EXHIBIT H

Preliminary
Determination of Compliance

Contra Costa Power Plant
Unit 8 Project

Bay Area Air Quality Management District
Application 1000

October 23, 2000

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I Introduction

This is the Preliminary Determination of Compliance (PDOC) for the Unit 8 Project at the existing Contra Costa Power Plant (CCPP), a 530-MW, natural-gas fired, combined cycle merchant power plant proposed by Southern Energy California. The existing power plant is located about 1-mile northeast of the city of Antioch on Wilbur Avenue near State Route (SR) 4, SR 160 and the Antioch Bridge. The new unit will include two natural gas fired General Electric Frame 7FA combustion turbine generators (CTGs), one steam turbine generator and associated equipment, two supplementally fired heat recovery steam generators (HRSGs) and a wet cooling tower.

A. Background

Pursuant to BAAQMD Regulation 2, Rule 3, Section 403, this document serves as the Preliminary Determination of Compliance (PDOC) document for the CCPP Unit 8. It will also serve as the evaluation report for the BAAQMD Authority to Construct application #1000. The PDOC describes how the proposed facility will comply with applicable federal, state, and BAAQMD regulations, including the Best Available Control Technology and emission offset requirements of the District New Source Review regulation. Permit conditions necessary to insure compliance with applicable rules and regulations and air pollutant emission calculations are also included. This document includes a health risk assessment that estimates the impact of the project emissions on public health and a PSD air quality impact analysis, which shows that the project will not interfere with the attainment or maintenance of applicable ambient air quality standards.

Pursuant to Regulation 2, Rule 3, Section 404, this PDOC is subject to the public notice, public inspection, and 30-day public comment period requirements of District Regulation 2, Rule 2, Sections 406 and 407.

B. Project Description

1. Process Equipment

The applicant is proposing a combined-cycle cogeneration facility with a maximum electrical output of 530 MW. The CCPP Unit 8 will consist of the following new permitted equipment:

S-41 Combustion Gas Turbine #1, General Electric Frame 7FA, 1872 MM Btu per hour, equipped with dry low-NO_x Combustors, abated by A-11 Selective Catalytic Reduction System and A-12 CO Catalyst System.

S-42 Heat Recovery Steam Generator #1, 395 MM Btu per hour, abated by A-11 Selective Catalytic Reduction System and A-12 CO Catalyst System.

S-43 Combustion Gas Turbine #2, General Electric Frame 7FA, 1872 MM Btu per hour, equipped with dry low-NO_x Combustors, abated by A-13 Selective Catalytic Reduction System and A-14 CO Catalyst System.

S-44 Heat Recovery Steam Generator #2, 395 MM Btu per hour, abated by A-13 Selective Catalytic Reduction System and A-14 CO Catalyst System.

S-45 Gas-Fired Fuel Preheater, 12 MM Btu per hour.

S-46 10-Cell Wet Cooling Tower, 125,000 gallons per minute

As proposed, each natural gas fired combustion turbine generator (CTG) will have a nominal electrical output of 175 MW and the steam produced by both heat recovery steam generators (HRSGs) will feed to a single steam turbine generator with a nominal electrical output of 192 MW.

2. Equipment Operating Scenarios

Turbines and Heat Recovery Steam Generators

As a merchant power plant, market circumstances and demand will dictate the exact operation of the new gas turbine/HRSG power trains. However, the following general operating modes are projected to occur:

Base Load: Maximum continuous output with duct firing and power augmentation steam injection during high ambient temperature conditions

Load Following: Facility would be operated to meet contractual load and spot sale demand, with a total output less than the base load scenario

Partial Shutdown: Based upon contractual load and spot sale demand, it may be economically favorable to shutdown one or more turbine/HRSG power trains; this would occur during period of low overall demand such as late evening and early morning hours

Full Shutdown: May be caused by equipment malfunction, fuel supply interruption, or transmission line disconnect or if market price of electricity falls below cost of generation

HRSG Duct Burner Firing with Steam Injection Power Augmentation:

Under peak demand situations and high ambient temperatures, steam may be injected into the gas turbine combustors to lower the flame temperature and allow increased fuel use rate, which results in increased mass flow through the gas turbine thereby increasing maximum electrical output.

The following projected operating scenario was utilized to estimate maximum annual air pollutant emissions from the new gas turbines and HRSGs.

- 4304 hours of baseload (100% load) operation per year for each gas turbine @ 60^oF
- 4313 hours of duct burner firing per HRSG per year with steam injection power augmentation at gas turbine combustors
- 83 gas turbine hot start-ups per year (90 min. each)
- 28 gas turbine cold start-ups per year (256 min. each)
- 111 gas turbine shutdowns per year (23 min. each)

3. Air Pollution Control Strategies and Equipment

The proposed CCPP Unit 8 includes sources that trigger the Best Available Control Technology (BACT) requirement of New Source Review (District Regulation 2, Rule 2, NSR) for emissions of nitrogen oxides (NO_x), carbon monoxide (CO), precursor organic compounds (POCs), sulfur dioxide (SO_2), and particulate matter of less than 10 microns in diameter (PM_{10}).

a. Selective Catalytic Reduction with Ammonia Injection for the Control of NO_x

The gas turbines and HRSG duct burners each trigger BACT for NO_x emissions. The gas turbines will be equipped with dry low-NO_x (DLN) combustors, which are designed to minimize NO_x emissions. The HRSGs will be equipped with low-NO_x duct burners, which are designed to minimize NO_x emissions. In addition, the combined NO_x emissions from the gas turbines and HRSGs will be further reduced through the use of selective catalytic reduction (SCR) systems with ammonia injection. The gas turbine and HRSG duct burner combined exhaust will achieve a BACT-level NO_x emission limit of 2.5 ppmvd @ 15 % O_2 (one hour average).

b. Dry Low-NO_x (DLN) Combustors and Oxidation Catalyst to Minimize CO Emissions

The gas turbines and HRSG duct burners each trigger BACT for CO emissions. The gas turbines will be equipped with dry low-NO_x combustors, which are also designed to minimize CO emissions. The HRSGs will be equipped with a CO catalyst designed to catalytically oxidize the CO and POC produced from firing natural gas in the CT and duct burner. The gas turbine and HRSG duct burner combined exhaust will achieve a BACT-level CO emission limit of 6.0 ppmvd @ 15 % O_2 and a POC level of 2.0 ppmvd @ 15 % O_2.

c. Dry Low-NO_x (DLN) Combustors and the CO catalyst to minimize POC Emissions

The Gas Turbines and HRSGs each trigger BACT for POC emissions. The gas turbines will utilize dry low-NO_x combustors, which are designed to minimize incomplete combustion and therefore minimize POC emissions. The HRSGs will be equipped with a CO catalyst to minimize CO and POC emissions.

d. Exclusive Use of Clean-burning Natural gas to Minimize SO_2 and PM_{10} Emissions

The gas turbines and HRSG duct burners will utilize exclusively natural gas as a fuel to minimize SO_2 and PM_{10} emissions. Because the emission rate of SO_2 depends on the sulfur content of the fuel burned and is not dependent upon the burner type or other combustion characteristics; the use of natural gas will result in the lowest possible emission of SO_2. PM_{10} emissions are minimized through the use of best combustion practices and "clean burning" natural gas.

II Facility Emissions

The facility regulated air pollutant emissions and toxic air contaminant emissions are presented in the following tables. Detailed emission calculations, including the derivations of emission factors are presented in the appendices.

Table 1 is a summary of the daily maximum regulated air pollutant emissions for the gas turbines, heat recovery steam generators (HRSGs) and cooling tower. These emission rates are used to determine if the Best Available Control Technology (BACT) requirement of the District New Source Review Regulation (NSR; Regulation 2, Rule 2) is triggered on a pollutant-specific basis. Pursuant to Regulation 2-2-301.1, any new source that will result in POC, NPOC, NO_x, SO_2, PM_{10}, or CO emissions in excess of 10 pounds per highest day per pollutant are subject to the BACT requirement for that pollutant.

Table 1 Maximum Daily Regulated Air Pollutant Emissions for Baseload Operation of Proposed Sources[a] (lb./day)

Pollutant	Source			
	S-41 CTG & S-42 HRSG[a]	S-43 CTG & S-44 HRSG[a]	S-45 Fuel Preheater[b]	S-46 Cooling Tower
Nitrogen Oxides (as NO_2)	997	997	2.6	
Carbon Monoxide	1801	1801	0.9	
Precursor Organic Compounds	234	234	1.1	
Particulate Matter (PM_{10})	312	312	0.5	43
Sulfur Dioxide	148	148	0.2	

[a]Based upon one cold start, one hot start, 16 hours of CTG/HRSG baseload operation with HRSG firing and steam injection power augmentation and 2.2 hours of CTG/HRSG baseload operation in a 24-hour period.

[b] The Fuel Preheater is operated only during starts.

Table 2 is a summary of the maximum facility toxic air contaminant (TAC) emissions from new sources. These emissions are used as input data for air pollutant dispersion models used to assess the increased health risk to the public resulting from the project. The ammonia emissions

shown are based upon a worst-case ammonia emission concentration of 10 ppmvd @ 15% O_2 due to ammonia slip from the A-11 and A-13 SCR Systems.

Table 2
Maximum Facility Toxic Air Contaminant (TAC) Emissions

Toxic Air Contaminant	Pounds/year	Risk Screening Trigger Level[a] (lb./yr-source)
S-41, S-42, S-43, and S-44 Combined		
Acetaldehyde[b]	2558	72
Acrolein	884	3.9
Ammonia[c]	518,242	19,300
Benzene[b]	506	6.7
1,3-Butadiene[b]	4	1.1
Ethylbenzene	670	193,000
Formaldehyde[b]	4102	33
Hexane	9630	83,000
Naphthalene	62	270
PAHs[b]	38	0.043
Propylene	39,214	none specified
Propylene Oxide[b]	1780	52
Toluene	2706	38,600
Xylenes	1078	57,900
Cooling Tower Emissions, S-46[d]		
Arsenic[b]	0.016	0.024
Beryllium	0.041	0.014
Cadmium[b]	0.00010	0.046
Chromium VI[b]	0.018	0.0014
Copper	0.024	463
Lead[b]	0.003	16
Manganese	0.15	77
Mercury	0.0007	57.9
Nickel	0.023	73
Selenium	0.002	97
Zinc	0.017	6,760
Fuel Pre-Heater, S-45		
Acetaldehyde[b]	0.025	72
Arsenic	0.00056	0.024
Benzene	0.025	6.7
Beryllium	3.37E-5	0.014
Cadmium[b]	0.0031	0.046
Chromium VI[b]	0.040	0.0014
Copper	0.0024	463

Toxic Air Contaminant	Pounds/year	Risk Screening Trigger Level[a] (lb./yr-source)
Formaldehyde	0.624	33
Hexane	5.08	83,000
Manganese	0.0011	77
Mercury	0.0007	57.9
Naphthalene	0.0017	270
Nickel	0.006	73
PAHs, Total	0.00005	0.043
Selenium	0.00005	97
Toluene	0.0097	38,600
Zinc	0.082	6,760

[a]pursuant to BAAQMD Toxic Risk Management Policy

[b]carcinogenic compound

[c]based upon the worst-case ammonia slip of 10 ppmvd @ 15% O_2 from the A-11 and A-13 SCR systems with ammonia injection

[d]based on San Joaquin River water analysis and cooling tower drift rate.

Table 3 is a summary of the maximum annual regulated air pollutant emissions for the facility from proposed permitted sources. Pursuant to the Prevention of Significant Deterioration (PSD) requirements of New Source Review (Regulation 2-2-304.1 and 2-2-305.1), a new major facility with maximum annual pollutant emissions in excess of the trigger levels shown must perform modeling to assess the net air quality impact of that pollutant.

Table 3
Maximum Annual Facility Regulated Air Pollutant Emissions Increase

Pollutant	Cumulative Increase Emissions[a,b] (tons/year)	PSD Trigger[c] (tons/year)
Nitrogen Oxides (as NO_2)	174.3	40
Carbon Monoxide	259.1	100
Precursor Organic Compounds	46.6	N/A
Particulate Matter (PM_{10})	112.2	15
Sulfur Dioxide	48.5	40

[a]Includes emissions from two gas turbines, heat recovery steam generators, natural-gas-fired preheater and cooling tower.

[b] Emissions include 28 cold startups, 83 hot startups, and 111 shutdowns, and 8,626 hours at 100% duct burner capacity with the balance of the time at 100% load at 60F.

[c] For a new major facility.

III Statement of Compliance

The following section summarizes the applicable District Rules and Regulations and describes how the proposed CCPP Unit 8 will comply with those requirements.

A. Regulation 2, Rule 2; New Source Review

The primary requirements of New Source Review that apply to the proposed CCPP Unit#8 facility are Section 2-2-301; “Best Available Control Technology Requirement”, Section 2-2-302; “Offset Requirements, Precursor Organic Compounds and Nitrogen Oxides, NSR”, and Section 2-2-404, “PSD Air Quality Analysis”.

1. Best Available Control Technology (BACT) Determinations

Pursuant to Regulation 2-2-206, BACT is defined as the more stringent of:

(a) "The most effective control device or technique which has been successfully utilized for the type of equipment comprising such a source; or

(b) The most stringent emission limitation achieved by an emission control device or technique for the type of equipment comprising such a source; or

(c) Any emission control device or technique determined to be technologically feasible and cost-effective by the APCO; or

(d) The most effective emission control limitation for the type of equipment comprising such a source which the EPA states, prior to or during the public comment period, is contained in an approved implementation plan of any state, unless the applicant demonstrates to the satisfaction of the APCO that such limitations are not achievable. Under no circumstances shall the emission control required be less stringent than the emission control required by any applicable provision of federal, state or District laws, rules or regulations.”

The type of BACT described in definitions (a) and (b) must have been demonstrated in practice and approved by a local Air Pollution Control District, CARB, or the EPA and is referred to as “BACT 2”. This type of BACT is termed "achieved in practice". The BACT category described in definition (c) is referred to as "technologically feasible/cost-effective" and must have been demonstrated to be effective and reliable on a full-scale unit and shown to be cost-effective on the basis of dollars per ton of pollutant abated. This is referred to as “BACT 1”. BACT specifications (for both the "achieved in practice" and “technologically feasible/cost-effective" categories) for various source categories have been compiled in the BAAQMD BACT Guideline.

The following section includes BACT determinations by pollutant for the permitted sources of the proposed CCPP Unit 8. Because each Gas Turbine and its associated HRSG will exhaust through a common stack and be subject to combined emission limitations, the BACT determinations will, in practice, apply to each Gas Turbine/HRSG power train as a combined unit.

Nitrogen Oxides (NO_x)

- Combustion Gas Turbines/ Heat Recovery Steam Generators (HRSGs)

  District BACT Guideline 89.1.6, for Gas Turbine Combined Cycle (>50 Megawatts Heat Input) specifies BACT 1 (Technologically Feasible/Cost Effective) for NO_x as 2.5 ppmvd @ 15% O_2 with an averaging period of one hour. This BACT determination was based upon the use of SCR and Low NO_x combustors or a SCONOX System. This determination is based on recent BAAQMD permits issued for: Los Medanos Energy Center (Application # 18595), Delta Energy Center (Application # 19414) and Metcalf Energy Center (Application # 27215). The EPA has accepted this BACT determination as Federal LAER and further established a NO_x concentration of 2.0 ppmvd @ 15% O_2 averaged over three hours as equivalent to 2.5 ppmvd @ 15% O_2, averaged over one hour. CARB has also cited these levels as BACT in their "Guidance for Power Plant Siting and Best Available Control Technology", June 1999.

  In accordance with design criteria specified by the applicant, each combustion gas turbine is designed to meet a NO_x emission concentration limit of 2.5 ppmvd NO_x @ 15% O_2, averaged over one hour, during all operating modes except gas turbine start-ups and shutdowns. Compliance with this emission limitation will be achieved through the use of a selective catalytic reduction (SCR) system with ammonia injection and will be verified by a CEM located at the common stack for each gas turbine/HRSG power train.

- Gas-Fired Fuel Preheater

  During startup a gas-fired fuel preheater will heat the natural gas fuel supply. This unit will be restricted to 16 hours of operation per day, which results in a NO_x emission of 7.2 lbs./day. BACT is therefore not required.

Carbon Monoxide (CO)

BACT for CO will be analyzed within the context of three distinct operating modes for each gas turbine/HRSG power train. The first mode is firing of the gas turbine only over its entire operating range from minimum to maximum load. The second mode includes gas turbine firing at maximum load with HRSG duct burner firing. The third mode includes gas turbine firing at maximum load with HRSG duct burner firing and steam injection power augmentation at the gas turbine combustors. Steam injection power augmentation lowers the combustor flame temperature thereby allowing an increased fuel use rate, which in turn

increases gas turbine peak generating capacity during periods of high ambient temperature. However, by lowering the combustor flame temperature steam injection can increase CO production.

- Combustion Gas Turbines and Heat Recovery Steam Generators (HRSGs)

  District BACT Guideline 89.1.6, for Gas Turbine Combined Cycle (>50 Megawatts Heat Input) specifies BACT 1 (Technologically Feasible/Cost Effective) for CO as 6 ppmvd, @ 15% O_2 with an averaging period of one hour. This BACT determination was based upon the use of CO Catalyst and Dry Low NO_x combustors. This determination is based on recent BAAQMD permits issued for: Los Medanos Energy Center (Application # 18595) and Metcalf Energy Center (Application # 27215). CARB has also cited these levels as BACT in their "Guidance for Power Plant Siting and Best Available Control Technology", June 1999.

  The CCPP Unit 8 has agreed to a CO emission limit of 6 ppmvd @ 15% O_2 that will apply to all gas turbine/HRSG operating modes except for gas turbine start-up and shutdown. As is the case for Los Medanos Energy Center, this limit will apply to the firing of the turbine alone, turbine operation with HRSG duct burner firing, and steam injection power augmentation mode. The CCPP Unit 8 intends to comply with this BACT specification through the use of dry low-NO_x duct burners, which minimize incomplete combustion, and by the use of a CO oxidation catalyst.

- Gas-Fired Fuel Preheater

  During startup a gas-fired fuel preheater will heat the natural gas fuel supply. This unit will be restricted to 16 hours of operation per day, which results in a CO emission of 2.4 lbs./day. BACT is therefore not required.

Precursor Organic Compounds (POCs)

- Combustion Gas Turbines/ Heat Recovery Steam Generators (HRSGs)

  District BACT Guideline 89.1.6, for Gas Turbine Combined Cycle (>50 Megawatts Heat Input) specifies BACT 1 (Technologically Feasible/Cost Effective) for POC as 2 ppmvd, @ 15% O_2 with an averaging period of one hour. This BACT determination was based upon the use of an Oxidation Catalyst or Dry Low NO_x combustors. This determination is based on recent BAAQMD permits issued for: Los Medanos Energy Center (Application # 18595) and Metcalf Energy Center (Application # 27215). CARB has also cited these levels as BACT in their "Guidance for Power Plant Siting and Best Available Control Technology", June 1999.

- Gas-Fired Fuel Preheater

  During startup a gas-fired fuel preheater will heat the natural gas fuel supply. The exhaust gases from this unit will achieve POC emissions no greater than 1.1 lbs./day so a BACT determination is not required for this unit.

Sulfur Dioxide (SO_2)

- Combustion Gas Turbines/ Heat Recovery Steam Generators (HRSGs)

  District BACT Guideline 89.1.6 specifies BACT for SO_2 for gas turbines with a heat input rating $\geq$ 50 Megawatts as the exclusive use of PUC-regulated natural gas. The proposed turbines and duct burners will utilize PUC natural gas exclusively, which will result in minimal SO_2 emissions. Accordingly, the sulfur content of the natural gas will be limited by permit condition to 1 grain/scf. This corresponds to an SO_2 emission factor of 0.0028 lb./MM Btu. The natural gas sulfur content specification of 1 grain per 100 scf is deemed BACT for SO_2.

- Gas-Fired Fuel Preheater

  During startup a gas-fired fuel preheater will heat the natural gas fuel supply. The exhaust gases from this unit will achieve SO_2 emissions no greater than 0.2 lbs./day based on 6 hours of operation. A BACT determination is therefore not required.

Particulate Matter (PM_{10})

- Combustion Gas Turbines

  District BACT Guideline 89.1.6 specifies BACT for PM_{10} for gas turbines with a heat input rating $\geq$ 50 Megawatts as the exclusive use of PUC-regulated natural gas. The proposed turbines and duct burners will utilize PUC natural gas exclusively, which will result in minimal PM_{10} emissions. Accordingly, the sulfur content of the natural gas will be limited by permit condition to 1 grain/scf. The proposed turbines and duct burners will utilize PUC natural gas exclusively, which will result in minimal direct PM_{10} emissions and minimal formation of secondary PM_{10} such as sulfates.

- Cooling Tower

  Southern Energy is proposing a cooling tower with a drift rate of 0.0005 %. Based on a recent BACT determination by the San Joaquin Valley Unified APCD (Guideline 8.3.10). The District considers BACT for the cooling towers to be a drift rate of 0.0006 % which will be published in BAAQMD BACT Guideline 181.1. The proposed drift rate is therefore acceptable.

- Gas-Fired Fuel Preheater

  During startup a gas-fired fuel preheater will heat the natural gas fuel supply. The exhaust gases from this unit will achieve PM_{10} emissions no greater than 0.5 lbs./hour based on 6 hours of operation and therefore a BACT determination is not required.

2. Emission Offsets

General Requirements

Pursuant to Regulation 2-2-302, federally enforceable emission offsets are required for POC and NO_x emission increases from permitted sources at facilities, which will emit 15 tons per year or more on a pollutant-specific basis. Because the CCPP facility will emit more than 50 tons per year of NO_x, offsets must be provided by the applicant at a ratio of 1.15 to 1.0. Because CCPP will emit more than 50 tons/year of POC, offsets must be provided, by the applicant, at a ratio of 1.15 to 1.0.

Pursuant to Regulation 2-2-303, emission offsets shall be provided (at a ratio of 1.0:1.0) for PM_{10} emission increases at facilities that will be permitted to emit more than 100 tons of PM_{10} per year. These offsets will be required for the gas turbines, HRSGs and the cooling tower. Pursuant to Regulation 2-2-303.1, emission reduction credits of nitrogen oxides or sulfur dioxide may be used to offset PM_{10} emission increases. The applicant is proposing to offset PM_{10} at a ratio of 3 tons of sulfur dioxide for each ton of PM_{10}. This is the same ratio that that has been used for the nearby Delta Energy Center project. The APCO has determined that the same ratio is acceptable for this application.

It should be noted that in the case of POC and NO_x offsets, District regulations do not require consideration of the location of the source of the emission reduction credits relative to the location of the proposed emission increases that will be offset.

Timing for Provision of Offsets

Pursuant to District Regulation 2-2-311, the applicant must "provide" the required valid emission reduction credits to mitigate the emission increases for the facility prior to the issuance of the Authority to Construct. Pursuant to District Regulation 2, Rule 3, "Power Plants," the Authority to Construct will be issued after the California Energy Commission issues the Certificate for the power plant. Historically, the BAAQMD has not required the applicant to provide the actual banking certificates to the District prior to the issuance of the Authority to Construct. Rather, the District has accepted the applicant's demonstration of control of valid offsets through enforceable contracts or options to purchase as equivalent to the "provision" of offsets as required by Regulation 2-2-311. The actual banking certificates must be surrendered to the District prior to the issuance of the Permit to Operate.

Interpollutant Offset Ratios

Pursuant to District Regulation, 2-2-303.1, an applicant can provide NO_x and/or SO_2 emission credits to offset PM_{10} emission increases at ratios deemed appropriate by the APCO. Pursuant to current District policy, the default interpollutant trade-off ratios for Eastern Contra Costa County are 6 to 1 for NO_x and 4 to 1 for SO_2. These ratios represent "conservative best-estimate values" from an interpollutant trade-off study conducted by Systems Applications International (SAI) for the Shell Refinery located in Martinez, California. More specifically, the analysis specifies a "best estimate" trade-off ratio for the Pittsburg area of 3 to 1 for SO_2 to PM_{10}. Because the

Contra Costa Unit #8 project will be located within 8 miles of the Pittsburg monitoring station the trade-off ratio of 3 tons of SO_2 for each ton of PM_{10} will be used. Please see Appendix C, Attachment 1 for the District policy memorandum regarding this trade-off ratio.

The SAI analysis utilized three methods to estimate the amount of secondary PM_{10} formation resulting from the emission of NO_x and SO_2. The first method was based entirely upon the analysis of air quality data. The second method used a photochemical box model to compute the aerosol yield from a unit of NO_x or SO_2 emissions. The third method used the photochemical model to simulate the effect of an incremental unit of precursor emissions on a typical atmosphere with variable mixing height. The inter-pollutant trade-off ratios generated by the SAI analysis only apply to facilities located in the eastern portion of Contra Costa County. Under current District policy, if an applicant wishes to utilize different (i.e. lower) interpollutant offset ratios, they must submit an analysis for review by the District Planning Division.

Offset Requirements by Pollutant

The applicable offset ratios and the quantity of offsets required are summarized in Appendix C, Table C-1.

POC Offsets

Because the combined emissions from the existing and proposed units at the CCPP facility will exceed 50 tons per year of Precursor Organic Compounds (POCs), the POC emission increases must be offset at a ratio of 1.15 to 1.0 pursuant to District Regulation 2-2-302.

NO_x Offsets

Because the CCPP Unit 8 will emit greater than 50 tons per year of Nitrogen Oxides (as NO_2) from permitted sources, the applicant must provide emission reduction credits (ERCs) of NO_x at a ratio of 1.15 to 1.0 pursuant to District Regulation 2-2-302.

PM_{10} Offsets

With projected PM_{10} emissions from permitted sources of greater than 100 tons per year, the CCPP Unit 8 triggers the PM_{10} offset requirement of District Regulation 2-2-303. The applicant plans to offset the PM_{10} with SO_2 credits at a ratio of 3:1.

SO_2 Offsets

Pursuant to Regulation 2-2-303, emission reduction credits are not required for the proposed SO_2 emission increases associated with this project since the facility SO_2 emissions will not exceed 100 tons per year. Regulation 2-2-303 does allow for the voluntary offsetting of SO_2 emission increases of less than 100 tons per year. The applicant has not opted to provide such emission offsets.

Current Proposed Offset Package

Table 4 summarizes the current offset obligation of the CCPP Unit 8 and the quantity of valid emission reduction credits (ERCs) under the control of Southern Energy. The emission reduction credits presented in Table 4 exist as federally-enforceable, banked emission reduction credits that have been reviewed for compliance with District Regulation 2, Rule 4, "Emissions Banking", and were subsequently issued as a banking certificate by the BAAQMD.

As indicated, Southern Energy has secured sufficient valid emission reduction credits to offset the emission increases from the permitted sources proposed for the CCPP Unit 8.

Table 4
Emission Reduction Credits Identified by Southern Energy as of September 25, 2000 (ton/yr)

	POC[a]	NO_x[b]	PM_{10}[c]
Valid Emission Reduction Credits	53.6	200.5	112.2
Permitted Source Emission Limits	46.6	174.3	112.2
Offsets Required per BAAQMD Calculations	53.6[d]	200.5[d]	112.2[e]

[a]From Banking Certificate # 693.

[b]From Banking Certificate # 693.

[c]SO_2 used at a ratio of 3:1. The following SO_2 Banking Certificates used:

#693 321.90 tons

#694 14.53 tons

#695 0.17 tons

Total 336.60 tons (PM_{10} equivalent 112.2 tons)

[d]Reflects applicable offset ratio of 1.15:1.0 pursuant to Regulation 2-2-302

[e]Reflects applicable offset ratio of 1.0:1.0 pursuant to Regulation 2-2-302

These Banking Certificates originated from the following locations:

Certificate	Company	Location	Original Issue Date
#693	Gaylord Container	Antioch	6/8/84
#694	P G & E	Martinez	7/22/87
#695	Hudson ICS	San Leandro	4/9/97

3. PSD Air Quality Impact Analysis

Pursuant to BAAQMD Regulation 2-2-414.1, the applicant has submitted a modeling analysis that adequately estimates the air quality impacts of the CCPP Unit#8 project. The applicant's analysis was based on EPA-approved models and was performed in accordance with District Regulation 2-2-414.

Pursuant to Regulation 2-2-414.2, the District has found that the modeling analysis has demonstrated that the allowable emission increases from the CCPP Unit#8 facility, in conjunction with all other applicable emissions, will not cause or contribute to a violation of applicable ambient air quality standards for NO_2, CO, and PM_{10} or an exceedence of any applicable PSD increment. **Table 5** summarizes the applicable ambient air quality standards, the maximum background concentrations, and the contribution form the proposed CCPP Unit#8.

Pursuant to Regulation 2-2-417, the applicant has submitted an analysis of the impact of the proposed source and source-related growth on visibility, soils, and vegetation.

Table 5
California and National Ambient Air Quality Standards and Ambient Air Quality Levels from the Proposed CCPP Unit#8 (mg/m^3)

Pollutant	Averaging Time	Maximum Background	Maximum Project impact	Maximum Project impact plus maximum background	California Standards	National Standards
NO_2	1-hour	164	225	389	470	---

Please see Appendix E for a detailed discussion of the PSD air quality impact analysis.

B. Health Risk Assessment

Pursuant to the BAAQMD Risk Management Policy, a health risk screening must be executed to determine the potential impact on public health resulting from the worst-case emissions of toxic air contaminants (TACs) from the CCPP Unit#8 project. The potential TAC emissions (both carcinogenic and non-carcinogenic) from the CCPP Unit#8 are summarized in Table 2. In accordance with the requirements of the BAAQMD Toxic Risk Management Policy (TRMP) and CAPCOA guidelines, the impact on public health due to the emission of these compounds was assessed utilizing air pollutant dispersion models.

Table 6 Health Risk Assessment Results

Source	Multi-pathway Carcinogenic Risk (risk in one million)	Non-carcinogenic Chronic Hazard Index	Non-carcinogenic Acute Hazard Index[a]
Gas Turbines, HRSGs, and Cooling Tower[b]	0.67	0.04	0.2

[a]included for informational purposes only; BAAQMD TRMP does not require an assessment of acute (short-term; i.e. < 24 hour) health impacts

[b]numbers represent combined risk from all sources

The health risk assessment performed by the applicant has been reviewed by the District Toxics Evaluation Section and found to be in accordance with guidelines adopted by Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA), the California Air Resources Board (CARB), and the California Air Pollution Control Officers Association (CAPCOA). Pursuant to the BAAQMD Risk Management Policy, the increased carcinogenic risk attributed to this project is considered to be not significant since it is less than 1.0 in one million. The chronic hazard index attributed to the emission of non-carcinogenic air contaminants is considered to be not significant since it is less than 1.0. Therefore, the CCPP Unit#8 facility is deemed to be in compliance with the BAAQMD Toxic Risk Management Policy. Please see Appendix D for further detail.

C. Other Applicable District Rules and Regulations

Regulation 1, Section 301: Public Nuisance

None of the project's proposed sources of air contaminants are expected to cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public with respect to any impacts resulting from the emission of air contaminants regulated by the District. In part, the PSD air quality impact analysis insures that the proposed facility will comply with this Regulation.

Regulation 2, Rule 1, Sections 301 and 302:
Authority to Construct and Permit to Operate

Pursuant to Regulation 2-1-301 and 2-1-302, the CCPP Unit 8 has submitted an application to the District to obtain an Authority to Construct and Permit to Operate for the proposed S-41 & S-43 Gas Turbines, S-42 & S-44 Heat Recovery Steam Generators, S-45 Fuel Preheater and S-46 Cooling Tower.

Regulation 2, Rule 3: Power Plants

Pursuant to Regulation 2-3-403, this Preliminary Determination of Compliance (PDOC) serves as the APCO's preliminary decision that the proposed power plant will meet the requirements of

all applicable BAAQMD, state, and federal regulations. The PDOC contains proposed permit conditions to ensure compliance with those regulations. Pursuant to Regulation 2-3-304, the PDOC will be subject to the public notice, public comment, and public inspection requirements contained in Regulation 2-2-406 and 407.

Regulation 2, Rule 6: Major Facility Review

Pursuant to Regulation 2, Rule 6, section 404.1, the owner/operator of the CCPP Unit#8 shall submit an application to the BAAQMD for a major facility review permit within 12 months after the facility becomes subject to Regulation 2, Rule 6. Pursuant to Regulation 2-6-212.1, the CCPP Unit#8 will become subject to Regulation 2, Rule 6 upon initial firing of any of the gas turbines (S-41 & S-43) or HRSGs (S-42 & S-44).

Regulation 2, Rule 7: Acid Rain

The CCPP Unit 8 gas turbine units and heat recovery steam generators will be subject to the requirements of Title IV of the federal Clean Air Act. The requirements of the Acid Rain Program are outlined in 40 CFR Part 72. The specifications for the type and operation of continuous emission monitors (CEMs) for pollutants that contribute to the formation of acid rain are given in 40 CFR Part 75. District Regulation 2, Rule 7 incorporates by reference the provisions of 40 CFR Part 72. Pursuant to 40 CFR Part 72.30(b)(2)(ii), CCPP Unit#8 must submit an Acid Rain Permit Application to the District at least 24 months prior to the date on which each unit commences operation. Pursuant to 40 CFR Part 72.2, "commence operation" includes the start-up of the unit's combustion chamber.

Regulation 6: Particulate Matter and Visible Emissions

Through the use of dry low-NO_x burner technology and proper combustion practices, the combustion of natural gas at the proposed gas turbines and HRSG duct burners is not expected to result in visible emissions. Specifically, the facility's combustion sources are expected to comply with Regulation 6, including sections 301 (Ringelmann No. 1 Limitation), 302 (Opacity Limitation) with visible emissions not to exceed 20% opacity, and 310 (Particulate Weight Limitation) with particulate matter emissions of less than 0.15 grains per dry standard cubic foot of exhaust gas volume. As calculated in accordance with Regulation 6-310.3, the grain loading resulting from the simultaneous operation of each power train (CTG and HRSG Duct Burners) is 0.0022 gr./dscf @ 6% O_2. See Appendix A for CTG/HRSG grain loading calculations.

With a maximum total dissolved solids content of 5666 mg/l and corresponding maximum PM_{10} emission rate of 1.77 lb./hr, the proposed exempt 10-cell cooling tower is expected to comply with the requirements of Regulation 6.

Particulate matter emissions associated with the construction of the facility are exempt from District permit requirements but are subject to Regulation 6. It is expected that the California Energy Commission will impose conditions on construction activities that will require the use of water and/or chemical dust suppressants to minimize PM_{10} emissions and prevent visible particulate emissions.

Regulation 7: Odorous Substances

Regulation 7-302 prohibits the discharge of odorous substances, which remain odorous beyond the facility property line after dilution with four parts odor-free air. Regulation 7-302 limits ammonia emissions to 5000 ppm. Because the ammonia emissions from the two proposed CTG/HRSG power trains will each be limited by permit condition to 10 ppmvd @ 15% O_2, the facility is expected to comply with the requirements of Regulation 7.

Regulation 8: Organic Compounds

This facility is exempt from Regulation 8, Rule 2, "Miscellaneous Operations" per 8-2-110 since natural gas will be fired exclusively at the CCPP Unit#8.

The use of solvents for cleaning and maintenance at the CCPP Unit#8 is expected to comply with Regulation 8, Rule 4, "General Solvent and Surface Coating Operations" section 302.1 by emitting less than 5 tons per year of volatile organic compounds.

Regulation 9: Inorganic Gaseous Pollutants

Regulation 9, Rule 1, Sulfur Dioxide

This regulation establishes emission limits for sulfur dioxide from all sources and applies to the combustion sources at this facility. Section 301 (Limitations on Ground Level Concentrations) prohibits emissions which would result in ground level SO_2 concentrations in excess of 0.5 ppm continuously for 3 consecutive minutes, 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours. Section 302 (General Emission Limitation) prohibits SO_2 emissions in excess of 300 ppmv (dry). With maximum projected SO_2 emissions of < 1 ppmv, the gas turbines and HRSG duct burners are not expected to contribute to noncompliance with ground level SO_2 concentrations and should easily comply with section 302.

Regulation 9, Rule 3, Nitrogen Oxides from Heat Transfer Operations

The proposed combustion gas turbines (each rated at 1,872 MM Btu/hr HHV) shall comply with the Regulation 9-3-303 NO_x limit of 125 ppm by complying with a permit condition nitrogen oxide emission limit of 2.5 ppmvd @ 15% O_2. The HRSG duct burners will also be limited to 2.5 ppmvd and therefor comply with this regulation.

Regulation 9, Rule 7, Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters

The proposed HRSGs are exempt from Regulation 9, Rule 7, per section 110.5 since they are used to recover sensible heat from the exhaust of the proposed combustion turbines.

Regulation 9, Rule 9, Nitrogen Oxides from Stationary Gas Turbines

Because each of the proposed combustion gas turbines and HRSGs will be limited by permit condition to NO_x emissions of 2.5 ppmvd @ 15% O_2, they are expected to comply with the Regulation 9-9-301.3 NO_x limitation of 9 ppmvd @ 15% O_2.

D. CEQA

The CEQA requirements of regulation 2-1-426 are met because the California Energy Commission (CEC) has taken the lead agency roll on this project and are responsible for the EIR, which will fulfill the CEQA requirement. The Application for Certification that the applicant has submitted to the CEC serves as the EIR.

IV Permit Conditions

The following permit conditions will be imposed to ensure that the proposed project complies with all applicable District, State, and Federal Regulations. The conditions limit operational parameters such as fuel use, stack gas emission concentrations, and mass emission rates. Permit conditions will also specify abatement device operation and performance levels. To aid enforcement efforts, conditions specifying emission monitoring, source testing, and record keeping requirements are included. Furthermore, pollutant mass emission limits (in units of lb./hr and lb./MM Btu of natural gas fired) will ensure that daily and annual emission rate limitations are not exceeded.

To provide maximum operational flexibility, no limitations will be imposed on the type, or quantity of gas turbine start-ups or shutdowns. Instead, the facility must comply with daily and annual (consecutive twelve-month) mass emission limits at all times. Compliance with CO and NO_x limitations will be verified by continuous emission monitors (CEMs) that will be in operation during all turbine operating modes, including start-up and shutdown. If the CO and NO_2 CEMs are not capable of accurately assessing gas turbine start-up and shutdown mass emission rates due to variable gas content and the differing response times of the gas monitors, then start-up and shutdown mass emission rates will be based upon annual source test results. Compliance with POC, SO_2, and PM_{10} mass emission limits will be verified by annual source testing.

In addition to permit conditions that apply to as designed operation of each CTG/HRSG power train and the auxiliary boilers, conditions will be imposed that govern equipment operation during the initial commissioning period when the CTG/HRSG power trains will operate without their SCR systems and oxidation catalysts fully operational. During this commissioning period, the gas turbines will be tested, control systems will be adjusted, and the HRSGs and auxiliary boiler steam tubes will be cleaned. Permit conditions 1 through 12 apply to this commissioning period and are intended to minimize emissions during the commissioning period and insure that those emissions will not contribute to the exceedence of any short-term applicable ambient air quality standard.

CCPP Unit 8
Permit Conditions

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:	All heat inputs refer to the heat input at the higher heating value (HHV) of the fuel, in Btu/scf.
Rolling 3-hour period:	Any three-hour period that begins on the hour and does not include start-up or shutdown periods.

Firing Hours:	Period of time during which fuel is flowing to a unit, measured in fifteen-minute increments.
MM Btu:	million British thermal units
Gas Turbine Start-up Mode:	The lesser of the first 256 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 27(b) and 27(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 27(b) through 27(d) until termination of fuel flow to the Gas Turbine.
Specified PAHs:	The polycyclic aromatic hydrocarbons listed below shall be considered to 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 NH_3) corrected to a standard stack gas oxygen concentration. For emission point P-11 (combined exhaust of S-41 Gas Turbine and S-42 HRSG duct burners) and emission point P-12 (combined exhaust of S-43 Gas Turbine and S-44 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 CCPP Unit#8 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.
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
CEC CPM:	California Energy Commission Compliance Program Manager
CCPP Unit#8:	Contra Costa Power Plant Unit 8

Conditions for the Commissioning Period

1. The owner/operator of the CCPP Unit 8 (CCPP Unit#8) shall minimize emissions of carbon monoxide and nitrogen oxides from S-41 and S-43 Gas Turbines and S-42 and S-44 Heat Recovery Steam Generators (HRSGs) to the maximum extent possible during the commissioning period. Conditions 1 through 12 shall only apply during the commissioning period as defined above. Unless otherwise indicated, Conditions 13 through 47 shall apply after the commissioning period has ended.

2. At the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor, the S-41 & S-43 Gas Turbine combustors and S-42 & S-44 Heat Recovery Steam Generator duct burners shall be tuned to minimize the emissions of carbon monoxide and nitrogen oxides.

3. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturers and the construction contractor, the A-11 and A-13 SCR Systems and A-12 and A-14 CO Oxidation Catalyst Systems shall be installed, adjusted, and operated to minimize the emissions of carbon monoxide and nitrogen oxides from S-41 & S-43 Gas Turbines and S-42 & S-44 Heat Recovery Steam Generators.

4. Coincident with the as designed operation of A-11 & A-13 SCR Systems, pursuant to conditions 3, 10, 11, and 12, the Gas Turbines (S-41 & S-43) and the HRSGs (S-42 & S-44) shall comply with the NO_x and CO emission limitations specified in conditions 20(a) through 20(d).

5. The owner/operator of the CCPP Unit#8 shall submit a plan to the District Permit Services Division and the CEC CPM at least four weeks prior to first firing of S-41 or S-43 Gas Turbines describing the procedures to be followed during the commissioning of the gas turbines, HRSGs and gas-fired preheater. 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 tuning of the Dry-Low-NO_x combustors, the installation and operation of the SCR systems and oxidation catalysts, the installation, calibration, and testing of the CO and NO_x continuous emission monitors, and any activities requiring the firing of the Gas Turbines (S-41 & S-43) and HRSGs (S-42 & S-44) without abatement by their respective SCR and CO Catalyst Systems.

6. During the commissioning period, the owner/operator of the CCPP Unit#8 shall demonstrate compliance with conditions 8 through 11 through the use of properly operated and maintained continuous emission monitors and data recorders for the following parameters:

   firing hours for each gas turbine and each HRSG
   fuel flow rates to each train
   stack gas nitrogen oxide emission concentrations at P-11 and P-12
   stack gas carbon monoxide emission concentrations P-11 and P-12
   stack gas carbon dioxide concentrations P-11 and P-12

   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 Gas Turbines (S-41 & S-43) and HRSGs (S-42 & S-44). The owner/operator shall use District-approved methods to calculate heat input rates, NO_x mass emission rates, carbon monoxide mass emission rates, and NO_x and CO emission concentrations, summarized for each clock hour and each calendar day. All records shall be retained on site for at least 5 years from the date of entry and made available to District personnel upon request.

7. The District-approved continuous emission monitors specified in condition 5 shall be installed, calibrated, and operational prior to first firing of the Gas Turbines (S-41 & S-43) and Heat Recovery Steam Generators (S-42 & S-44). After first firing of the turbines and auxiliary boilers, the detection range of these continuous emission monitors shall be adjusted as necessary to accurately measure the resulting range of CO and NO_x emission concentrations. The type, specifications, and location of these monitors shall be subject to District review and approval.

8. The total number of firing hours of S-41 Gas Turbine and S-42 Heat Recovery Steam Generator without abatement of nitrogen oxide emissions by A-11 SCR System and/or A-12 Oxidation Catalyst System shall not exceed 500 hours during the commissioning period. Such operation of S-41 Gas Turbine and S-42 HRSG without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR or Oxidation Catalyst Systems fully operational. Upon completion of these activities, the owner/operator shall provide written notice to the District Permit Services and Enforcement Divisions and the unused balance of the 500 firing hours without abatement shall expire.

9. The total number of firing hours of S-43 Gas Turbine and S-44 Heat Recovery Steam Generator without abatement of nitrogen oxide emissions by A-13 SCR System and/or A-14 Oxidation Catalyst System shall not exceed 500 hours during the commissioning period. Such operation of S-43 Gas Turbine and S-44 HRSG without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR or Oxidation Catalyst Systems fully operational. Upon completion of these activities, the owner/operator shall provide written notice to the District Permit Services and Enforcement Divisions and the unused balance of the 500 firing hours without abatement shall expire.

10. The total mass emissions of nitrogen oxides, carbon monoxide, precursor organic compounds, PM_{10}, and sulfur dioxide that are emitted by the Gas Turbines (S-41 & S-43) and Heat

Recovery Steam Generators (S-42 & S-44) during the commissioning period shall accrue towards the consecutive twelve-month emission limitations specified in condition 24.

11. Combined pollutant mass emissions from the Gas Turbines (S-41 & S-43) and Heat Recovery Steam Generators (S-42 & S-44) shall not 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-41 & S-43).

NO_x (as NO_2)	8,400 pounds per calendar day	400 pounds per hour
CO	13,000 pounds per calendar day	584 pounds per hour
POC (as CH_4)	535 pounds per calendar day	
PM_{10}	624 pounds per calendar day	
SO_2	297 pounds per calendar day	

12. Prior to the end of the Commissioning Period, the Owner/Operator shall conduct a District and CEC approved source test using external continuous emission monitors to determine compliance with condition 20. The source test 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. No later than twenty working days before the execution of the source tests, the Owner/Operator shall submit to the District and the CEC Compliance Program Manager (CPM) a detailed source test plan designed to satisfy the requirements of this condition. The District and the CEC 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 CEC CPM comments into the test plan. The Owner/Operator shall notify the District and the CEC CPM within seven (7) working days prior to the planned source testing date. Source test results shall be submitted to the District and the CEC CPM within 30 days of the source testing date.

Conditions for the Gas Turbines (S-41 & S-43) and the Heat Recovery Steam Generators (HRSGs; S-42 & S-44)

13. The Gas Turbines (S-41 and S-43) and HRSG Duct Burners (S-42 and S-44) shall be fired exclusively on natural gas. (BACT for SO_2 and PM_{10})

14. The combined heat input rate to each power train consisting of a Gas Turbine and its associated HRSG (S-41 & S-42 and S-43 & S-44) shall not exceed 2,227 MM Btu per hour, averaged over any rolling 3-hour period. (PSD for NO_x)

15. The combined heat input rate to each power train consisting of a Gas Turbine and its associated HRSG (S-41 & S-42 and S-43 & S-44) shall not exceed 53,440 MM Btu per calendar day. (PSD for PM_{10})

16. The combined cumulative heat input rate for the Gas Turbines (S-41 & S-43) and the HRSGs (S-42 & S-44) shall not exceed 34,900,000 MM Btu per year. (Offsets)

17. The HRSG duct burners (S-42 and S-44) shall not be fired unless its associated Gas Turbine (S-41 and S-43, respectively) is in operation. (BACT for NO_x)

18. Except as provided in Condition No. 8, S-41 Gas Turbine and S-42 HRSG shall be abated by the properly operated and properly maintained A-11 Selective Catalytic Reduction (SCR) System whenever fuel is combusted at those sources and the A-11 catalyst bed has reached minimum operating temperature. (BACT for NO_x)

19. Except as provided in Condition No. 9, S-43 Gas Turbine and S-44 HRSG shall be abated by the properly operated and properly maintained A-13 Selective Catalytic Reduction (SCR) System whenever fuel is combusted at those sources and the A-13 catalyst bed has reached minimum operating temperature. (BACT for NO_x)

20. The Gas Turbines (S-41 & S-43) and HRSGs (S-42 & S-44) shall comply with requirements (a) through (h) under all operating scenarios, including duct burner firing mode and steam injection power augmentation mode. Requirements (a) through (h) do not apply during a gas turbine start-up or shutdown. (BACT, PSD, and Toxic Risk Management Policy)

    (a) Nitrogen oxide mass emissions (calculated in accordance with District approved methods as NO_2) at P-11 (the combined exhaust point for the S-41 Gas Turbine and the S-42 HRSG after abatement by A-11 SCR System) shall not exceed 20 pounds per hour or 0.0090 lb./MM Btu (HHV) of natural gas fired. Nitrogen oxide mass emissions (calculated in accordance with District approved methods as NO_2) at P-12 (the combined exhaust point for the S-43 Gas Turbine and the S-44 HRSG after abatement by A-13 SCR System) shall not exceed 20 pounds per hour or 0.0090 lb./MM Btu (HHV) of natural gas fired. (PSD for NO_x)

    (b) The nitrogen oxide emission concentration at emission points P-11 and P-12 each shall not exceed 2.5 ppmv, on a dry basis, corrected to 15% O_2, averaged over any 1-hour period. (BACT for NO_x)

    (c) Carbon monoxide mass emissions at P-11 and P-12 each shall not exceed 0.013 lb./MM Btu (HHV) of natural gas fired or 29.22 pounds per hour, averaged over any rolling 3-hour period. (PSD for CO)

    (d) The carbon monoxide emission concentration at P-11 and P-12 each shall not exceed 6 ppmv, on a dry basis, corrected to 15% O_2, averaged over any rolling 3-hour period. (BACT for CO)

    (e) Ammonia (NH_3) emission concentrations at P-11 and P-12 each shall not exceed 10 ppmv, on a dry basis, corrected to 15% O_2, 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-11 and A-13 SCR Systems. The correlation between the gas turbine and HRSG heat input rates, A-11 and A-13 SCR System ammonia injection rates,

and corresponding ammonia emission concentration at emission points P-11 and P-12 shall be determined in accordance with permit condition #29. (TRMP for NH_3)

(f) Precursor organic compound (POC) mass emissions (as CH_4) at P-11 and P-12 each shall not exceed 5.6 pounds per hour or 0.0025 lb./MM Btu of natural gas fired. (BACT)

(g) Sulfur dioxide (SO_2) mass emissions at P-11 and P-12 each shall not exceed 6.18 pounds per hour or 0.0028 lb./MM Btu of natural gas fired. (BACT)

(h) Particulate matter (PM_{10}) mass emissions at P-11 and P-12 each shall not exceed 11 pounds per hour or 0.00588 lb./MM Btu of natural gas fired when the HRSG duct burners are not in operation. Particulate matter (PM_{10}) mass emissions at P-11 and P-12 each shall not exceed 13 pounds per hour or 0.00584 lb./MM Btu of natural gas fired when the HRSG duct burners are in operation. (BACT)

21. The regulated air pollutant mass emission rates from each of the Gas Turbines (S-41 and S-43) during a start-up or a shutdown shall not exceed the limits established below. (PSD)

	Cold Start-Up (lb./start-up)	Hot Start-Up (lb./start-up)	Shutdown (lb./shutdown)
Oxides of Nitrogen (as NOx)	452	189	59
Carbon Monoxide (CO)	990	291	73
Precursor Organic Compounds (as CH_4)	109	26	6

22. The Gas Turbines (S-41 and S-43) shall not be in start-up mode simultaneously. (PSD)

23. Total combined emissions from the Gas Turbines and HRSGs (S-41, S-42, S-43, and S-44), including emissions generated during Gas Turbine start-ups and shutdowns shall not exceed the following limits during any calendar day:

(a)	1,994 pounds of NO_x (as NO_2) per day	(CEQA)
(b)	3,602 pounds of CO per day	(PSD)
(c)	468 pounds of POC (as CH_4) per day	(CEQA)
(d)	624 pounds of PM_{10} per day	(PSD)
(e)	297 pounds of SO_2 per day	(BACT)

24. Cumulative combined emissions from the Gas Turbines and HRSGs (S-41, S-42, S-43, and S-44)and the Fuel Gas Preheater (S-45) and the Cooling Tower (S-46), including emissions generated during gas turbine start-ups and shutdowns shall not exceed the following limits during any consecutive twelve-month period:

(a)	174.3 tons of NO_x (as NO_2) per year	(Offsets, PSD)
(b)	259.1 tons of CO per year	(Cumulative Increase)
(c)	46.6 tons of POC (as CH_4) per year	(Offsets)
(d)	112.2 tons of PM_{10} per year	(Offsets, PSD)
(e)	48.5 tons of SO_2 per year	(Cumulative Increase)

25. The maximum projected annual toxic air contaminant emissions (per condition 28) from the Gas Turbines and HRSGs combined (S-41, S-42, S-43, and S-44) shall not exceed the following limits:

    4,102 pounds of formaldehyde per year
    506 pounds of benzene per year
    38 pounds of Specified polycyclic aromatic hydrocarbons (PAHs) per year

    unless the following requirement is satisfied:

    The owner/operator shall perform a health risk assessment using the emission rates determined by source test and the most current Bay Area Air Quality Management District approved procedures and unit risk factors in effect at the time of the analysis. This risk analysis shall be submitted to the District and the CEC CPM within 60 days of the source test date. The owner/operator may request that the District and the CEC CPM revise the carcinogenic compound emission limits specified above. If the owner/operator demonstrates to the satisfaction of the APCO that these revised emission limits will result in a cancer risk of not more than 1.0 in one million, the District and the CEC CPM may, at their discretion, adjust the carcinogenic compound emission limits listed above. (TRMP)

26. The owner/operator shall demonstrate compliance with conditions 14 through 17, 20(a) through 20(d), 21, 23(a), 23(b), 24(a), and 24(b) by using properly operated and maintained continuous monitors (during all hours of operation including equipment Start-up and Shutdown periods) for all of the following parameters:

    (a) Firing Hours and Fuel Flow Rates for each of the following sources: S-41 & S-42 combined and S-43 & S-44 combined.
    (b) Carbon Dioxide (CO_2) or Oxygen (O_2) concentrations, Nitrogen Oxides (NO_x) concentrations, and Carbon Monoxide (CO) concentrations at each of the following exhaust points: P-11 and P-12.
    (c) Ammonia injection rate at A-11 and A-13 SCR Systems
    (d) Steam injection rate at S-41 & S-43 Gas Turbine Combustors

    The 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 owner/operator shall calculate and record the total firing hours, the average hourly fuel flow rates, and average hourly pollutant emission concentrations.

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

    (e) Heat Input Rate for each of the following sources: S-41 & S-42 combined and S-43 & S-44 combined.

(f) Corrected NO_x concentrations, NO_x mass emissions (as NO_2), corrected CO concentrations, and CO mass emissions at each of the following exhaust points: P-11 and P-12.

Applicable to emission points P-11 and P-12, the owner/operator shall record the parameters specified in conditions 26(e) and 26f) at least once every 15 minutes (excluding normal calibration periods). As specified below, the owner/operator shall calculate and record the following data:

(g) total Heat Input Rate for every clock hour and the average hourly Heat Input Rate for every rolling 3-hour period.
(h) 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-41, S-42, S-43, and S-44) combined.
(i) the average NO_x mass emissions (as NO_2), CO mass emissions, and corrected NO_x and CO emission concentrations for every clock hour and for every rolling 3-hour period.
(j) on an hourly basis, the cumulative total NO_x mass emissions (as NO_2) 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-41, S-42, S-43, and S-44) combined.
(k) For each calendar day, the average hourly Heat Input Rates, Corrected NO_x emission concentrations, NO_x mass emissions (as NO_2), corrected CO emission concentrations, and CO mass emissions for each Gas Turbine and associated HRSG combined.
(l) on a daily basis, the cumulative total NO_x mass emissions (as NO_2) and cumulative total CO mass emissions, for the previous consecutive twelve month period for all four sources (S-41, S-42, S-43, and S-44) combined.

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

27. To demonstrate compliance with conditions 20(f), 20(g), 20(h), 23(c) through 23(e), and 24(c) through 24(e), the owner/operator shall calculate and record on a daily basis, the Precursor Organic Compound (POC) mass emissions, Fine Particulate Matter (PM_{10}) mass emissions (including condensable particulate matter), and Sulfur Dioxide (SO_2) mass emissions from each power train. The owner/operator shall use the actual Heat Input Rates calculated pursuant to condition 26, actual Gas Turbine Start-up Times, actual Gas Turbine Shutdown Times, and CEC and District-approved emission factors to calculate these emissions. The calculated emissions shall be presented as follows:

(a) For each calendar day, POC, PM_{10}, and SO_2 emissions shall be summarized for: each power train (Gas Turbine and its respective HRSG combined) and all four sources (S-41, S-42, S-43, and S-44) combined.
(b) on a daily basis, the 365 day rolling average cumulative total POC, PM_{10}, and SO_2 mass emissions, for all four sources (S-41, S-42, S-43, and S-44) combined.

(Offsets, PSD, Cumulative Increase)

28. To demonstrate compliance with Condition 25, the owner/operator shall calculate and record on an annual basis the maximum projected annual emissions of: Formaldehyde, Benzene, and Specified PAHs. Maximum projected annual emissions shall be calculated using the maximum Heat Input Rate of 34,900,000 MM Btu/year and the highest emission factor (pounds of pollutant per MM Btu of Heat Input) determined by any source test of the S-41 & S-43 Gas Turbines and/or S-42 & S-44 Heat Recovery Steam Generators. If this calculation method results in an unrealistic mass emission rate (the highest emission factor occurs at a low firing rate) the applicant may use an alternate calculation, subject to District approval. (TRMP)

29. Within 60 days of start-up of the CCPP Unit#8, the owner/operator shall conduct a District-approved source test on exhaust point P-11 or P-12 to determine the corrected ammonia (NH_3) emission concentration to determine compliance with condition 20(e). The source test shall determine the correlation between the heat input rates of the gas turbine and associated HRSG, A-11 or A-13 SCR System ammonia injection rate, and the corresponding NH_3 emission concentration at emission point P-11 or P-12. The source test shall be conducted over the expected operating range of the turbine and HRSG (including, but not limited to minimum, 70%, 85%, and 100% load) to establish the range of ammonia injection rates necessary to achieve NO_x emission reductions while maintaining ammonia slip levels. Continuing compliance with condition 20(e) shall be demonstrated through calculations of corrected ammonia concentrations based upon the source test correlation and continuous records of ammonia injection rate. (TRMP)

30. Within 60 days of start-up of the CCPP Unit#8 and on an annual basis thereafter, the owner/operator shall conduct a District-approved source test on exhaust points P-11 and P-12 while each Gas Turbine and associated Heat Recovery Steam Generator are operating at maximum load (including steam injection power augmentation mode) to determine compliance with Conditions 20(a), (b), (c), (d), (f), (g), and (h), while each Gas Turbine and associated Heat Recovery Steam Generator are operating at minimum load to determine compliance with Conditions 20(c) and (d), and to verify the accuracy of the continuous emission monitors required in condition 26. 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 NO_2), carbon monoxide concentration and mass emissions, sulfur dioxide concentration and mass emissions, methane, ethane, and particulate matter (PM_{10}) emissions including condensable particulate matter. (BACT, offsets)

31. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section and the CEC 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 CEC 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 PM_{10} 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. Source test results shall be submitted to the District and the CEC CPM within 60 days of conducting the tests. (BACT)

32. Within 60 days of start-up of the CCPP Unit#8 and on an biennial basis (once every two years) thereafter, the owner/operator shall conduct a District-approved source test on exhaust point P-11 or P-12 while the Gas Turbine and associated Heat Recovery Steam Generator are operating at maximum allowable operating rates to demonstrate compliance with Condition 25. If three consecutive biennial source tests demonstrate that the annual emission rates calculated pursuant to condition 28 for any of the compounds listed below are less than the BAAQMD Toxic Risk Management Policy trigger levels shown, then the owner/operator may discontinue future testing for that pollutant:

Benzene	$\leq$	26.8 pounds/year
Formaldehyde	$\leq$	132 pounds/year
Specified PAHs	$\leq$	0.18 pounds/year

(TRMP)

33. The owner/operator of the CCPP Unit#8 shall submit all reports (including, but not limited to monthly CEM reports, monitor breakdown reports, emission excess reports, equipment breakdown reports, etc.) as required by District Rules or Regulations and in accordance with all procedures and time limits specified in the Rule, Regulation, Manual of Procedures, or Enforcement Division Policies & Procedures Manual. (Regulation 2-6-502)

34. The owner/operator of the CCPP Unit#8 shall maintain all records and reports on site for a minimum of 5 years. These records shall include but are not limited to: continuous monitoring records (firing hours, fuel flows, emission rates, monitor excesses, breakdowns, etc.), source test and analytical records, natural gas sulfur content analysis results, emission calculation records, records of plant upsets and related incidents. The owner/operator shall make all records and reports available to District and the CEC CPM staff upon request. (Regulation 2-6-501)

35. The owner/operator of the CCPP Unit#8 shall notify the District and the CEC CPM of any violations of these permit conditions. Notification shall be submitted in a timely manner, in accordance with all applicable District Rules, Regulations, and the Manual of Procedures. Notwithstanding the notification and reporting requirements given in any District Rule, Regulation, or the Manual of Procedures, the owner/operator shall submit written notification (facsimile is acceptable) to the Enforcement Division within 96 hours of the violation of any permit condition. (Regulation 2-1-403)

36. The stack height of emission points P-11 and P-12 shall each be at least 195 feet above grade level at the stack base. (PSD, TRMP)

37. The Owner/Operator of CCPP Unit#8 shall provide adequate stack sampling ports and platforms to enable the performance of source testing. The location and configuration of the stack sampling ports shall be subject to BAAQMD review and approval.

(Regulation 1-501)

38. Within 180 days of the issuance of the Authority to Construct for the CCPP Unit#8, the Owner/Operator shall contact the BAAQMD Technical Services Division regarding requirements for the continuous monitors, sampling ports, platforms, and source tests required by conditions 26, 29, 30 and 32. All source testing and monitoring shall be conducted in accordance with the BAAQMD Manual of Procedures. (Regulation 1-501)

39. Prior to the issuance of the BAAQMD Authority to Construct for the CCPP Unit 8, the Owner/Operator shall demonstrate that valid emission reduction credits in the amount of 200.5 tons/year of Nitrogen Oxides, 53.6 tons/year of Precursor Organic Compounds or equivalent (as defined by District Regulations 2-2-302.1 and 2-2-302.2), and 112.2 tons of Particulate Matter less than 10 microns are under their control through enforceable contracts, option to purchase agreements, or equivalent binding legal documents. (Offsets)

40. Prior to the start of construction of the CCPP Unit 8, the Owner/Operator shall provide to the District valid emission reduction credit banking certificates in the amount of 200.5 tons/year of Nitrogen Oxides, 53.6 tons/year of Precursor Organic Compounds or equivalent as defined by District Regulations 2-2-302.1 and 2-2-302.2 and 112.2 tons of Particulate Matter less than 10 microns. (Offsets)

41. Pursuant to BAAQMD Regulation 2, Rule 6, section 404.1, the owner/operator of the CCPP Unit#8 shall submit an application to the BAAQMD for a major facility review permit within 12 months of the issuance of the PSD Permit. (Regulation 2-6-404.1)

42. Pursuant to 40 CFR Part 72.30(b)(2)(ii) of the Federal Acid Rain Program, the owner/operator of the CCPP Unit 8 shall not operate either of the gas turbines until either: 1) a Title IV Operating Permit has been issued; 2) 24 months after a Title IV Operating Permit Application has been submitted, whichever is earlier. (Regulation 2, Rule 7)

43. The CCPP Unit 8 shall comply with the continuous emission monitoring requirements of 40 CFR Part 75. (Regulation 2, Rule 7)

44. The owner/operator shall take monthly samples of the natural gas combusted at the CCPP Unit#8. The samples shall be analyzed for sulfur content using District-approved laboratory methods or the owner/operator shall obtain certified analytical results from the gas supplier. The sulfur content test results shall be retained on site for a minimum of five years from the test date and shall be utilized to satisfy the requirements of 40 CFR Part 60, subpart GG. If the results from six consecutive monthly samples show results below 0.5 grains per 100 scf, the owner/operator may discontinue the sampling program with District approval. (cumulative increase)

45. The cooling towers shall be properly installed and maintained to minimize drift losses. The cooling towers shall be equipped with high-efficiency mist eliminators with a maximum guaranteed drift rate of 0.0005%. 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 5,666 ppmw (mg/l). The owner/operator shall sample the water at least once per day. (PSD)

46. 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 CCPP Unit 8, 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. The CEC CPM may, in years 5 and 15 of cooling tower operation, require the owner/operator to perform a source test to determine the PM_{10} emission rate from the cooling tower to verify compliance with the vendor-guaranteed drift rate specified in condition 45. (PSD)

47. The Fuel Gas Preheater (S-45) shall not be operated more than 16 hours in any day. (BACT)

V Recommendation

The APCO has concluded that the proposed CCPP Unit 8 power plant, which is composed of the permitted sources listed below, complies with all applicable District rules and regulations. The following sources will be subject to the permit conditions and BACT and offset requirements discussed previously.

S-41 Combustion Gas Turbine #1, General Electric Frame 7FA, 1872 MM Btu per hour, equipped with dry low-NO_x Combustors, abated by A-11 Selective Catalytic Reduction System and A-12 CO Catalyst System.

S-42 Heat Recovery Steam Generator #1, 395 MM Btu per hour, abated by A-11 Selective Catalytic Reduction System and A-12 CO Catalyst System.

S-43 Combustion Gas Turbine #2, General Electric Frame 7FA, 1872 MM Btu per hour, equipped with dry low-NO_x Combustors, abated by A-13 Selective Catalytic Reduction System and A-14 CO Catalyst System.

S-44 Heat Recovery Steam Generator #2, 395 MM Btu per hour, abated by A-13 Selective Catalytic Reduction System and A-14 CO Catalyst System.

S-45 Gas-Fired Fuel Preheater, 12 MM Btu per hour.

S-46 10-Cell Wet Cooling Tower, 125,000 gallons per minute

Pursuant to District Regulation 2-3-404, this document shall be subject to the public notice, public comment, and public inspection requirements of Regulation 2-2-406 and 2-2-407.

Written comments on this Preliminary Determination of Compliance should be directed to:

Ellen Garvey
Air Pollution Control Officer/Executive Officer
Bay Area Air Quality Management District
939 Ellis Street
San Francisco CA 94109