

CALIFORNIA ENERGY COMMISSION

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**STATE OF CALIFORNIA
 ENERGY RESOURCES CONSERVATION
 AND DEVELOPMENT COMMISSION**

California Energy Commission DOCKETED 01-AFC-7C
TN 71498 JUL. 01 2013

In the Matter of:)	Docket No. 01-AFC-7C
Russell City Energy Center)	Order No. 13-0508-6
)	
)	
Russell City Energy Company, LLC)	ORDER APPROVING a Petition to Amend
)	Air Quality, Hazardous Materials
)	Management, and Visual Resources
)	Conditions of Certification

On November 8, 2012, the owner/operator of the Russell City Energy Center submitted a petition requesting to amend several of the project’s Conditions of Certification (COC) contained in the October 2007 California Energy Commission (Energy Commission) Final Decision. The petition requested modifications to Air Quality Conditions of Certification to clarify certain terms concerning monitoring, test methods, and timing for initial source testing, and to conform to the conditions in the draft Authority to Construct (ATC) air permit issued by the Bay Area Air Quality Management District (BAAQMD); a change to COC **VIS-2** to allow onsite planting after the start of commercial operation; to modify COC **VIS-10** to provide alternative offsite visual enhancement measures; and the deletion of COC **VIS-9** (trailside improvements), because the condition is not feasible and is no longer necessary.

On March 20, 2013, an addendum to the November 8, 2012 petition was received that requested a modification to **AQ-SC12** for consistency with other provisions relating to particulate matter found in **AQ-23** and for consistency with the conditions in the draft ATC and Prevention of Significant Deterioration (PSD) air permits issued by the BAAQMD; and a modification to **HAZ-5** to change the spacing requirements around the sulfuric acid tank.

The modifications to the Air Quality Conditions of Certification contained in the November 8, 2012 petition to amend and the subsequent addendum were approved by the BAAQMD, and a revised ATC was issued on May 8, 2013.

STAFF RECOMMENDATION

Energy Commission staff reviewed the petition and addendum, found that they comply with the requirements of Title 20, Section 1769(a) of the California Code of Regulations (CCR), and recommended approval of Russell City Energy Company, LLC, 's petition to amend or delete the specified COCs. The requested changes to **VIS-10** require additional information and staff recommended that they be heard at a later Energy Commission Business Meeting date.

ENERGY COMMISSION FINDINGS

Based on staff's analysis, the Energy Commission concludes that the proposed modifications will not result in any significant impact to public health and safety, or to the environment. The Energy Commission finds that:

- The petition meets all the filing criteria of Title 20, section 1769(a) CCR concerning post-certification project modifications;
- The modification will not change the findings in the Energy Commission's Final Decision pursuant to Title 20, section 1755 CCR; and
- The project will remain in compliance with all applicable laws, ordinances, regulations, and standards, subject to the provisions of Public Resources Code section 25525.

CONCLUSION AND ORDER

The California Energy Commission hereby adopts staff's recommendations and approves the following changes to the October 2007 Energy Commission Final Decision for the Russell City Energy Center. New language is shown as ~~strike-out~~ or ~~bold~~ ~~double strike-out~~ for deletions and **bold underline** for additions.

CONDITIONS OF CERTIFICATION

AQ-SC12 [Reserved]

~~A fireplace retrofit/woodstove replacement program shall be made available to all Hayward residents on a first-come, first-serve basis to finance a voluntary woodstove replacement/fireplace retrofit. The program can also made available to all residents of the cities of Fremont, Newark, Union City, San Leandro, Oakland, Emeryville, Albany, Piedmont, Berkeley, Alameda and the unincorporated communities of San Lorenzo and Castro Valley after twelve (12) months from the start date of the fireplace retrofit/woodstove replacement program. The program shall provide a minimum of 43.4 tons of winter time (Oct 1 to Mar 31) PM10 ERCs per year. Each resident participating in the retrofit/replacement program would agree to replace their existing woodstove or fireplace with a natural gasfired unit, or to permanently close the fireplace or woodstove chimney and apply the rebate toward the improvement or replacement of their homes' existing central heating and air conditioning unit. Quarterly status reports on the program meeting the following milestones shall be submitted to the CPM:~~

- ~~a. achieving 6.5 tons per year of winter time PM10 six (6) months after start of construction,~~
- ~~b. achieving 13.0 tons per year of winter time PM10 nine (9) months after start of construction.~~
- ~~c. achieving 21.7 tons per year of winter time PM10 twelve (12) months after start of construction.~~
- ~~d. achieving 34.7 tons per year of winter time PM10 eighteen (18) months after start of construction.~~
- ~~e. achieving 43.4 tons per year of winter time PM10 twenty four (24) months after start of construction.~~

Verification: ~~At least ninety (90) days before start of construction, the project owner shall submit to the CPM a plan detailing the fireplace/woodstove replacement program for approval. The plan shall include, at the minimum, the description of the program, the amount of rebate, the person (or agency) who oversees the program implementation, the responsible person who reports to the CPM on the progress of the program implementation, the target milestones, and procedures to be followed if the target milestones have not been met. The project owner shall submit documentation to show compliance with this condition in the quarterly and annual reports as required in AQ-20.~~

AQ-SC13 ~~If complete compliance with AQ-SC12 cannot be achieved by the condition milestones, †The project owner shall~~ **provide 71.8 TPY of PM10 ERCs required, either as PM10 or SOx ERCs.** ~~make up the wintertime PM10 milestone shortfall by providing annual PM10 or PM10 equivalent (SOx for PM10) ERCs at a ratio of 2 tons of annual PM10 or PM10 equivalent ERCs to 1 ton of wintertime PM10. PM10 equivalent ERCs can be provided by SOx for PM10 interpollutant trading at a ratio of 5.3 to 1.~~

Verification: ~~The project owner shall submit to the CPM a list of PM10 and/or SOx ERCs to be surrendered to the District at least 60 days prior to initial startup.~~

AIR DISTRICT CONDITIONS OF CERTIFICATION

Definitions:

Clock Hour:	Any continuous 60-minute period beginning on the hour.
Calendar Day:	Any continuous 24-hour period beginning at 12:00 AM or 0000 hours.
Year:	Any consecutive twelve-month period of time.
Heat Input:	Heat inputs refer to the heat input at the higher heating value (HHV) of the fuel, in BTU/scf.
Firing Hours:	Period of time during which fuel is flowing to a unit, measured in minutes.

MM BTU: Million British thermal units.

Gas Turbine Warm and Hot Start-up Mode: The lesser of the first 180 minutes of continuous fuel flow to the gas turbine after fuel flow is initiated or the period of time from gas turbine fuel flow initiation until the gas turbine achieves two consecutive CEM data points in compliance with the emission concentration limits of Conditions of Certification **AQ-19(b)** and **AQ-19(d)**.

Gas Turbine Cold Start-up Mode: The lesser of the first 360 minutes of continuous fuel flow to the gas turbine after fuel flow is initiated or the period of time from gas turbine fuel flow initiation until the gas turbine achieves two consecutive CEM data points in compliance with the emission concentration limits of Conditions of Certification **AQ-19(b)** and **AQ-19(d)**.

Gas Turbine Shutdown Mode: The lesser of the 30 minute period immediately prior to the termination of fuel flow to the gas turbine or the period of time from non-compliance with any requirement listed in Conditions of Certification **AQ-19(b)** and through **AQ-19(d)** until termination of fuel flow to the gas turbine.

Gas Turbine Combustor Tuning Mode: The period of time, not to exceed 360 minutes, in which testing, adjustment, tuning, and calibration operations are performed, as recommended by the gas turbine manufacturer, to insure safe and reliable steady-state operation, and to minimize NO_x and CO emissions. ~~The SCR and oxidation catalyst are not operating during the tuning operation.~~

Gas Turbine Cold Start-up: A gas turbine start-up that occurs more than 48 hours after a gas turbine shutdown.

Gas Turbine Hot Start-up: A gas turbine start-up that occurs within 8 hours of a gas turbine shutdown.

Gas Turbine Warm Start-up: A gas turbine start-up that occurs between 8 hours and 48 hours of a gas turbine shutdown.

Specified PAHs: The polycyclic aromatic hydrocarbons listed below shall be considered to be Specified PAHs for these permit conditions. Any emission limits for Specified PAHs refer to the sum of the emissions for all six of the following compounds:

- Benzo[a]anthracene
- Benzo[b]fluoranthene
- Benzo[k]fluoranthene
- Benzo[a]pyrene

Dibenzo[a,h]anthracene

Indeno[1,2,3-cd]pyrene

Corrected Concentration: The concentration of any pollutant (generally NO_x, CO, or NH₃) corrected to a standard stack gas oxygen concentration. For emission points P-1 (combined exhaust of S-1 gas turbine and S-3 HRSG duct burners), P-2 (combined exhaust of S-2 gas turbine and S-4 HRSG duct burners), the standard stack gas oxygen concentration is 15% O₂ by volume on a dry basis.

Commissioning Activities: All testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the RCEC construction contractor to insure safe and reliable steady state operation of the gas turbines, heat recovery steam generators, steam turbine, and associated electrical delivery systems during the commissioning period.

Commissioning Period: The Period shall commence when all mechanical, electrical, and control systems are installed and individual system start-up has been completed, or when a gas turbine is first fired, whichever occurs first. The period shall terminate when the plant has completed performance testing, is available for commercial operation, and has initiated sales to the power exchange.

Precursor Organic

Compounds (POCs): Any compound of carbon, excluding methane, ethane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.

CPM: California Energy Commission Compliance Program Manager

RCEC: Russell City Energy Center

CONDITIONS FOR COMMISSIONING PERIOD

AQ-10 The project owner/operator shall not operate the gas turbines (S-1 & S-3) and HRSGs (S-2 & S-4) in a manner such that the combined pollutant emissions from these sources will exceed the following limits during the commissioning period. These emission limits shall include emissions resulting from the start-up and shutdown of the gas turbines (S-1 & S-3).

NO _x (as NO ₂)	4,805 pounds per calendar day	400 pounds per hour
CO	20,000 pounds per calendar day	5,000 pounds per hour
POC (as CH ₄)	495 pounds per calendar day	
PM10	413 pounds per calendar day	
SO ₂	298 pounds per calendar day	

Verification: The project owner shall submit a MCR to the CPM specifying how this condition is being complied with.

AQ-11 No less than ~~120~~**90** days after startup, the owner/operator shall conduct District and Energy Commission approved source tests ~~using certified continuous emissions monitors~~ to determine compliance with the emission limitations specified in **AQ-19**. The source tests shall determine NO_x, CO, and POC emissions during start-up and shutdown of the gas turbines. The POC emissions shall be analyzed for methane and ethane to account for the presence of unburned natural gas. The source test shall include a minimum of three start-up and three shutdown periods and shall include at least one cold start, one warm start, and one hot start. Twenty (20) working days before the execution of the source tests, the owner/operator shall submit to the District and the CPM a detailed source test plan designed to satisfy the requirements of this condition. The District and the CPM will notify the owner/operator of any necessary modifications to the plan within 20 working days of receipt of the plan; otherwise, the plan shall be deemed approved. The owner/operator shall incorporate the District and CPM comments into the test plan. The owner/operator shall notify the District and the CPM within seven (7) working days prior to the planned source testing date. The owner/operator shall submit the source test results to the District and the CPM within **150 days of the initial startup**~~60 days of the source testing date~~.

Verification: No later than 30 working days before the commencement of the source tests, the project owner shall submit to the District and the CPM a detailed source test plan designed to satisfy the requirements of this condition. The District and the CPM will notify the project owner of any necessary modifications to the plan within 20 working days of receipt of the plan; otherwise, the plan shall be deemed approved. The project owner shall incorporate the District and CPM comments into the test plan. The project owner shall notify the District and the CPM within seven (7) working days prior to the planned source testing date. Source test results shall be submitted to the District and the CPM within **150 days of the initial startup**~~60 days of the source testing date~~.

CONDITIONS FOR THE GAS TURBINES (S-1 & S-3) AND THE HRSGS (S-2 & S-4)

AQ-12 The owner/operator shall fire the gas turbines (S-1 & S-3) and HRSG Duct Burners (S-2 & S-4) exclusively on PUC-regulated natural gas with a maximum sulfur content of 1 grain per 100 standard cubic feet. To demonstrate compliance with this limit, the operator of S-1 through S-4 shall sample and analyze the gas from each supply source at least monthly to determine the sulfur content of the gas. PG&E monthly sulfur data may be used provided that such data can be demonstrated to be representative of the gas delivered to the RCEC. In the event that the **rolling 12-month annual** average sulfur content exceeds 0.25 grain per 100 standard cubic feet, a reduced annual heat input rate may be utilized to

calculate the maximum projected annual emissions. The reduced annual heat input rate shall be subject to District review and approval. (BACT for SO₂ and PM₁₀)

Verification: The project owner shall complete, on a monthly basis, a laboratory analysis showing the sulfur content of natural gas being burned at the facility. The sulfur analysis reports shall be incorporated into the quarterly compliance reports.

AQ-19 The project owner/operator shall ensure that the gas turbines (S-1 & S-3) and HRSGs (S-2 & S-4) comply with requirements **(a) through (h)** under all operating scenarios, including duct burner firing mode. Requirements **(a) through (h)** do not apply during a gas turbine start-up, combustor tuning operation or shutdown. (BACT, PSD, and Regulation 2, Rule 5)

- (a) Nitrogen oxide mass emissions (calculated as NO₂) at P-1 (the combined exhaust point for S-1 gas turbine and S-2 HRSG after abatement by A-1 SCR System) shall not exceed 16.5 pounds per hour or 0.00735 lb/MM BTU (HHV) of natural gas fired, **averaged over any 1-hour period**. Nitrogen oxide mass emissions (calculated as NO₂) at P-2 (the combined exhaust point for S-3 gas turbine and S-4 HRSG after abatement by A-3 SCR System) shall not exceed 16.5 pounds per hour or 0.00735 lb/MM BTU (HHV) of natural gas fired, **averaged over any 1-hour period**.
- (b) The nitrogen oxide emission concentration at emission points P-1 and P-2 each shall not exceed 2.0 ppmv, on a dry basis, corrected to 15 percent O₂, averaged over any 1-hour period. (BACT for NO_x)
- (c) Carbon monoxide mass emissions at P-1 and P-2 each shall not exceed 10 pounds per hour or 0.0045 lb/MM BTU of natural gas fired, averaged over any 1-hour period. (PSD for CO)
- (d) The carbon monoxide emission concentration at P-1 and P-2 each shall not exceed 2.0 ppmv, on a dry basis, corrected to 15 percent O₂, averaged over any 1-hour period. (BACT for CO)
- (e) Ammonia (NH₃) emission concentrations at P-1 and P-2 each shall not exceed 5 ppmv, on a dry basis, corrected to 15 percent O₂, averaged over any rolling 3-hour period. This ammonia emission concentration shall be verified by the continuous recording of the ammonia injection rate to A-2 and A-4 SCR Systems. The correlation between the gas turbine and HRSG heat input rates, A-2 and A-4 SCR System ammonia injection rates, and corresponding ammonia emission concentration at emission points P-1 and P-2 shall be determined in accordance with permit condition **AQ-2930 or District approved alternative method**. (Regulation 2-5)
- (f) Precursor organic compound (POC) mass emissions (as CH₄) at P-1 and P-2 each shall not exceed 2.86 pounds per hour or 0.00128 lb/MM BTU of natural gas fired. (BACT)
- (g) Sulfur dioxide (SO₂) mass emissions at P-1 & P-2 each shall not exceed 6.21 pounds per hour or 0.0028 lb/MM BTU of natural gas fired. (BACT)

- (h) Particulate matter (PM10) mass emissions at P-1 & P-2 each shall not exceed 7.5 pounds per hour or 0.0036 lb PM10 per MM BTU of natural gas fired. (BACT)

Verification: The project owner shall submit to the District and CPM, quarterly reports for the proceeding calendar quarter within 30 days from the end of the quarter. The report for the fourth quarter can be an annual compliance summary for the preceding year. The quarterly and annual compliance summary reports shall contain the following information:

- (a) Operating parameters of emission control equipment, including but not limited to ammonia injection rate, NO_x emission rate and ammonia slip.
- (b) Total plant operation time (hours), number of startups, hours in cold startup, hours in warm startup, hours in hot startup, and hours in shutdown.
- (c) Date and time of the beginning and end of each startup and shutdown period.
- (d) Average plant operation schedule (hours per day, days per week, weeks per year).
- (e) All continuous emissions data reduced and reported in accordance with the District approved CEMS protocol.
- (f) Maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NO_x, CO, PM10, POC and SO_x (including calculation protocol).
- (g) Fuel sulfur content (monthly laboratory analyses, monthly natural gas sulfur content reports from the natural gas supplier(s), or the results of a custom fuel monitoring schedule approved by the District.
- (h) A log of all excess emissions, including the information regarding malfunctions/breakdowns.
- (i) Any permanent changes made in the plant process or production, which would affect air pollutant emissions, and indicate when changes were made.
- (j) Any maintenance to any air pollutant control system (recorded on an as performed basis).

In addition, this information shall be maintained on site for a minimum of five (5) years and shall be provided to District personnel on request.

AQ-20 The project owner/operator shall ensure that the regulated air pollutant mass emission rates from each of the gas turbines (S-1 & S-3) during a startup or shutdown does not exceed the limits established below. The project

owner/operator shall not operate both of the Gas Turbines (S1 & S3) in Startup Mode at the same time. (PSD, CEC Conditions of Certification)

Pollutant	Cold Start-Up/ Combustor Tuning	Hot Start-Up	Warm Start-Up	Shutdown
	lb/start-up	lb/start-up	lb/start-up	lb/shutdown
NO _x (as NO ₂)	480.0	95	125	40
CO	2514	891	2514	100
POC (as CH ₄)	83	35.3	79	16

Verification: The project owner shall submit to the District and CPM the quarterly and annual compliance reports as required by **AQ-19**.

AQ-22 The ~~project~~ owner/operator shall not allow total combined emissions from the gas turbines and HRSGs (S-1, S-2, S-3 & S-4), S-5 Cooling Tower, and S-6 Fire Pump Diesel Engine, including emissions generated during gas turbine start-ups, combustor tuning, and shutdowns to exceed the following limits during any calendar day:

- (a) 1,453 pounds of NO_x (as NO₂) per day (Cumulative Emissions)
- (b) 1,225 pounds of NO_x per day during ozone season from June 1 to September 30. (CEC Condition of Certification)
- (c) 7,360 pounds of CO per day (PSD)
- (d) 295 pounds of POC (as CH₄) per day (Cumulative Emissions)
- (e) 413 pounds of PM10 per day (PSD)
- (f) 292 pounds of SO₂ per day (BACT)

Verification: The project owner shall submit to the District and CPM the quarterly and annual compliance reports as required by **AQ-19**.

AQ-23 The ~~project~~ owner/operator shall not allow cumulative combined emissions from the gas turbines and HRSGs (S-1, S-2, S-3 & S-4), S-5 Cooling Tower, and S-6 Fire Pump Diesel Engine, including emissions generated during gas turbine start-ups, combustor tuning, and shutdowns to exceed the following limits during any consecutive twelve-month period:

- (a) 127 tons of NO_x (as NO₂) per year (Offsets, PSD)
- (b) 330 tons of CO per year (Cumulative Increase, PSD)
- (c) 28.5 tons of POC (as CH₄) per year (Offsets)

- (d) 71.8 tons of PM10 per year (Cumulative Increase, PSD)
- (e) 12.2 tons of SO₂ per year (Cumulative Increase, PSD)

Verification: The project owner shall submit to the District and CPM the quarterly and annual compliance reports as required by **AQ-19**.

AQ-26 The project owner/operator shall demonstrate compliance with **AQ-13 through AQ-16, AQ-19(a) through (d), AQ-20, AQ-22(a) and (b), AQ-23(a) and (b)** by using properly operated and maintained continuous monitors (during all hours of operation including gas turbine start-up, combustor tuning, and shutdown periods) for all of the following parameters:

- (a) Firing Hours and Fuel Flow Rates for each of the following sources: S-1 & S-3 combined, S-2 & S-4 combined.
- (b) Oxygen (O₂) concentration, Nitrogen Oxides (NO_x) concentration, and Carbon Monoxide (CO) concentration at exhaust points P-1 and P-2.
- (c) Ammonia injection rate at A-1 and A-3 SCR Systems

The project owner/operator shall record all of the above parameters every 15 minutes (excluding normal calibration periods) and shall summarize all of the above parameters for each clock hour. For each calendar day, the project owner/operator shall calculate and record the total firing hours, the average hourly fuel flow rates, and pollutant emission concentrations.

The project owner/operator shall use the parameters measured above and District-approved calculation methods to calculate the following parameters:

- (d) Heat Input Rate for each of the following sources: S-1 & S-3 combined, S-2 & S-4 combined.
- (e) Corrected NO_x concentration, NO_x mass emission rate (as NO₂), corrected CO concentration, and CO mass emission rate at each of the following exhaust points: P-1 and P-2.

For each source, source grouping, or exhaust point, the project owner/operator shall record the parameters specified in **AQ-26(d) and (e)** at least once every 15 minutes (excluding normal calibration periods). As specified below, the project owner/operator shall calculate and record the following data:

- (f) total heat input rate for every clock hour.
- (g) on an hourly basis, the cumulative total heat input rate for each calendar day for the following: each gas turbine and associated HRSG combined and all four sources (S-1, S-2, S-3 and S-4) combined.
- (h) the average NO_x mass emission rate (as NO₂), CO mass emission rate, and corrected NO_x and CO emission concentrations for every clock hour..

- (i) on an hourly basis, the cumulative total NO_x mass emissions (as NO₂) and the cumulative total CO mass emissions, for each calendar day for the following: each gas turbine and associated HRSG combined and all four sources (S-1, S-2, S-3 and S-4) combined.
- (j) For each calendar day, the average hourly heat input rates, corrected NO_x emission concentration, NO_x mass emission rate (as NO₂), corrected CO emission concentration, and CO mass emission rate for each gas turbine and associated HRSG combined ~~and the auxiliary boiler.~~
- (k) on a daily basis, the cumulative total NO_x mass emissions (as NO₂) and cumulative total CO mass emissions, for the previous consecutive twelve month period for all four sources (S-1, S-2, S-3 and S-4) combined.

(1-520.1, 9-9-501, BACT, Offsets, NSPS, Cumulative Increase)

Verification: At least 30 days before first fire, the project owner shall submit to the CPM a plan on how the measurements and recordings required by this condition will be performed.

AQ-27 To demonstrate compliance with conditions **AQ-19(f), AQ-19(g), thru AQ-19(h), AQ-22(de), thru AQ-22(e), AQ-22(f)**, and **AQ-23(c), AQ-23(d), thru AQ-23(e)**, the owner/operator shall calculate and record on a daily basis, the Precursor Organic Compound (POC) mass emissions, Fine Particulate Matter (PM10) mass emissions (including condensable particulate matter), and Sulfur Dioxide (SO₂) mass emissions from each power train. The owner/operator shall use the actual heat input rates measured pursuant to **AQ-26**, actual gas turbine start-up times, actual gas turbine shutdown times, and CEC and District-approved emission factors developed pursuant to source testing under **AQ-30** to calculate these emissions. The owner/operator shall present the calculated emissions in the following format:

- (a) For each calendar day, POC, PM10, and SO₂ emissions, summarized for each power train (gas turbine and its respective HRSG combined) and all four sources (S-1, S-2, S-3 & S-4) combined
- (b) on a daily basis, the cumulative total POC, PM10, and SO₂ mass emissions, for each year for all ~~four~~ **eight** sources (S-1, S-2, S-3 & S-4) combined

(Offsets, PSD, Cumulative Increase)

Verification: The project owner shall submit to the District and CPM the quarterly and annual compliance reports as required by **AQ-19**.

AQ-29 Within ~~12090~~ **12090** days of start-up of the RCEC, the owner/operator shall conduct a District-approved source test on exhaust point P-1 or P-2 to determine the corrected ammonia (NH₃) emission concentration to determine compliance with **AQ-19(e)**. The source test shall determine the correlation between the heat input rates of the gas turbine and associated HRSG, A-2 or A-4 SCR System ammonia injection rate, and the corresponding NH₃ emission concentration at emission

point P-1 or P-2. The source test shall be conducted over the expected operating range of the turbine and HRSG (including, but not limited to, minimum and full load modes) to establish the range of ammonia injection rates necessary to achieve NO_x emission reductions while maintaining ammonia slip levels. The owner/operator shall repeat the source testing on an annual basis thereafter. Ongoing compliance with **AQ-19(e)** shall be demonstrated through calculations of corrected ammonia concentrations based upon the source test correlation and continuous records of ammonia injection rate. The owner/operator shall submit the source test results to the District and the CPM, **in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of conducting the tests. (Regulation 2, Rule 5)

Verification: The project owner shall notify the District and the CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM, **in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of the date of the tests.

AQ-30 Within ~~120~~90 days of start-up of the RCEC and on an annual basis thereafter, the owner/operator shall conduct a District-approved source test on exhaust points P-1 and P-2 while each gas turbine and associated Heat Recovery Steam Generator are operating at maximum load to determine compliance with **AQ-19(a), (b), (c), (d), (f), (g), and (h)** and while each gas turbine and associated Heat Recovery Steam Generator are operating at minimum load to determine compliance with **AQ-19(c) and (d)**, and to verify the accuracy of the continuous emission monitors required in **AQ-26**. **For the purposes of the testing at maximum load only,** the owner/operator shall test for (as a minimum): water content, stack gas flow rate, oxygen concentration, precursor organic compound concentration and mass emissions, nitrogen oxide concentration and mass emissions (as NO₂), carbon monoxide concentration and mass emissions, sulfur dioxide concentration and mass emissions, methane, ethane, and particulate matter (PM₁₀) emissions including condensable particulate matter. The owner/operator shall submit the source test results to the District and the CEC CPM, **in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of conducting the tests. (BACT, offsets)

Verification: The project owner shall notify the District and the CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM, **in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of the date of the tests.

AQ-31 The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section and the CPM prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for

continuous emission monitors as specified in Volume V of the District's Manual of Procedures. The owner/operator shall notify the District's Source Test Section and the CPM in writing of the source test protocols and projected test dates at least 7 days prior to the testing date(s). As indicated above, the owner/operator shall measure the contribution of condensable PM (back half) to the total PM10 emissions. However, the owner/operator may propose alternative measuring techniques to measure condensable PM such as the use of a dilution tunnel or other appropriate method used to capture semi-volatile organic compounds. The owner/operator shall submit the source test results to the District and the CPM, in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter, within 60 days of conducting the tests. (BACT)

Verification: Approval of the source test procedures, as required in **AQ-31**, and the source test reports shall be deemed as verification for this condition. The project owner shall notify the District and the CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM, in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter, within 60 days of the date of the tests.

AQ-32 Within ~~120~~90 days of start-up of the RCEC and on a biennial basis (once every two years) thereafter, the owner/operator shall conduct a District-approved source test on exhaust point P-1 or P-2 while the gas turbine and associated Heat Recovery Steam Generator are operating at maximum allowable operating rates to demonstrate compliance with **AQ-25**. The owner/operator shall also test the gas turbine while it is operating at minimum load. If three consecutive biennial source tests demonstrate that the annual emission rates calculated pursuant to **AQ-25** for any of the compounds listed below are less than the BAAQMD trigger levels, pursuant to Regulation 2, Rule 5, shown, then the owner/operator may discontinue future testing for that pollutant:

Benzene	≤	6.4 pounds/year and 2.9 pounds/hour
Formaldehyde	≤	30 pounds/year and 0.21 pounds/hour
Specified PAHs	≤	0.011 pounds/year

(Regulation 2, Rule 5)

Verification: The project owner shall notify the District and the CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM, in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter, within 60 days of the date of the tests.

AQ-33 The owner/operator shall calculate the SAM emission rate using the total heat input for the sources and the highest results of any source testing conducted

pursuant to ~~AQ-3430~~. If this SAM mass emission limit of **AQ-24** is exceeded, the owner/operator must utilize air dispersion modeling to determine the impact (in $\mu\text{g}/\text{m}^3$) of the sulfuric acid mist emissions pursuant to Regulation 2-2-306. (PSD)

Verification: The project owner shall notify the District and the CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM, **in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of the date of the tests.

AQ-34 Within ~~120~~90 days of start-up of the RCEC and on a semi-annual basis (~~twice per year~~) thereafter, the owner/operator shall conduct a District-approved source test on exhaust points P-1 and P-2 while each gas turbine and HRSG duct burner is operating at maximum heat input rates to demonstrate compliance with the SAM emission rates specified in **AQ-24**. The owner/operator shall test for (as a minimum) SO_2 , SO_3 , and H_2SO_4 . ~~After acquiring one year of source test data on these sources, the owner/operator may petition the District to reduce the test frequency to an annual basis if test result variability is sufficiently low as determined by the District.~~ The owner/operator shall submit the source test results to the District and the CPM, **in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of conducting the tests. (PSD)

Verification: The project owner shall notify the District and the CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM, **in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of the date of the tests.

AQ-42 Pursuant to 40 CFR Part 72.30(b)(2)(ii) of the Federal Acid Rain Program, the owner/operator of the Russell City Energy Center shall submit an application for a Title IV operating permit to the BAAQMD at least 24 months before operation of any of the gas turbines (S-1, or S-3, ~~S-5, or S-7~~) or HRSGs (S-2, or S-4, ~~S-6, or S-8~~). (Regulation 2, Rule 7)

Verification: The project owner shall submit to the CPM copies of the Federal (Title IV) Acid Rain and (Title V) Operating Permit within 30 days after they are issued by the District.

PERMIT CONDITIONS FOR COOLING TOWERS

AQ-44 The ~~project~~ owner/**operator** shall properly install and maintain the S-5 cooling tower to minimize drift losses. The ~~project~~ owner/**operator** shall equip the cooling towers with high-efficiency mist eliminators with a maximum guaranteed drift rate of 0.0005 percent. The maximum total dissolved solids (TDS) measured at the base of the cooling towers or at the point of return to the wastewater facility shall

not be higher than 6,200 ppmw (mg/l). The ~~project~~ owner/operator shall sample and test the cooling tower water at least once per day to verify compliance with this TDS limit. (PSD)

Verification: At least 120 days prior to construction of the cooling tower, the project owner shall provide the District and CPM an "approved for construction" drawing and specifications for the cooling tower and the high-efficiency mist eliminator.

AQ-45 The owner/operator shall perform a visual inspection of the cooling tower drift eliminators at least once per calendar year, and repair or replace any drift eliminator components which are broken or missing. Prior to the initial operation of the Russell City Energy Center, the owner/operator shall have the cooling tower vendor's field representative inspect the cooling tower drift eliminators and certify that the installation was performed in a satisfactory manner. Within ~~120~~ 60 days of the initial operation of the cooling tower, the owner/operator shall perform an initial performance source test to determine the PM10 emission rate from the cooling tower to verify compliance with the vendor-guaranteed drift rate specified in **AQ-44**. The CPM may require the owner/operator to perform source tests to verify continued compliance with the vendor-guaranteed drift rate specified in **AQ-44**. (PSD)

Verification: The project owner shall submit to the District and CPM the quarterly and annual compliance reports as required by **AQ-19**.

AIR DISTRICT CONDITIONS OF CERTIFICATION

Definitions:

Clock Hour:	Any continuous 60-minute period beginning on the hour.
Calendar Day:	Any continuous 24-hour period beginning at 12:00 AM or 0000 hours.
Year:	Any consecutive twelve-month period of time.
Heat Input:	Heat inputs refer to the heat input at the higher heating value (HHV) of the fuel, in BTU/scf.
Firing Hours:	Period of time during which fuel is flowing to a unit, measured in minutes.
MM BTU:	Million British thermal units.
Gas Turbine Warm and Hot Start-up Mode:	The lesser of the first 180 minutes of continuous fuel flow to the gas turbine after fuel flow is initiated or the period of time from gas turbine fuel flow initiation until the gas turbine achieves two consecutive CEM data points in compliance with the emission concentration limits of Conditions of Certification AQ-19(b) and AQ-19(d) .
Gas Turbine Cold	

Start-up Mode:	The lesser of the first 360 minutes of continuous fuel flow to the gas turbine after fuel flow is initiated or the period of time from gas turbine fuel flow initiation until the gas turbine achieves two consecutive CEM data points in compliance with the emission concentration limits of Conditions of Certification AQ-19(b) and AQ-19(d) .
Gas Turbine Shutdown Mode:	The lesser of the 30 minute period immediately prior to the termination of fuel flow to the gas turbine or the period of time from non-compliance with any requirement listed in Conditions of Certification AQ-19(b) and <u>through</u> AQ-19(d) until termination of fuel flow to the gas turbine.
Gas Turbine Combustor Tuning Mode:	The period of time, not to exceed 360 minutes, in which testing, adjustment, tuning, and calibration operations are performed, as recommended by the gas turbine manufacturer, to insure safe and reliable steady-state operation, and to minimize NO _x and CO emissions. The SCR and oxidation catalyst are not operating during the tuning operation.
Gas Turbine Cold Start-up:	A gas turbine start-up that occurs more than 48 hours after a gas turbine shutdown.
Gas Turbine Hot Start-up:	A gas turbine start-up that occurs within 8 hours of a gas turbine shutdown.
Gas Turbine Warm Start-up:	A gas turbine start-up that occurs between 8 hours and 48 hours of a gas turbine shutdown.
Specified PAHs:	The polycyclic aromatic hydrocarbons listed below shall be considered to be Specified PAHs for these permit conditions. Any emission limits for Specified PAHs refer to the sum of the emissions for all six of the following compounds: <ul style="list-style-type: none"> Benzo[a]anthracene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[a]pyrene Dibenzo[a,h]anthracene Indeno[1,2,3-cd]pyrene
Corrected Concentration:	The concentration of any pollutant (generally NO _x , CO, or NH ₃) corrected to a standard stack gas oxygen concentration. For emission points P-1 (combined exhaust of S-1 gas turbine and S-3 HRSG duct burners), P-2 (combined exhaust of S-2 gas turbine and S-4 HRSG duct burners), the standard stack gas oxygen concentration is 15% O ₂ by volume on a dry basis.

Commissioning Activities: All testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the RCEC construction contractor to insure safe and reliable steady state operation of the gas turbines, heat recovery steam generators, steam turbine, and associated electrical delivery systems during the commissioning period.

Commissioning Period: The Period shall commence when all mechanical, electrical, and control systems are installed and individual system start-up has been completed, or when a gas turbine is first fired, whichever occurs first. The period shall terminate when the plant has completed performance testing, is available for commercial operation, and has initiated sales to the power exchange.

Precursor Organic

Compounds (POCs): Any compound of carbon, excluding methane, ethane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.

CPM: California Energy Commission Compliance Program Manager

RCEC: Russell City Energy Center

HAZ-5 The project owner shall ensure that no combustible or flammable material is stored, used, or transported within 50 feet of the sulfuric acid tank, **or within less than 50 feet, provided the project owner constructs or installs a physical barrier between the sulfuric acid tank and the location of any combustible or flammable material that meets design and construction requirements established by the California Building Code, as verified by the CBO.**

Verification: At least sixty (60) days prior to receipt of sulfuric acid on-site, the project owner shall provide to the CPM for review and approval copies of the facility design drawings showing the location of the sulfuric acid storage tank and the location of any tanks, drums, or piping containing any combustible or flammable material and the route by which such materials will be transported through the facility.

VIS-2 ~~Prior to the first turbine roll~~ The project owner shall prepare and implement an approved onsite landscape plan to screen the power plant from view to the greatest extent possible. Suitable irrigation shall be installed to ensure survival of the plantings. Landscaping shall be installed consistent with the City of Hayward zoning ordinance and with the U.S. Fish and Wildlife Service's recommendations, if applicable, that plants not provide opportunities for perching by birds of prey. **Protocol:** The project owner shall submit a landscape plan to the City of Hayward for review and comment, and to the CPM for review and approval. The submittal to the CPM shall include the City's comments. The plan shall include, but not be limited to:

- 1) A detailed landscape, grading, and irrigation plan, at a reasonable scale, which includes a list of proposed tree and shrub species and installation sizes, and a discussion of the suitability of the plants for the site conditions and mitigation objectives.
- 2) An installation schedule. The project owner shall not implement the landscape plan until the project owner receives approval of the plan from the CPM. ~~The planting must be completed by the start of commercial operation, and the planting must occur during the optimal planting season.~~
- 3) Maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project; and
- 4) A procedure for monitoring for and replacement of unsuccessful plantings for the life of the project.

The project owner shall not implement the plan until the project owner receives approval of the plan from the CPM.

Verification: ~~Prior to the first turbine roll~~ **At** least 60 days prior to installing the landscaping; the project owner shall submit the landscape plan to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the submittal are needed before the CPM would approve the submittal, within 30 days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall complete installation of the landscaping within 90 days of the commercial operation date. The project owner shall notify the CPM within seven days after completing installation of the landscape screening that the planting and irrigation system are ready for inspection.

The project owner shall report landscape maintenance activities, including replacement of dead vegetation, for the previous year of operation in the Annual Compliance Report.

VIS-9 deleted in its entirety.

~~**VIS-9** Prior to commercial operation, the project owner shall install new trailside amenities in the Hayward Regional Shoreline that may include, benches, free-of-charge viewsopes, and an information kiosk and set of low panels for the display of interpretive information related to Mt. Diablo and other important elements of the regional setting. The project owner shall work with the Hayward Area Recreation and Parks District (HARD) to develop the final designs for these facilities. As part of this measure, the project owner shall provide the HARD with an adequate budget that would allow its Staff to research and prepare the interpretive materials to be mounted on the kiosk and panels. The project owner shall determine the precise location of the trailside amenities in consultation with the CPM and the HARD.~~

~~**Verification:** Within 12 months after the start of HRSG construction, the project owner shall submit a final design plan for the trailside amenities to the HARD for review and comment and to the CPM for review and approval. If the CPM notifies the project owner that revisions are needed before the CPM would approve the plan, within 30 days of receiving that notification the project owner shall submit a revised plan to the CPM.~~

~~Not less than thirty 30 days prior to the first turbine roll, the project owner shall notify the CPM that the trailside amenities are ready for inspection.~~

IT IS SO ORDERED.

CERTIFICATION

The undersigned Secretariat to the Commission does hereby certify that the foregoing is a full, true, and correct copy of an Order duly and regularly adopted at a meeting of the California Energy Commission held on May 8, 2013.

AYE: Weisenmiller, Douglas, Hochschild, McAllister, Scott

NAY: None

ABSENT: None

ABSTAIN: None



Harriet Kallemeyn,
Secretariat