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CALIFORNIA ENERGY COMMISSION

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CEC-57 (Revised 1/19)



STATEMENT OF STAFF APPROVAL OF PROPOSED CHANGE MAGNOLIA POWER PROJECT (MPP) (01-AFC-06C)

On February 4, 2021, the Southern California Public Power Authority (SCPPA) filed a post certification petition with the California Energy Commission (CEC) for the Magnolia Power Project (MPP). The 323-megawatt combined-cycle facility was certified by the CEC in March 2003, and began commercial operation in September 2005. The facility is in the City of Burbank, in Los Angeles County.

DESCRIPTION OF PROPOSED CHANGE

This request includes the following change:

- Upgrade the existing MPP combustion system to allow improved combustor turndown and increased operating flexibility to integrate better with intermittent renewable energy resources.

The petition is available on the CEC's MPP webpage at <https://ww2.energy.ca.gov/sitingcases/magnolia/>

CEC STAFF REVIEW AND CONCLUSIONS

Title 20, California Code of Regulations, Section 1769 states that a project owner shall petition the commission for approval of any change it proposes to the project design, operation, or performance requirements.

CEC technical staff reviewed the petition for potential environmental effects and consistency with applicable laws, ordinances, regulations, and standards (LORS). Staff has determined that only the technical or environmental areas of Air Quality, Hazardous Materials Management, and Worker Safety and Fire Protection are affected by the project change.

Staff notes the following for these technical areas affected by the proposed change:

- **AIR QUALITY.** Staff has determined the project would continue to comply with applicable LORS and would not result in any significant adverse environmental impacts. The proposed changes would conform with past changes made by the South Coast Air Quality Management District to its permit language, and some Air Quality conditions of certification in the Decision require updating. No daily, quarterly, annual or other emission limits would increase because of this change. See Attachment A for the Air Quality analysis and revised conditions.
- **HAZARDOUS MATERIALS MANAGEMENT.** During the proposed installation of the upgraded combustion system and new gas fuel piping, several hazardous

materials would be used onsite. Like materials used for equipment maintenance activities, these materials would include gasoline, solvents, lubricants, paint, and welding gases. Existing Condition of Certification **WORKER SAFETY-1**, which covers worker health and safety requirements, would ensure the safe and appropriate use of the hazardous materials used for the proposed project modifications. In addition, due to the low volumes to be used, they would not present a significant impact to workers or the offsite public. No extremely hazardous or regulated hazardous materials would be used on site specifically for the installation of the upgraded combustion system and new gas fuel piping.

Therefore, with the project owner's continued compliance with existing Condition of Certification **WORKER SAFETY-1**, the proposed change would not have a significant impact on the offsite public or the environment and the facility would continue to comply with all applicable LORS.

- **WORKER SAFETY.** Existing Condition of Certification **WORKER SAFETY-1** covers worker health and safety requirements for construction activities, including activities to be performed to complete the proposed project modifications. By continuing to comply with existing conditions of certification, the project owner's proposed installation of the upgraded combustion system and installation of new gas fuel piping would not have a significant impact on worker health and safety and would comply with all applicable LORS.

Staff's conclusions for each technical or environmental area are summarized in the table below.

Summary of Staff Responses to Petition

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

ENVIRONMENTAL JUSTICE

Environmental Justice – Figure 1 shows 2010 census blocks in the six-mile radius of the Magnolia Power Project with a minority population greater than or equal to 50 percent. The population in these census blocks represents an environmental justice (EJ) population based on race and ethnicity as defined in the United States Environmental Protection Agency’s *Guidance on Considering Environmental Justice During the Development of Regulatory Actions*.

Staff conservatively obtains demographic data within a six-mile radius around a project site based on the parameters for dispersion modeling used in staff’s air quality analysis. Air quality impacts are generally the type of project impacts that extend the furthest from a project site. Beyond a six-mile radius, air emissions have either settled out of the air column or mixed with surrounding air to the extent the potential impacts are less than significant. The area of potential impacts would not extend this far from the project site for most other technical areas included in staff’s EJ analysis.

Based on California Department of Education data in the **Environmental Justice – Table 1**, staff concluded that the percentage of those living in the Los Angeles Unified School District (in a six-mile radius of the project site) and enrolled in the free or reduced price meal program is larger than those in the reference geography, and thus are considered an EJ population based on low income as defined in *Guidance on Considering Environmental Justice During the Development of Regulatory Actions*. **Environmental Justice – Figure 2** shows where the boundaries of the school district are in relation to the six-mile radius around the Magnolia Power Project site.

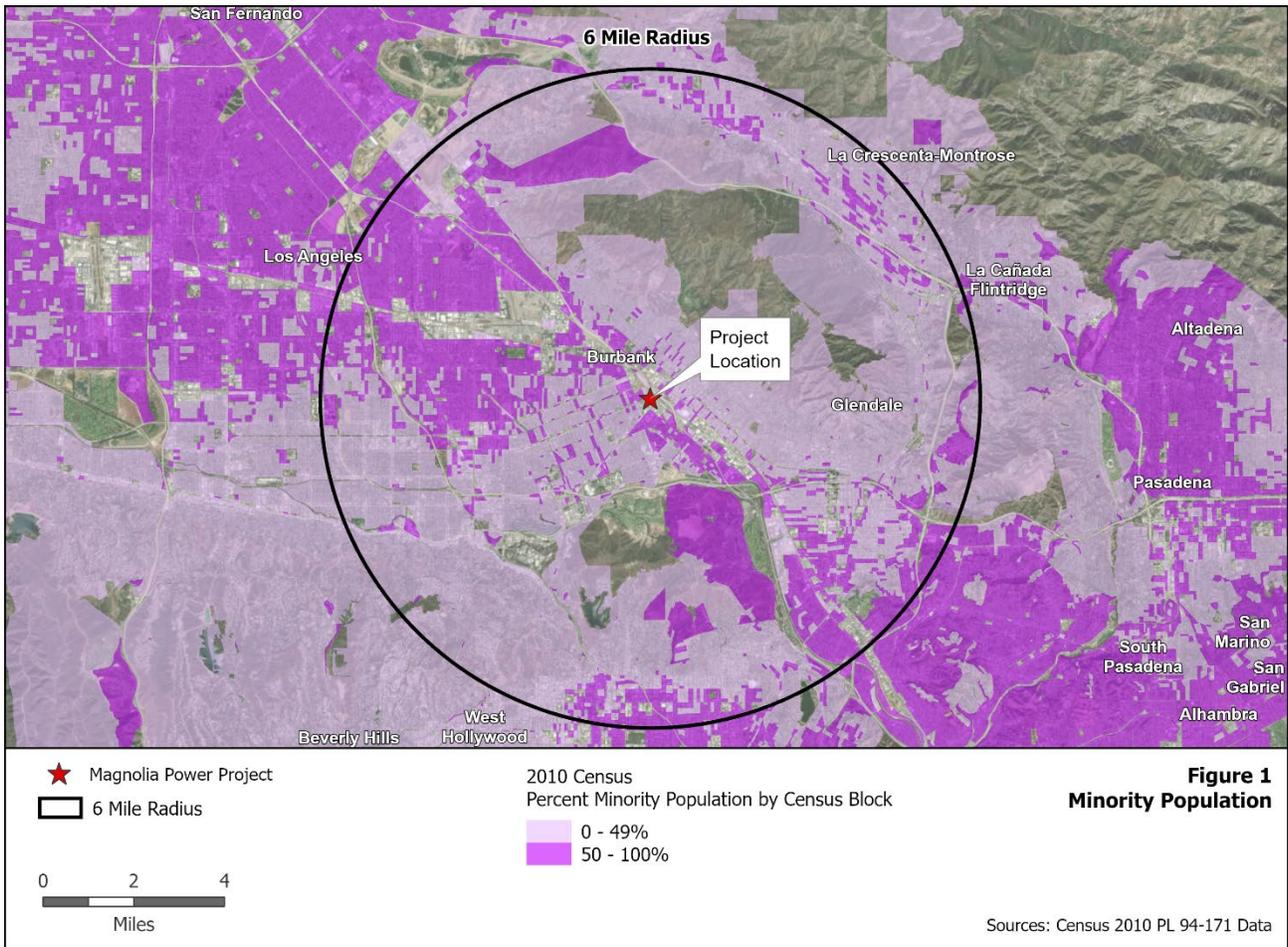
**Environmental Justice – Table 1
 Low Income Data within the Project Area**

SCHOOL DISTRICTS IN SIX-MILE RADIUS	Enrollment Used for Meals	Free or Reduced Price Meals	
Burbank Unified	15,182	5,180	34.1%
Glendale Unified	25,528	12,315	48.2%
Los Angeles Unified	596,937	479,085	80.3%
REFERENCE GEOGRAPHY			
Los Angeles County	1,436,605	989,954	68.9%
Source: CDE 2020. California Department of Education, DataQuest, Free or Reduced Price Meals, District level data for the year 2017-2018, < http://dq.cde.ca.gov/dataquest/ >.			

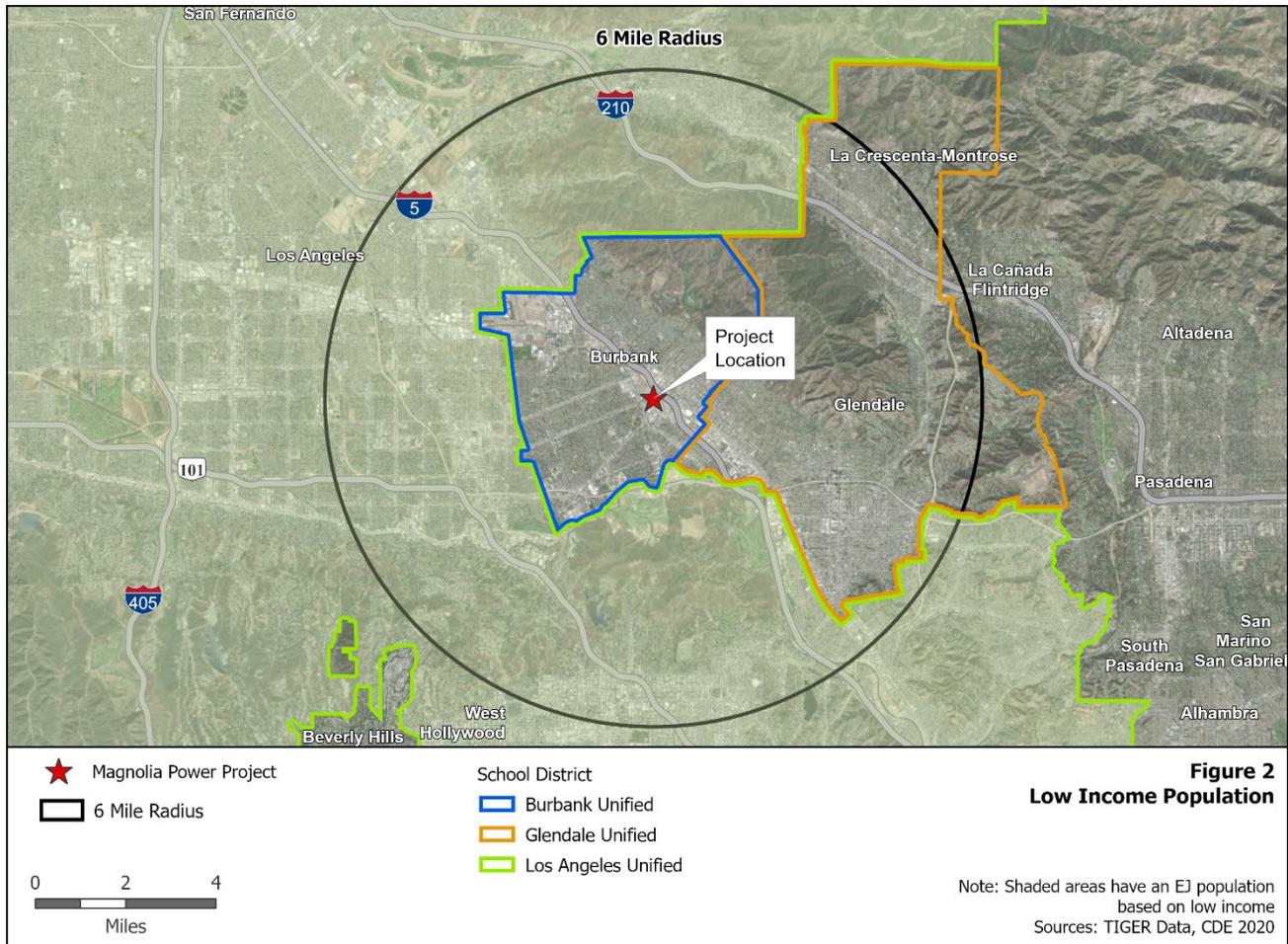
The following technical areas (if affected by the proposed project changes) consider impacts to EJ populations: Air Quality, Cultural Resources (indigenous people), Hazardous Materials Management, Land Use, Noise and Vibration, Public Health, Socioeconomics, Soil and Water resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Visual Resources, Waste Management, and Worker Safety and Fire Protection.

For Hazardous Materials Management and Worker Safety and Fire Protection, staff concludes that impacts would be less than significant, and thus would be less than significant on the EJ population represented in **Environmental Justice – Figure 1, Figure 2, and Table 1**. In the air quality analysis, staff proposes changes to conditions of certification. Staff has determined that by adopting the proposed changes to the existing conditions of certification, the project change would not cause significant air quality impacts for any population in the project’s six-mile radius, including the EJ population. Impacts to the EJ population are less than significant.

Environmental Justice – Figure 1



Environmental Justice – Figure 2



CEC STAFF DETERMINATION

Pursuant to Title 20, California Code of Regulations, section 1769(a)(3)(A) and (B), CEC staff has determined for this petition that approval by the CEC at a noticed business meeting or hearing is not required and the proposed changes meet the criteria for approval by staff because:

- i. There is no possibility that the change may have a significant impact on the environment, or the project is exempt from the California Environmental Quality Act [1769(a)(3)(A)];
- ii. The change would not cause the project to fail to comply with any applicable laws, ordinances, regulations, or standards [1769(a)(3)(A)]; and
- iii. That no daily, quarterly, annual or other emission limit will be increased as a result of the change [1769(a)(3)(B)].

Staff also concludes that the proposed changes do not meet the criteria requiring production of subsequent or supplemental review as specified in Title 14, California Code of Regulations, section 15162(a).

WRITTEN COMMENTS

This Statement of Staff Approval of the proposed project changes has been filed in the docket for this project. Pursuant to section 1769(a)(3)(C), any person may file an objection to staff's determination within 14 days of the filing of this statement on the grounds that the project change does not meet the criteria set forth in sections 1769(a)(3)(A) and (B). Absent any objections as specified in 1769(a)(3)(C), this petition will be approved 14 days after this statement is filed.

Written comments or objections to staff's determination may be submitted using the CEC's e-Commenting feature, as follows: Go to the CEC's project webpage and click on either the "Comment on this Proceeding," or "Submit e-Comment" link. When your comments are filed, you will receive an email with a link to them.

Written comments or objections may also be mailed to:

California Energy Commission
Docket Unit, MS-4
Docket No. **01-AFC-6C**
1516 Ninth Street
Sacramento, CA 95814-5512

All comments and materials filed with the Docket Unit will be added to the facility Docket Log and be publicly accessible on the CEC's webpage for the facility.

If you have questions about this notice, please contact Elizabeth Huber, Compliance Office Manager, at (916) 776-0609, or via email at Elizabeth.Huber@energy.ca.gov.

For information on public participation, please contact the Public Advisor, at (916) 654-4489 or (800) 822-6228 (toll-free in California) or send your email to publicadvisor@energy.ca.gov.

News media inquiries should be directed to the CEC Media Office at (916) 654-4989, or by email at mediaoffice@energy.ca.gov.

ATTACHMENT A

MAGNOLIA POWER PROJECT (01-AFC-06C)

Magnolia Power Project (MPP) Upgrade, Part 2, 2021 AIR QUALITY, PUBLIC HEALTH, AND GREENHOUSE GASES

Wenjun Qian, Ph.D., P.E.

INTRODUCTION AND SUMMARY

The Magnolia Power Project (MPP) is a nominal 323-megawatt (MW) combined-cycle electricity generating facility consisting of a 181-MW General Electric (GE) Model 7FA combustion turbine generator (CTG) and one 142-MW steam turbine. The combustion turbine is equipped with Dry Low NO_x (DLN) combustors and a heat recovery steam generator (HRSG) with duct burning capabilities. Selective catalytic reduction (SCR) technology and a carbon monoxide (CO) oxidation catalyst control emissions in the exhaust gas. Additional equipment includes a cooling tower and water treatment facility to enable re-use of the cooling water.

MPP is located within the South Coast Air Basin (SCAB). The Southern California Public Power Authority (SCPPA) owns MPP and the City of Burbank Water & Power Department (BWP) operates MPP. The MPP was commissioned in September 2005 and placed under operation after commissioning.

On November 5, 2019, SCPPA filed a petition (SCPPA 2019) with the California Energy Commission (CEC) requesting to modify the CEC license for the MPP. SCPPA requested to upgrade the combustors in the turbine to allow the turbine to operate at lower loads without increasing the emission limits. The South Coast Air Quality Management District (SCAQMD) issued modified Title V permit for MPP on January 10, 2020 (SCAQMD 2020). Energy Commission issued the Statement of Staff Approval of Proposed Change for MPP on February 12, 2020 (CEC 2020).

MPP completed the upgrade project in February 2020. However, the facility discovered problems with the new hardware installed. GE decided to redesign the affected parts and placed MPP into a temporary configuration, which included the disabling of the Axial Fuel Staging (AFS) system. With the temporary configuration, MPP has been operating in compliance with all the permit conditions specified in the modified Title V permit issued on January 10, 2020.

GE planned to install the redesigned parts by the end of January 2021 during the Major Inspection of the MPP. MPP submitted an application for Title V Permit Modification to SCAQMD in September 2020. The SCAQMD completed the Statement and Basis (SCAQMD 2021a) and issued a revised Title V permit on January 28, 2021 (SCAQMD 2021b).

On January 25, 2021, the SCPPA filed a petition to amend (PTA) to the CEC for the upgrade work planned for 2021 (SCPPA 2021). Staff reviewed the PTA and the associated SCAQMD analysis and revised Title V permit.

Air quality, public health, and greenhouse gas impacts from the evaluated changes would be less than significant, including impacts to environmental justice populations. Emissions would stay below the potential to emit (PTE) of the existing facility. The proposed limits on duration, fuel use, and total emissions for the 2021 recommissioning period would be lower than those permitted for the 2020 recommissioning period. SCPPA proposes no changes to the hourly or daily emission limits for the recommissioning period. SCPPA proposes no increases to emission limits for ongoing operations in the CEC license or project mitigation including emission reduction credits (ERCs) and Regional Clean Air Incentives Market (RECLAIM) trading credits. There would be no increase in emissions of toxic air contaminants or greenhouse gases. Therefore, there are no air quality, public health, or greenhouse gas environmental justice issues related to the evaluated facility modifications and no minority or low-income populations would be significantly or adversely impacted.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS COMPLIANCE

SCAQMD classifies the proposed modification as a minor revision to the existing Title V permit. SCAQMD does not consider the proposed modification to be a major modification under Regulation XIII – New Source Review. The source is considered minor under PSD, and the proposed modification is not considered a major modification in and of itself. Energy Commission staff reviewed the SCPPA’s 2021 PTA and the SCAQMD evaluations for consistency with all federal, state, and SCAQMD laws, ordinances, regulations, and standards (LORS).

Air Quality Table 1 includes a summary of the air quality LORS relevant to the proposed changes. **Air Quality Table 1** in this analysis is not intended to be comprehensive of all LORS applicable to the MPP facility. The conditions of certification in the Final Commission Decision and amendments thereafter ensure that the facility would remain in compliance with all LORS.

Air Quality Table 1
Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description and Compliance
Federal	U.S. Environmental Protection Agency
40 CFR 60, Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units. Establishes emission standards for units installed after January 8, 2014. The proposed modifications would not qualify the upgraded turbines to be subject to subpart requirements, as the proposed modifications do not meet the definition of reconstruction.
40 CFR 70	State Operating Permits Program–Part 70 establishes the Title V permitting program. MPP currently operates under a Title V permit. MPP submitted an

Applicable LORS	Description and Compliance
	application for Title V permit modification as part of SCAQMD requirements. Continued compliance is expected.
Local	South Coast Air Quality Management District
Regulation II Permits Rule 212	Standards for Approving Permits and Issuing Public Notice—Outlines specific criteria for approving permits and issuing public notice. Outlines requirements for RECLAIM facilities. The proposed changes did not trigger Rule 212 public noticing requirements. MPP is not located within 1,000 feet of a school and the proposed changes will not result in an increase in emissions of toxic contaminants that would expose a person to levels above noticing thresholds.
Regulation IV Prohibitions Rule 401	Visible Emissions—Establishes limits on visible emissions. SCAQMD reported there is no indication of visible emission problems in their compliance database. Staff does not expect visible emissions during the recommissioning period or on-going operation of MPP.
Regulation XIII New Source Review	New Source Review for Criteria Pollutants—This regulation applies to new or modified sources of emissions. Regulation XIII requirements are applicable to pollutants not covered under RECLAIM requirements. There would be no increase in daily, monthly, or hourly emissions for CO, volatile organic compounds (VOCs), sulfur oxide (SO _x), and particulate matter less than ten microns (PM ₁₀) due to the proposed changes. Therefore, the equipment is not subject to additional BACT, offsets, or modeling requirements per SCAQMD rules and regulations. See analysis for further discussion.
Regulation XIII New Source Review Rule 1325	Federal PM _{2.5} New Source Review Program—Outlines requirements for particulate matter less than 2.5 microns (PM _{2.5}) for any new major polluting facility or major modification to a major polluting facility located in areas designated as non-attainment for PM _{2.5} . MPP's PTE is below 70 tons per year and there is no proposed increase in PM _{2.5} emissions. Therefore, SCAQMD does not consider MPP a major facility for PM _{2.5} under Rule 1325.
Regulation XIV Toxics and Other Non-Criteria Pollutants Rule 1401	New Source Review of Toxic Air Contaminants (TAC)—Specifies limits for maximum individual cancer risk and acute and chronic hazard index for modifications to existing facilities emitting toxic air contaminants. SCPPA is not proposing an increase in fuel use and therefore there is no increase in toxic air contaminants. Conditions of Certification AQ-22 , AQ-23 , and AQ-25 limit the fuel use during recommissioning period to ensure there is no increase in toxics. SCPPA proposes to reduce the fuel use in these conditions of certification for the 2021 recommissioning period.
Regulation XVII Prevention of Significant Deterioration (PSD)	Prevention of Significant Deterioration—Establishes requirements for attainment emissions. The SCAB is in attainment for nitrogen dioxide (NO ₂), sulfur dioxide (SO ₂), CO and PM ₁₀ National Ambient Air Quality Standards (NAAQS). SCAQMD has partial delegation of PSD authority from the U.S. EPA depending on the calculation methodology and plant wide applicability limits. SCAQMD does not consider MPP a major source and the proposed changes do not constitute a major amendment in and of itself. Therefore, PSD requirements do not apply to the proposed changes.
Regulation XVII Prevention of Significant Deterioration (PSD) Rule 1714	Prevention of Significant Deterioration (PSD) for Greenhouse Gases (GHGs)—GHGs are regulated pollutants under the PSD major source permitting program. A GHG analysis under PSD is only required when a source triggers PSD review for criteria pollutants. There is no proposed change to the GHG PTE and a PSD GHG review is not required.

Applicable LORS	Description and Compliance
Regulation XX Regional Clean Air Incentives Market (RECLAIM) Rule 2005	New Source Review for RECLAIM—Establishes requirements for new or modified facilities subject to the RECLAIM program. BACT is required for a modified source resulting in specified emission increases. SCPPA does not propose an increase to the existing emission limits. However, during the one-time recommissioning period, hourly NOx emissions will be higher than the BACT limits in the SCAQMD-issued permit and the Energy Commission license because recommissioning may occur without full SCR control. Per SCAQMD, an operation exempt from BACT requirements does not trigger BACT. After recommissioning, the turbine would return to normal operation and there would be no change to the emission profile. SCAQMD determined the equipment is not subject to BACT, additional RECLAIM, or modeling NOx requirements per SCAQMD rules and regulations. See analysis for further discussion.
Regulation XXX Title V Permits Rule 3003	Applications—Establishes application procedures for facilities subject to Title V requirements. MPP is a Title V facility. The SCAQMD determined that the requested amendment is a minor permit revision since there would be no increase in emissions or significant change in permit conditions. The revisions require a 45-day U.S. EPA review period.

ANALYSIS

Operation Summary and Emissions Analysis

The upgrade would allow the MPP facility to generate power over a wider operating range of the gas turbine from the Minimum Emissions Compliance Load (MECL) of about 27 percent of full load to the full load. The ability to operate over a broader range would increase the operating flexibility of the MPP to integrate better with intermittent renewable energy resources (e.g. wind and solar). SCPPA stated they would continue to meet all emission limits and would not increase fuel input limits, power generating capacity, and potential to emit for criteria pollutants, greenhouse gases, and air toxics.

The combustion turbine was equipped with Dry Low NOx (DLN2.6e) combustors before the 2020 upgrade. The 2020 upgrade project included the upgrade of the combustors to the DLN2.6+ Axial Fuel Staging (AFS) combustion system. DLN2.6+ adds an advanced fuel nozzle to the DLN2.6+ system architecture, which combines the fuel injection ports into the swirler vanes, all within the fuel nozzle body, to provide a better mixed, more stable combustion zone. The asymmetric fuel strategy allows the DLN2.6+ to maintain low emission levels and also allow the unit to operate at lower loads.

Both the SCAQMD and CEC staff analyzed the MPP 2020 upgrade project previously. The SCAQMD issued modified Title V permit for MPP on January 10, 2020 (SCAQMD 2020). Energy Commission issued the Statement of Staff Approval of Proposed Change for MPP on February 12, 2020.

MPP completed the upgrade project in February 2020. On March 4, 2020, during the recommissioning phase, GE identified an issue with flexible piping belonging to the AFS

system installed during the upgrade project. GE personnel determined that the flexible pipes were seeing stresses greater than what was modeled during the design of the MPP gas turbine upgrade. GE has placed MPP into a temporary configuration, which includes the disabling of the AFS system. Because the AFS system was disabled, the gas turbine cannot be turned down to MECL of 27 percent load. BWP will continue to operate the MPP with temporary configuration until the redesigned parts are installed and tested by GE.

SCPPA provided data showing that the 2020 recommissioning operation complied with the permit conditions specified in the SCAQMD 2020 modified Title V permit and the CEC 2020 Statement of Staff Approval of Proposed Change for the MPP upgrade project. The conditions include: (a) Recommissioning shall not exceed 312 turbine operating hours and 402 million standard cubic feet (mmscf) of fuel use, (b) NO_x emissions during recommissioning shall not exceed 198 pounds per hour (lbs/hr) and 5,657 total lbs, and (c) CO emissions during recommissioning shall not exceed 84 lbs/hr, 792 lbs in any one day, and 1,909 lbs total.

The SCPPA expected that the redesigned parts would be ready for installation by January 2021 during the Major Inspection of the MPP. The combustors would be upgraded/modified with an AFS system. GE will perform the complete enhancement work in two phases: 1) hardware and software modifications to the gas turbine combustor system, and 2) recommissioning of the upgraded gas turbine. SCPPA expected Phase 1 to start by the end of January 2021 and would be completed by the middle of March 2021. Phase 2 is expected to start by the middle of March 2021 and would be completed in about 11 days.

SCPPA states that the construction activity during the 2021 upgrade will not result in any changes in the construction phase air emissions. A minimal amount of construction equipment would be needed for the construction related activities and the equipment would be placed on the existing paved site. Therefore, the 2021 upgrade work would not require grading activity that would require ground disturbance. The upgrade is expected to be completed within the duration of the normal overhaul outage activity, which typically occur every four years. No additional workers or heavy equipment would be required. The construction activity and equipment used for the proposed project upgrade would be temporary and stationary source air permits would not be required through the SCAQMD. Any diesel equipment used would be required to comply with State of California diesel regulations. As applicable, SCPPA would be required to use diesel equipment registered through the Statewide Portable Equipment Registration Program or Diesel Off-road On-line Reporting System and associated equipment permits would need to be retained onsite. Therefore, staff does not expect significant impacts to air quality from the associated short-term construction activity.

During the planned 2021 recommissioning phase, the turbine would be operated about 159.6 hours with 214 million standard cubic feet (mmscf) of natural gas fuel use. There would be about 66.2 hours of turbine downtime, for a total of 225.8 hours over the course of 11 days. During the 2020 recommissioning phase, the gas turbine was operated for 187

hours, which is less than the permitted 312 recommissioning hours. Testing conducted in February/March 2020 was limited to primarily unfueled AFS operation because of hardware durability risks with fuel supply. Unfueled AFS turndown testing in 2021 would be reduced. However, most/all of the fueled AFS testing at higher loads would be performed in 2021. SCPPA proposes to reduce the limit for recommissioning duration from 312 hours permitted for the 2020 upgrade work to 159.6 hours for the 2021 upgrade work. In addition, SCPPA proposes to reduce the fuel use limit for the recommissioning period from 402 mmscf permitted for the 2020 upgrade work to 214 mmscf for the 2021 upgrade work. These changes would be incorporated in Conditions of Certification **AQ-22**, **AQ-23**, and **AQ-25**.

SCPPA states that while the SCR and CO catalyst systems would be operational during the recommissioning period, they may not be able to operate at their full control efficiencies when the gas turbine operates at low loads during the recommissioning operation. Similar to startup and shutdown operations, MPP would not be able to meet the BACT emission requirements for normal steady-state CTG operations during the entire recommissioning period. SCAQMD determined that the recommissioning period is exempt from BACT requirements for steady state operations.

The recommissioning (tuning) operation would involve all of the steps from the first start of the gas turbine after the modification of the gas system through the contractual performance testing. GE provided a schedule for recommissioning of the upgraded MPP. GE also provided performance data for the recommissioning event over five basic operating load cases: 10 percent, 25 percent, 35 percent, 50 percent, and 90 percent load cases. The recommissioning stack exhaust emissions and stack temperatures were developed by Fossil Energy Research Corporation (FERCo).

Air Quality Table 2 includes the estimated fuel use and emissions for the five load scenarios for the 2021 recommissioning operations. The estimated maximum hourly emission rate during recommissioning (shown as **bold** in **Air Quality Table 2**) would occur at a different load for NO_x than CO or VOC. The maximum hourly NO_x, CO, and VOC emissions estimated for the 2021 recommissioning operations would be the same as those estimated for the 2020 recommissioning operations. **Air Quality Table 2** does not include PM₁₀ and SO_x emissions because these emissions depend on fuel use, which would be lower during recommissioning compared to the normal operation.

Air Quality Table 2
Fuel Use and Stack Emissions for Five Basic Gas Turbine Load Scenarios during 2021 Recommissioning (Tuning) Operations

Case	Nominal Load (%)	Fuel Flow (HHV [MMBtu/hr])	Stack Emissions (lbs/hr)			Stack Temperature (°F)
			CO	NOx	VOC	
1	10	564.03	35.12	98.71	18.86	191.47
2	25	826.12	34.69	155.94	15.61	196.40
3	35	992.08	55.64	11.93	43.76	199.69
4	50	1,204.41	3.35	8.44	0.18	204.62
5	90	1,732.58	2.97	12.56	0.29	217.77

Sources: SCAQMD 2021a and SCPPA 2021

Air Quality Table 3 compares the maximum hourly emissions from the initial commissioning, startup, shutdown, estimated recommissioning emissions, normal turbine operations with and without duct firing, and the proposed recommissioning limits. Staff notes the hourly startup emission rates listed in **Air Quality Table 3** are average rates over the 6-hour startup period. The maximum hourly emission rate could be higher during a given startup hour. The hourly shutdown emission rates are shown as double the emissions in each shutdown event of 0.5 hour. SCPPA stated the duct burners would not be in operation during the recommissioning period.

Air Quality Table 3
Maximum Hourly Emissions by Pollutant for All Operations

Operating Scenario	Maximum Hourly Emissions (lbs/hr)				
	NOx	CO	VOC	PM10	SOx
Normal (No duct firing)	13.18	8.02	4.58	11.79	1.28
Normal (With duct firing)	17.48	10.64	6.08	16.22	1.70
Startup	73.33	83.33	5.00	11.79	1.28
Shutdown	50	240	34	11.79	1.28
Original Commissioning	192.1	200.0	13.64	--	--
Recommissioning	155.94	55.64	43.76	11.79	1.28
Recommissioning Limit	198	84	--	--	--

Sources: CEC 2002, CEC 2020, SCAQMD 2021a, and SCPPA 2021

Air Quality Table 3 shows that the maximum hourly manufacturer emission estimates for NOx and CO from the recommissioning period would be less than those for the original commissioning period approved by the CEC Final Decision. SCPPA estimated the maximum hourly NOx emissions during some periods of recommissioning would be higher than those during normal, startup, and shutdown operations. SCPPA estimated the maximum hourly CO emissions during periods of recommissioning would be less than those during startup and shutdown operation. SCPPA estimated the maximum hourly VOC emissions would be higher during some periods of recommissioning than those in normal, startup, shutdown

operations, and original commissioning period. The estimated maximum hourly emissions for PM10 and SOx are fuel based and are therefore the same for recommissioning and other operations. Staff notes that the recommissioning activities are considered one-time event and there are no proposed increases to the ongoing hourly emission limits during startup, shutdown, or normal turbine operations.

The maximum hourly emissions estimated for the 2021 recommissioning operations would be the same as those analyzed for the 2020 recommissioning operations. SCPPA does not propose to change the hourly recommissioning NOx limit of 198 lbs/hr and CO limit of 84 lbs/hr, which were analyzed and approved in the Energy Commission 2020 Statement of Staff Approval of Proposed Change (CEC 2020). These emission limits are higher than the manufacturer estimated hourly NOx and CO recommissioning emissions to provide a margin of safety for MPP to demonstrate compliance.

Air Quality Table 4 compares the estimated maximum daily recommissioning emissions with the current daily potential to emit (PTE) for each criteria pollutant from the turbine and duct burner. Emission estimates for both the 2020 recommissioning and 2021 recommissioning periods are included for comparison purposes. Staff notes the air quality conditions of certification do not include explicit daily emission limits for the combustion turbine and duct burner. However, the estimated maximum daily emissions for both the 2020 recommissioning and 2021 recommissioning periods would be less than the calculated daily PTE for normal operations of the existing turbine and duct burner. The current maximum daily PTE for the combustion turbine and duct burner includes one 6-hour cold start, one 0.5-hour shutdown, 12 hours of operation with duct firing, and 5.5 hours of full load operations without duct firing.

Air Quality Table 4 also shows the daily CO recommissioning limit of 792 lbs/day, which was incorporated into the air quality Condition of Certification **AQ-23** in the CEC 2020 Statement of Staff Approval of Proposed Change (CEC 2020). This limit is the calculated CO PTE based on the maximum daily emission scenario. SCPPA states that the maximum CO emissions in any one day of the 2020 recommissioning period were less than the permitted limit of 792 lbs/day. It is expected the maximum daily CO emissions during the 2021 recommissioning period would stay below the permitted limit of 792 lbs/day. SCPPA does not propose to change the permitted daily CO emissions limit of 792 lbs/day.

Air Quality Table 4
Maximum Daily Recommissioning Emissions
Compared to Current Hourly Potential to Emit

Operation	Maximum Daily Emissions (lbs/day)				
	NOx	CO	VOC	PM10	SOx
Current PTE	747.3	791.8	145.2	336.1	35.8
2020 Recommissioning	552.5	201.9	107.4	274.4	29.7
2021 Recommissioning	579.6	219.0	126.2	260.5	28.2
Recommissioning Limit	--	792	--	--	--
Comparison	Below	Below	Below	Below	Below

Sources: CEC 2020, SCAQMD 2021a, and SCPA 2021

Air Quality Table 5 compares the estimated maximum emissions for the recommissioning month with the current monthly PTE for each criteria pollutant from the turbine and duct burner. Emission estimates for both the 2020 recommissioning month and 2021 recommissioning month are included for comparison purposes.

The monthly PTE for CO, PM10, VOC, and SOx were set as limits in Condition of Certification **AQ-11**. The monthly PTE for NOx was not set as a limit. However, Condition of Certification **AQ-22** limits the NOx emissions during startups and shutdowns as well as durations and numbers of startups and shutdowns allowed in each month. Previous amendments established these limits from the evaluation of two worst-case operating scenarios. One scenario includes 720 hours of baseload operation (240 hours with duct firing and 480 hours without duct firing). The other scenario includes 5 startups and 5 shutdowns, 240 hours of operation with duct firing, and 447.5 hours of full load operation without duct firing, with a total of 720 hours of operation per month.

CEC staff and SCAQMD staff conservatively estimated the maximum monthly emissions for the recommissioning month assuming a total of 744 hours of operation, which is more than the 720 hours used previously for the emission limits calculations. The estimated 2021 recommissioning period of 225.8 hours includes 159.6 hours of operation (including 4 startups and 3 shutdowns) and 66.2 hours of downtime. The worst-case monthly operation scenario during the recommissioning month for NOx, CO, and VOCs includes the proposed recommissioning activity, 1 additional startup, 2 additional shutdowns (limit of 5 per month), 240 hours of operation with duct firing, and 271.2 hours of operation without duct firing. The worst-case monthly operation scenario during the recommissioning month for PM10 and SOx includes the proposed recommissioning activity, 240 hours of operation with duct firing, and 278.2 hours of operation without duct firing. Similarly, a total of 744 hours of operation was used in the maximum monthly emissions estimates for the 2020 recommissioning month.

Air Quality Table 5
Maximum Monthly Emissions Including Recommissioning
Compared to Current Monthly Potential to Emit

Operation	Maximum Monthly Emissions (lbs/month)				
	NOx	CO	VOC	PM10	SOx
Current PTE	12,418	9,243	3,744	9,552	1,022
2020 Recommissioning Month	11,496	5,800	2,642	7,808	832
2021 Recommissioning Month	12,374	6,908	3,388 ^a	8,654 ^b	924
Comparison	Below	Below	Below	Below	Below

Sources: CEC 2020, SCAQMD 2021a, SCPPA 2021, and Energy Commission staff analysis
Notes:

^a Energy Commission staff notes SCAQMD staff used the VOC emission rate of 620.58 lbs (SCAQMD 2021a) for the 2021 recommissioning period, which is lower than the 622.68 lbs provided by SCPPA (SCPPA 2021). SCAQMD staff agreed that 622.68 lbs should be used. However, the correction was not incorporated in the monthly VOC emission calculations in the finalized SCAQMD Statement of Basis (SCAQMD 2021a). Energy Commission staff corrected the total monthly VOC emission rate from 3,386 lbs (as shown in SCAQMD 2021a) to 3,388 lbs with the corrected VOC emissions for the 2021 recommissioning period.

^b Energy Commission staff notes SCAQMD staff used the PM10 emission rate of 1,538.85 lbs (SCAQMD 2021a) for the 2021 recommissioning period, which is higher than the 1,480.8 lbs provided by SCPPA (SCPPA 2021). SCAQMD staff agreed that 1,480.8 lbs should be used. However, the correction was not incorporated in the monthly PM10 emission calculations in the finalized SCAQMD Statement of Basis (SCAQMD 2021a). Energy Commission staff corrected the total monthly PM10 emission rate from 8,712 lbs (as shown in SCAQMD 2021a) to 8,654 lbs with the corrected PM10 emissions for the 2021 recommissioning period.

Air Quality Table 5 shows that the conservatively estimated maximum monthly emissions during both the 2020 recommissioning month and the 2021 recommissioning month would be below the current potential monthly emissions from the turbine and duct burner. SCCPA is not proposing any changes to the current monthly emission limitations.

The worst-case annual operation scenario for the 2021 recommissioning year includes the proposed recommissioning activity, 56 startups, 57 shutdowns, 1,000 hours of operation with duct firing, and 6,731.7 hours of operation without duct firing. There is no proposed change to the total annual operating profile of 8,322 annual hours of operation during a recommissioning year.

Air Quality Table 6 compares the estimated maximum annual emissions from the recommissioning year with the current annual PTE for each criteria pollutant from the turbine and duct burner. Emission estimates for both the 2020 recommissioning and 2021 recommissioning years are included for comparison purposes. **Air Quality Table 6** demonstrates the annual emissions from a year with the proposed recommissioning activity would be below the current potential annual emissions from the turbine and duct burner.

Air Quality Table 6
Maximum Annual Emissions Including Recommissioning
Compared to Current Annual Potential to Emit

Operation	Maximum Annual Emissions (lbs/year)				
	NOx	CO	VOC	PM10	SOx
Current PTE	136,744	103,435	40,649	102,546	11,072
2020 Recommissioning Year	135,506	99,800	39,437	100,519	10,851
2021 Recommissioning Year	136,384	100,907	40,183	101,365	10,943 ^a
Comparison	Below	Below	Below	Below	Below

Sources: CEC 2020, SCAQMD 2021a, SCPPA 2021, and Energy Commission staff analysis
 Note:

^a Energy Commission staff notes SCAQMD staff used the SOx emission rate of 159.4 lbs (SCAQMD 2021a) for the 2021 recommissioning period, which is lower than the 160.26 lbs provided by SCPPA (SCPPA 2021). SCAQMD staff agreed that 160.26 lbs should be used. However, the correction was not incorporated in the annual SOx emission calculations in the finalized SCAQMD Statement of Basis (SCAQMD 2021a). Energy Commission staff corrected the annual SOx emission rate from 10,942 lbs (as shown in SCAQMD 2021a) to 10,943 lbs with the corrected SOx emissions for the 2021 recommissioning period.

As noted under **Air Quality Table 5** and **Air Quality Table 6**, CEC staff made minor changes in some of the emission estimates for the 2021 recommissioning month and year provided by SCAQMD. These minor changes were inadvertently left out in the 2021 SCAQMD Statement of Basis (SCAMQD 2021a). Energy Commission staff made these minor changes in the emission estimates, but the changes would not affect the conclusions of the analysis.

Public Health

The public health impacts assessed during the licensing of the MPP indicated that the acute, chronic, and cancer risk associated with the operation of the MPP were below the significance impact levels (CEC 2002). Air toxics emissions during the upgrade/recommissioning year would be less than those for the existing MPP facility because these emissions are proportional to fuel use, which would be lower during the upgrade/recommissioning year. Air toxics emissions after the upgrade/recommissioning year are expected to be the same as those for the existing MPP facility. Therefore, no significant public health impacts are expected from the proposed upgrade to the MPP facility.

Greenhouse Gas Emissions

Greenhouse gas (GHG) emissions during the upgrade/recommissioning year would be less than the emissions for the existing MPP facility because fuel use would be lower during the upgrade/recommissioning year. There would be no change in the GHG emissions on a future PTE compared to existing PTE basis for the proposed modification.

Revised Conditions of Certification for the 2021 Upgrade

The SCAQMD issued an updated Title V permit for the 2021 upgrade work (SCAQMD 2021b). Staff reviewed the updated Title V permit and agreed with the changes made in the permit conditions. Staff proposes to incorporate these changes in the air quality conditions of certification.

To incorporate the changes in permit condition A195.2, staff proposes to revise the allowable limits on recommissioning time, fuel use, and NOx emissions in Condition of Certification **AQ-22**. To incorporate the changes in permit condition A195.3, staff proposes to revise the allowable limits on recommissioning time, fuel use, and CO emissions in Condition of Certification **AQ-23**. To incorporate the changes in permit condition A195.4, staff proposes to revise the allowable limits on recommissioning time and fuel use in Condition of Certification **AQ-25**. The revised limits would be lower than those in the current condition.

To distinguish the limits on annual operation hours for the 2020 and 2021 recommissioning years, SCAQMD added clarification language in permit condition C1.5 for the 2020 recommissioning year and a new permit condition C1.6 for the 2021 recommissioning year. To incorporate the changes in permit condition C1.5, staff proposes to add the clarification language regarding the annual operating time limit for the 2020 recommissioning year in Condition of Certification **AQ-2a**. Staff proposes to incorporate the new permit condition C1.6 as a new Condition of Certification **AQ-2b** to specify the annual operating time limit for the 2021 recommissioning year.

Other conditions of certification would remain the same.

CONCLUSIONS AND RECOMMENDATIONS

Staff recommends approval of the modification to the combustor system to improve combustion turbine generator-turndown with accompanying changes to the air quality conditions of certification. These changes would not require additional mitigation in the form of offsets or RECLAIM trading credits. All proposed changes would conform with the applicable LORS related to air quality and would not result in significant air quality impacts. The SCAQMD has analyzed requested changes and incorporated the changes into the SCAQMD-issued Title V permit.

AMENDED CONDITIONS OF CERTIFICATION

The modifications to the Air Quality Conditions of Certification are included below. **Bold underline** indicates new language. ~~Strikethrough~~ indicates deleted language.

AQ-2a The project owner shall limit the ~~operation~~ **operating time** to no more than 7,914 hours in any 12 months.

The limit applies only to the 12-month period ~~which encompasses recommissioning~~ **beginning from the start of the recommissioning operation in 2020**. The hours counted towards the limit shall include normal operation with and without duct firing and start up and shutdown time but does not include operation during recommissioning.

[Rule 1303(b)(1)-~~BACT~~**Modeling**; Rule 2005]

[Devices subject to this condition: D4]

Verification: The project owner shall submit data on the hourly operation to the CPM to demonstrate compliance with the 7,914 annual hour operation limit in the applicable Quarterly Operation Reports until no portion of the 12-month period includes recommissioning. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-2b The project owner shall limit the operating time to no more than 8,096 hours in any 12-month period.

The limit applies only to the 12-month period beginning from the start of the recommissioning in 2021. The hours counted towards the limit shall include normal operation with and without duct firing and start up and shutdown time but does not include operation during recommissioning.

[Rule 1303(b)(1)-Modeling; Rule 2005]

[Devices subject to this condition: D4]

Verification: The project owner shall submit data on the hourly operation to the CPM to demonstrate compliance with the 8,096 annual hour operation limit in the applicable Quarterly Operation Reports until no portion of the 12-month period includes recommissioning. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-22 The project owner shall limit NOx emissions to 2.0 ppmv. The 2.0 ppmv NOx emission limit is averaged over 3 hours at 15 percent oxygen, dry.

The 2.0 PPM NOx emission limit shall not apply during startup, recommissioning, and shutdown periods. Startup time shall not exceed 6 hours per startup per day. NOx emissions during the 6 hours after commencement of a startup shall not exceed 440 lbs. Shutdown time shall not exceed 30 minutes per shutdown per day. NOx emissions during the 30 minutes prior to the conclusion of a shutdown shall not exceed 25 lbs. The project owner shall limit the number of startups to 5 per month.

The project owner shall keep records of the date, time and duration as well as minute-by-minute data (NO_x, CO, and O₂ concentration and fuel flow rate at a minimum) of each startup and shutdown.

Recommissioning is a one-time event that shall not exceed ~~312~~-**159.6** turbine operating hours and ~~402~~-**214** mmscf of fuel use. **Once started, the recommissioning shall be completed within 60 days.** The NO_x emissions during recommissioning shall not exceed 198 lbs/hr and ~~5,657~~ **4,115** total lbs as determined through use of the certified CEMS.

The project owner shall keep records of the date and time the turbine is operated during recommissioning, the duration of the operation, the fuel use and the NO_x and CO emissions. The project owner shall notify SCAQMD prior to the start of the recommissioning operation and at the conclusion of the recommissioning operation.

[Rule 2005]

[Devices subject to this condition: D4, D6]

Verification: The project owner shall submit to the CPM CEMS data and emissions calculations to demonstrate compliance for the NO_x limits in Quarterly Operation Reports. The project owner shall submit to the CPM CEMS data and fuel use data to demonstrate compliance with NO_x emission limits and fuel usage during the one-time recommissioning event in any applicable Quarterly Operation Report. The project owner shall submit to the CPM monthly start up and shutdown data to demonstrate compliance with the monthly limit on the number of startups and startup and shutdown duration requirements in the Quarterly Operation Reports. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-23 The project owner shall limit CO emissions to 2.0 ppmv. The 2.0 ppmv CO emission limit is averaged over 1 hour at 15 percent oxygen, dry.

The 2.0 PPM CO emission limit shall not apply during startup, recommissioning, and shutdown periods. Startup time shall not exceed 6 hours per startup per day. Shutdown time shall not exceed 30 minutes per shutdown per day. CO emissions during the 30 minutes prior to the conclusion of a shutdown shall not exceed 120 lbs. The project owner shall limit the number of startups to 5 per month.

The project owner shall keep records of the date, time and duration as well as minute-by-minute data (NO_x, CO, and O₂ concentration and fuel flow rate at a minimum) of each startup and shutdown.

Recommissioning is a one-time event that shall not exceed ~~312~~-**159.6** turbine operating hours and ~~402~~-**214** mmscf of fuel use. **Once started, the recommissioning shall be completed within 60 days.** The CO emissions during recommissioning shall not exceed 84 lbs/hr, 792 lbs in any one day, and ~~1,909~~-**1,439** lbs total as determined through use of the certified CEMS.

The project owner shall keep records of the date and time the turbine is operated during recommissioning, the duration of the operation, the fuel use, and the NOx and CO emissions. The project owner shall notify SCAQMD prior to the start of the recommissioning operation and at the conclusion of the recommissioning operation.

[Rule 1303(a)(1)-BACT]

[Devices subject to this condition: D4, D6]

Verification: The project owner shall submit to the CPM CEMS data and emissions calculations to demonstrate compliance for the CO limits in Quarterly Operation Reports. The project owner shall submit to the CPM CEMS data and fuel use data to demonstrate compliance with CO emission limits and fuel usage during the one-time recommissioning event in any applicable Quarterly Operation Report. The project owner shall submit to the CPM monthly start up and shutdown data to demonstrate compliance with the monthly limit on the number of startups and startup and shutdown duration requirements in the Quarterly Operation Reports. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-25 The project owner shall limit VOC emissions to 2.0 ppmv. The 2.0 ppmv VOC emission limit is averaged over ~~60 minutes~~-**1 hour** at 15 percent oxygen, dry. The 2.0 VOC emission limit shall not apply during recommissioning. Recommissioning is a one-time event that shall not exceed ~~312~~-**159.6** turbine operating hours and ~~402~~-**214** mmscf of fuel use. **Once started, the recommissioning shall be completed within 60 days.**

The project owner shall keep records of the date and time the turbine is operated during recommissioning, the duration of the operation, the fuel use, and the NOx and CO emissions. The project owner shall notify AQMD prior to the start of the recommissioning operation and at the conclusion of the recommissioning operation.

[Rule 1303(a)(1)-BACT]

[Devices subject to this condition: D4, D6]

Verification: The project owner shall submit to the CPM emissions calculations to demonstrate compliance with the VOC limits in Quarterly Operation Reports. The project

owner shall submit to the CPM the turbine operating hours and fuel use data to demonstrate compliance with the operating hour and fuel usage limits during the one-time recommissioning event in any applicable Quarterly Operation Report. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

REFERENCES

- CEC 2002** – California Energy Commission, Final Staff Assessment (TN 26908), Magnolia Power Project, Application for Certification (01-AFC-6), October 2002.
- CEC 2020** – California Energy Commission, Statement of Staff Approval of Proposed Change (TN 232017), Magnolia Power Project (01-AFC-06C), February 12, 2020.
- SCAQMD 2020** – South Coast Air Quality Management District, Title V permit Renewal and RECLAIM/Title V Permit Revision (TN 231572), January 10, 2020.
- SCAQMD 2021a** – South Coast Air Quality Management District, Statement of Basis, Proposed Minor Permit Revision (TN 236825), dated January 22, 2021.
- SCAQMD 2021b** – South Coast Air Quality Management District, MPP Title V Permit Issued January 28, 2021 (TN 236747).
- SCPPA 2019** – Southern California Public Power Authority, Petition to Amend Magnolia Power Project (MPP) Upgrade Southern California Public Power Authority (TN 230510). November 5, 2019.
- SCPPA 2021** – Southern California Public Power Authority, Petition to Amend, Magnolia Power Project (MPP) Upgrade, Part 2, 2021 (TN 236612), dated January 2021, docketed February 3, 2021.