

    a. At least thirty (30) days prior to the actual testing, a written test plan shall be submitted to the District detailing the sampling methods, analytical methods or detection principles to be used. The prior written approval of the District is required for the use of alternate test methods.

    b. The District may require, upon reasonable written notice, the conduct by Roseville Electric of such emissions testing or analysis as may be deemed necessary by the District to demonstrate compliance with District Rules and/or state or federal regulations and the limiting conditions of this permit.

    c. Testing shall be conducted in accordance with 40 CFR 60, Appendix A, Methods, or equivalent methods approved by the State of California Air Resources Board (CARB) by reference in Title 17 of the California Administrative Code, or other methods specified by Roseville Electric and approved in writing by the District. Independent testing contractors and analytical laboratories shall be CARB certified for the test or analysis conducted. Particulate matter testing, if requested, shall include both filterable and condensed particulate matter (e.g. Method 5 modified to include impinger catch).

    d. A report of the testing shall be submitted to the District no later than sixty (60) days after the source test is performed.

67. The applicant/Permittee has an obligation to defend and indemnify the District against third party challenges in accordance with District Rule 411.

	CO	NOx	PM10	SOx	VOC
lbs/hr	33.20	26.70	4.00	0.20	2.30
lbs/start	19.40	3.10	0.50	0.10	0.80
lbs/stop	21.60	3.40	0.60	0.30	0.90

CT 5 and CT6 Run Times (based on breaker opening/closing)

	CT5 Close	CT5 Open	Total (HH:MM)	Total (hours)
9/15/2021	--	--	0	0.00
9/15/2021	23:13	0:00	0:47	0.78
9/16/2021	0:00	1:16	1:16	1.27
9/16/2021	15:36	15:57	0:21	0.35
9/17/2021	3:53	6:28	2:35	2.58
9/17/2021	13:48	14:19	0:31	0.52
9/17/2021	14:32	15:58	1:26	1.43
9/18/2021	3:24	12:11	8:47	8.78
9/19/2021	5:53	15:35	9:42	9.70
9/20/2021	2:57	9:09	6:12	6.20
9/21/2021	7:55	15:56	8:01	8.02
9/22/2021	--	--	0	0.00
			39:38:00	**39.63**
Starts			9	
Shutdowns			9	

	CO	NOx	PM10	SOx	VOC
	0.00	0.00	0.00	0.00	0.00
	26.01	20.92	3.13	0.16	1.80
	42.05	33.82	5.07	0.25	2.91
	11.62	9.34	1.40	0.07	0.80
	85.77	68.98	10.33	0.52	5.94
	17.15	13.80	2.07	0.10	1.19
	47.59	38.27	5.73	0.29	3.30
	291.61	234.52	35.13	1.76	20.20
	322.04	258.99	38.80	1.94	22.31
	205.84	165.54	24.80	1.24	14.26
	266.15	214.05	32.07	1.60	18.44
	0.00	0.00	0.00	0.00	0.00
Run Time lbs	**1,316**	**1,058**	**159**	**8**	**91**
SU lbs	174.60	27.90	4.50	0.90	7.20
SD lbs	194.40	30.60	5.40	2.70	8.10
	369	**59**	**10**	**4**	**15**
CT5 total lbs	**1,685**	**1,117**	**168**	**12**	**106**
CT5 total tons	**0.84**	**0.56**	**0.08**	**0.01**	**0.05**

	CT6 Close	CT6 Open	Total (HH:MM)	Total (hours)
9/15/2021	--	--	0	0.00
9/16/2021	15:06	15:34	0:28	0.47
9/17/2021	3:00	3:33	0:33	0.55
9/17/2021	3:53	4:34	0:41	0.68
9/17/2021	4:51	5:01	0:10	0.17
9/17/2021	14:10	14:59	0:49	0.82
9/20/2021	9:12	10:52	1:40	1.67
9/22/2021	7:58	15:06	7:08	7.13
			11:29:00	**11.48**
Starts			7	
Shutdowns			7	

	CO	NOx	PM10	SOx	VOC
	0.00	0.00	0.00	0.00	0.00
	15.49	12.46	1.87	0.09	1.07
	18.26	14.69	2.20	0.11	1.27
	22.69	18.25	2.73	0.14	1.57
	5.53	4.45	0.67	0.03	0.38
	27.11	21.81	3.27	0.16	1.88
	55.33	44.50	6.67	0.33	3.83
	236.83	190.46	28.53	1.43	16.41
Run Time lbs	**381**	**307**	**46**	**2**	**26**
SU lbs	135.80	21.70	3.50	0.70	5.60
SD lbs	151.20	23.80	4.20	2.10	6.30
	287	**46**	**8**	**3**	**12**
CT6 total lbs	**668**	**352**	**54**	**5**	**38**
CT6 total tons	**0.33**	**0.18**	**0.03**	**0.00**	**0.02**

	CO	NOx	PM10	SOx	VOC
lbs/hr	33.20	26.70	4.00	0.20	2.30
lbs/start	19.40	3.10	0.50	0.10	0.80
lbs/stop	21.60	3.40	0.60	0.30	0.90

CT 5 and CT6 Run Times (DWR Inspector Observed)

	CT5 Start	CT5 Stop	Total (HH:MM)	Total (hours)
9/15/2021	12:00	13:30	1:30	1.50
9/15/2021	21:15	0:00	2:45	2.75
9/16/2021	0:00	2:00	2:00	2.00
9/16/2021	15:30	15:45	0:15	0.25
9/17/2021			0:00	0.00
9/17/2021	13:45	16:00	2:15	2.25
9/17/2021				
9/18/2021	6:00	12:30	6:30	6.50
9/19/2021	6:00	15:30	9:30	9.50
9/20/2021	3:15	10:30	7:15	7.25
9/21/2021	8:30	15:30	7:00	7.00
9/22/2021	7:00	7:15	0:15	0.25
			39:15:00	**39.25**
Starts			9	
Shutdowns			9	

	CO	NOx	PM10	SOx	VOC
	49.80	40.05	6.00	0.30	3.45
	91.30	73.42	11.00	0.55	6.32
	66.40	53.40	8.00	0.40	4.60
	8.30	6.67	1.00	0.05	0.57
	0.00	0.00	0.00	0.00	0.00
	74.70	60.08	9.00	0.45	5.18
	0.00	0.00	0.00	0.00	0.00
	215.80	173.55	26.00	1.30	14.95
	315.40	253.65	38.00	1.90	21.85
	240.70	193.58	29.00	1.45	16.68
	232.40	186.90	28.00	1.40	16.10
	8.30	6.67	1.00	0.05	0.57
Run Time lbs	**1,303**	**1,048**	**157**	**8**	**90**
SU lbs	174.60	27.90	4.50	0.90	7.20
SD lbs	194.40	30.60	5.40	2.70	8.10
	369	**59**	**10**	**4**	**15**
CT5 total lbs	**1,672**	**1,106**	**167**	**11**	**106**
CT5 total tons	**0.84**	**0.55**	**0.08**	**0.01**	**0.05**

	CT6 Start	CT6 Stop	Total (HH:MM)	Total (hours)
9/15/2021	14:30	16:00	1:30	1.50
9/16/2021	15:00	15:30	0:30	0.50
9/17/2021			0:00	0.00
9/17/2021			0:00	0.00
9/17/2021			0:00	0.00
9/17/2021	14:00	16:00	2:00	2.00
9/20/2021	10:30	11:00	0:30	0.50
9/22/2021	7:30	15:00	7:30	7.50
			12:00:00	**12.00**
Starts			5	
Shutdowns			5	

	CO	NOx	PM10	SOx	VOC
	49.80	40.05	6.00	0.30	3.45
	16.60	13.35	2.00	0.10	1.15
	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00
	66.40	53.40	8.00	0.40	4.60
	16.60	13.35	2.00	0.10	1.15
	249.00	200.25	30.00	1.50	17.25
Run Time lbs	**398**	**320**	**48**	**2**	**28**
SU lbs	97.00	15.50	2.50	0.50	4.00
SD lbs	108.00	17.00	3.00	1.50	4.50
	205	**33**	**6**	**2**	**9**
CT6 total lbs	**603**	**353**	**54**	**4**	**36**
CT6 total tons	**0.30**	**0.18**	**0.03**	**0.00**	**0.02**

CT5 = North Unit
CT6 = South Unit

CT 5 and CT6 Run Times (based on breaker opening/closing)

	CT5 Close	CT5 Open	Total (HH:MM)	Total (hours)
9/15/2021	--	--	0	0.00
9/15/2021	23:13	0:00	0:47	0.78
9/16/2021	0:00	1:16	1:16	1.27
9/16/2021	15:36	15:57	0:21	0.35
9/17/2021	3:53	6:28	2:35	2.58
9/17/2021	13:48	14:19	0:31	0.52
9/17/2021	14:32	15:58	1:26	1.43
9/18/2021	3:24	12:11	8:47	8.78
9/19/2021	5:53	15:35	9:42	9.70
9/20/2021	2:57	9:09	6:12	6.20
9/21/2021	7:55	15:56	8:01	8.02
9/22/2021	--	--	0	0.00
			39:38:00	**39.63**
Starts			9	
Shutdowns			9	

	CT6 Close	CT6 Open	Total (HH:MM)	Total (hours)
9/15/2021	--	--	0	0.00
9/16/2021	15:06	15:34	0:28	0.47
9/17/2021	3:00	3:33	0:33	0.55
9/17/2021	3:53	4:34	0:41	0.68
9/17/2021	4:51	5:01	0:10	0.17
9/17/2021	14:10	14:59	0:49	0.82
9/20/2021	9:12	10:52	1:40	1.67
9/22/2021	7:58	15:06	7:08	7.13
			11:29:00	**11.48**
Starts			7	
Shutdowns			7	

CT 5 and CT6 Run Times (DWR Inspector Observed)

	CT5 Start	CT5 Stop	Total (HH:MM)	Total (hours)
9/15/2021	12:00	13:30	1:30	1.50
9/15/2021	21:15	0:00	2:45	2.75
9/16/2021	0:00	2:00	2:00	2.00
9/16/2021	15:30	15:45	0:15	0.25
9/17/2021			0:00	0.00
9/17/2021	13:45	16:00	2:15	2.25
9/17/2021				
9/18/2021	6:00	12:30	6:30	6.50
9/19/2021	6:00	15:30	9:30	9.50
9/20/2021	3:15	10:30	7:15	7.25
9/21/2021	8:30	15:30	7:00	7.00
9/22/2021	7:00	7:15	0:15	0.25
			39:15:00	**39.25**
Starts			9	
Shutdowns			9	

	CT6 Start	CT6 Stop	Total (HH:MM)	Total (hours)
9/15/2021	14:30	16:00	1:30	1.50
9/16/2021	15:00	15:30	0:30	0.50
9/17/2021			0:00	0.00
9/17/2021			0:00	0.00
9/17/2021			0:00	0.00
9/17/2021	14:00	16:00	2:00	2.00
9/20/2021	10:30	11:00	0:30	0.50
9/22/2021	7:30	15:00	7:30	7.50
			12:00:00	**12.00**
Starts			5	
Shutdowns			5	

Notes:

CT run time appears to be cut short compared to the breaker opening time
Appears to be missing a run time data set from ~3:45 to ~6:45

This missing line is ok as it appears that the breaker opened and closed twice during the same CT startup/shutdown cycle
CT start time later than breaker close time
Please verify CT run hours as they appear shorter than breaker close hours
Please verify CT start time as it appears later than breaker close time
Please verify CT run hours as they appear shorter than breaker close hours

Please confirm number of startups and shutdowns. Initial estimates are based on # of run "sets" provided.

Please verify CT shutoff time as compared to breaker open time
Appears to be missing a run time data set from ~2:45 to ~5:15
"
"

Please verify CT start time as it appears later than breaker close time
Please verify CT shutoff time as compared to breaker open time

Please confirm number of startups and shutdowns. Initial estimates are based on # of run "sets" provided.