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CALIFORNIA ENERGY COMMISSION

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DATE: October 10, 2014

TO: Interested Parties

FROM: Camille Remy Obad, Compliance Project Manager

**SUBJECT: Marsh Landing Generating Station Project (08-AFC-03C)
Staff Analysis of Proposed Modifications to Install Two Emergency Diesel Engines**

On July 8, 2014, the Facility Owner and Operator NRG Marsh Landing LLC (formerly known as GenOn or Mirant Marsh Landing LLC) (NRG Marsh Landing) filed a petition with the California Energy Commission (Energy Commission) requesting to modify the Final Decision for the Marsh Landing Generating Station (MLGS). The simple-cycle, natural gas-fired, 760-megawatt facility was certified by the Energy Commission in its Decision on August 25, 2010, and began commercial operation on May 1, 2013. The facility is located just north of the City of Antioch, in Contra Costa County, California.

The modifications proposed in the petition would install a diesel backup generator and install a new diesel fire pump engine and 150 feet of fire loop piping with a maximum depth approximately 5 feet below ground surface.

On July 9, 2014, the Bay Area Air Quality Management District (BAAQMD) Draft Engineering Evaluation was docketed to permit the emergency diesel engine and the diesel fire pump engine was docketed to the Marsh Landing Generating Station docket log located at <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=08-AFC-03C>. BAAQMD completed an evaluation of the diesel engines, including a health risk screening analysis, and determined that the addition of these engines will not have a significant effect on the environment. BAAQMD is waiting for the Energy Commission's Decision before issuing its Authority to Construct.

Energy Commission staff reviewed the petition and assessed the impacts of this proposal on environmental quality, public health and safety, and proposes new conditions of certification for Air Quality and Biological Resources. Air Quality staff recommends new Conditions of Certification **AQ-41**, **AQ-42**, **AQ-43**, **AQ-44**, and **AQ-45** and revisions to Condition of Certification **AQ-SC7**. Biological Resources staff also recommends modifications to **BIO-8**. It is staff's opinion that, with the implementation of revised conditions, the project will remain in compliance with applicable laws, ordinances, regulations, and standards and that the proposed modifications will not result in a significant adverse direct or cumulative impact to the environment (Title 20, California Code of Regulations, Section 1769).

The amendment petition and staff's analysis has been posted on the Energy Commission's webpage at <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=08-AFC-03C>. The Energy Commission's Order (if approved) will also be posted on the webpage.

Agencies and members of the public who wish to provide comments on the amendment petition are asked to submit their comments prior to November 10, 2014 using the Energy Commission's e-commenting feature by going to the Energy Commission's Marsh Landing Generating Station webpage

<http://www.energy.ca.gov/sitingcases/marshlanding/>, and clicking on the "Submit e-Comment" link. A full name, e-mail address, comment title, and either a comment or an attached document (in the .doc, .docx, or .pdf format) are mandatory. After entering CAPTCHA (a challenge-response test used by the system to ensure that responses are generated by a human user and not a computer), click on the "Agree & Submit Your comment" button to submit the comment to the Energy Commission Dockets Unit. Written comments may also be mailed or hand delivered to:

California Energy Commission
Dockets Unit, MS-4
Docket No. (08-AFC-03C)
1516 Ninth Street
Sacramento, CA 95814-5512

All comments and materials filed with the Dockets Unit will become part of the public record of the proceeding.

If you have any questions, please contact Camille Remy Obad, Compliance Project Manager, at (916) 654-3940, or by fax to (916) 654-3882, or via e-mail at: cremyoba@energy.ca.gov.

If you desire information on participating in the Energy Commission's amendment process, please contact the Energy Commission's Public Adviser's Office, at (916) 654-4489 or toll free in California, at (800) 822-6228. The Public Adviser's Office can also be contacted via email at publicadviser@energy.ca.gov.

News media inquiries should be directed to the Energy Commission Media Office at (916) 654-4989, or by e-mail at mediaoffice@energy.state.ca.us.

Attachment

MARSH LANDING GENERATING STATION (08-AFC-03C)

Petition to Amend Commission Decision

EXECUTIVE SUMMARY

Camille Remy Obad

INTRODUCTION

On July 8, 2014, the Facility Owner and Operator NRG Marsh Landing LLC (formerly known as GenOn or Mirant Marsh Landing LLC) (NRG Marsh Landing) filed a petition with the California Energy Commission (Energy Commission) requesting to modify the Final Decision for the Marsh Landing Generating Station (MLGS). Staff has completed its review of all materials received.

The purpose of the Energy Commission's review process is to assess any impacts the proposed modifications would have on environmental quality and public health and safety. The process includes an evaluation of the consistency of the proposed changes with the Energy Commission's Final Decision (Decision), and if the project, as modified, will remain in compliance with applicable laws, ordinances, regulations, and standards (Title 20, Calif. Code of Regulations, section 1769).

This Staff Analysis contains the Energy Commission staff's evaluation of the affected technical areas including air quality and biological resources.

PROJECT DESCRIPTION AND LOCATION

On July 8, 2014, NRG Marsh Landing filed a petition with the Energy Commission requesting to modify the Final Decision for the MLGS. The simple-cycle, natural gas-fired, 760-megawatt facility was certified by the Energy Commission in its Decision on August 25, 2010, and began commercial operation on May 1, 2013. The facility is located just north of the City of Antioch, in Contra Costa County, California.

DESCRIPTION OF PROPOSED MODIFICATIONS

Within MLGS's existing 27-acre facility, the petition's proposed modifications would install a diesel backup generator, a new diesel fire pump engine and 150 feet of fire loop piping with a maximum depth of approximately 5 feet below ground surface.

NECESSITY FOR THE PROPOSED MODIFICATIONS

The adjacent Contra Costa Generating Station (CCGS) fire suppression system, that also serves MLGS, draws water from the San Joaquin River. With the proposed project modifications, MLGS would no longer connect to the CCGS system, and therefore, would no longer use river water for fire suppression. The source of water for MLGS' modified fire suppression system would be City of Antioch water, which is stored in the existing MLGS' 600,000-gallon Raw Water Storage Tank. To disconnect from the

CCGS system NRG Marsh Landing has identified the need to install a diesel backup generator, a new diesel fire pump engine and 150 feet of fire loop piping with a maximum depth approximately 5 feet below ground surface.

STAFF'S ASSESSMENT OF THE PROPOSED PROJECT CHANGES

The technical areas contained in this Staff Analysis indicate recommended staff changes to the existing Marsh Landing Generating Station Decision and conditions of certification. Staff believes that the proposed changes to the existing air quality and biological resources conditions reduce any potential impacts of the proposed MLGS facility changes to less than significant levels. A summary of staff's conclusions reached in each technical area are summarized in the following table. The details of the proposed condition changes can be found under the appropriate technical headings in this Staff Analysis.

Energy Commission technical staff reviewed the petition to amend for potential environmental effects and consistency with applicable laws, ordinances, regulations and standards (LORS). Staff has determined that the technical or environmental areas of land use, socioeconomics, transmission line safety and nuisance, transmission system engineering, visual resources, and waste management are not affected by the proposed changes, and no revisions or new conditions of certification are needed to ensure the project remains in compliance with all applicable LORS.

Staff determined that the technical areas of cultural resources, geological hazards and resources, hazardous materials management, facility design, noise and vibration, paleontological resources, public health, soil and water resources, traffic and transportation, and worker safety and fire protection would have no significant environmental impacts if the existing applicable conditions of certifications were applied. Therefore, no changes to the conditions of certification are needed to ensure the project remains in compliance with all applicable LORS.

Staff determined that the technical areas of air quality and biological resources would be affected by the proposed project changes and have proposed revised conditions of certification in order to assure compliance with LORS and/or to reduce potential environmental impacts to a less than significant level.

**Executive Summary Table 1
Summary of Impacts to Each Technical Area**

TECHNICAL AREAS REVIEWED	STAFF RESPONSE			New or Modified Conditions of Certification Recommended
	Technical Area Not Affected	No Significant Environmental Impact*	Process As Amendment	
Air Quality			X	Yes
Biological Resources			X	Yes
Cultural Resources		X		No
Geological Hazards & Resources		X		No
Hazardous Materials Management		X		No
Facility Design		X		No
Land Use	X			No
Noise and Vibration		X		No
Paleontological Resources		X		No
Public Health		X		No
Socioeconomics	X			No
Soil and Water Resources		X		No
Traffic and Transportation		X		No
Transmission Line Safety & Nuisance	X			No
Transmission System Engineering	X			No
Visual Resources	X			No
Waste Management	X			No
Worker Safety and Fire Protection		X		No

*There is no possibility that the modifications may have a significant effect on the environment and the modification will not result in a change or deletion of a condition adopted by the commission in the final decision or make changes that would cause the project not to comply with any applicable laws, ordinances, regulations, or standards (LORS) (20 Cal. Code Regs., § 1769 (a)(2)).

STAFF RECOMMENDATIONS AND CONCLUSIONS

Staff concludes that the following required findings mandated by Title 20, section 1769(a)(3) of the California Code of Regulations can be made and will recommend approval of the petition to the Energy Commission:

- A. There will be no new or additional unmitigated significant environmental impacts associated with the proposed changes;

- B. The facility will remain in compliance with all applicable laws, ordinances, regulations and standards;
- C. The changes will be beneficial to the project owner because it will install a new independent fire suppression system that is no longer shared with the retired CCGS; and
- D. There has been a substantial change in circumstances since the Energy Commission certification justifying the changes because MLGS can no longer share a fire suppression system with the CCGS. .

MARSH LANDING GENERATING STATION (08-AFC-3C)
Request to Amend Final Commission Decision
Air Quality Analysis
Nancy Fletcher

INTRODUCTION

On July 8, 2014, NRG Marsh Landing LLC (NRG), formerly known as GenOn or Mirant Marsh Landing LLC, filed a petition (NRG 2014) with the California Energy Commission requesting an amendment to the Air Quality Conditions of Certification for the Marsh Landing Generating Station project (MLGS). NRG is proposing to install an emergency standby diesel generator and diesel fire pump. MLGS is a nominal 760-megawatt (MW) electricity generating facility consisting of four simple cycle natural gas-fired combustion turbines. The approved project consists of four 190 MW Siemens SGT6-5000F simple cycle turbines with ultra-low nitrogen oxide (NOx) combustors and inlet evaporative cooler, two 8 million British thermal units per hour (MMBtu/hr) natural gas-fired pre-heaters, and associated equipment. MLGS is located on a 27 acre industrial site, in the northeast portion of the City of Antioch on the southern shore of the San Joaquin River in Contra Costa County.

The original Commission Decision approving MLGS was issued in August 2010 and the facility has been in commercial operation since April 2014. In May 2012 the Commission Decision was amended (2012 Amendment) to incorporate design refinements, including the replacement of two 5 MMBtu/hr pre-heaters with the existing 8 MMBtu/hr pre-heaters. Additional emission reduction credits (ERCs) were surrendered to offset the associated increases of specific criteria pollutants.

NRG is requesting revisions to the Air Quality Conditions of Certification for the installation of a diesel-fueled emergency generator and fire pump. Equipment changes during construction led to modifications necessitating the installation of the diesel-fueled emergency generator due to the change from an electric battery system to a diesel-fueled system. In addition, the owner of the adjacent Contra Costa Generating Station (CCGS) requested MLGS no longer rely on the CCGS pump for the MLGS fire suppression system. Therefore NRG is proposing to install a new fire pump as well.

In April 2014, NRG submitted an application to the Bay Area Air Quality Management District (BAAQMD) to permit the proposed emergency diesel-fueled emergency generator and fire pump engines. On July 8, 2014 BAAQMD provided Energy Commission staff with a draft evaluation of the diesel engines and determined the addition of the proposed equipment is approvable if approved by the Energy Commission. Additional Air Quality Conditions of Certification would be added to BAAQMD permits addressing the addition of the proposed engines.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS COMPLIANCE

The BAAQMD reviewed the requested modifications and determined the changes would comply with their regulations. BAAQMD submitted to Energy Commission staff for review BAAQMD's draft engineering evaluation of the proposed amendments. **Air Quality Table 1** includes a summary of the air quality laws, ordinances, regulations and standards (LORS) applicable to the proposed amendment. The requested changes were evaluated by staff for consistency with the following LORS. The conditions of certification in the original Energy Commission Decision and any and all amendments thereafter must ensure that the facility will remain in compliance with all LORS.

**Air Quality Table 1
Laws, Ordinances, Regulations, and Standards (LORS)**

<i>Applicable Law</i>	<i>Description</i>
Federal	U.S. Environmental Protection Agency
Federal Clean Air Act Amendments of 1990 (FCAAA), Title 40 Code of Federal Regulations (CFR) Part 50	National Ambient Air Quality Standards (NAAQS).
40 CFR 60, Subpart IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines – Requires the proposed diesel engines to achieve specific emission standards depending on the size and model year of the engine.
40 CFR 63, Subpart ZZZZ	National Emission Standards for Hazardous Air Pollutants for Stationary reciprocating Internal Combustion Engines – Establishes emission limitations and operating limitations for internal combustion (IC) engines located at major and area sources of HAP emissions. New engines comply by meeting the requirements of 40 CFR 60 Subpart IIII.
40 CFR 89 Subpart B	Emission Standards and Certification Provisions – Establishes oxides of nitrogen, carbon monoxide, hydrocarbon, and particulate matter exhaust emission standards, and smoke emission standards.
State	California Air Resources Board and Energy Commission
California Health & Safety Code (H&SC) §41700 (Nuisance Regulation)	Prohibits discharge of such quantities of air contaminants that cause injury, detriment, nuisance, or annoyance.
H&SC §41510	Permitting of source needs to be consistent with approved clean air plan. [BAAQMD Regulation 1-440, 1-441]
Airborne Toxic Control Measure for Stationary Compression Ignition Engines (ATCM, 17 CCR§93115)	Establishes operating requirements and emission standards for emergency standby diesel-fueled compression ignition (CI) engines [17 CCR 93115.6]. The emission standard is 0.15 grams per brake horsepower hour (g/bhp-hr) diesel particulate matter for emergency engines (operated fewer than 50 hours per year for maintenance and engine testing).

<i>Applicable Law</i>	<i>Description</i>
Local	Bay Area Air Quality Management District (BAAQMD)
BAAQMD Regulation 1	General Provisions & Definitions - Limits releases of air contaminants to not “cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public.” Prohibits contaminants that may endanger “the comfort, repose, health or safety of any such persons or the public, or cause injury or damage to business or property.”
BAAQMD Regulation 2, Rule 2	New Source Review (NSR) – Requires preconstruction review including Best Available Control Technology (BACT) for sources with the potential to emit more than 10 pounds per day of nitrogen oxide (NOx), precursor organic compound (POC), particulate matter less than ten microns (PM10), carbon monoxide (CO), or sulfur dioxide (SO ₂). Requires surrendering offsets for facilities with the potential to emit of more than 35 tons per year of NOx or POC at a 1.15 to 1.0 ratio, more than 10 but less than 35 tons per year of NOx or POC at a 1.0 to 1.0, or 100 tons per year of PM10 or SO ₂ .
BAAQMD Regulation 2, Rule 5	NSR of Toxic Air Contaminants – Requires preconstruction review for new and modified sources of toxic air contaminants. Contains project health risk limits and requirements for Toxics BACT (TBACT). The proposed engines meet TBACT requirements.
BAAQMD Regulation 2, Rule 6	Major Facility Review – Requires an application be submitted for the federal operating permit within 12 months after commencing operation, as specified by Title V federal Clean Air Act. An application has been submitted, the Title V permit is pending.
BAAQMD Regulation 6, Rule 1	Particulate Matter – Limits particulate matter and visible emissions from specified internal combustion engines to less than Ringlemann 2 and 40% opacity for periods aggregating more than 3 minutes in any 1 hour. Limits emissions of visible particles on adjacent properties and limits particulate concentration to less than or equal to 0.15 grains per dry standard cubic feet (grains/dscf) exhaust volume. The proposed engines are tier certified and are expected to comply with the particulate requirements.
BAAQMD Regulation 9, Rule 1	Sulfur Dioxide – Establishes emission limits for sulfur dioxide and limits ground level concentration. Compliance is expected with the combustion of CARB certified diesel fuel.
BAAQMD Regulation 9, Rule 8	Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines– Establishes emission limits from stationary internal combustion engines rated at more than 50 brake horsepower (BHP). The proposed engines will be operated as emergency standby engines and therefore are not subject to emission rate limits but are subject to operating limitations and monitoring/record keeping requirements.

SETTING

Federal and state ambient air quality attainment status designations have not changed since the revised Energy Commission Decision. MLGS is located in Contra Costa County, and is considered part of a nine county regional air basin in the San Francisco Bay Area. For convenience, staff includes **Air Quality Table 2**, which summarizes the area's attainment status for current state and federal air quality standards for the San Francisco Bay Area Air Basin.

**Air Quality Table 2
BAAQMD Attainment Status**

Pollutant	Averaging Time	California Status	Federal Status
Ozone (O ₃)	8 Hour	Non-attainment	Non-attainment
	1 Hour	Non-attainment	N/A
Carbon Monoxide (CO)	8 Hour	Attainment	Attainment
	1 Hour	Attainment	Attainment
Nitrogen Dioxide(NO _x)	Annual	N/A	Attainment
	1 Hour	Attainment	Unclassified
Sulfur Dioxide(SO ₂)	Annual	N/A	Attainment
	24 Hour	Attainment	Attainment
	1 Hour	Attainment	Attainment
PM10	Annual	Non-attainment	N/A
	24 Hour	Non-attainment	Unclassified
Particulate Matter Less Than 2.5 Microns (PM _{2.5})	Annual	Non-attainment	Attainment
	24 Hour	N/A	Non-attainment

Notes:

Unclassified means the area is treated as if it is in attainment.

N/A= no standard applies or not applicable.

ANALYSIS

NRG requests the addition of an emergency generator diesel engine and diesel fire pump engine. The emergency diesel engine powering a generator will enable the facility to have black start capabilities. The proposed fire pump would enable the facility to have onsite fire suppression and would no longer rely on the existing adjacent CCGS fire pump engine. The emergency engines would be limited in operation to emergency purposes and maintenance and reliability testing. The proposed diesel engines would be located within the 27-acre project site and would not impact the size, location, configuration or operation of the four simple cycle units. These proposed modifications are necessary or desirable to ensure that the project will be capable of operating as intended.

The proposed emergency generator would be powered by a 779 brake horsepower (BHP) Caterpillar C15 ATAAC engine. Other than emergency uses, the engine would be operated only for maintenance and reliability testing. The testing would be approximately 30 minutes every other week. The proposed fire pump engine would be a

299 BHP Cummins CFP9E-F-20 or equivalent. The fire pump has not yet been selected. The staff analysis herein is based on specifications for the Cummins engine and therefore any alternative fire pump engine would have to meet the same standards. Other than emergency uses, the fire pump engine would be operated only for maintenance and readiness testing, including weekly reliability runs of 30 minutes, an annual pump test and 5 hours of periodic hydrant testing.

The proposed engines would be subject to requirements for stationary diesel-fueled compression-ignition engines. California's operating requirements and emission standards for stationary compression-ignition engines are contained in California Code of Regulations Title 17 Airborne Toxics Control Measure for Stationary Compression Ignition Engines (ATCM). The ATCM includes emission standards for emergency engines and fire pump engines based on engine horsepower. The California Air Resources Board (ARB) issues executive orders certifying the emission levels in engine exhaust for specified engine models. These certifications are used to demonstrate compliance with the emission standards. The ATCM limits allowable operating hours for the diesel engines based on emission data for the engine and National Fire Protection Association (NFPA) 25 requirements for fire pumps. The ATCM includes requirements for the use of CARB certified diesel fuel, a non-resettable fuel meter with minimum display capabilities, record-keeping provisions including the maintenance of a log with the hours of operation for emergency use, testing and maintenance, emission testing, startup, NFPA 25 certification hours when applicable, fuel use and purchase records. In addition the ATCM includes operating restrictions for engines when located in close proximity to schools.

The proposed emergency generator engine is also subject to federal emission standards in 40 CFR Section 60.4200. 40 CFR Section 60.4202 references 40 CFR 89.112 and 40 CFR 89.113 as applicable to the proposed emergency generator engine. Section 112 has emission standards of 4.8 grams per horsepower hour (g/hp-hr) for non methane hydrocarbons (NMHC) + NO_x, 2.6 g/hp-hr for carbon monoxide (CO) and particulate matter (PM). In addition the engine emissions are limited to no more than 20% opacity during acceleration mode, 15% opacity during lugging mode and 50% opacity during peaks in acceleration or lugging mode. The engine is certified to Tier 4 Interim ARB exhaust certification levels under ARB Executive Order U-R-001-0430. The certification levels for the engine are 0.07 g/hp-hr for hydrocarbon (HC), 2.3 g/hp-hr for NO_x, 0.8 g/hp-hr for CO and 0.05 g/hp-hr for PM. Manufacturer's specification and ARB certification indicate compliance with state and federal emission standards for this engine.

The proposed fire pump engine is required to meet the certification requirements and emission standards in 40 CFR 60.4200. Per 40 CFR 60.4202(d) and 60.4205(c) the fire pump must meet emission standards of 3.0 g/hp-hr for NMHC + NO_x, 2.6 g/hp-hr for CO and 0.15 g/hp-hr for PM. The engine is certified to Tier 3 ARB exhaust certification levels under ARB Executive Order U-R-002-0521. The certification levels for the engine are 2.5 g/hp-hr for NMHC + NO_x, 1.4 g/hp-hr for CO, 0.13 g/hp-hr for PM, no more than 5% opacity during acceleration mode, 2% opacity during lugging mode and 13% opacity

during peaks in acceleration of lugging mode. Manufacturer's specification and ARB certification indicate compliance with state and federal emission standards for this engine.

Both the proposed emergency generator engine and fire pump would be subject to additional requirements outlined in the 40 CFR 60.4200. Specifically, the owner and operator of the engines are required to maintain them according to manufacturer requirements, the fuel used must meet specific standards outlined in 40 CFR 80.510, and they must use a non-resettable hour meter. Compliance with these requirements would be generally achieved through compliance with the ATCM requirements.

NRG requests the addition of five Conditions of Certification, **AQ-41** to **AQ-45**. The additional conditions of certification are BAAQMD standard conditions for emergency diesel engines and fire pumps. These conditions ensure the engines are operated in compliance with both state and federal requirements. Proposed Condition of Certification **AQ-41** would limit the total operation to 50 hours per year per engine consistent with the ATCM. In addition Condition of Certification **AQ-42** would limit the operation of the engines according to the restrictions in the ATCM. Proposed Condition of Certification **AQ-43** would require the engines to be operated with non-resettable totalizing meters with a minimum display capability of 9,999 hours. Proposed Condition of Certification **AQ-44** would outline the applicable record keeping requirements for the engines. Proposed Condition of Certification **AQ-45** would limit operations at or near a school; however, there are currently no schools fitting the definition of a school within 500 feet of the MLGS.

PROJECT EMISSION PROFILE CHANGES

The proposed installation of the diesel engines would result in slightly increased emissions of criteria pollutants and greenhouse gas emissions. The NO_x, volatile organic compounds (VOC), PM_{10/2.5}, and CO emissions were calculated using emission factors from the ARB certifications for each engine. The sulfur oxide (SO_x) emission factor was calculated according to Table 3.4-1 of the EPA Document AP-42, Compilation of Air Pollutant Emission Factors. The resulting SO_x emission factor is based on a diesel sulfur content of 15 ppm. The appropriate emission factors are multiplied by each engine's rated horsepower and proposed hours of operation. The resulting criteria pollutant emissions from the proposed project modifications, as well as the criteria pollutant emissions presented in the Revised Staff Assessment (RSA) and 2012 Amendment, are summarized in **Air Quality Table 3**.

As stated in the RSA and the Commission Decision, the MLGS exceeds the Emission Performance Standard established by SB1368 for base load generation. However, as also concluded in the Commission Decision, the MLGS is not designed or intended for base load generation and is therefore not subject to the Emission Performance Standard. The project will still be required to comply with the mandatory GHG reporting requirement and any GHG reduction or trading requirement finalized by ARB.

Air Quality Table 3
Marsh Landing Generating Station Annual Emissions (tons per year)

Source	NOx	VOC	PM10/2.5	CO	SOx
2010 Commission Decision (as reflected in the RSA) ^a					
Four CTGs	78.57	14.21	31.54	138.57	4.94
Fuel gas Pre-heaters	0.26	0.02	0.03	0.30	0.02
Total	78.83	14.23	31.57	138.9	4.96
2012 Approved Revisions ^b					
Four CTGs (no changes)	78.57	14.21	31.54	138.57	4.94
Fuel gas Pre-heaters	0.36	0.05	0.16	5.80	0.01
Total	78.93	14.26	31.70	144.37	4.95
Percent Increase from Commission Decision	0.12%	0.24%	0.40%	3.97%	NA
2014 Proposed Revisions					
Four CTGs (no changes) ^a	78.57	14.21	31.54	138.57	4.94
Fuel gas Pre-heaters ^c	0.36	0.05	0.16	5.80	0.01 ^b
S-7 Diesel Emergency	0.099	0.003	0.002	0.035	0.0002
S-8 Diesel Fire Pump	0.040	0.002	0.002	0.023	0.0001
Total	79.07	14.27	31.70	144.43	4.95
Increase	0.14	0.01	NG	0.06	NG
Percent Increase from Previous Amendment	0.18%	0.04%	0.01%	0.04%	0.01%

^a Source: CEC 2010a.

^b Source: CEC 2012.

NG = negligible.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) MITIGATION

As documented in **Air Quality Table 2**, the BAAQMD is in non-attainment with the state and federal ambient air quality standards for O₃, PM10, and PM2.5. The California Energy Commission requires mitigation for the emissions of pollutants and/or their precursors that are in non-attainment with state and federal ambient air quality standards or may cause an exceedance of any ambient air quality standard. Precursors of O₃, PM10, and PM2.5 include VOC, SOx, and NOx. Therefore, the Energy Commission requires the mitigation of PM10, PM2.5, SOx, NOx, and VOC emissions in areas designated as non-attainment for O₃, PM10, and PM2.5 standards.

Energy Commission staff reviewed the RSA impact analysis of the CO emissions from the project to determine if the addition of the engines would result in a violation of the applicable air quality standards. The RSA included a summary of the projected

maximum operational impacts from the project. A refined dispersion modeling analysis was performed to identify offsite criteria pollutant impacts that would occur throughout the life of the project. The impact analysis included an assessment of routine operation and fumigation events taking into consideration background concentrations. The impacts are conservative estimates since they include an evaluation under a combination of highest allowable emission rates and the most extreme meteorological conditions, which are unlikely to occur simultaneously. The results presented in the RSA include the modeled project impacts, background concentrations, the total impact, the limiting air quality standard and the percent of the total impact in respect to the limiting air quality standard. These tables were used to demonstrate CO emissions from the project would not result in a violation to any applicable air quality standard. The results are summarized in **Air Quality Table 4**.

Air Quality Table 4
CO Maximum Impacts (ug/m3)

Scenario	Averaging Time	Modeled Impact	Background	Total Impact	Limiting Standard	% of Standard
Routine	1 hour	466.0	4,686	5,152	23,000	22
	8 hour	187.9	2,194	2,382	10,000	24
Fumigation	1 hour	576.0	4,686	5,262	23,000	23
	8 hour	82.0	2,194	2,276	10,000	23

Source: CEC 2010a.

The background concentrations of CO are much higher than the modeled impacts of CO for the approved project. **Air Quality Table 3** lists the emission increases from both the approved 2012 Amendment and the proposed amendment. Due to the low amount of emissions from the modifications, the projected increases in CO emissions are not expected to significantly impact the results from the modeling and will not result in any violation of any applicable CO air quality standard. Since the area is in attainment of the CO standard and the project would not cause the standards to be exceeded, offsets for CO will not be required.

The original Commission Decision required the project offset specified quantities of NO_x, VOC, PM_{10/2.5}, and SO_x through Condition of Certification **AQ-SC7** (see **Air Quality Table 5**). These requirements were based upon the total calculated emissions for the four CTGs and the pre-heaters at a 1.0 to 1.0 offset ratio. ERCs were not required for CO because the staff analysis demonstrated the CO emissions would not result in a violation of any applicable air quality standard, and the BAAQMD is currently in attainment with the CO standard. Offsets were required for SO_x and NO_x because, although it was determined the direct impact of SO_x and NO_x emissions would not contribute to a violation of the SO₂ or NO_x standards, SO_x and NO_x emissions contribute to the formation of ozone, PM₁₀, and PM_{2.5}, and the BAAQMD is not in attainment with all the ambient air quality standards for PM₁₀ and PM_{2.5}.

The BAAQMD Final Determination of Compliance required offsets for NO_x and VOC based off the calculated emissions for the four CTGs only. In addition, BAAQMD

required the ERCs for NOx to be surrendered at a ratio of 1.15 to 1. The original offsets provided by GenOn Marsh Landing, LLC, are documented in **Air Quality Table 5**.

The 2012 Amendment approved an increase to the offsets required by the project due to the change to the pre-heating equipment. The project owner surrendered additional emission reduction credits (ERCs) to offset the associated increases of specific pollutants. As demonstrated in **Air Quality Table 5**, additional offsets were only required for VOC and PM10/2.5 because the amount of ERCs already surrendered for other pollutants met or exceeded any additional emissions projected from the proposed amendment. Additional offsets were not required by the BAAQMD because according to BAAQMD regulations the pre-heaters are considered exempt equipment from offset requirements. The additional offsets required and provided from the 2012 Amendment are documented in **Air Quality Table 5**.

For purposes of CEQA, the offsets already provided by the project owner do not fully mitigate the projected emission increases from the proposed addition of the diesel-fired engines (see **Air Quality Table 5**). Consistent with the findings outlined in the RSA and this analysis, Energy Commission staff recommends requiring additional mitigation for the projected emission increase. Requiring additional offsets would mitigate these proposed increases to less than significant for CEQA purposes.

As shown in **Air Quality Table 3**, the proposed increases in emission would be very small in comparison to the project as a whole. For example, the projected increases for PM10/2.5 and SOx are below a level of significance that shows an increase to the project total calculated in **Air Quality Table 3**. Specifically, the facility total calculation does not change when computed to two significant figures when considering the increase. Since mitigation was already required and surrendered to two significant figures for PM10/2.5 and SOx, the proposed increase has already been mitigated and no additional offsets will be required for these pollutants. Similarly, additional mitigation will not be required for NOx because the amount of ERCs already surrendered for NOx exceeds any additional emissions projected from the proposed engines.

As shown in **Air Quality Table 5** below, the offsets already provided for VOCs are slightly below the calculated facility total of VOC emissions including the addition of the proposed diesel engines. Therefore Energy Commission staff is proposing additional mitigation for the increased VOC emissions. As demonstrated in **Air Quality Table 5**, the amount of offset required is 0.01 tons of VOC calculated as the difference between the proposed facility VOC total and the amount of offsets for VOC already surrendered. In order to ensure compliance with CEQA mitigation requirements, Energy Commission staff is proposing to revise Condition of Certification **AQ-SC7** to reflect the revised mitigation total listed in **Air Quality Table 5**. Revising Condition of Certification **AQ-SC7** would ensure compliance with VOC mitigation requirements. NRG holds emission reduction credits that would be surrendered to offset the 0.01 tons of VOC increase.

**Air Quality Table 5
Marsh Landing Generating Station Offsets (tons per year)**

Source	NOx	VOC ^a	PM10/2.5	CO	SOx
2010 Commission Decision (as reflected in the RSA)^a					
Original CEQA Mitigation Recommended by Commission Staff - CTGs and Pre-heaters ^a	78.83	14.23	31.57	None	4.96
Original Offsets Required by BAAQMD - CTGs Only ^b	90.36	14.21	None	None	None
Original Offsets Surrendered ^c	90.36	14.23	31.57	None	4.96
2012 Amendment					
Commission Staff Revised Mitigation Total - CTGs and New Pre-heaters ^d	78.93	14.26	31.70	None	4.95
Additional Offsets Required by BAAQMD	None	None	None	None	None
Additional Mitigation Surrendered ^d	None	0.03	0.13	None	None
2014 Amendment					
Commission Staff Proposed Mitigation Total-CTG, Pre-heaters, and Diesel Engines	79.07	14.27	31.70	None	4.95
Revised Offsets Required by BAAQMD –CTGs and Diesel Engines	90.52	14.215	None	None	None
Additional Mitigation Required	None	0.01	None	None	None
^a For the purpose of this analysis the term VOC is assumed to be equivalent to POC ^b Source: CEC 2010a. ^c Source: GMLP 2012. ^d Source: CEC 2012.					

CONCLUSIONS AND RECOMMENDATIONS

The California Energy Commission staff (staff) recommends approval of the requested changes to the Air Quality Conditions of Certification for MLGS listed in NRG 2014. Specifically staff recommends the addition of five new Conditions of Certification, **AQ-41, AQ-42, AQ-43, AQ-44, and AQ-45**. The proposed addition of the emergency engines will result in increased emissions of pollutants and/or their precursors that are in non-attainment with state and federal ambient air quality standards. In order to ensure compliance with mitigation requirements, the Energy Commission staff recommends revising Condition of Certification **AQ-SC7** to include additional offset requirements for the proposed emission increase from the addition of the emergency engines. The requested changes will conform with the applicable LORS related to air quality and will not result in significant air quality impacts. The requested changes have already been reviewed by BAAQMD staff.

PROPOSED AND AMENDED CONDITIONS OF CERTIFICATION

Staff recommends the modification of Air Quality Conditions of Certification **AQ-SC7** and the addition of Air Quality Conditions of Certification **AQ-41, AQ-42, AQ-43, AQ-44, and AQ-45**. **Bold underline** is used to indicate new language. ~~Strikethrough~~ is used to indicate deleted language.

AQ-SC7 The project owner shall provide emission reductions in the form of offsets or emission reductions credits (ERCs) in the quantities of at least 78.93 tons per year (tpy) NO_x, ~~14.267~~ tpy VOC, 31.70 tpy PM₁₀, and 4.95 tpy SO_x emissions. The project owner shall demonstrate that the reductions are provided in the form required by the Bay Area Air Quality Management District.

Verification: The project owner shall submit to the CPM records showing that the project's offset requirements have been met prior to initiating construction. If the CPM approves a substitution or modification to the list of ERCs, the CPM shall file a statement of the approval with the project owner and the Energy Commission docket. The CPM shall maintain an updated list of approved ERCs for the project.

Conditions for the Emergency Standby Diesel Generator, Caterpillar C15 ATAAC, 779 bhp, 4.9 MMBtu/hour (S-7), and the Diesel Fire Pump, Cummins CFP9E-F20 or equivalent, 299 bhp, 2.1 MMBtu/hour (S-8)

AQ-41 **The project owner shall not exceed 50 hours per year per engine for reliability-related testing. (Basis: Title 17, California Code of Regulations, Section 93115, ATCM for Stationary CI Engines)**

Verification: The project owner shall verify compliance with this Condition of Certification in each quarterly report required by Condition of Certification AQ-SC8.

AQ-42 **The project owner shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, State or Federal emission limit, or for reliability related activities (maintenance and other testing, but excluding emission testing). Operating while mitigating emergency conditions or while emission testing to show compliance with District, State or Federal emission limits is not limited. (Basis: Title 17, California Code of Regulations, Section 93115, ATCM for Stationary CI Engines)**

Verification: The project owner shall verify compliance with this Condition of Certification in each quarterly report required by Condition of Certification AQ-SC8.

AQ-43 **The project owner shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display**

capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained. (Basis: Title 17, California Code of Regulations, Section 93115, ATCM for Stationary CI Engines)

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB and the Commission.

AQ-44 Records: The project owner shall maintain the following monthly record in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title v Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff and CPM upon request.

- a) Hours of operation for reliability-related activities (maintenance and testing).
- b) Hours of operation for emission testing to show compliance with emission limits.
- c) Hours of operation (emergency).
- d) For each emergency, the nature of the emergency condition.
- e) Fuel usage for each engine(s).

(Basis: Title 17, California Code of Regulations, Section 93115, ATCM for Stationary CI Engines)

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB and the Commission.

AQ-45 At School and Near-School Operation: If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:

The project owner shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:

- a) Whenever there is a school sponsored activity (if the engine is located on school grounds).
- b) Between 7:30 a.m. and 3:30 p.m. on days when school is in session.

“School” or “School Grounds” means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). “School” or “School Grounds” includes any building or

structure, athletic field, or other areas of school property but does not include unimproved school property.

(Basis: Title 17, California Code of Regulations, Section 93115, ATCM for Stationary CI Engines)

Verification: The project owner shall make the site and records available for inspection by representatives of the District , ARB and the Commission.

REFERENCES

BAAQMD 2014 - Bay Area BAAQMD Draft Engineering Evaluation (TN 202673), docketed July 9, 2014.

GMLP 2012 - GenOn Marsh Landing, LLC, Petition for Approval of Project Design Refinements – Marsh Landing Generating Station (08-AFC-3C) (TN 63551), received February 3, 2012.

NRG 2014 - Petition to Amend (TN 202671), docketed July 8, 2014.

CEC 2010 – California Energy Commission – Marsh Landing Generating Station Commission Decision (TN 58247). August 31, 2010.

CEC 2010a – California Energy Commission – Revised Staff Assessment (TN 57073). June 10, 2010.

CEC 2012 - California Energy Commission – Staff Analysis of Proposed Modifications for Project Design Refinements (08-AFC-3C) (TN 64111). March 12, 2012.

MARSH LANDING GENERATING STATION (08-AFC-3C)

Request to Amend Final Commission Decision Biological Resources Analysis Ann Crisp

INTRODUCTION

This petition requests the installation of new equipment, specifically a new diesel backup generator and a new diesel fire pump engine, as part of modifications to the Marsh Landing Generating Station (MLGS) Project. This analysis addresses the proposed modifications that affect **Biological Resources**.

ANALYSIS

The proposed project modifications include changes related to installation of new equipment, specifically a diesel backup generator, diesel fire pump engine, and 150 feet of fire loop piping with a maximum depth of approximately 5 feet below ground surface. There would be no physical changes to the site boundary and construction would take place on site in previously disturbed or developed areas. Construction of the diesel backup generator would take place in the center of the existing four air-cooled power blocks. Based on the existing level of development at this location it is unlikely that impacts to biological resources would occur from construction of this modification. However, potential impacts to wildlife could occur if the 150 feet of water pipeline excavations are left open overnight without being backfilled or providing escape ramps. Construction of the new diesel fire pump engine would occur in the northwest corner of the project site. This area is located near two areas of potential wildlife habitat identified in the Revised Staff Assessment including the row of Tasmanian bluegum (*Eucalyptus globulus*) along the western boundary and the shoreline of the San Joaquin River along the northern boundary. The mature eucalyptus trees are approximately 50 feet tall and have sufficient canopies to potentially support nesting raptors. The shoreline area provides habitat for several bird species including ducks, grebes, and coots, and willows provide suitable nesting habitat for resident and migratory riparian birds. Construction activities during the nesting season (March through August) could adversely affect breeding birds through disruption or harassment. In addition, temporary impacts to biological resources may occur as a result of a temporary increase in noise and lighting as well as potential impacts from stormwater runoff during ground disturbing activities.

To address potential impacts from the construction of the proposed modifications staff recommends implementation of existing Conditions of Certification **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Biologist Authority), **BIO-4** (Worker Environmental Awareness Program (WEAP)), **BIO-5** (Biological Resources Mitigation Implementation and Monitoring Plan), and **BIO-6** (Impact Avoidance and Minimization Measures). In addition, if construction would occur during the nesting season staff recommends implementation of existing Condition of

Certification **BIO-7** (Pre-Construction Nest Surveys and Impact Avoidance and Minimization Measures for Breeding Birds).

With implementation of the existing conditions of certification, construction of the proposed project modifications would have no significant effect on biological resources and the project would remain in compliance with all applicable laws, ordinances, regulations, and standards (LORS) related to biological resources.

The potential impacts to biological resources from the operation of the proposed project modifications would be related to a slight increase in nitrogen deposition from the new diesel backup generator and fire pump engine (diesel engines). Operation of the new diesel engines, not to exceed 50 hours per year each, would result in slightly higher nitrogen deposition at the adjacent Antioch Dunes National Wildlife Refuge (ADNWR), which is habitat for the federally-listed endangered Lange's metalmark butterfly as well as the state and/or federally-protected Contra Costa wallflower and Antioch Dunes evening primrose. The increased nitrogen deposition would contribute to the cumulative impacts to the refuge that result from the increased nitrogen and resulting fertilization of a normally nitrogen-poor environment which promotes an increase in weeds and overall habitat degradation. The amount of additional nitrogen oxide (NO_x) emissions from the proposed new diesel engines is estimated to be 0.14 tpy or an increase of approximately 0.18 percent of the total MLGS NO_x emissions. There would be no additional ammonia (NH₃) emissions from the new diesel engines. Staff expects the additional annual nitrogen deposition impact at the ADNWR to be small.

The current Condition of Certification **BIO-8** requires an annual payment to the California Wildlife Foundation of \$2,805, which was increased by \$112 (from \$2,693 to \$2,805) due to the NO_x emissions increase of 0.10 tpy from the larger natural gas-fired pre-heaters approved in a 2012 amendment, to fund noxious weed management and other activities that benefit state and/or federally protected species at the ADNWR. Because the additional NO_x from the new diesel engines is so small, the project owner has not done a detailed nitrogen deposition modeling analysis. Instead, the project owner proposes to provide an additional annual payment of \$157 by prorating the estimated NO_x increase of 0.14 tpy and the 2012 pre-heater NO_x increase of 0.10 tpy as follows:

$$\$112 \times (0.14/0.10) = \$157$$

Staff found the proration method acceptable for this amendment because the diesel engines normally have much lower plume rises than the turbine exhaust stacks, which means the impacts of the diesel engines on the ADNWR (about 1.5 miles away from the MLGS) would be smaller than those from the stacks assuming the same amount of emissions.

In addition to the annual mitigation amount (as adjusted above), the project owner makes an additional, voluntary annual payment of \$20,000 to the California Wildlife Foundation, which will continue for the life of the project (as

specified in **BIO-8**). This voluntary annual payment does not change as a result of the proposed project modifications.

CONCLUSIONS AND RECOMMENDATIONS

The project owner's proposal to install a backup diesel generator and a new fire pump engine may result in impacts to biological resources from construction of the proposed modifications. To address potential impacts from the construction of the proposed modifications staff recommends implementation of existing Conditions of Certification **BIO-1** through **BIO-7**. The implementation of above listed conditions of certification would protect sensitive biological resources from potential direct or indirect impacts related to construction.

The project owner's proposal to install new diesel engines would result in a slightly higher nitrogen deposition amount at the Antioch Dunes National Wildlife Refuge. Consequently, the project owner proposes to pay slightly more to the California Wildlife Foundation than required by Condition of Certification **BIO-8** to assist in noxious weed management and other activities that benefit state and/or federally protected species, including Lange's metalmark butterfly, Contra Costa wallflower, and Antioch Dunes evening primrose at the refuge. Staff recommends amending **BIO-8** as outlined below. The California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS) representatives agree with the proposed changes and additional mitigation (Adair, pers comm. 2014; Jentsch, pers comm. 2014).

PROPOSED AND AMENDED CONDITIONS OF CERTIFICATION

The following Biological Resources condition of certification must be modified to reflect a slight increase in nitrogen deposition at the Antioch Dunes National Wildlife Refuge and the need to pay slightly more than the amount that was identified in the Commission Decision and 2012 amendment. The required changes to Condition of Certification **BIO-8** are shown in ~~strike through~~ and **bold underlined** text.

BIO-8 The project owner shall provide an annual payment to the California Wildlife Foundation or other third party approved by the CPM in coordination with the USFWS performing similar work to assist in noxious weed management and other activities that benefit state and/or federally protected species, including Lange's metalmark butterfly, Contra Costa wallflower, and Antioch Dunes evening primrose at the Antioch Dunes National Wildlife Refuge. Management activities funded may include but are not limited to: captive breeding and release of Lange's metalmark butterfly; propagation and transplantation of naked-stem buckwheat, Contra Costa wallflower, and Antioch Dunes evening primrose; and noxious weed eradication using grazing animals, hand tools and/or appropriate mechanical equipment. The first annual payment shall be at least equal to ~~\$2,805.00~~ **\$2,962.00**.

Each subsequent annual payment as calculated above shall be adjusted for inflation in accordance with the Employment Cost Index – West or its successor, as reported by the U.S. Department of Labor's Bureau of Labor Statistics. Payment shall be made annually for the duration of project operation.

The project owner has voluntarily offered to contribute additional annual funding for weed management and other activities that benefit native habitat and species at the Antioch Dunes National Wildlife Refuge in an amount equal to \$20,000 per year and has agreed to include that additional payment as a requirement in this condition of certification. The additional annual payment shall be made at the same time as the annual payment specified above and shall be made for the duration of project operation, but shall not be adjusted for inflation.

Verification: No later than 30 days following the start of project operation, the project owner shall provide written verification to the CPM, USFWS, and CDFG that the first annual payment was made to the California Wildlife Foundation or other third party approved by the CPM in coordination with the USFWS performing similar work in accordance with this condition of certification. The project owner shall provide evidence that it has specified that its annual payment can be used only to assist in noxious weed management and other management activities as required under BIO-8 as directed by the USFWS. Thereafter, within 30 days after each anniversary date of the commencement of project operation, the project owner shall provide written verification to the CPM, USFWS, and CDFG that payment has been made to the California Wildlife Foundation or other third party approved by the CPM in coordination with the USFWS performing similar work in accordance with this condition of certification. This verification shall be provided annually for the operating life of the project. The project owner also shall request an annual report from California Wildlife Foundation or other third-party approved by the CPM in coordination with the USFWS performing similar work documenting how each annual payment required hereunder was used and applied to assist in noxious weed management and other management activities as required under **BIO-8** at the Antioch Dunes National Wildlife Refuge. The project owner shall provide copies of such reports to the CPM within thirty (30) days after receipt.

REFERENCES

Adair, R. 2014. Randi Adair. Senior Environmental Scientist Bay Delta Region California Department of Fish and Wildlife. Email communication with Ann Crisp, California Energy Commission. September 8, 2014.

Jentsch, S. 2014. Stephanie Jentsch. Fish and Wildlife Service Biologist. U.S. Fish and Wildlife Service. Email communication with Ann Crisp of the California Energy Commission. September 9, 2014.