

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

*PERMIT SERVICES DIVISION*

**Permit Evaluation and Emission Calculations**

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APPLICATION 2233	DATE 02/09/01
PROCESSING ENGINEER DENNIS T. JANG	

**Delta Energy Center; Plant #12095  
Arcy Lane, Pittsburg CA 94565**

**BACKGROUND**

Delta Energy Center is applying for the following:

An authority to construct and permit to operate for the following equipment:

S-9 Cooling Tower, 12-Cell

And a change of permit conditions to reflect the “withdrawal” of the following equipment:

S-7 Auxiliary Boiler

S-8 Auxiliary Boiler

And a letter of exemption for the following equipment:

Emergency Generator, Caterpillar Model G3616SITA, 1040 KW, Natural Gas Fired,  
14,998 scf/hr

The output rating of the exempt natural-gas fired emergency generator originally proposed for the project was 2,275 kW. Because the emergency generator will be operated for a maximum of 200 hours per year and because it will have an increased cancer risk of less than one in one million, it will remain exempt from permit per Regulation 2-1-114.2.3.

This application originally included a fire pump diesel engine. However, the applicant has withdrawn the engine and will submit a separate application for the engine at a later date.

The original purpose of the auxiliary boilers was to provide process steam to Dow Chemical when the existing and new gas turbines cannot provide steam when they are down for maintenance or the steam is required for electricity generation. Since the Authority to Construct was issued for the DEC, Calpine has acquired the Los Medanos Energy Center, which will provide process steam to Dow Chemical. Therefore, the removal of the auxiliary boilers will not affect the operation and emission rates of the turbines or HRSGs.

**CRITERIA-POLLUTANT EMISSION SUMMARY**

**Annual Average Project Emissions Increase:**

Pollutant	lb/day	ton/yr
POC	0	0
NO <sub>x</sub>	0	0
SO <sub>2</sub>	0	0
CO	0	0
PM <sub>10</sub>	52.6	9.60
NPOC	0	0

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**Daily Maximum Emissions by Source (lb/day):**

Source	POC	NO <sub>x</sub>	SO <sub>2</sub>	CO	PM <sub>10</sub>	NPOC
S-9 Cooling Tower	0	0	0	0	52.6	0

**EMISSION CALCULATIONS**

**S-9 Cooling Tower**

It is conservatively assumed that all particulate matter will be emitted as PM<sub>10</sub>.

Cooling tower circulation rate: 167,885 gpm (83.9E6 lb/hr)  
 Evaporation Rate: 3,349 gpm  
 maximum total dissolved solids: 5223 ppm  
 Drift Rate: 0.0005 %

Cooling Tower Drift: (83.9E6 lb/hr)(0.000005) = 419.5 lb/hr

**PM<sub>10</sub>** = (5223 ppm)(419.5 lb/hr)/(10<sup>6</sup>)  
 = 2.172 lb/hr  
 = 52.13 lb/day (24 hr/day operation)  
 = 19,026.7 lb/yr (8,760 operating hours per year)  
 = **9.51 ton/yr**

The applicant calculated an annual emission rate of **9.60 ton/yr**.

*Toxic Air Contaminant Emissions:*

**TAC Emission Factors and Emission Rates for Cooling Tower**

Contaminant	Concentration <sup>a</sup>	Emission Factor <sup>b</sup> (lb/hr)	Emission Rate <sup>c</sup> (lb/yr)
Ammonia	91 mg/l	2.67E-03	23.4
Arsenic	7.78 µg/l	2.28E-07	0.002
Cadmium	9.21 µg/l	2.70E-07	0.0024
Trivalent chromium	14.05 µg/l	4.12E-07	0.004
Copper	27.32 µg/l	8.01E-07	0.007
Lead	17.04 µg/l	5.00E-07	0.004
Mercury	7.3 µg/l	2.14E-07	0.002
Nickel	0.04 µg/l	1.17E-09	1.02E-05
Silver	11.95 µg/l	3.51E-07	0.003
Zinc	1.55 µg/l	4.55E-08	0.0004

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<sup>a</sup>expected concentrations based upon analysis of supplied cooling water

<sup>b</sup>based upon a maximum drift rate of 419.5 lb/hr (13.31 l/hr)

<sup>c</sup>based upon 24 hr/day, 365 day/yr operation of cooling towers at maximum flow rate

Sample calculation:

$$\begin{aligned} \text{Arsenic} &= (7.78\text{E-}06 \text{ g/l})(2.2 \text{ lb}/10^3 \text{ g})(13.31 \text{ lb/hr}) \\ &= 2.28\text{E-}07 \text{ lb/hr} \end{aligned}$$

**Natural Gas Fired Emergency Generator**

**TAC Emission Factors and Emission Rates for Emergency Generator**

Toxic Air Contaminant	Emission Factor (lb/MMscf)	Annual Emission Rate <sup>a</sup> (lb/yr)	Screening Trigger Level (lb/yr)
Acenaphthene	2.17E-04	5.28E-04	4.4E-02
Acenaphthylene	7.35E-04	1.79E-03	4.4E-02
Acetaldehyde	2.62	6.38	72
Acrolein	1.61E-01	3.92E-01	3.9
Anthracene	1.71E-04	4.16E-04	4.4E-02
Benzene	2.59E-01	6.31E-01	6.7
Benzo(a)anthracene	9.92E-05	2.42E-04	4.4E-02
Benzo(a)pyrene	3.88E-06	9.45E-06	4.4E-02
Benzo(b)fluoroanthene	7.98E-05	1.94E-04	4.4E-02
Benzo(gbi)perylene	1.71E-05	4.16E-05	4.4E-02
Benzo(k)fluoroanthene	1.21E-05	2.95E-05	4.4E-02
chrysene	2.25E-05	5.48E-05	4.4E-02
Dibenz(a,h)anthracene	3.88E-06	9.45E-06	4.4E-02
Ethylbenzene	1.15E-01	2.80E-01	1.02E-05
Fluoranthene	4.57E-04	1.11E-03	4.4E-02
Flourene	7.98E-04	1.94E-03	4.4E-02
<b>Formaldehyde</b>	2.09E+01	<b>50.9</b>	<b>33</b>
Indeno(123-e,d)pyrene	1.09E-05	2.65E-05	4.4E-02
Naphthalene	3.10E-02	7.55E-02	270
Phenanthrene	2.75E-03	6.70E-03	4.4E-02
Propylene	1.21E+01	2.95E+01	N/S
Pyrene	3.26E-04	7.94E-04	4.4E-02
Toluene	3.94E-01	9.59E-01	30,000
Xylene	9.65E-01	2.35	58,000

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<sup>a</sup>based upon a maximum fuel consumption rate of 12173 scf/hr and maximum annual operation of 200 hr/yr

*Total Emissions from New Sources*

The following table is taken from the FDOC for the DEC issued on October 21, 1999. It summarizes the current annual emissions from proposed new sources.

**Table B-12 Maximum Annual Facility Regulated  
Air Pollutant Emissions (ton/yr)**

Source	NO <sub>2</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
S-1 CTG and S-2 HRSG <sup>a</sup>	92.176	368.48	24.533	45.255	6.14
S-3 CTG and S-4 HRSG <sup>a</sup>	92.176	368.48	24.533	45.255	6.14
S-5 CTG and S-6 HRSG <sup>a</sup>	92.176	368.48	24.533	45.255	6.14
S-7 Auxiliary Boiler	1.88	6.36	0.59	2.59	0.12
S-8 Auxiliary Boiler	1.26	4.26	0.48	2.216	0.08
<b>Total Permitted Emissions<sup>b</sup></b>	<b>279.67</b>	<b>1,116.06</b>	<b>74.67</b>	<b>140.57</b>	<b>18.62</b>
Cooling Towers <sup>c</sup>	0	0	0	14.1	0
<b>Total Facility Emissions</b>	<b>279.67</b>	<b>1,116.06</b>	<b>74.67</b>	<b>154.67</b>	<b>18.62</b>

<sup>a</sup>includes CTG start-up emissions

<sup>b</sup>new sources only; does not include existing turbines and waste heat boiler emissions

<sup>c</sup>Exempt from BAAQMD permit requirements per Regulation 2-1-128.4.

**Revised Maximum Annual Facility Regulated  
Air Pollutant Emissions (ton/yr)**

Source	NO <sub>2</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
S-1 CTG and S-2 HRSG <sup>a</sup>	92.176	368.48	24.533	45.255	6.14
S-3 CTG and S-4 HRSG <sup>a</sup>	92.176	368.48	24.533	45.255	6.14
S-5 CTG and S-6 HRSG <sup>a</sup>	92.176	368.48	24.533	45.255	6.14
S-9 Cooling Tower	0	0	0	9.60	0
<b>Total Permitted New Source Emissions</b>	<b>276.53</b>	<b>1,105.44</b>	<b>73.6</b>	<b>145.365</b>	<b>18.42</b>

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**FACILITY CUMULATIVE INCREASE**  
(since April 5, 1991)

	<b>Current</b>		<b>Increase</b>		<b>New Total</b>	
	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr
<b>POC</b>	403.3	73.6	0	0	403.3	73.6
<b>NO<sub>x</sub></b>	1,532	279.6	0	0	1,532	279.6
<b>SO<sub>2</sub></b>	100.9	18.42	0	0	100.9	18.42
<b>CO</b>	6,057	1,105.4	0	0	6,057	1,105.4
<b>NPOC</b>	0	0	0	0	0	0
<b>PM<sub>10</sub></b>	770.25	140.57	52.60	9.60	822.85	150.17

**TOXIC RISK SCREENING ANALYSIS**

<b>Compound</b>	<b>Project Annual Emission Rate (lb/yr)</b>	<b>Risk Screening Trigger Level (lb/yr)</b>
Ammonia	23.4	19,000
Arsenic	0.002	0.025
Cadmium	0.0024	0.046
Trivalent chromium	0.004	N/S
Copper	0.007	460
Lead	0.004	29
Mercury	0.002	58
Nickel	1.02E-05	0.73
Silver	0.003	N/S
Zinc	0.0004	6,800

In addition to the toxic air contaminants emitted by the cooling tower as listed above, the emergency generator will emit the toxic air contaminants listed in the emission calculation section above. Because the gas turbine/HRSG stacks have been moved and the auxiliary boilers have been removed, the applicant performed a new health risk assessment for all proposed sources at the facility.

The HRA was reviewed by Jane Lundquist of the District Toxics Evaluation Section. Based upon her review and analysis, the total increased risk from the three gas turbines/HRSGs, cooling tower, and natural gas fired emergency generator are summarized the following table.

Maximum Increased Cancer Risk	Chronic Hazard Index
0.2 in one million	0.01

These increased risk levels are acceptable under the District Toxic Risk Management Policy. Please see attached memorandum from Jane Lundquist dated February 6, 2001 for further detail.

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**BACT ANALYSIS**

With highest daily PM<sub>10</sub> emissions in excess of 10 pounds, the proposed S-9 Cooling Tower triggers the BACT requirement of NSR. The BAAQMD BACT/TBACT workbook does not specify BACT for PM<sub>10</sub> for wet cooling towers. However, the ARB BACT Clearinghouse cites a BACT specification for PM<sub>10</sub> for the proposed La Paloma power plant cooling tower as the use of drift eliminators with a maximum drift rate of 0.0006%. The cooling towers for the Los Medanos Energy Center and Metcalf Energy Center will be equipped with drift eliminators with a guaranteed drift rate of 0.0005%.

The proposed S-9 Cooling Tower will also be equipped with drift eliminators with a guaranteed drift rate of 0.0005%. This is deemed to satisfy BACT for PM<sub>10</sub>.

**OFFSET ANALYSIS**

The following table is taken from Appendix C of the FDOC for the DEC.

**Table C-1 Emission Offset Summary**

	NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
BAAQMD Calculated New Source Emission Increases <sup>a</sup> (ton/yr)	279.67	1,116.06	74.67	140.57	18.62
Proposed New Source Annual Emission Limits <sup>b</sup> (ton/yr)	279.6	1,116.1	74.4	140.7	18.6
Contemporaneous Emission Reductions <sup>c</sup> (ton/yr)	77.71	212.3	8.92	13.325	1.2
Net Annual Emission Increases (ton/yr)	201.89	903.8	65.48	127.375	17.4
Offset Requirement Triggered	Yes	N/A	Yes	Yes	N/A
Offset Ratio	1.15:1.0 <sup>d</sup>	N/A	1.15:1.0 <sup>d</sup>	1.0:1.0	N/A
Offsets Required (tons)	<b>232.17</b>	<b>0</b>	<b>75.3</b>	<b>127.37</b>	<b>0</b>

<sup>a</sup>sum of Gas Turbine (S-1, S-3, & S-5), HRSG (S-2, S-4, & S-6), and Auxiliary Boiler (S-7 & S-8) emission increases

<sup>b</sup>permit condition annual emission limitations as calculated by applicant

<sup>c</sup>resulting from the reduced operation of S-67, S-70, & S-73 Gas Turbines and S-68, S-71, & S-74 Waste Heat Boilers

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<sup>d</sup>Pursuant to District Regulation 2-2-302, the applicant must provide emission offsets at a ratio of 1.15 to 1.0 since the proposed facility NO<sub>x</sub> and POC emissions from permitted sources will each exceed 50 tons per year

The following table summarizes any offset refunds or outstanding offsets due as a result of the withdrawal of the auxiliary boilers and the permitting of the cooling tower.

**Revised Emission Offset Summary**

	NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
BAAQMD Calculated New Source Emission Increases <sup>a</sup> (ton/yr)	276.53	1,105.44	73.6	145.365	18.42
Proposed New Source Annual Emission Limits <sup>b</sup> (ton/yr)	276.6	1,105.4	73.6	145.365	18.42
Contemporaneous Emission Reductions <sup>c</sup> (ton/yr)	77.71	212.3	8.92	13.325	1.2
Net Annual Emission Increases (ton/yr)	198.89	893.1	64.68	132.04	17.22
Offset Requirement Triggered	Yes	N/A	Yes	Yes	N/A
Offset Ratio	1.15:1.0 <sup>d</sup>	N/A	1.15:1.0 <sup>d</sup>	1.0:1.0	N/A
Offsets Required (tons)	<b>228.723</b>	<b>0</b>	<b>74.382</b>	<b>132.04</b>	<b>0</b>

<sup>a</sup>sum of Gas Turbine (S-1, S-3, & S-5), HRSG (S-2, S-4, & S-6), and S-9 Cooling Tower emission increases

<sup>b</sup>permit condition annual emission limitations as calculated by applicant

<sup>c</sup>resulting from the reduced operation of S-67, S-70, & S-73 Gas Turbines and S-68, S-71, & S-74 Waste Heat Boilers

<sup>d</sup>Pursuant to District Regulation 2-2-302, the applicant must provide emission offsets at a ratio of 1.15 to 1.0 since the proposed facility NO<sub>x</sub> and POC emissions from permitted sources will each exceed 50 tons per year

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The following table summarizes the quantity and type of emission reduction credits provided by the applicant in May of 2000.

**Emission Reduction Credits Provided by Applicant (tons)**

Location	Certificate	POC	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>
Crockett	610	0	0	71.59	0
Pittsburg	626	19.2	0	0	0
Rodeo	100	8	165.747	60.73	65
Berkeley	403	3.12	0	0	0
Berkeley	511	20.60	0	0	0
Richmond	271	53.26	0	0	0
Antioch	618	1.6	14.56	0	2.21
Pittsburg	608	2.783	0	0	0
Napa	642	0	22.07	1.3	21.72
<b>Total</b>		<b>108.563</b>	<b>202.377</b>	<b>133.62</b>	<b>88.93</b>
<b>Offset Obligation</b>		75.302	235.624	0	127.37
<b>Surplus/Deficit</b>		33.261	-33.247	133.62	-38.44
<b>POC for NO<sub>x</sub> at 1.0:1.0</b>		-33.247	33.247	N/A	N/A
<b>SO<sub>2</sub> for PM<sub>10</sub> at 3.0:1.0</b>		N/A	N/A	-115.32	38.44
<b>Surplus Offsets</b>		<b>0.014</b>	<b>0</b>	<b>18.285</b>	<b>0</b>

As shown, 88.93 tons of the PM<sub>10</sub> offset obligation were offset directly with PM<sub>10</sub> emission reduction credits. The outstanding balance (38.44 tons PM<sub>10</sub>) was offset with SO<sub>2</sub> at a ratio of 3:1 pursuant to Attachment 2 to Appendix B of the FDOC. Therefore, (38.44)(3) = 115.32 tons of SO<sub>2</sub> are required.

As shown, 202.37 tons of the NO<sub>x</sub> offset obligation were offset directly with NO<sub>x</sub>. The outstanding balance (33.243 tons NO<sub>x</sub>) was offset with POC at a ratio of 1:1 pursuant to Regulation 2, Rule 1, Section 302.2.

The 0.014 tpy of surplus POC offsets were issued to Calpine under banking certificate 676 and the 18.285 tpy of surplus SO<sub>2</sub> offsets were issued to Calpine under banking certificate 675.

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The following table summarizes the current offset requirements as a result of withdrawal of the auxiliary boilers and permitting of the cooling tower.

**Outstanding Emission Reduction Credits Required (tons)**

Location	Certificate	POC	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>
Crockett	610	0	0	71.59	0
Pittsburg	626	19.2	0	0	0
Rodeo	100	8	165.747	60.73	65
Berkeley	403	3.12	0	0	0
Berkeley	511	20.60	0	0	0
Richmond	271	53.26	0	0	0
Antioch	618	1.6	14.56	0	2.21
Pittsburg	608	2.783	0	0	0
Napa	642	0	22.07	1.3	21.72
<b>Total</b>		<b>108.563</b>	<b>202.377</b>	<b>133.62</b>	<b>88.93</b>
<b>Former Offset Obligation</b>		75.302	235.624	0	127.37
<b>Revised Offset Obligation</b>		<b>74.382</b>	<b>228.723</b>	0	<b>132.04</b>
<b>Surplus/Deficit</b>		34.181	-26.346	133.62	-43.11
<b>POC for NO<sub>x</sub> at 1.0:1.0</b>		-26.346	26.346	N/A	N/A
<b>SO<sub>2</sub> for PM<sub>10</sub> at 3.0:1.0</b>		N/A	N/A	-115.32	38.44
<b>Outstanding/ Surplus Offsets</b>		<b>7.835<sup>a</sup></b>	<b>0</b>	<b>18.285<sup>b</sup></b>	<b>-4.67<sup>c</sup></b>
<b>Offset Refund</b>		<b>7.835</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Offset Required</b>		<b>0</b>	<b>0</b>	<b>14.01</b>	<b>0</b>

<sup>a</sup>the 7.835 tpy of surplus POC offsets will be “refunded” to Calpine since the POC and NO<sub>x</sub> offset obligation has been reduced slightly as a result of the “withdrawal” of the auxiliary boilers.

<sup>b</sup>the 18.285 tpy of surplus SO<sub>2</sub> offsets were issued to Calpine under banking certificate #675 on 5/9/00.

<sup>c</sup>the applicant will provide 14.01 tpy of SO<sub>2</sub> ERCs from banking certificate #701 (which contains 465.270 tpy of SO<sub>2</sub>) to offset the outstanding PM<sub>10</sub> offset obligation of 4.67 tpy at a ratio of 3:1.

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**PSD Air Quality Analysis**

Pursuant to BAAQMD Regulation 2-2-414.1, the applicant submitted a modeling analysis that adequately demonstrates the air quality impacts of the DEC project. The applicant's analysis was based on EPA-approved models and was performed in accordance with District Regulation 2-2-414. Because the gas turbine/HRSG stacks have been relocated, the auxiliary boilers have been withdrawn, and the cooling tower has been moved and reduced in height and capacity, the applicant has submitted a revised PSD modeling analysis.

Pursuant to Regulation 2-2-414.2, the District has found that the modeling analysis has demonstrated that the allowable emission increases from the DEC project, in conjunction with all other applicable emissions, will not cause or contribute to a violation of any applicable ambient air quality standard for NO<sub>2</sub>, CO, and PM<sub>10</sub> or an exceedance of any applicable PSD increment.

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.

Please see attached report from Glen Long of the District Planning Division for a detailed discussion of the air quality impact analysis.

**FEE SUMMARY**

Source	Fee Schedule	Filing Fee	Initial Fee	Late Fee	Permit to Operate Fee	Source Sub-Total
S-9 Cooling Tower	F	\$228.00	\$160.00	\$0.00	\$115.00	\$503.00
					<b>Grand Total</b>	<b>\$503.00</b>
					<b>Amount Paid</b>	<b>\$503.00</b>
					<b>Log Number</b>	<b>32101</b>

**STATEMENT OF COMPLIANCE**

**S-9 Cooling Tower** is expected to comply with Regulation 6, section 301 (Ringelmann No. 1 Limitation), 305 (Visible Particles), 310 (Particulate Weight Limitation), and 311 (General Operations).

This project is **categorically exempt** from District CEQA Regulation 2-1-311 pursuant to Regulation 2-1-312.11 (Permit applications for a new source or for process changes which will satisfy the "No Net Emission Increase" provisions of Regulation 2, Rule 2, and for which there is no possibility that the project may have any significant environmental effect in connection with any environmental media or resources other than air quality) and therefore is not subject to CEQA review.

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The Delta Energy Center facility is **not** located within 1000 feet of the outer boundary of the nearest school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

A Toxics Risk Screening Analysis was performed due to the emission of the toxic air contaminants listed above. TBACT does not apply to this project.

**PERMIT CONDITIONS**

Permit Condition #17154 will be modified as shown below to reflect the changes proposed under this application.

**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 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 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.
Auxiliary Boiler Start-up:	The lesser of the first 120 minutes of continuous fuel flow to an Auxiliary Boiler after fuel flow is initiated; or the period of time from fuel flow initiation until the Boiler achieves two consecutive CEM data points in compliance with the emission concentration limits of conditions 37(b) and 37(d).

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**Auxiliary Boiler Shutdown:** The lesser of the 30 minute period immediately prior the termination of fuel flow to the Auxiliary Boiler; or the period of time from non-compliance with any requirement listed in Conditions 37(a) through 37(d) until termination of fuel flow to the auxiliary boiler.

**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<sub>x</sub>, CO, or NH<sub>3</sub>) corrected to a standard stack gas oxygen concentration. For emission point P-1 (S-1 Gas Turbine and S-2 HRSG), emission point P-2 (S-3 Gas Turbine and S-4 HRSG), and emission point P-3 (S-5 Gas Turbine and S-6 HRSG) the standard stack gas oxygen concentration is 15% O<sub>2</sub> by volume on a dry basis. For emission point P-4 (S-7 Auxiliary Boiler #1) and emission point P-5 (S-8 Auxiliary Boiler #2), the standard stack gas oxygen concentration is 3% O<sub>2</sub> by volume on a dry basis.

**Commissioning Activities:** All testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the DE construction contractor to insure safe and reliable steady state operation of the gas turbines, heat recovery steam generators, steam turbine, auxiliary boiler, 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

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DEC: Delta Energy Center

**Conditions for the Commissioning Period**

1. The owner/operator of the Delta Energy Center (DEC) shall minimize emissions of carbon monoxide and nitrogen oxides from S-1, S-3, & S-5 Gas Turbines, and S-2, S-4, & S-6 Heat Recovery Steam Generators (HRSGs), ~~and S-7 & S-8 Auxiliary Boilers~~ to the maximum extent possible during the commissioning period. Conditions 1 through ~~18~~13 shall only apply during the commissioning period as defined above. Unless otherwise indicated, Conditions ~~19~~14 through ~~73~~59 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 combustors of S-1, S-3, & S-5 Gas Turbines, and S-2, S-4, & S-6 Heat Recovery Steam Generators, ~~and S-7 & S-8 Auxiliary Boilers~~ 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-1, A-2, and A-3 SCR Systems shall be installed, adjusted, and operated to minimize the emissions of carbon monoxide and nitrogen oxides from S-1, S-3, & S-5 Gas Turbines and S-2, S-4, & S-6 Heat Recovery Steam Generators.
- ~~4. At the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor, the A-4 & A-6 Oxidation Catalysts and A-5 & S-7 SCR Systems shall be installed, adjusted, and operated to minimize the emissions of carbon monoxide and nitrogen oxides from S-7 & S-8 Auxiliary Boilers.~~
- ~~5.4~~ Coincident with the steady-state operation of A-1, A-2, & A-3 SCR Systems pursuant to conditions 3, ~~108~~, ~~119~~, and ~~1210~~, the Gas Turbines (S-1, S-3, & S-5) and the HRSGs (S-2, S-4, & S-6) shall comply with the NO<sub>x</sub> and CO emission limitations specified in conditions ~~227~~(a) through ~~227~~(d).
- ~~6. Coincident with the steady-state operation of A-5 & A-7 SCR Systems and A-4 & A-6 Oxidation Catalysts pursuant to conditions 4, 13, and 14, the Auxiliary Boilers (S-7 & S-8) shall comply with the NO<sub>x</sub> and CO emission limitations specified in conditions 37(a) through 37(d).~~
- ~~7.5~~ The owner/operator of the DEC shall submit a plan to the District Permit Services Division and the CEC CPM at least four weeks prior to first firing of S-1, S-3, or S-5 Gas Turbines

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describing the procedures to be followed during the commissioning of the turbines, HRSGs, ~~auxiliary boilers~~, and steam turbine. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not be limited to, the tuning of the Dry-Low-NO<sub>x</sub> combustors, the installation and operation of the SCR systems and oxidation catalysts, the installation, calibration, and testing of the CO and NO<sub>x</sub> continuous emission monitors, and any activities requiring the firing of the Gas Turbines (S-1, S-3, & S-5) and, HRSGs (S-2, S-4, & S-6), ~~and Auxiliary Boilers (S-7 & S-8)~~ without abatement by their respective SCR Systems, and/or oxidation catalysts.

8.6 During the commissioning period, the owner/operator of the DEC shall demonstrate compliance with conditions ~~108~~ through 1410, ~~16~~, and 1712 through the use of properly operated and maintained continuous emission monitors and data recorders for the following parameters:

- firing hours
- fuel flow rates
- stack gas nitrogen oxide emission concentrations,
- stack gas carbon monoxide emission concentrations
- stack gas oxygen concentrations.

The monitored parameters shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation) for the Gas Turbines (S-1, S-3, & S-5), and HRSGs (S-2, S-4, & S-6), ~~and Auxiliary Boilers (S-7 & S-8)~~. The owner/operator shall use District-approved methods to calculate heat input rates, nitrogen dioxide mass emission rates, carbon monoxide mass emission rates, and NO<sub>x</sub> 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.

9.7 The District-approved continuous monitors specified in condition 8 shall be installed, calibrated, and operational prior to first firing of the Gas Turbines (S-1, S-3, & S-5), and Heat Recovery Steam Generators (S-2, S-4, & S-6), ~~and Auxiliary Boilers (S-7 & S-8)~~. 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<sub>x</sub> emission concentrations. The type, specifications, and location of these monitors shall be subject to District review and approval.

10.8 The total number of firing hours of S-1 Gas Turbine and S-2 Heat Recovery Steam Generator without abatement of nitrogen oxide emissions by A-1 SCR System shall not exceed 300

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hours during the commissioning period. Such operation of S-1 Gas Turbine and S-2 HRSG without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR system in place. 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 300 firing hours without abatement shall expire.

~~11.9.~~ The total number of firing hours of S-3 Gas Turbine and S-4 Heat Recovery Steam Generator without abatement of nitrogen oxide emissions by A-3 SCR System shall not exceed 300 hours during the commissioning period. Such operation of S-3 Gas Turbine and S-4 HRSG without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR system in place. 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 300 firing hours without abatement shall expire.

~~12.10.~~ The total number of firing hours of S-5 Gas Turbine and S-6 Heat Recovery Steam Generator without abatement of nitrogen oxide emissions by A-3 SCR System shall not exceed 300 hours during the commissioning period. Such operation of S-3 Gas Turbine and S-4 HRSG without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR system in place. 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 300 firing hours without abatement shall expire.

~~13.~~ ~~The total number of firing hours of S-7 Auxiliary Boiler #1 without abatement of carbon monoxide emissions by A-4 Oxidation Catalyst and/or abatement of nitrogen oxide emissions by A-5 SCR System shall not exceed 100 hours during the commissioning period. Such operation of S-7 Auxiliary Boiler without abatement by A-4 and/or A-5 shall be limited to discrete commissioning activities that can only be properly executed without the SCR system and/or oxidation catalyst in place. 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 100 firing hours without abatement shall expire.~~

~~14.~~ ~~The total number of firing hours of S-8 Auxiliary Boiler #2 without abatement of carbon monoxide emissions by A-6 Oxidation Catalyst and/or abatement of nitrogen oxide emissions by A-7 SCR System shall not exceed 100 hours during the commissioning period. Such operation of S-8 Auxiliary Boiler without abatement by A-6 and/or A-7 shall be limited to discrete commissioning activities that can only be properly executed without the SCR system and/or oxidation catalyst in place. 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 100 firing hours without abatement shall expire.~~

~~15.11.~~ The total mass emissions of nitrogen oxides, carbon monoxide, precursor organic compounds, PM<sub>10</sub>, and sulfur dioxide that are emitted by the Gas Turbines (S-1, S-3, & S-5)

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~~and~~ Heat Recovery Steam Generators (S-2, S-4, & S-6), ~~and Auxiliary Boilers (S-7 & S-8)~~ during the commissioning period shall accrue towards the consecutive twelve-month emission limitations specified in condition 49.

~~16.12.~~ Combined pollutant mass emissions from the Gas Turbines (S-1, S-3, & S-5 and Heat Recovery Steam Generators (S-2, S-4, & S-6) 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-1, S-3, & S-5).

NO <sub>x</sub> (as NO <sub>2</sub> )	5,266 pounds per calendar day	400.4 pounds per hour
CO	16,272 pounds per calendar day	1,192 pounds per hour
POC (as CH <sub>4</sub> )	686 pounds per calendar day	
PM <sub>10</sub>	756 pounds per calendar day	
SO <sub>2</sub>	82.5 pounds per calendar day	

~~17. Pollutant emissions from the Auxiliary Boilers (S-7 & S-8) shall not exceed the following limits during the commissioning period. These emission limits shall include emissions that occur during Auxiliary Boiler start-ups.~~

<del>NO<sub>x</sub> (as NO<sub>2</sub>)</del>	<del>428 pounds per calendar day</del>	<del>33 pounds per hour</del>
<del>CO</del>	<del>368 pounds per calendar day</del>	<del>22 pounds per hour</del>
<del>POC (as CH<sub>4</sub>)</del>	<del>25.4 pounds per calendar day</del>	
<del>PM<sub>10</sub></del>	<del>96 pounds per calendar day</del>	
<del>SO<sub>2</sub></del>	<del>12.4 pounds per calendar day</del>	

~~18.13.~~ 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 28. The source test shall determine NO<sub>x</sub>, 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. Twenty calendar 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.

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**Conditions for the Gas Turbines (S-1, S-3, & S-5) and the Heat Recovery Steam Generators (HRSGs; S-2, S-4, & S-6).**

1914. The Gas Turbines (S-1, S-3, and S-5) and HRSG Duct Burners (S-2, S-4, and S-6) shall be fired exclusively on natural gas. (BACT for SO<sub>2</sub> and PM<sub>10</sub>)

2015. The combined heat input rate to each power train consisting of a Gas Turbine and its associated HRSG (S-1 & S-2, S-3 & S-4, and S-5 & S-6) shall not exceed 2,125 MM BTU per hour, averaged over any rolling 3-hour period. (PSD for NO<sub>x</sub>)

2416. The combined heat input rate to each power train consisting of a Gas Turbine and its associated HRSG (S-1 & S-2 and S-3 & S-4) shall not exceed 50,024 MM BTU per calendar day. (PSD for PM<sub>10</sub>)

2217. The combined cumulative heat input rate for the Gas Turbines (S-1, S-3, & S-5) and the HRSGs (S-2, S-4, & S-6) shall not exceed 53,188,532 MM BTU per year. (Offsets)

2318. The HRSG duct burners (S-2, S-4, and S-6) shall not be fired unless its associated Gas Turbine (S-1, S-3, and S-5, respectively) is in operation. (BACT for NO<sub>x</sub>)

2419. S-1 Gas Turbine and S-2 HRSG shall be abated by the properly operated and properly maintained A-1 Selective Catalytic Reduction (SCR) System whenever fuel is combusted at those sources and the A-1 catalyst bed has reached minimum operating temperature. (BACT for NO<sub>x</sub>)

2520. S-3 Gas Turbine and S-4 HRSG shall be abated by the properly operated and properly maintained A-2 Selective Catalytic Reduction (SCR) System whenever fuel is combusted at those sources and the A-2 catalyst bed has reached minimum operating temperature. (BACT for NO<sub>x</sub>)

2621. S-5 Gas Turbine and S-6 HRSG shall be abated by the properly operated and properly maintained A-3 Selective Catalytic Reduction (SCR) System whenever fuel is combusted at those sources and the A-3 catalyst bed has reached minimum operating temperature. (BACT for NO<sub>x</sub>)

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27-22 The Gas Turbines (S-1, S-3, & S-5) and HRSGs (S-2, S-4, & S-6) 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 as NO<sub>2</sub>) at P-1 (the combined exhaust point for the S-1 Gas Turbine and the S-2 HRSG after abatement by A-1 SCR System) shall not exceed 19.2 pounds per hour or 0.00904 lb/MM BTU (HHV) of natural gas fired. Nitrogen oxide mass emissions (calculated as NO<sub>2</sub>) at P-2 (the combined exhaust point for the S-3 Gas Turbine and the S-4 HRSG after abatement by A-3 SCR System) shall not exceed 19.2 pounds per hour or 0.00904 lb/MM BTU (HHV) of natural gas fired. Nitrogen oxide mass emissions (calculated as NO<sub>2</sub>) at P-3 (the combined exhaust point for the S-5 Gas Turbine and the S-6 HRSG after abatement by A-3 SCR System) shall not exceed 19.2 pounds per hour or 0.00904 lb/MM BTU (HHV) of natural gas fired. (PSD for NO<sub>x</sub>)
- (b) The nitrogen oxide emission concentration at emission points P-1, P-2, and P-3 each shall not exceed 2.5 ppmv, on a dry basis, corrected to 15% O<sub>2</sub>, averaged over any 1-hour period. (BACT for NO<sub>x</sub>)
- (c) Carbon monoxide mass emissions at P-1, P-2, and P-3 each shall not exceed 0.022 lb/MM BTU (HHV) of natural gas fired or 46.75 pounds per hour, averaged over any rolling 3-hour period. If compliance test results or continuous emissions monitoring data indicate that this level cannot be achieved during power steam augmentation operations, the owner/operator may seek approval for a higher CO mass emission limit for this operating mode, not to exceed 113.7 pounds per hour or 0.0535 lb/MM BTU of natural gas fired. (PSD for CO)
- (d) The carbon monoxide emission concentration at P-1, P-2, and P-3 each shall not exceed 10 ppmv, on a dry basis, corrected to 15% O<sub>2</sub>, averaged over any rolling 3-hour period. If compliance test results or continuous emissions monitoring data indicate that this level cannot be achieved during power steam augmentation operations, the owner/operator may seek approval for a higher CO emission limit for this operating mode, not to exceed 24.3 ppmv, on a dry basis, corrected to 15% O<sub>2</sub>, averaged over any rolling 3-hour period. (BACT for CO)
- (e) Ammonia (NH<sub>3</sub>) emission concentrations at P-1, P-2, and P-3 each shall not exceed 10 ppmv, on a dry basis, corrected to 15% O<sub>2</sub>, averaged over any rolling 3-hour period. This ammonia emission concentration shall be verified by the continuous recording of

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the ammonia injection rate to A-1, A-2, and A-3 SCR Systems. The correlation between the gas turbine and HRSG heat input rates, A-1, A-2, and A-3 SCR System ammonia injection rates, and corresponding ammonia emission concentration at emission points P-1, P-2, and P-3 shall be determined in accordance with permit condition #52. (TRMP for NH<sub>3</sub>)

- (f) Precursor organic compound (POC) mass emissions (as CH<sub>4</sub>) at P-1, P-2, and P-3 each shall not exceed 5.33 pounds per hour or 0.00251 lb/MM BTU of natural gas fired. (BACT)
- (g) Sulfur dioxide (SO<sub>2</sub>) mass emissions at P-1, P-2, and P-3 each shall not exceed 1.49 pounds per hour or 0.0007 lb/MM BTU of natural gas fired. (BACT)
- (h) Particulate matter (PM<sub>10</sub>) mass emissions at P-1, P-2, and P-3 each shall not exceed 12 pounds per hour or 0.00565 lb/MM BTU of natural gas fired. (BACT)

2823. The regulated air pollutant mass emission rates from each of the Gas Turbines (S-1, S-3, and S-5) 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 NO <sub>2</sub> )	240	80	18.1
Carbon Monoxide (CO)	2,514	902	44.1
Precursor Organic Compounds (as CH <sub>4</sub> )	48	16	8

2924 No more than one of the Gas Turbines (S-1, S-3, and S-5) shall be in start-up mode at any one time. (PSD)

3025. The heat recovery steam generators (S-2, S-4, & S-6) and associated ducting shall be designed such that an oxidation catalyst can be readily installed and properly operated if deemed necessary by the APCO to insure compliance with the CO emission rate limitations of conditions 27(c) and 27(d). (BACT)

**Conditions for Auxiliary Boilers (S-7 and S-8)**

~~31. S-7 and S-8 Auxiliary Boilers shall be fired exclusively on natural gas.  
(BACT for SO<sub>2</sub> and PM<sub>10</sub>)~~

~~32. The heat input rate to each Auxiliary Boiler (S-7 and S-8) shall not exceed 256 million BTU per hour, averaged over any rolling 3-hour period. (Cumulative Increase)~~

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- ~~33. The daily heat input rate to each Auxiliary Boiler (S-7 and S-8) shall not exceed 6,144 million BTU per day. (Cumulative Increase)~~
- ~~34. The combined cumulative heat input rate to S-7 Auxiliary Boiler #1 and S-8 Auxiliary Boiler #2 shall not exceed 582,234 million BTU per consecutive twelve month period. (Cumulative Increase)~~
- ~~35. S-7 Auxiliary Boiler #1 exhaust gas shall be abated by A-4 Oxidation Catalyst and A-5 Selective Catalytic Reduction (SCR) System whenever fuel is combusted at S-7 and the A-5 catalyst bed has reached minimum operating temperature. (BACT)~~
- ~~36. S-8 Auxiliary Boiler #2 exhaust gas shall be abated by A-6 Oxidation Catalyst and A-7 Selective Catalytic Reduction (SCR) System whenever fuel is combusted at S-8 and the A-7 catalyst bed has reached minimum operating temperature. (BACT)~~
- ~~37. S-7 and S-8 Auxiliary Boilers shall comply with requirements (a) through (h) listed below at all times, except during an auxiliary boiler start-up or shutdown. (BACT, PSD)~~
- ~~(a) Nitrogen oxide mass emissions (calculated as NO<sub>2</sub>) at P-4 (the exhaust point for S-7 Auxiliary Boiler #1, after abatement by A-4 Oxidation Catalyst and A-5 SCR System) shall not exceed 0.0108 lb/MM BTU (HHV) of natural gas fired or 2.9 pounds per hour, averaged over any rolling 3-hour period. Nitrogen oxide mass emissions (calculated as NO<sub>2</sub>) at P-5 (the exhaust point for S-8 Auxiliary Boiler #2, after abatement by A-6 Oxidation Catalyst and A-7 SCR System) shall not exceed 0.0108 lb/MM BTU (HHV) of natural gas fired or 2.9 pounds per hour, averaged over any rolling 3-hour period. (PSD for NO<sub>x</sub>)~~
- ~~(b) The nitrogen oxide emission concentration at P-4 and P-5 each shall not exceed 9.0 ppmv, on a dry basis, corrected to 3% O<sub>2</sub>, averaged over any rolling 3-hour period. (BACT for NO<sub>x</sub>)~~
- ~~(c) Carbon monoxide mass emissions at P-4 (the exhaust point for S-7 Auxiliary Boiler #1, after abatement by A-4 Oxidation Catalyst) shall not exceed 0.0365 lb/MM BTU (HHV) of natural gas fired or 9.34 pounds per hour, averaged over any rolling 3-hour period. Carbon monoxide mass emissions at P-5 (the exhaust point for S-8 Auxiliary Boiler #2, after abatement by A-6 Oxidation Catalyst) shall not exceed 0.0365 lb/MM BTU (HHV) of natural gas fired or 9.34 pounds per hour, averaged over any rolling 3-hour period. (PSD for CO)~~

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- ~~(d) The carbon monoxide emission concentration at P-4 and P-5 each shall not exceed 50 ppmv, on a dry basis, corrected to 3% O<sub>2</sub>, averaged over any rolling 3-hour period. (BACT for CO)~~
- ~~(e) The precursor organic compound (POC) mass emission rates at P-4 and P-5 each shall not exceed 0.53 pounds per hour. (BACT for POC)~~
- ~~(f) The ammonia (NH<sub>3</sub>) emission concentrations at P-4 and P-5 each shall not exceed 10 ppmv, on a dry basis, corrected to 3% O<sub>2</sub>, 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-5 and A-7 SCR Systems. The correlation between the auxiliary boiler heat input rates, A-5 and A-7 SCR System ammonia injection rates, and corresponding ammonia emission concentration at emission points P-4 and P-5 shall be determined in accordance with permit condition 55. (TRMP for NH<sub>3</sub>)~~
- ~~(g) Sulfur dioxide (SO<sub>2</sub>) mass emissions at P-4 and P-5 each shall not exceed 0.18 pounds per hour or 0.0007 lb/MM BTU of natural gas fired. (BACT)~~
- ~~(h) Particulate matter (PM<sub>10</sub>) mass emissions at P-4 and P-5 each shall not exceed 2 pounds per hour or 0.0195 lb/MM BTU of natural gas fired. (BACT)~~

**Conditions for Existing Sources**

**(S-67, S-70 & S-73 Gas Turbines and S-68, S-71, & S-74 Waste Heat Boilers)**

~~3826.~~ Cumulative combined emissions from the Calpine/Dow Gas Turbines (S-67, S-70, and S-73) and Waste Heat Boilers (S-68, S-71, and S-74), including emissions generated during Gas Turbine Start-ups and Shutdowns shall not exceed the following limits during any consecutive twelve-month period:

- (a) 18.5 tons of NO<sub>x</sub> (as NO<sub>2</sub>) per year (Offsets)
- (b) 113.3 tons of CO per year (Cumulative increase)
- (c) 4.7 tons of POC (as CH<sub>4</sub>) per year (Offsets)
- (d) 7.1 tons of PM<sub>10</sub> per year (Offsets)
- (e) 0.6 tons of SO<sub>2</sub> per year (Cumulative increase)

~~3927.~~ The cumulative combined heat input rate to the Calpine/Dow Gas Turbines (S-67, S-70, and S-73) and Waste Heat Boilers (S-68, S-71, and S-74) shall not exceed 2,060,652 million BTU per consecutive twelve-month period. (offsets)

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[4028](#). The combined exhaust gas from S-67 Gas Turbine T-1 and S-68 Waste Heat Boiler #1 shall be abated by A-188 Selective Catalytic Reduction System whenever fuel is combusted at S-67 or S-68 and the A-188 catalyst bed has reached minimum operating temperature. (Regulation 9-9-301.3)

[4129](#). The combined exhaust gas from S-70 Gas Turbine T-2 and S-71 Waste Heat Boiler #2 shall be abated by A-189 Selective Catalytic Reduction System whenever fuel is combusted at S-70 or S-71 and the A-189 catalyst bed has reached minimum operating temperature. (Regulation 9-9-301.3)

[4230](#). The combined exhaust gas from S-73 Gas Turbine T-3 and S-74 Waste Heat Boiler #3 shall be abated by A-190 Selective Catalytic Reduction System whenever fuel is combusted at S-73 or S-74 and the A-190 catalyst bed has reached minimum operating temperature. (Regulation 9-9-301.3)

[4331](#). The owner/operator of S-67, S-70, and S-73 Gas Turbines shall perform a source test to determine the NO<sub>x</sub>, CO, and POC mass emission rates and the accuracy of the NO<sub>x</sub> CEMs during gas turbine start-ups and shutdowns. The source test shall also determine the accuracy of the NO<sub>x</sub> CEMs during gas turbine start-ups and shutdowns. If the NO<sub>x</sub> CEMs do not accurately assess emissions during start-ups and/or shutdowns (as determined by APCO), then the District-approved source test results for NO<sub>x</sub> mass emissions shall be utilized as an emission factor for the purposes of determining compliance with condition [2638\(a\)](#). The District-approved source test results for CO and POC mass emissions shall be utilized as emission factors for the purposes of determining compliance with conditions [2638\(b\)](#) and [2638\(c\)](#). (offsets, cumulative increase)

[44:32](#) The owner/operator of S-67, S-70, and S-73 Gas Turbines and S-68, S-71, and S-74 Waste Heat Boilers shall perform a District-approved source test for NO<sub>x</sub>, POC, and PM<sub>10</sub> mass emission rates in lb/hr and lb/MM BTU of natural gas fired at maximum operating rates at least once every 8,000 hours of turbine operation or every three calendar years, whichever comes first. (offsets, cumulative increase)

[4533](#). The owner/operator shall demonstrate compliance with conditions [3826\(a\)](#), [3826\(c\)](#), [3826\(d\)](#), and [2739](#) 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-67, S-68, S-70, S-71, S-73, and S-74

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- (b) Oxygen (O<sub>2</sub>) Concentrations and Nitrogen Oxides (NO<sub>x</sub>) Concentrations at each of the following exhaust points: P-67, P-73, and P-79.

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 pollutant emission concentrations.

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

- (c) Combined Heat Input Rate for S-67, S-68, S-70, S-71, S-73, and S-74  
(d) Corrected NO<sub>x</sub> concentrations, and NO<sub>x</sub> mass emissions (as NO<sub>2</sub>) at each of the following exhaust points: P-67, P-73, and P-79.

For each source, source grouping, or exhaust point, the owner/operator shall record the parameters specified in conditions [4533\(c\)](#) and [4533\(d\)](#) at least once every 15 minutes (excluding normal calibration periods). As specified below, the owner/operator shall utilize the data specified in [4533\(c\)](#) and [4533\(d\)](#) and the source test results specified in condition [3244](#) to calculate and record the following data:

- (e) total combined Heat Input Rate for the previous consecutive twelve month period  
(f) on a monthly basis, the cumulative total NO<sub>x</sub> mass emissions (as NO<sub>2</sub>), POC mass emissions, and PM<sub>10</sub> mass emissions for the previous consecutive twelve month period for all six sources (S-67, S-68, S-70, S-71, S-73, and S-74) combined.

(1-520.1, 9-9-501, Offsets)

**Conditions for All New Sources**

**(S-1, S-3, & S-5 Gas Turbines and, S-2, S-4, & S-6 HRSGs, ~~and S-7 & S-8 Auxiliary Boilers~~)**

[4634](#). The combined heat input rate to the Gas Turbines (S-1, S-3, and S-5) and; HRSGs (S-2, S-4, and S-6), ~~and Auxiliary Boilers (S-7 and S-8)~~ shall not exceed ~~162,360~~ 150,072 million BTU per calendar day. (PSD, CEC Offsets)

[4735](#). The cumulative heat input rate to the Gas Turbines (S-1, S-3, and S-5), and HRSGs (S-2, S-4, and S-6), ~~and Auxiliary Boilers (S-7 and S-8)~~ combined shall not exceed ~~53,770,760~~ 53,187,840 million BTU per year. (Offsets)

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4836. Total combined emissions from the Gas Turbines, and HRSGs, and Auxiliary Boilers (S-1, S-2, S-3, S-4, S-5, and S-6, ~~S-7, and S-8~~), including emissions generated during Gas Turbine start-ups and shutdowns, ~~Auxiliary Boiler start-ups and shutdowns~~, shall not exceed the following limits during any calendar day:

- (a) 2,123.5 pounds of NO<sub>x</sub> (as NO<sub>2</sub>) per day (CEQA)
- (b) 13,204.4 pounds of CO per day (PSD)
- (c) 503.6 pounds of POC (as CH<sub>4</sub>) per day (CEQA)
- (d) 876.3 pounds of PM<sub>10</sub> per day (PSD)
- (e) 105.2 pounds of SO<sub>2</sub> per day (BACT)

4937. Cumulative combined emissions from the Gas Turbines, and HRSGs, and Auxiliary Boilers (S-1, S-2, S-3, S-4, S-5, and S-6, ~~S-7, and S-8~~), including emissions generated during gas turbine start-ups, and gas turbine shutdowns, ~~auxiliary boiler start-ups, and auxiliary boiler shutdowns~~, shall not exceed the following limits during any consecutive twelve-month period:

- (a) ~~279.7~~ 276.6 tons of NO<sub>x</sub> (as NO<sub>2</sub>) per year (Offsets, PSD)
- (b) ~~1,116~~ 1,105.4 tons of CO per year (Cumulative Increase)
- (c) ~~74.4~~ 73.6 tons of POC (as CH<sub>4</sub>) per year (Offsets)
- (d) ~~140.57~~ 136.37 tons of PM<sub>10</sub> per year (Offsets, PSD)
- (e) ~~18.642~~ tons of SO<sub>2</sub> per year (Cumulative Increase)

5038. The maximum projected annual toxic air contaminant emissions (per condition 52) from the Gas Turbines, and HRSGs, and Auxiliary Boilers combined (S-1, S-2, S-3, S-4, S-5, and S-6, ~~S-7, and S-8~~) shall not exceed the following limits:

- (a) 5,945 pounds of formaldehyde per year
- (b) 709 pounds of benzene per year
- (c) 120.5 pounds of Specified polycyclic aromatic hydrocarbons (PAHs) per year

unless requirement (d) is satisfied:

- (d) 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

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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)

5139. The owner/operator shall demonstrate compliance with conditions 20 through 23, 27(a) through 27(d), 28, 29, 32 through 34, 37(a) through 37(d), 46, 47, 48(a), 48(b), 49(a), and 49(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-1 and S-2 combined, S-3 and S-4 combined, S-5 and S-6 combined, S-7, and S-8.
- (b) Oxygen (O<sub>2</sub>) Concentrations, Nitrogen Oxides (NO<sub>x</sub>) Concentrations, and Carbon Monoxide (CO) Concentrations at each of the following exhaust points: P-1, P-2, P-3, P-4, and P-5.
- (c) Ammonia injection rate at A-1, A-2, A-3, A-5, and A-7 SCR Systems
- (d) Steam injection rate at S-1, S-3, & S-5 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 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-1 and S-2 combined, S-3 and S-4 combined, S-5 and S-6 combined, S-7, and S-8.
- (f) Corrected NO<sub>x</sub> concentrations, NO<sub>x</sub> mass emissions (as NO<sub>2</sub>), corrected CO concentrations, and CO mass emissions at each of the following exhaust points: P-1, P-2, P-3, P-4, and P-5.

For each source, source grouping, or exhaust point, the owner/operator shall record the parameters specified in conditions 51(e) and 51(f) 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, ~~each Auxiliary Boiler,~~ and all eight sources (S-1, S-2, S-3, S-4, S-5, S-6, S-7, & S-8) combined.

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- (i) the average NO<sub>x</sub> mass emissions (as NO<sub>2</sub>), CO mass emissions, and corrected NO<sub>x</sub> and CO emission concentrations for every clock hour and for every rolling 3-hour period.
- (j) on an hourly basis, the cumulative total NO<sub>x</sub> mass emissions (as NO<sub>2</sub>) and the cumulative total CO mass emissions, for each calendar day for the following: each Gas Turbine and associated HRSG combined, ~~the Auxiliary Boilers~~, and all eight sources (S-1, S-2, S-3, S-4, S-5, S-6, S-7, and S-8) combined.
- (k) For each calendar day, the average hourly Heat Input Rates, Corrected NO<sub>x</sub> emission concentrations, NO<sub>x</sub> mass emissions (as NO<sub>2</sub>), corrected CO emission concentrations, and CO mass emissions for each Gas Turbine and associated HRSG combined ~~and each Auxiliary Boiler~~.
- (l) on a daily basis, the cumulative total NO<sub>x</sub> mass emissions (as NO<sub>2</sub>) and cumulative total CO mass emissions, for the previous consecutive twelve month period for all eight sources (S-1, S-2, S-3, S-4, S-5, S-6, S-7, and S-8) combined.

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

5240. To demonstrate compliance with conditions 27(f), 27(g), 27(h), 28, 48(c) through 48(e), and 49(c) through 49(e), the owner/operator shall calculate and record on a daily basis, the Precursor Organic Compound (POC) mass emissions, Fine Particulate Matter (PM<sub>10</sub>) mass emissions (including condensable particulate matter), and Sulfur Dioxide (SO<sub>2</sub>) mass emissions from each power train ~~and the auxiliary boilers~~. The owner/operator shall use the actual Heat Input Rates calculated pursuant to condition 51, 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<sub>10</sub>, and SO<sub>2</sub> Emissions shall be summarized for: each power train (Gas Turbine and its respective HRSG combined), ~~the Auxiliary Boilers~~; and all eight sources (S-1, S-2, S-3, S-4, S-5, S-6, S-7, and S-8) combined.
- (b) on a daily basis, the cumulative total POC, PM<sub>10</sub>, and SO<sub>2</sub> mass emissions, for each year for all eight sources (S-1, S-2, S-3, S-4, S-5, S-6, S-7, and S-8) combined.

(Offsets, PSD, Cumulative Increase)

5341. To demonstrate compliance with Condition 50, the owner/operator shall calculate and record on an annual basis the maximum projected annual emissions of: Formaldehyde, Benzene, and Specified PAH's. Maximum projected annual emissions shall be calculated using the maximum Heat Input Rate of 32,912,920 MM BTU/year and the highest emission factor (pounds of pollutant per MM BTU of Heat Input) determined by any source test at ~~any the Gas Turbine, and HRSG, or Auxiliary Boilers~~. (TRMP)

5442. Within 60 days of start-up of the DEC, the owner/operator shall conduct a District-approved source test on exhaust point P-1, P-2, or P-3 to determine the corrected ammonia (NH<sub>3</sub>)

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emission concentration to determine compliance with condition 27(e). The source test shall determine the correlation between the heat input rates of the gas turbine and associated HRSG, A-1, A-2, or A-3 SCR System ammonia injection rate, and the corresponding NH<sub>3</sub> emission concentration at emission point P-1, P-2, or P-3. 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<sub>x</sub> emission reductions while maintaining ammonia slip levels. Continuing compliance with condition 27(e) shall be demonstrated through calculations of corrected ammonia concentrations based upon the source test correlation and continuous records of ammonia injection rate. (TRMP)

5543. Within 60 days of start-up of the DEC and on an annual basis thereafter, the owner/operator shall conduct a District-approved source test on exhaust points P-1, P-2, and P-3 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 27(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 27(c) and (d), and to verify the accuracy of the continuous emission monitors required in condition 50. 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<sub>2</sub>), carbon monoxide concentration and mass emissions, sulfur dioxide concentration and mass emissions, methane, ethane, and particulate matter (PM<sub>10</sub>) emissions including condensable particulate matter. (BACT, offsets)

~~56. Within 60 days of start up of the DEC, the owner/operator shall conduct a District approved source test on exhaust point P-4 or P-5 to determine the corrected ammonia (NH<sub>3</sub>) emission concentration to determine compliance with condition 37(e). The source test shall determine the correlation between the heat input rates of an auxiliary boilers and the A-4 or A-5 SCR System ammonia injection rate, and the corresponding NH<sub>3</sub> emission concentration at emission point P-4, or P-5. The source testing shall be conducted over the expected operating range of the auxiliary boiler (including, but not limited to 10%, 50%, and 100% load) to establish the range of ammonia injection rates necessary to achieve NO<sub>x</sub> emission reductions while maintaining ammonia slip levels. Continuing compliance with condition 37(e) shall be demonstrated through calculations of corrected ammonia concentrations based upon the source test correlation and continuous records of ammonia injection rate. (TRMP)~~

~~57. Within 60 days of start up of the DEC and on an annual basis thereafter, the owner/operator shall conduct a District approved source test on exhaust point P-4 and P-5 while each Auxiliary Boiler (S-7 and S-8) is operating at maximum load to determine compliance with the~~

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~~emission limitations of Condition 37, parts (a) through (e), (g), & (h), while each Auxiliary Boiler (S-7 and S-8) is operating at minimum load to determine compliance with Condition 37, parts (c), (d), & (f), and to verify the accuracy of the continuous emission monitors required in condition 51. 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<sub>2</sub>), carbon monoxide concentration and mass emissions, and particulate matter (PM<sub>10</sub>) emissions including condensable particulate matter. (BACT, offsets)~~

5844. 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<sub>10</sub> 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)

5945. Within 60 days of start-up of the DEC and on an biennial basis (once every two years) thereafter, the owner/operator shall conduct a District-approved source test on exhaust point P-1, P-2, or P-3 while the Gas Turbine and associated Heat Recovery Steam Generator are operating at maximum allowable operating rates to demonstrate compliance with Condition 50. Unless the requirements of condition 59(b) have been met, the owner/operator shall determine the formaldehyde, benzene, and Specified PAH emission rates (in pounds/MM BTU). If any of the above pollutants are not detected (below the analytical detection limit), the emission concentration for that pollutant shall be deemed to be one half (50%) of the detection limit concentration. (TRMP)

(a) The owner/operator shall calculate the maximum projected annual emission rate for each pollutant by multiplying the pollutant emission rate (in pounds/MM BTU; determined by source testing) by 53,770,760 MM BTU/year.

(b) If three consecutive biennial source tests demonstrate that the annual emission rates calculated pursuant to part (a) 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 ≤ 221 pounds/year

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Formaldehyde	≤	1,834 pounds/year
Specified PAH's	≤	38 pounds/year

(TRMP)

6046. The owner/operator of the DEC 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)

6147. The owner/operator of the DEC 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)

6248. The owner/operator of the DEC 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)

6349. The stack height of emission points P-1, P-2, and P-3 shall each be at least 144 feet above grade level at the stack base. ~~The stack height of emission points P-4 and P-5 shall each be at least 115 feet above grade level at the stack base.~~ (PSD, TRMP)

64.50 The Owner/Operator of DEC 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)

6551. Within 180 days of the issuance of the Authority to Construct for the DEC, 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 ~~54 through 57~~ 42, 43, and 45~~59~~. All source testing and monitoring shall be conducted in accordance with the BAAQMD Manual of Procedures. (Regulation 1-501)

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~~6652.~~ Prior to the issuance of the BAAQMD Authority to Construct for the Delta Energy Center, the Owner/Operator shall demonstrate that valid emission reduction credits in the amount of ~~235.62 tons/year of Nitrogen Oxides, 75.3 tons/year of Precursor Organic Compounds, and 127.37~~ 4.67 tons/year of PM<sub>10</sub> or equivalent as defined by District Regulations 2-2-302.1, 2-2-302.2, and 2-2-303.1 are under their control through enforceable contract or option to purchase agreements or equivalent binding legal documents. (Offsets)

~~6753.~~ Prior to the start of construction of the Delta Energy Center, the Owner/Operator shall provide to the District valid emission reduction credit banking certificates in the amount of ~~235.62 tons/year of Nitrogen Oxides, 75.3 tons/year of Precursor Organic Compounds, and 127.37~~ 4.67 tons/year of PM<sub>10</sub> or equivalent as defined by District Regulations 2-2-302.1, 2-2-302.2, and 2-2-303.1. (Offsets)

~~6854.~~ Pursuant to BAAQMD Regulation 2, Rule 6, section 404.3, the owner/operator of DEC shall submit an application to the District for a significant modification to the DEC's Federal (Title V) Operating Permit within 12 months of the initial operation of the gas turbines (S-1, S-3, & S-5), ~~or~~ HRSGs (S-2, S-4, & S-6), ~~or Auxiliary Boilers (S-7 & S-8).~~ (Regulation 2-6-404.3)

~~6955.~~ Pursuant to 40 CFR Part 72.30(b)(2)(ii) of the Federal Acid Rain Program, the owner/operator of the Delta Energy Center shall submit an application for a Title IV operating permit at least 24 months prior to the initial operation of any of the gas turbines (S-1, S-3, & S-5) or HRSGs (S-2, S-4, & S-6). (Regulation 2, Rule 7)

~~70.56~~ The Delta Energy Center shall comply with the continuous emission monitoring requirements of 40 CFR Part 75. (Regulation 2, Rule 7)

~~71.57.~~ The owner/operator shall take monthly samples of the natural gas combusted at the DEC. The samples shall be analyzed for sulfur content using District-approved laboratory methods. The test results shall be retained on site for a minimum of five years from the test date. (cumulative increase)

~~72.58~~ 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 ~~0.0006%~~ 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 5,233 ppmw (mg/l). The owner/operator shall sample the water at least once per day. (PSD)

~~73.59~~ 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

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components which are broken or missing. Prior to initial operation of the Delta 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. The CPM may, in years 5 and 15 of cooling tower operation, require the owner/operator to perform a source test to determine the PM<sub>10</sub> emission rate from the cooling tower to verify continued compliance with the vendor-guaranteed drift rate specified in condition #[5874](#). (PSD)

**RECOMMENDATION**

- Issue a **conditional Authority to Construct** for the following source:  
**S-9 Cooling Tower, 12-Cell, 10,100,000 gallons per hour circulation rate**
- And a **Letter of Exemption** for the following equipment:  
**Emergency Generator, Caterpillar Model G3616SITA, Natural Gas Fired, 14,998 scf/hr**  
**(exempt per Regulation 2-1-114.2.3)**
- Issue a **banking certificate** in the amount of **7.835 tons per year of POC** emission reduction credits to:  
  
Calpine Corporation and Bechtel Enterprises Holdings, Inc.  
620 Coolidge Drive, Suite 200  
Folsom, CA 95630  
  
Attention: Neal Pospisil

By: \_\_\_\_\_

**Air Quality Engineer II**

\_\_\_\_\_

**Date**