CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

STATE OF CALIFORNIA
ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

In the Matter of:	)	
Procter and Gamble Cogeneration	)	**Docket No. 93-AFC-2C**
Project	)	
Sacramento Cogeneration Authority	)	**Order No. 08-0312-3**
	)	**ORDER APPROVING** a Petition to
	)	Upgrade Three Combustion Turbines

Sacramento Cogeneration Authority (SCA), the owner of the Procter and Gamble Cogeneration Project, has requested to upgrade three combustion turbines. These upgrades are anticipated to lower the turbines' greenhouse gas emissions and natural gas consumption on a per-megawatt-hour basis, and raise thermal efficiency. Overall facility output is expected to increase by 22 MW (nominal).

The modifications were approved by the Sacramento Metropolitan Air Quality Management District; an Authority to Construct permit was issued on February 8, 2008.

STAFF RECOMMENDATION

The Energy Commission staff reviewed the petition and finds that it complies with the requirements of Title 20, Section 1769(a) of the California Code of Regulations and recommends approval of SCA's petition to modify the Procter and Gamble Cogeneration Project and amend related conditions of certification.

ENERGY COMMISSION FINDINGS

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

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

- The change will be beneficial to the public because the combustion turbine upgrade will reduce greenhouse gas emissions and natural gas consumption on a per-megawatt-hour basis, and will increase thermal efficiency, providing up to approximately 22 MW (nominal) of additional capacity.

- There has been a substantial change in circumstances since the Energy Commission certification justifying the changes to the project. The changes are based on information that was not available to the parties prior to Energy Commission certification in that the new turbine technology was not available until 2003.

CONCLUSION AND ORDER

The California Energy Commission hereby adopts staff's recommendations and approves the following changes to the Procter and Gamble Project's Certification.

PROPOSED REVISIONS TO CONDITION(S) OF CERTIFICATION

(Deleted text is in ~~strikethrough~~, new text is **bold underlined**) :

AQ-10 Emissions at the SCA Cogeneration facility, on a pound per hour basis, shall not exceed the following limits averaged over a three hour period, not including start-ups **and shutdowns** as defined in conditions **AQ-16**, **AQ**-22 and **AQ**-24.

Prior to CTG upgrade to PC Sprint/EFS

Pollutant	Units	CTG + Duct Burner (each)	Simple Cycle CTG	Auxiliary Boiler	Cooling Tower
NOx	lb/hr	9.72	8.22	1.15	--
*CO	lb/hr	4.27	3.3	7.12	--
ROC	lb/hr	1.8	1.18	0.41	--
SOx	lb/hr	0.32	0.27	0.08	--
PM10	lb/hr	3.3	2.5	0.54	0.29

* The CO emissions from the combustion turbines were taken at a different temperature scenario which represented a worst case continuous operation Condition.

Following CTG upgrade to PC Sprint/EFS

Pollutant	Units	CTG + Duct Burner (each)	Simple Cycle CTG	Auxiliary Boiler	Cooling Tower
NOx	lb/hr	5.37	4.60	1.15	--
CO	lb/hr	7.85	6.73	7.12	--
ROC	lb/hr	1.8	1.18	0.41	--
SOx	lb/hr	0.35	0.30	0.08	--
PM10	lb/hr	3.3	2.5	0.54	0.29

The ~~District~~ **SMAQMD**, in agreement with the project owner, may choose to decrease the above hourly emission limits to correspond to the source test results pursuant to Condition AQ-38.

Verification: The project owner shall maintain appropriate emission data records as required by Condition AQ-8 and submit source test reports required under Condition AQ-38.

AQ-11 Emissions at the SCA Cogeneration facility, ~~from the following equipment listed below,~~ on a pounds per calendar **day** basis, shall not exceed the following limits.

Prior to CTG upgrade to PC Sprint/EFS

Pollutant	Units	Combined Cycle CTG with Supp. Fuel (each)	Simple Cycle CTG	Cooling Tower	Auxiliary Boiler	Total Emissions
NOx	lb/day	233	203.8		27.6	697.3
CO	lb/day	113.4	85.1		170.8	482.7
ROC	lb/day	43.2	28.3		9.8	124.5
SOx	lb/day	7.7	6.5		1.8	23.5
PM10	lb/day	79.2	60	7	13.1	238.5

Following CTG upgrade to PC Sprint/EFS

Pollutant	Units	Combined Cycle CTG with Supp. Fuel (each)	Simple Cycle CTG	Cooling Tower	Auxiliary Boiler	Total Emissions
NOx	lb/day	144.9	120.3		27.6	437.7
CO	lb/day	197.3	163.9		170.8	729.3
ROC	lb/day	43.2	28.3		9.8	124.5
SOx	lb/day	8.4	7.2		1.8	25.8
PM10	lb/day	79.2	60	7	13.1	238.5

The ~~District~~ **SMAQMD**, in agreement with the project owner may choose to decrease the above daily emission limits to correspond to the source test results pursuant to Condition 38.

Verification: The project owner shall maintain appropriate emission data records as required by Condition AQ-8.

AQ- 12 Emissions at the entire P&G Cogeneration project shall not exceed the following limits on a quarterly basis.

Prior to CTG upgrade to PC Sprint/EFS

Quarter	Unit	NOx	CO	ROC	SOx	PM10
Qtr 1	lb/qtr	49,051	29,758	8,287	1,722	17,220

Qtr 2	lb/qtr	49,590	30,082	8,380	1,741	17,411
Qtr 3	lb/qtr	50,128	30,407	8,472	1,760	17,603
Qtr 4	lb/qtr	50,128	30,407	8,472	1,760	17,603

Following First CTG upgrade to PC Sprint/EFS

Quarter	Unit	NOx	CO	ROC	SOx	PM10
Qtr 1	lb/qtr	41,207	37,041	8,287	1,791	17,220
Qtr 2	lb/qtr	41,658	37,447	8,380	1,811	17,411
Qtr 3	lb/qtr	42,110	37,852	8,472	1,831	17,603
Qtr 4	lb/qtr	42,110	37,852	8,472	1,831	17,603

Following Second CTG upgrade to PC Sprint/EFS

Quarter	Unit	NOx	CO	ROC	SOx	PM10
Qtr 1	lb/qtr	33,363	44,324	8,287	1,860	17,220
Qtr 2	lb/qtr	33,727	44,811	8,380	1,881	17,411
Qtr 3	lb/qtr	34,091	45,298	8,472	1,901	17,603
Qtr 4	lb/qtr	34,091	45,298	8,472	1,901	17,603

Following Final CTG upgrade to PC Sprint/EFS

Quarter	Unit	NOx	CO	ROC	SOx	PM10
Qtr 1	lb/qtr	28,993	48,994	8,287	1,901	17,220
Qtr 2	lb/qtr	29,305	49,535	8,380	1,923	17,411
Qtr 3	lb/qtr	29,618	50,075	8,472	1,944	17,603
Qtr 4	lb/qtr	29,618	50,075	8,472	1,944	17,603

The ~~District~~ **SMAQMD**, in agreement with the applicant, may choose to decrease the above ~~daily~~ **quarterly** emission limits to correspond to the source test results pursuant to Condition 38.

Verification: The project owner shall maintain appropriate emission data records as required by Condition AQ-8.

AQ-13 The combined cycle combustion turbines and their associated duct burner HRSGs shall not emit more than 5 ppmvd nitrogen oxides at 15 percent O2 each, averaged over any consecutive three hour period, excluding start-ups as defined in Condition 22 **prior to upgrading to the PC Sprint/EFS**.

The combined cycle combustion turbines and their associated duct burner HRSGs shall not emit more than 2.5 ppmvd nitrogen oxides at 15 percent O2 each, averaged over any consecutive three hour period, excluding start-ups as defined in Condition 22 after upgrading to the PC Sprint/EFS.

Verification: The project owner shall maintain appropriate emission data records as required by Condition AQ-8.

AQ-14 The simple cycle combustion turbine shall not emit more than 5 ppmvd nitrogen oxides at 15 percent O2, averaged over any consecutive three hour period, excluding start-ups as defined in Condition 24 **prior to upgrading to the PC Sprint/EFS**.

The simple cycle combustion turbine shall not emit more than 2.5 ppmvd nitrogen oxides at 15 percent O2, averaged over any consecutive three hour period, excluding start-ups as defined in Condition 24 after upgrading to the PC Sprint/EFS.

Verification: The project owner shall maintain appropriate emission data records as required by Condition AQ-8.

AQ-15 **Deleted** ~~The auxiliary boiler shall not emit more than 30 ppmvd nitrogen oxides at 3% O2, averaged over any consecutive three hour period for any load below 25%.~~

~~**Verification:** The project owner shall maintain appropriate emission data records as required by Condition AQ-8.~~

AQ-16 The auxiliary boiler shall not emit more than 9 ppmvd nitrogen oxides at 3% O2 averaged over any consecutive three hour period ~~any load equal to or greater than 25 percent~~ **except during periods of startup and shutdown. Startup is defined as the period of time, not to exceed two hours, in which the auxiliary boiler is brought to its operating temperature and pressure immediately after a period in which the gas flow is shut off for a continuous period of 30 minutes or longer. Shutdown is defined as the period of time, not to exceed two hours, in which the auxiliary boiler is cooled from its normal operating temperature.**

Verification: The project owner shall maintain appropriate emission data records as required by Condition AQ-8.

AQ-39 A NOx, ROC, CO, PM10, and ammonia source test of the auxiliary boiler, each of the combined cycle combustion turbines with duct fired HRSG, and the simple cycle combustion turbine shall be performed annually ~~during the first calendar quarter~~.

a. The project owner shall submit a test plan to the Air Pollution Control Officer for approval at least 30 days before the source test is to be performed.

b. The Air P ollution Control Officer shall be notified at least 7 days prior to the emission testing date.

c ~~b~~. During the test(s), all of the turbines and HRSGs are to be operated at their maximum total firing capacities. The auxiliary boiler must also be tested at its maximum firing capacity.

d ~~c~~. The turbines are also to be tested at 50 percent load for CO and ROC.

e ~~d~~. The source test results shall be submitted to the Air Pollution Control Officer within **60** ~~30~~ days from the completion of the source test(s).

f ~~e~~. The Air Pollution Control Officer may waive the annual PM10 **and/or ROC** source test requirement if, in the Air Pollution Control Officer's sole judgment, prior test results indicate an adequate compliance margin has been maintained.

Verification: The project owner shall submit a test plan to the Air Pollution Control Officer for approval at least 30 days before the source tests are to be performed. The source test results shall be submitted to the Air Pollution Control Officer and the Commission CPM within **60** ~~30~~ days from the completion of the source tests.

AQ-50 As each combustion turbine is upgraded to a PC Sprint/EFS turbine, the owner/operator shall engage in a period of commissioning as defined within this condition.

a. The commissioning period shall begin when all mechanical, electrical and control systems are installed and individual system startup has been completed, or when the gas turbine is first fired, whichever occurs first.

b. The commissioning period shall end when the unit has completed an initial performance testing as required in conditions AQ-51 and is available for commercial operation.

c. Commissioning activities include, but are not limited to, all testing, adjustments, tuning and calibration activities recommended by the equipment manufacturers and the construction contractor to ensure safe reliable operation of the gas turbines, heat recovery steam generators, emission control equipment and other ancillary equipment.

d. During the commissioning period, hourly NOx emissions shall not exceed 21.4 lbs/hr and hourly CO emissions shall not exceed 16.8 lbs/hr.

e. The NOx concentration emission limits in conditions AQ-13 and AQ-14 shall not apply during the commissioning period.

f. The hourly emission limits as specified in condition AQ-10, with the exception of the NOx and CO emission limits, shall remain effective during the commissioning period.

g. The daily and quarterly emission limits as specified in conditions AQ-11 and AQ-12 shall remain effective during the commissioning period.

h. During the commissioning period, compliance with all emission limits, as indicated in this condition, shall be demonstrated through the use of properly installed, operated and maintained continuous emissions monitors and recorders.

Verification: The owner/operator shall notify the Commission CPM at least 10 days prior to start of commissioning activities. The owner/operator shall collect and record all necessary information to verify the emission limits as specified within this condition. No later than 60 days following the completion of commissioning, the owner/operator shall submit a report for approval to the Commission CPM demonstrating compliance with all emission limits as specified within this condition.

AQ-51 Within 60 days of completion of each turbine's upgrade to a PC Sprint/EFS turbine, a NOx, ROC, CO, PM10, ammonia and CEMS accuracy source test shall be performed. A successful completion of this start-up test can qualify as the annual compliance test required in condition AQ-39.

a. The project owner shall submit a test plan to the Air Pollution Control Officer for approval at least 30 days before the source test is to be performed.

b. The Air pollution Control Officer shall be notified at least 7 days prior to the emission testing date.

c. During the test(s), all of the turbines and HRSGs are to be operated at their maximum total firing capacities. The auxiliary boiler must also be tested at its maximum firing capacity.

d. The turbines are also to be tested at 50 percent load for CO and ROC.

e. The source test results shall be submitted to the Air Pollution Control Officer within 60 days from the completion of the source test(s).

Verification: The project owner shall submit a test plan to the Air Pollution Control Officer for approval at least 30 days before the source tests are to be performed. The source test results shall be submitted to the Air Pollution Control Officer and the Commission CPM within 60 days from the completion of the source tests.

IT IS SO ORDERED.

Date: March 12, 2008

STATE OF CALIFORNIA
ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

JACKALYNE PFANNENSTIEL, Chairman