NORTH COAST UNIFIED AIR QUALITY MANAGEMENT DISTRICT

2300 Myrtle Avenue, Eureka, CA 95501

Phone: (707) 443.3093 Fax: (707) 443.3099

ENGINEERING EVALUATION FOR PROPOSED SIGNIFICANT MODIFICATION AND RENEWAL OF TITLE V PERMIT TO OPERATE NCU 059-12

THE HUMBOLDT BAY REPOWERING PROJECT

APPLICATION #: NCU 059-12; HBGS

EVALUATION DATE: October 14, 2009

EVALUATION BY: Jason L. Davis

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FACILITY NAME
Pacific Gas & Electric Company (PG&E), Humboldt Bay Generation Station (HBGS).

LOCATION OF EQUIPMENT
The project is located within a 143-acre site at 1000 King Salmon Ave, 3 miles southwest of the city of Eureka. It will be sited within the boundaries of PG&E's existing Humboldt Bay Power Plant complex which has been renamed as the Humboldt Bay Generating Station.

INTRODUCTION
Since the mid 1950's, PG&E has operated various pieces of equipment at the facility to produce electricity for commercial distribution. Currently, two natural gas fired boilers and two turbines are authorized for use under Title V Permit To Operate NCU 059-12. These existing units are nearing the end of their service life. PG&E is proposing to install a 163 MW nominal power plant consisting of ten 16.3 MW nominal dual-fuel fired reciprocating engines to replace the existing equipment. PG&E will decommission the existing power plant following commissioning of the ten 16.3 MW Wärtsilä reciprocating engines described above. Authority To Construct and a Prevention of Significant Deterioration Permit (ATC 443-1) for construction of the reciprocating engines was issued by the District on April 14, 2008. The new engines were required to demonstrate compliance with Best Available Control Technology (BACT) requirements as well as Prevention of Significant Deterioration (PSD) requirements.

Recently, PG&E has applied for a series of modifications to ATC 443-1 in order to enhance their ability to comply with permit conditions. The District has proposed to issue a revised ATC / PSD permit for the project which is the subject of a separate evaluation. Additionally, PG&E has applied for a renewal of the existing Title V permit. As a part of the renewal, two additional pieces of equipment are proposed to be added which were previously designated as insignificant equipment and have been in operation at the facility for a number of years.

APPLICATIONS SUBJECT TO REVIEW
The following applications are the subject of this evaluation.

- Application for Significant Modification – addition of devices identified in application # 025 which were previously designated as insignificant sources.
- Application for Significant Modification – addition of Wärtsilä engines and ancillary support equipment listed in ATC / PSD 443-1.
- Application for Renewal of Title V Permit To Operate

Application #025
In 2005, the District notified PG&E that several pieces of equipment previously listed as insignificant equipment on NCU 059-12 were in fact subject to District Rule 102. Consequently, PG&E applied for permits to operate in April of 2005. After review of the application materials and District Rules, the District has determined the following with regard to the devices and their respective permit applicability.

Device	Permit Required	Basis
Emergency Backup Fire Pump	Yes – Designated as "D-8"	Diesel Fired and Greater Than 50 Horse Power
Emergency Backup Generator	No	Exempt, Propane Fired District Rule 102
Emergency Black Start – Generac	Yes – Designated as "D-23"	Diesel Fired and Greater Than 50 Horse Power
Portable Gorman-Rupp Water Pump #1	No	Retired From Service
Portable Gorman-Rupp Water Pump #2	No	Retired From Service

Devices added to the Authorized Equipment Section of the Permit

Device D-8	**Fire Pump – Emergency Backup**
Manufacturer	Caterpillar
Model, Year Manufactured	3304 DI, 1993
Serial Number	83Z00622
Rating - Output	95 bhp
Device D-23	**Emergency Black Start**
Manufacturer	Generac
Model, Year Manufactured	SD130, 1999
Serial Number	G3675D18EBYLC
Rating - Output	195 bhp

The devices were previously designated as insignificant emission units and have been in operation at the facility for several years. Thus, inclusion on the authorized equipment list will not result in any actual or tangible emission increases from the facility. However, emission limits for each device are proposed to be established as indicated in the table below. Emission limits were calculated based upon regulatory limits and manufacture's data; operation of 50 hours per year was assumed. Operation will be limited to emergency events and for periodic maintenance and testing purposes. D-8 and D-23 will be retired during the decommissioning phase of the old plant and their permits surrendered.

Unit	Pollutant	g/Hp – hr	lb/hr
D-8 Fire Pump	CO	7.16	1.50
	DPM	2.34	0.5
	NOx	33.32	6.98
	ROC (non-methane HC)	3.25	0.68
	SOx	-	0.0024
D-23 Black Start Generator	CO	0.95	0.41
	DPM	0.14	0.06
	NOx	6.79	2.92
	ROC (non-methane HC)	0.42	0.18
	SOx	-	0.0781

ATC / PSD 443-1

The new plant will consist of ten Wärtsilä 18V50DF16.3 MW lean-burn reciprocating engines, equipped with selective catalytic reduction (SCR), oxidation catalyst, and associated support equipment including continuous emissions monitors. The primary fuel will be natural gas with diesel pilot injection, and the backup fuel will be diesel. The applicant will also install a diesel-fired emergency back-up generator and a diesel-fired fire pump. PG&E has identified and will be providing offsets for the project. The tables below summarize pollutant emissions during operation of the existing units and during operation of the new units.

Emissions from Existing Plant

Pollutant	Annual Emissions In tons per year
Carbon Monoxide (CO)	125.8
Oxides of Nitrogen (NOx)	1,123.3
Oxides of Sulfur (SOx)	43.3
Particulate Matter	34.4
Reactive Organic Carbon (ROC)	27.5
Hazardous Air Pollutants	0.76

Emissions from New Equipment

Pollutant	Annual Emissions In tons per year	Change in Emissions in tons per year "( )" denotes a reduction
Carbon Monoxide (CO)	172.7	46.9
Oxides of Nitrogen (NOx)	179.1	(944.1)
Oxides of Sulfur (SOx)	4.3	(38.9)
Particulate Matter (PM10)	119.8	85.4
Reactive Organic Carbon (ROC)	190.8	163.3
Hazardous Air Pollutants	25.7	24.9

Please refer to the Application For Certification (AFC), Final Determination of Compliance, and the Engineering Evaluation for ATC / PSD 443-1 for additional information.

Renewal of NCU 037-12

Title V Permits are generally issued for a period of 5 years and are subject to renewal. Permit NCU 059-12 was originally issued for this facility in March 17, 1998. The permit is entering its third renewal period and so would expire on March 16, 2013, a full 15 years from the initial date of issuance. The District staff has performed a review of the known equipment at the facility, a regulatory review to determine applicability, and a

review of compliance activity to determine if modifications to the permit are necessary. The addition of equipment units D-8 and D-23, as previously discussed, is the only outstanding issue identified. Having added the equipment to the permit, the District intends to renew Title V Permit to Operate NCU 059-12.

Conclusion

The proposed modifications described in this evaluation should not impede or preclude the applicant's ability to comply with all local, state, and federal emission requirements when the equipment is operated in accordance with the Authority to Construct Temporary Permit Operate #443-1 as amended. Further, staff has evaluated the information presented by the applicant and applicable rules and regulations, and believes sufficient evidence exists for the APCO to make the determinations required under Rule 102 §1.2 and issue the proposed permit.

Evaluation Prepared By:  Date: 10/14/09

Jason L. Davis