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June 10, 2025

Mr. Jeffery Bland, P.E.
Air 1 Branch Chief
Mississippi Department of Environmental Quality
Environmental Permits Division
PO Box 226
Jackson, MS 39225-2261

Subject: Preconstruction and PSD Air Permit Application
Entergy Mississippi, LLC - Madison County Advanced Power Station
Ridgeland, Madison County, Mississippi

Mr. Bland:

On behalf of Entergy Mississippi, LLC (EML), Entergy Services, LLC hereby submits the enclosed hard copy of the above-referenced air permit application with original signatures. EML is proposing to build a new, highly efficient, combined cycle combustion turbine power plant in Ridgeland, Mississippi which will be called the Madison County Advanced Power Station (MCAPS).

In accordance with Mississippi Department of Environmental Quality (MDEQ) procedures, an electronic version of this application has already been submitted via MDEQ's web portal. As requested by MDEQ, an Air Dispersion Modeling Protocol for the MCAPS project was submitted prior to this application submittal.

EML appreciates your efforts to expeditiously process this application. If you have any questions or concerns, please don't hesitate to reach out to me at 972-743-9649 or jhallan@entergy.com.

Sincerely,

Jeremy Halland
Manager -Environmental Project Services
Entergy Services, LLC

Enclosure

June 2025

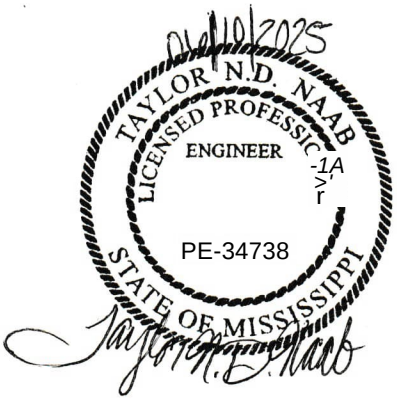
PRECONSTRUCTION AND PREVENTION OF SIGNIFICANT DETERIORATION AIR PERMIT APPLICATION

Entergy Mississippi, LLC
Madison County Advanced Power Station
Ridgeland, Madison County, Mississippi

Submitted To:
Mississippi Department of Environmental Quality
Environmental Permits Division
PO Box 2261
Jackson, MS 39225-2261

PROJECT NUMBER:
0257075

POWER ENGINEERS
MEMBER OF WSP



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1.0 INTRODUCTION / APPLICATION OVERVIEW

Entergy Mississippi, LLC (EML) is proposing to build a new natural gas-fired 1x1 combined cycle power plant on a greenfield site in Ridgeland, Madison County, Mississippi. The proposed new base load power plant will be referred to as the Madison County Advanced Power Station (MCAPS). The new plant is nominally rated to provide 750 megawatts (MW) of net power at the International Organization for Standardization (ISO) 3977 ambient conditions of 59 degrees Fahrenheit (°F), 1 atmosphere and 60% relative humidity. At colder temperatures MCAPS will have a higher power output.

The entire state of Mississippi is currently classified as in attainment/unclassifiable with all National Ambient Air Quality Standards (NAAQS). Because of this, this application is not required to address Nonattainment New Source Review (NNSR) for any New Source Review (NSR) regulated pollutant. As shown in the Area Map and Plot Plan in Section 2.2 and 2.3, respectively, the MCAPS will be located on a greenfield site. MCAPS will therefore be permitted as a new electric generating unit (EGU) (and not under any existing air permit). Under the federal NSR program, as described in Section 4.1, the MCAPS project will be a new major source that requires Prevention of Significant Deterioration (PSD) permitting for the NSR-regulated pollutants nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), particulate matter (PM_{10} and $PM_{2.5}$), sulfuric acid mist (SAM or H_2SO_4), and greenhouse gases (GHG – expressed as CO_2e).

The power generation equipment proposed for the MCAPS includes a Mitsubishi Model M501JAC Combustion Turbine (CT) equipped with supplementary-fired duct burners and a Heat Recovery Steam Generator (HRSG). In addition to power from a generator turned by the gas turbine shaft, additional power is supplied by a generator turned by a steam turbine which is fed steam generated in the HRSG. Final condensation of steam exiting the steam turbine is accomplished using air-cooled condensers. No cooling towers will be present at MCAPS. At the 59°F ISO design case, the MCAPS 1x1 combined cycle EGU will have a highly efficient gross heat rate of 6,396 British thermal units per kilowatt-hour on a higher heating value basis (BTU/kWh-HHV), which equates to a high net thermal efficiency of 51.8% (HHV).

The proposed emission controls for the gas turbine flue gas includes an ammonia-based Selective Catalytic Reduction (SCR) system to reduce NO_x emissions, and a catalytic oxidation unit to reduce CO and VOC emissions. The specified control levels of the SCR and catalytic oxidation systems result in the following combustion turbine flue gas pollutant concentrations:

- NO_x 2.0 parts per million by volume, dry (ppmvd) at 15% oxygen (O_2)
- CO 2.0 ppmvd at 15% O_2
- VOC 1.5 ppmvd at 15% O_2

Emissions of GHG are limited by using natural gas as a fuel and installing a power generation system with a high thermal efficiency. The emission control equipment and system design components proposed for the MCAPS gas turbine system meet PSD Best Available Control Technology (BACT) requirements as shown in Section 7.0.

The proposed MCAPS facility will have other ancillary sources of air pollution. This includes but is not limited to emissions from a natural gas-fired dewpoint heater to heat the natural gas fuel fed to the gas turbines and duct burners, diesel-fired internal combustion (IC) engines in support of emergency standby power generation and emergency fire pump operations, diesel storage

tanks, natural gas condensate storage tanks, lube oil system vents, diesel, natural gas and ammonia fugitive emissions, and maintenance, startup, and shutdown activities. The emission control and/or design components of the ancillary emission sources at the MCAPS meet PSD BACT requirements as demonstrated in Section 7.0.

» Appendix A contains the supporting air emission calculations and the PSD applicability analysis for this preconstruction/PSD application.

» Appendix B contains all required Mississippi Department of Environmental Quality (MDEQ) permit application forms. Where required, these forms are signed by an EML Responsible Official.

» Appendix C contains information from the United States Environmental Protection Agency's (USEPA's) RACT/BACT/LAER Clearinghouse (RBLC) database and other supporting BACT information.

» Appendix D contains control equipment cost evaluations used in the BACT selection process and supporting information.

» Appendix E contains the proposed PSD Air Dispersion Modeling Protocol for MDEQ's review and approval. When finalized, the dispersion modeling results will be presented in Section 8.0.

» Appendix F will contain the PSD air quality demonstration report. Appendix F is blank for now, but it will be provided to MDEQ under separate cover after MDEQ approves the dispersion modeling protocol and all final modeling runs have been completed.

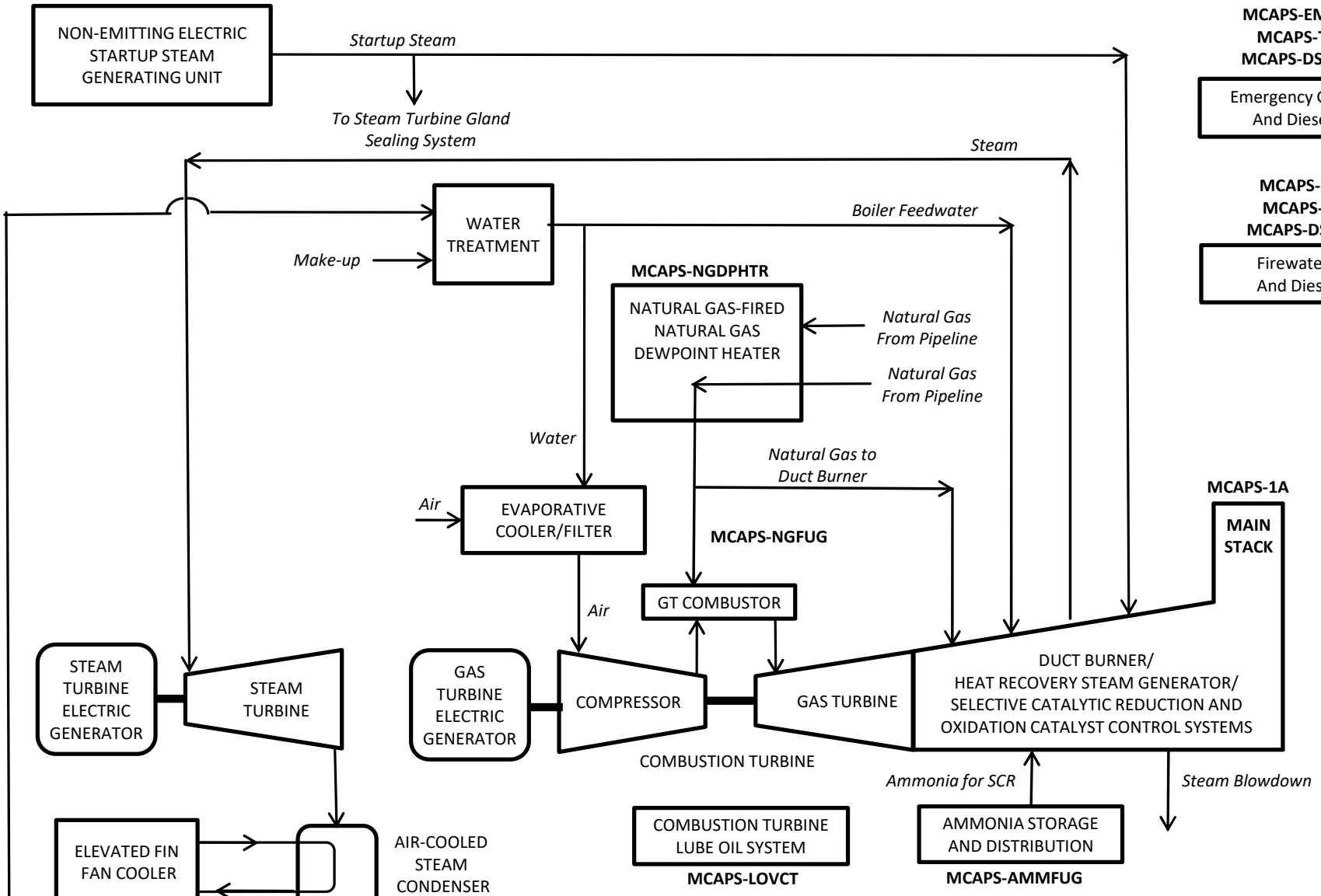
» Appendix G contains a report describing the results of an Environmental Justice (EJ) screening analysis.

» Appendix H contains vendor performance information and USEPA certifications for the two diesel-fired IC engines that will be in emergency service.

» Appendix I, as required by MDEQ's air permit application instructions, contains a Certificate of Good Standing for Entergy Mississippi, LLC obtained from the Mississippi Secretary of State.

2.0 APPLICATION FIGURES

2.1 Process Flow Diagram



ENTERGY MISSISSIPPI, LLC
MADISON COUNTY ADVANCED POWER STATION (MCAPS)

FIGURE 2.1
PROCESS FLOW DIAGRAM

POWER ENGINEERS
MEMBER OF WSP

Project No:	Date	Sheet
0257075	4/11/2025	1 of 1

2.2 Area Map

Legend

- Facility Boundary
- 3000' Radius

0 1,000 2,000
Feet

ENTERGY MISSISSIPPI, LLC
MADISON COUNTY ADVANCED POWER STATION

FIGURE 2.2: AREA MAP

MADISON COUNTY, MISSISSIPPI

POWER ENGINEERS

Date: 4/18/2025

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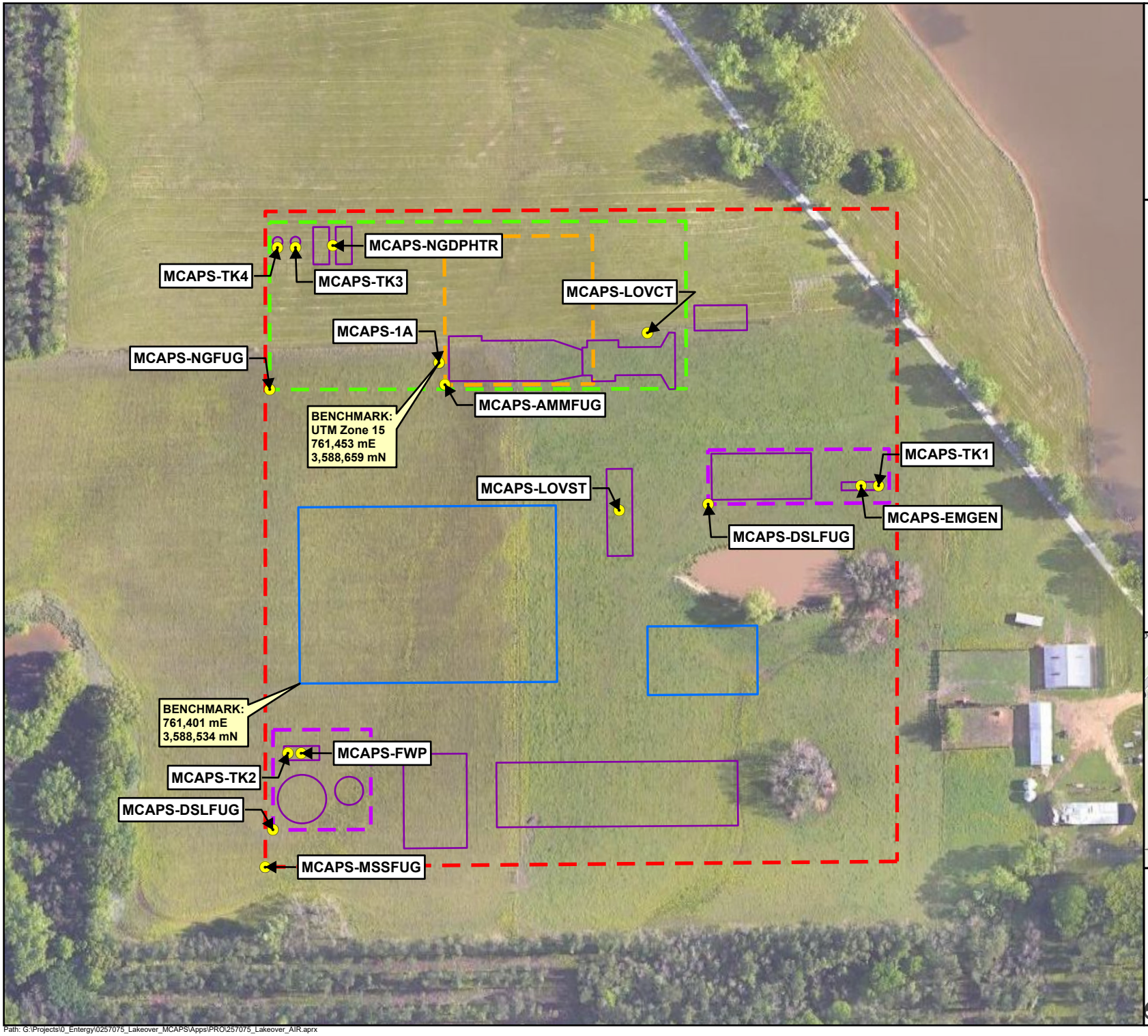
2.3 Plot Plan



ENTERGY MISSISSIPPI, LLC
MADISON COUNTY ADVANCED POWER STATION

PLOT PLAN

MADISON COUNTY, MISSISSIPPI

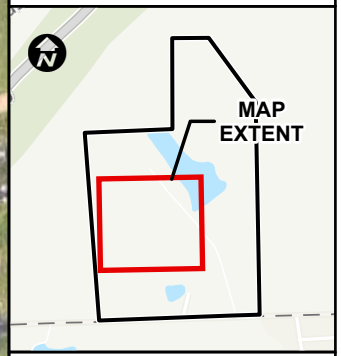
Legend

- EPN Location
- Elevated Fin Fan Coolers
- Proposed Structure
- Fenceline

Fugitive Area

- MCAPS-DSLFUG
- MCAPS-MSSFUG
- MCAPS-AMMFUG
- MCAPS-NGFUG

Aerial Source:
Google Earth Pro Basemap



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POWER ENGINEERS

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3.0 PROJECT AND PROCESS DESCRIPTION

As described in Section 1.0 and shown in Figure 2.1, EML's proposed MCAPS will be a new 750-megawatt natural gas-fired 1x1 combined cycle base-load power plant in Ridgeland, Madison County, Mississippi. The air emission sources associated with the proposed MCAPS facility are shown in Table 3.1.

TABLE 3.1 PROPOSED MADISON COUNTY ADVANCED POWER STATION AIR EMISSION SOURCES

EMISSION POINT ID	AIR EMISSION SOURCE DESCRIPTION
MCAPS-1A	COMBINED CYCLE UNIT 1A
MCAPS-EMGEN	EMERGENCY DIESEL STANDBY GENERATOR
MCAPS-FWP	EMERGENCY DIESEL FIREWATER PUMP
MCAPS-NGDPHTR	NATURAL GAS DEWPOINT HEATER
MCAPS-NGFUG	NATURAL GAS FUGITIVE EMISSIONS
MCAPS-AMMFUG	AMMONIA FUGITIVE EMISSIONS
MCAPS-DSLFUG	DIESEL FUGITIVE EMISSIONS
MCAPS-LOVCT	COMBUSTION TURBINE LUBE OIL VENT
MCAPS-LOVST	STEAM TURBINE LUBE OIL VENT
MCAPS-TK1	EMERGENCY GENERATOR DIESEL TANK 1 – 4,150 GAL
MCAPS-TK2	EMERGENCY FIREWATER PUMP DIESEL TANK 2 – 500 GAL
MCAPS-TK3	NATURAL GAS CONDENSATE TANK 3 – 400 GAL
MCAPS-TK4	NATURAL GAS CONDENSATE TANK 4 – 400 GAL

3.1 Combustion Turbine, Duct Burner, and Steam Turbine Operations

As shown in Figure 2.1, the power generation equipment proposed for the MCAPS includes a Mitsubishi Model M501JAC CT equipped with supplementary-fired duct burners and an HRSG. To boost the output power and thermal efficiency of the gas turbine, the combustion air fed to the CT compressor can be saturated with water in an evaporative cooler at various times, predominantly during warm weather conditions. In addition to power from a generator turned by the gas turbine shaft, power is produced by a steam turbine generator which is fed steam generated in the HRSG. Final condensation of steam exiting the steam turbine is accomplished using air-cooled condensers. No cooling towers will be present at MCAPS. At the 59°F ISO design case (represented as Case 4a in the calculations), the MCAPS 1x1 combined cycle unit will have an efficient gross heat rate of 6,396 BTU/kWh-HHV), which equates to a relatively high net thermal efficiency of 51.8% (HHV basis). The maximum firing rates of the CT and duct burner are 4,120 million (MM) Btu/hr-HHV, and 863 MMBtu/hr-HHV, respectively, at a cold weather ambient temperature firing condition of 10°F (Case 1a). The CT and duct burners will be permitted to operate continuously (8,760 hours per year). Numerous performance scenarios are presented in Table A-2 in Appendix A and associated emissions have been calculated for each operating scenario.

CT and duct burner combustion flue gas exits the main stack (MCAPS-1A) after passing through the emission control equipment. Proposed emission controls for the flue gas out of the main stack includes an ammonia-based SCR system to reduce NO_x emissions and a catalytic oxidation unit to reduce CO and VOC emissions. Emissions of GHGs are limited by using natural gas as a fuel and installing a power generation system with a high thermal efficiency. The emission control equipment and system design components proposed for the MCAPS CT system meet PSD BACT requirements as demonstrated in Section 7.0.

3.2 Lubrication Oil Recirculation Systems

The new combustion turbine and steam turbine will each be equipped with a dedicated lubrication system. Lubrication oil will be circulated through each turbine's machinery from the system's oil sumps. The oil sumps will be equipped with a vent that will be controlled by an oil mist eliminator. Emissions from the oil mist eliminators are based on lube oil replacement rates for similar units equipped with mist eliminators. Both VOCs and PM are expected to be emitted from the combustion turbine lube oil vent (MCAPS-LOVCT) and the steam turbine lube oil vent (MCAPS-LOVST). The lube oil vents will be permitted to operate continuously (8,760 hours per year).

3.3 Natural Gas System and Dewpoint Heater Operations

Pipeline quality natural gas will be delivered to the site via pipeline where it is metered and piped to the natural gas-fired units. natural gas fuel to the CT will be indirectly heated in a small 5.01 MMBtu/hr natural-gas fired dewpoint heater (MCAPS-NGDPHTR). The dewpoint heater will be permitted to operate continuously (8,760 hours per year).

3.4 Combined Cycle Unit Startup/Shutdown Operations

Startup/Shutdown (SU/SD) of the proposed combined cycle unit will occur infrequently as MCAPS will be a base load power plant. Startup is defined as the period beginning when the CT receives a "turbine start" signal and an initial flame detection signal is recorded in the plant's control system and ending when the combustion turbine output reaches minimum sustainable load, which is typically the point at which the unit reaches the lean pre-mix operating mode. In general, a startup is considered accomplished when the CT reaches 50% of full load. The shutdown period is defined as the period beginning when the gas turbine receives a "turbine stop" command and the generator output drops below the minimum stable load and ending when a flame detection signal is no longer recorded in the plant's control system. SU/SD emissions from the combined cycle unit are emitted from the main stack (MCAPS-1A) and are accounted for in the annual emission limits for this point source. The SCR and catalytic oxidation units will be coming up to temperature and not fully operational during SU/SD; therefore, SU/SD emissions are not controlled.

Higher-than-normal emissions from the main stack (MCAPS-1A) may occur during CT tuning and optimization maintenance activities. In addition to CT optimization during the commissioning period, the CT's fuel system requires periodic tuning, including after major overhauls, to maintain compliance with manufacturer's specifications for emissions and combustion dynamics. The turbine tuning is conducted across the combustor's load range and according to manufacturer recommendations to minimize NO_x and CO production while ensuring combustor stability. During CT tuning and optimization activities, the combustion turbine CO and NO_x emissions will be limited to the same levels as SU/SD.

3.5 Diesel-fired Emergency Internal Combustion Engines

The MCAPS is proposing to have two emergency diesel-fired IC engines. As described in Sections 4.3 and 5.2, the engines will be limited 100 hours per year of operation or less in non-emergency operating modes due to the engines' emergency classification status. The engines will not be constrained by an operating limit for legitimate emergency operating modes. Appendix H contains vendor performance information and USEPA New Source Performance Standards (NSPS) Subpart IIII certifications for the two diesel-fired IC engines that will be in emergency service.

One emergency diesel-fired IC engine powers a 2,180-kilowatt (kW) emergency standby generator. The engine is a Mitsubishi Model S16R-Y2PTAW2-1 with a 2,923-brake horsepower (BHP) rating. As required by regulation, the engine will only fire Ultra Low Sulfur Diesel (ULSD) with a maximum sulfur content of 15 parts per million by weight (ppmw). The engine will be a Tier 2 USEPA-certified NSPS-compliant engine which is approved by regulation for emergency service operations.

The other emergency diesel-fired IC engine powers a 235-kW emergency firewater pump. The engine is a John Deere Model 6068HFC48A with a 282 BHP rating. As required by regulation, the engine will only fire ULSD with a maximum sulfur content of 15 ppmw. The engine will be a Tier 3 USEPA-certified NSPS-compliant engine which is approved by regulation for emergency service.

3.6 Diesel, Natural Gas Condensate, and Ammonia Storage Tanks

MCAPS is proposing to have two fixed-roof diesel storage tanks. Each tank will provide ULSD fuel to one of the two emergency IC engines. The tank that will supply ULSD to the emergency generator is a 99-barrel (bbl) (4,150-gallon) white, horizontal fixed-roof tank (MCAPS-TK1). The tank that will supply ULSD to the emergency firewater pump is a 12-bbl (500-gallon) white, horizontal fixed-roof tank (MCAPS-TK2).

MCAPS is proposing to have two 400-gallon fixed-roof natural condensate tanks (MCAPS-TK3 and MCAPS-TK4). These tanks will knock out and collect natural gas condensate to prevent it from entering the CT in rare occurrences when condensate is present in the incoming pipeline natural gas.

Ammonia will be stored in a 40,000-gallon pressurized tank with no routine air emissions. Therefore, no emission point ID is assigned to the ammonia storage tank.

3.7 Fugitive Emissions

The proposed site will have piping in natural gas, diesel, and ammonia service. Potential fugitive emissions from piping components (valves, flanges, connectors, pumps, open-ended lines, and relief valves) are calculated based on a count of components and emissions factors associated with the liquid or gas/vapor service of the components. The fugitive emission sources are defined by their service as follows:

» MCAPS-NGFUG – addresses fugitive emissions of equipment components in natural gas service.
» MCAPS-AMMFUG – addresses fugitive emissions of equipment components in ammonia service.
» MCAPS-DSLFUG – addresses fugitive emissions of equipment components in diesel service.

4.0 EMISSIONS DATA AND CALCULATIONS

This section addresses the methods used to calculate potential air emissions from all emission units proposed for the site, as provided in Appendix A. Based on sitewide potential emissions of all applicable NSR regulated pollutants, an evaluation of PSD applicability is provided. The sitewide summary of potential Hazardous Air Pollutant (HAP) emissions in Appendix A shows that no single HAP has a potential emission rate greater than 10 tons per year, and all HAPs in aggregate do not have a potential emission rate greater than 25 tons per year. Therefore, the MCAPS facility will be a non-major, area source of HAP emissions.

4.1 Facility-wide Emissions Summary and PSD Applicability Analysis

The entire state of Mississippi is currently classified as in attainment/unclassifiable with all NAAQS. Therefore, this application is not required to address NNSR for any NSR-regulated pollutant. As shown in the Area Map and Plot Plan in Section 2.2 and 2.3, respectively, MCAPS will be constructed on a greenfield site. EML will therefore permit the MCAPS as a new greenfield EGU.

As shown in the site-wide potential emissions summary in Table 4.1 below, under the federal NSR program the MCAPS project will be a new major source that requires PSD permitting for the NSR-regulated pollutants NO_x, CO, VOC, PM_{10}, $PM_{2.5}$, SAM, and GHG (expressed as CO_2e). MDEQ's PSD regulation, which is codified at 11 Mississippi Administrative Code (MAC) Part 2, Chapter 5, incorporates by reference the federal PSD regulation found at 40 Code of Federal Regulations (CFR) 52.21.

TABLE 4.1 SITEWIDE POTENTIAL EMISSIONS AND PSD APPLICABILITY EVALUATION FOR EML'S PROPOSED MADISON COUNTY ADVANCED POWER STATION

NSR REGULATED POLLUTANT	NAAQS PRIMARY AND/OR SECONDARY POLLUTANT(S)	MCAPS PSD EMISSIONS FOR NSR-REGULATED POLLUTANTS (TONS/YEAR)	PSD MAJOR SOURCE SIGNIFICANT EMISSION RATES FOR NSR-REGULATED POLLUTANTS (TONS/YEAR)	NSR-REGULATED POLLUTANT SUBJECT TO PSD REVIEW?
NO_x	NO_2, OZONE, $PM_{2.5}$	222.84	40	YES
CO	CO	1,198.32	100	YES
VOC	OZONE	403.88	40	YES
PM_{10}	DIRECT PM_{10}	158.72	15	YES
$PM_{2.5}$	DIRECT $PM_{2.5}$	158.72	10	YES
SO_2	SO_2, $PM_{2.5}$	28.94	40	NO
H_2SO_4	SULFURIC ACID MIST	44.27	7	YES
GHG	GHG as CO_2E	2,533,114	75,000	YES

Note: NSR – New Source Review; NO_x – nitrogen oxides; CO – carbon monoxide; VOC – volatile organic compound; PM_{10} – particulate matter less than 10 microns in diameter; $PM_{2.5}$ – particulate matter less than 2.5 microns in diameter; SO_2 – sulfur dioxide; H_2SO_4 – sulfuric acid; GHG – greenhouse gas; NAAQS – National Ambient Air Quality Standards; MCAPS – Madison County Advanced Power Station; PSD – Prevention of Significant Deterioration

4.2 Combustion Turbine and Duct Burner Emissions

The power generation equipment proposed for the MCAPS includes a Mitsubishi Model M501JAC CT equipped with supplementary-fired duct burners and an HRSG. Oxygen for duct burner combustion operations is provided with excess oxygen present in the CT flue gas. Following the duct burner, the aggregate flue gas from the CT and duct burner is routed to SCR and catalytic oxidation emission control systems before exiting the main stack (MCAPS-1A). Annual emission rates from the main stack are based on CT/duct burner operation at ISO conditions of 59°F and 14.7 psia (Case 4a in the emission calculations in Appendix A). Maximum hourly emission rates are based on full load operation at cold weather conditions (Case 1a in the emission calculations in Appendix A). Startup and shutdown emission rates are based on vendor supplied performance levels during SU/SD operations. The emission calculations for criteria pollutants, hazardous air pollutants, and GHGs were performed as follows:

» Based on performance of the SCR system to control NO_x emissions from the CT/duct burner flue gas, NO_x emissions are based on a vendor-guaranteed performance level of a stack NO_x concentration of 2.0 ppmvd NO_x at 15% O_2.

» Based on performance of the Oxidation Catalyst system to control CO emissions for the CT/duct burner flue gas, CO emissions are based on a vendor-guaranteed performance level of a stack CO concentration of 2.0 ppmvd CO at 15% O_2.

» Based on performance of the Oxidation Catalyst system to control VOC emissions for the CT/duct burner flue gas, VOC emissions are based on a vendor-guaranteed performance level of a stack VOC concentration of 1.5 ppmvd VOC (as methane) at 15% O_2.

» Based on performance of the Oxidation Catalyst system to control formaldehyde (a key HAP) emissions for the CT/duct burner flue gas, formaldehyde emissions are based on a vendor-guaranteed performance level of a stack formaldehyde concentration of 0.091 ppmvd formaldehyde at 15% O_2.

» Based on proper operation of the SCR NO_x control system, which requires ammonia, the CT/duct burner flue gas ammonia emissions (the ammonia slip) are based on a vendor-guaranteed performance level of a stack ammonia concentration of 10 ppmvd ammonia at 15% O_2.

» CT/duct burner SO_2 annual emissions are calculated via a material balance using an annual-average natural gas sulfur content of 0.5 grains S/100 standard cubic feet (scf). Maximum hourly SO_2 emissions are calculated via material balance using a maximum allowable natural gas sulfur content of 1.0 grain S/100 scf.

» CT/duct burner PM emissions are calculated based on a combination of the AP-42 PM (filterable) emission factor and material balance based on reactions that form sulfuric acid mist and ammonium bisulfite. These PM species form due to the presence of the ammonia slip in the flue gas and reactions which occur in the catalytic oxidation unit. PM_{10} and $PM_{2.5}$ emissions are based on vendor-guaranteed data. These emissions include both filterable and condensable particulate.

» CT/duct burner GHG emissions are calculated as follows:

- CO_2 emissions are based on 40 CFR 75 Appendix G, Equation G-4.
- Methane and nitrous oxide emissions are based on emission factors in Table C-2 of the Mandatory GHG Reporting Rule, found at 40 CFR 98.

» CT/duct burner HAP emissions are addressed as follows. A complete list of individual HAPs emitted from the main stack (MCAPS-1A) can be found in Table A-4 and A-11 in Appendix A of this application. Only individual HAPs that equal or exceed 0.01 ton per year, in addition to the total HAPs for the CT/duct burner system, are listed in Form B.3 in Appendix B. Polycyclic aromatic hydrocarbon (PAH) is not a HAP option provided in the dropdown list in Form B.3. PAH is listed as a HAP in AP-42, Table 3.1-3 which was used to calculate individual HAPs for the gas turbine/duct burner system. Also, Section 112 of the Clean Air Act lists Polycyclic Organic Matter as a HAP, and PAH is a form of Polycyclic Organic Matter. The individual emissions for PAH are greater than 0.01 ton per year but have not been included separately in Form B.3. However, PAH emissions are included in the total HAP emissions for the CT/duct burner system and can be seen in Table A-4 and A-11 in Appendix A of this application.

» During planned SU/SD periods, emissions may be released from the CT/duct burner main stack at higher rates than during normal operations. During startup, higher NO_x emissions may be produced during the transition of the combustors to low NO_x operating mode and the lining out of the SCR NO_x control system. Also, higher CO emissions during SU/SD may result due to less complete combustion as the CT/duct burner transition to normal operating modes and the lining out of the Oxidation Catalyst control system. The planned SU/SD emissions from the CT/duct burner are based on data supplied by Mitsubishi.

4.3 Diesel-fired Emergency Internal Combustion Engine Emissions

Emissions for the two proposed emergency diesel-fired IC engines are calculated as follows:

» NO_x emissions are calculated using NSPS Subpart IIII NOx emission limits for the Tier 2 NSPS-certified emergency standby generator and the Tier 3 NSPS-certified firewater pump engine. The NSPS Subpart IIII NOx limits are expressed as “NOx + Non-Methane Hydrocarbon,” which was conservatively used to calculate the NOx emissions for each diesel-fired IC engine. The NOx limit used for the emergency standby generator is 6.4 g NOx/kW-hr, while the NOx limit used for the firewater pump engine is 4.0 g/kW-hr.

» CO emissions are calculated using NSPS Subpart IIII CO emission limits for the Tier 2 NSPS-certified emergency standby generator and the Tier 3 NSPS-certified firewater pump engine. The CO limit for both the emergency standby generator and the firewater pump engine is 3.50 g CO/kW-hr.

» PM emissions (PM_{10}/$PM_{2.5}$) are calculated using NSPS Subpart IIII PM emission limits for the Tier 2 NSPS-certified emergency standby generator and the Tier 3 NSPS-certified firewater pump engine. The PM limit for both the emergency standby generator and the firewater pump engine is 0.20 g PM/kW-hr. The total suspended particulate (TSP or filterable PM) emissions for the emergency standby generator engine are calculated using the AP-42 Section 3.4 emission factor for filterable PM. There is no filterable PM emission factor in AP-42 Section 3.3 for firewater pump engine.

» For the emergency standby generator engine, VOC emissions are calculated based on the IC engine manufacturer-guaranteed VOC performance level of 0.56 g VOC/kWh. For the emergency firewater pump engine, VOC emissions are calculated based on the IC engine manufacturer-guaranteed VOC performance level of 0.11 g VOC/kWh.

» For both emergency IC engines, SO_2 emissions are calculated via material balance based on IC engine ULSD usage rate at maximum load and a maximum ULSD sulfur content of 15 ppmw.

» The emergency standby generator HAP emissions were calculated using AP-42 emission factors from Tables 3.4-3 and 3.4-4 and the firewater pump engine HAP emissions were using AP-42 emission factors from Table 3.3-2. A complete list of individual HAPs from the emergency diesel-fired engines can be found in Table A-8, A-9, and A-11 in Appendix A of this application. Only the total HAPs for the engines have been listed in Form B.3 because no individual HAP is expected to potentially emit greater than or equal to 0.01 ton per year.

» For both emergency IC engines, GHG emissions are calculated using GHG emission factors in Tables C-1 and C-2 of the Mandatory GHG Reporting Rule, found at 40 CFR 98. Vendor and USEPA certification data for the emergency diesel-fired engines is provided in Appendix H of this application.

4.4 Natural Gas Dewpoint Heater Emissions

The 5.01 MMBtu/hr dewpoint heater will be permitted to operate continuously (8,760 hours per year); therefore, emissions were calculated assuming these hours of operation. Criteria pollutant emissions for the dewpoint heater are calculated using emission factors supplied by the manufacturer of the heater's Ultra Low NO_x Burners. The TSP (filterable PM) emissions for the dewpoint heater are calculated using the AP-42 Section 1.4 emission factor for filterable PM. The HAP emissions were calculated using AP-42 emission factors from AP-42 Table 1.4-3. A complete list of individual HAPs can be found in Table A-10 and A-11 in Appendix A of this application. GHG emissions are calculated using GHG emission factors in Tables C-1 and C-2 of the Mandatory GHG Reporting Rule, found at 40 CFR 98.

4.5 Storage Tank Emissions

The minor VOC emissions from the two diesel storage tanks (MCAPS-TK1 and MCAPS-TK2) and two condensate storage tanks (MCAPS-TK3 and MCAPS-TK4) are calculated in Appendix A using AP-42 Section 7.1, Organic Liquid Storage Tanks (October 2024) equations and manufacturer-provided tank data.

4.6 Lubrication Oil Systems Vents Emissions

In Appendix A, both VOC and PM potential emissions are calculated for the combustion turbine lubrication oil vent (MCAPS-LOVCT) and the steam turbine lubrication oil vent (MCAPS-LOVST). VOC and PM emissions for the two lube oil vents are calculated using a material balance approach based on manufacturer data that each lube oil vent will emit less than 0.01 gallons per day of lubrication oil from each mist eliminator vent.

4.7 Fugitive Emissions

Potential fugitive emissions from equipment components in natural gas service (MCAPS-NGFUG), ammonia service (MCAPS-AMMFUG), and diesel service (MCAPS-DSLFUG) are calculated using component-specific emission factors based on the liquid or gas/vapor service of the components and an estimated count of components. The emission factors used to calculate fugitive emissions are from USEPA's Protocol for Equipment Leaks Emission Factors, EPA-453/R-95-017 (November 1995) and the Texas Commission on Environmental Quality's Air Permit Guidance for Chemical Sources: Fugitive Guidance (June 2018). Texas Commission on Environmental Quality's guidance derives Synthetic Organic Chemical Manufacturing

Industry (SOCMI) emission factors without ethylene. The SOCMI emission factors without ethylene are a better representation for the natural gas and ammonia service components as opposed to average SOCMI emission factors provided in the USEPA's protocol.

4.8 Startup/Shutdown Operations

The planned SU/SD emissions from the CT/duct burner main stack (MCAPS-1A) are supplied by Mitsubishi, the CT/duct burner manufacturer.

5.0 FEDERAL AIR REGULATORY APPLICABILITY ANALYSIS

This section of the application addresses federal air regulations that are expected to apply to the MCAPS.

5.1 Prevention of Significant Deterioration

The entire state of Mississippi is currently classified as in attainment/unclassifiable with all NAAQS. As mentioned previously, the air permitting effort for MCAPS is based on a new stand-alone power station which becomes a new major source under the PSD rule. MDEQ's PSD regulation, which is codified at 11 MAC Part 2, Chapter 5, incorporates by reference the federal PSD regulation found at 40 CFR 52.21. As shown above in Table 4.1, under the federal NSR program, the MCAPS project will be a new major source that requires PSD permitting for the NSR-regulated pollutants NO_x, CO, VOC, PM_{10}, $PM_{2.5}$, SAM, and GHG (expressed as CO_2e). This application addresses all regulatory requirements for a PSD permit application as detailed below:

» 40 CFR 52.21(j) – BACT Review – presented in Section 7.0 and Appendices C and D.

» 40 CFR 52.21(k), (l) and (m) – Air Quality Demonstration – presented in Section 8.0 and Appendices E and F.

» 40 CFR 52.21(n) – Source Information – presented throughout this PSD permit application.

» 40 CFR 52.21(o) – Additional Impacts Analysis – presented in Section 9.0.

» 40 CFR 52.21(p) – Class I Area Impacts Analysis – presented in Section 10.0.

5.2 New Source Performance Standards

Several emission units at the MCAPS will be subject to the federal NSPS found at 40 CFR 60. Note that this permit application constitutes the NSPS initial notification required by 40 CFR 60.7(a)(1) and (3). The MCAPS emission units subject to NSPS are identified as follows:

» 40 CFR 60 Subpart A – NSPS General Provisions – all NSPS affected facilities will comply with NSPS Subpart A requirements.

» 40 CFR 60 Subpart KKKK and Proposed Subpart KKKKa – NSPS for Stationary Gas Turbines – the CT/duct burner combined cycle system (MCAPS-1A) will comply with all applicable NSPS Subpart KKKK requirements. However, a new gas turbine NSPS regulation, 40 CFR 60 Subpart KKKKa, was proposed in the December 13, 2024 *Federal Register*. As specified in Section 111 of the Clean Air Act, the effective date of any new NSPS rule is the date that the rule is first proposed. As a result, the new MCAPS CT will be subject to NSPS Subpart KKKKa once the rule has been finalized. These new requirements will replace and supersede NSPS Subpart KKKK requirements. The MCAPS CT will meet the NOx and SO_2 emission limits specified in the proposed NSPS Subpart KKKKa rule. It is expected that EPA will not lower the proposed emission limits while finalizing the rule. Because NSPS Subpart KKKKa is not a final rule, the regulatory section of MDEQ's forms (Form 5 Section N Item 2) shows NSPS Subpart KKKK's applicable limits. This application will be updated if NSPS Subpart KKKKa is finalized prior to air permit issuance. The proposed NSPS Subpart KKKKa emission limits are presented in Form 5 Section 5 Item 3 – Future Applicable Requirements. These future applicable requirements are subject to change.

» 40 CFR 60 Subpart TTTTa – NSPS for GHG Emissions for Electric Generating Units - the CT/duct burner combined cycle system (MCAPS-1A) will be subject to and will comply with all applicable NSPS Subpart TTTTa requirements. This includes the two-phase GHG performance specifications for base load EGUs found in Table 1 of NSPS Subpart TTTTa. The first control phase involves use of a power generation facility with a high thermal efficiency such that CO_2 emissions are limited to 800 pounds CO_2/MWh of gross energy output. This GHG limit applies to all 12-operating-month averages before January 2032. For 12-operating-month averages beginning after December 2031, the MCAPS EGU will be required to meet a more stringent GHG limit of 100 pounds CO_2/MWh of gross energy output. EML's position is that compliance with the first phase of the GHG control limits in NSPS TTTTa constitutes GHG BACT for the proposed MCAPS EGU.

» 40 CFR 60 Subpart IIII – NSPS for Compression Ignition Internal Combustion Engines – both the diesel-fired Emergency Standby Generator (MCAPS-EMGEN) and the diesel-fired Emergency Firewater Pump (MCAPS-FWP) will be subject to and will comply with all applicable NSPS Subpart IIII requirements for engines that maintain an emergency classification. Operation of emergency engines in non-emergency situations is limited to 100 hours per year per engine.

The emission units identified below do not exceed NSPS threshold levels or qualify for NSPS exemptions such that NSPS will not be applicable. These unaffected sources and the associated justification for NSPS non-applicability include:

» 40 CFR 60 Subpart Kc – NSPS for Volatile Organic Liquid (VOL) Storage Tanks Constructed After October 4, 2023 – NSPS Subpart Kc was promulgated in the October 15, 2024 *Federal Register*. The two diesel tanks (MCAPS-TK1 and MCAPS-TK2) and the two condensate tanks (MCAPS-TK3 and MCAPS-TK4) proposed at the MCAPS are not subject to NSPS Subpart Kc because the volumes of these tanks are well below the 20,000 gallons NSPS Subpart Kc applicability threshold found at proposed 40 CFR 60.110c(a).

» 40 CFR 60 Subparts Da – NSPS for Electric Utility Steam Generating Units – the duct burners/HRSG unit (MCAPS-1A) is not subject to NSPS Subpart Da because this unit is subject to NSPS Subpart KKKK. This exemption is found in NSPS Subpart KKKK at 40 CFR 60.4305(b).

» 40 CFR 60 Subpart Dc – NSPS for Small Industrial Steam Generating Units – the natural gas-fired Natural Gas Dewpoint Heater (MCAPS-NGDPHTR), which has a rated firing rate of 5.01 MMBtu/hr, is not subject to NSPS Subpart Dc because the unit's firing rate is less than the 10 MMBtu/hr NSPS Subpart Dc applicability threshold found at 40 CFR 60.40c(a). Also, this unit is a process heater and not a steam generating unit.

5.3 National Emission Standards for Hazardous Air Pollutants

National Emission Standards for Hazardous Air Pollutant (NESHAP) rules promulgated prior to the 1990 Clean Air Act Amendments are found at 40 CFR 61. The MCAPS will not have any sources present that are subject to the NESHAP rules found at 40 CFR 61.

NESHAP rules promulgated after the 1990 Clean Air Act Amendments, which are also referred to as Maximum Achievable Control Technology (MACT) standards, are found at 40 CFR 63. As previously stated, the MCAPS will be a non-major area source of HAP emissions. The following MACT standards will be applicable to operations at the MCAPS:

» 40 CFR 63 Subpart A – MACT General Provisions - all MACT affected facilities identified below will be subject to and comply with the MACT General Provisions as detailed in MACT Subpart A.

» 40 CFR 63 Subpart ZZZZ – MACT Standard for Reciprocating Internal Combustion Engines – the two proposed diesel-fired emergency engines (MCAPS-EMGEN and MCAPS-FWP) will both be subject to the emergency engine provisions of MACT Subpart ZZZZ. However, based on a regulatory overlap provision, compliance with MACT Subpart ZZZZ is achieved by having the engines comply with NSPS Subpart IIII requirements, as specified at 40 CFR 63.6590(c).

The emission units identified below do not exceed a MACT threshold level or qualify for a MACT exemption such that MACT will not be applicable:

» 40 CFR 63 Subpart YYYY – MACT standard for Stationary Combustion Turbines – the CT/duct burner combined cycle system (MCAPS-1A) will not be subject to MACT Subpart YYYY. The MCAPS will be a non-major area source of HAP emissions and MACT Subpart YYYY only applies to HAP major sources as specified at 40 CFR 63.6080.

» 40 CFR 63 DDDDD – Major Source Heater and Boiler MACT – this subpart only applies to major sources of HAP emissions as specified at 40 CFR 63.7485. The MCAPS is an area HAP source; therefore, the MCAPS will not be subject to this regulation.

» 40 CFR 63 Subpart JJJJJJ – Area Source Boiler MACT – this subpart does not apply to electric utility steam generating units as specified at 40 CFR 63.11195. Process heaters are not subject to this subpart as specified at 40 CFR 63.11193.

5.4 Risk Management Program

The proposed MCAPS facility will be subject to USEPA's Risk Management Program codified at 40 CFR 68. This will require the MCAPS to have a Risk Management Plan and follow all other applicable provisions found in 40 CFR 68. Risk Management Program requirements are triggered by one chemical, ammonia, which will be present at the plant to facilitate operation of the main unit's SCR NO_x control system. Specifically, the MCAPS will store ammonia at a concentration of 29 weight percentage, and the quantity of ammonia present will exceed the 20,000-pound threshold quantity specified in Tables 1 and 2 to 40 CFR 68.130. The MCAPS will be subject to and will comply with all applicable provisions of 40 CFR 68.

5.5 Acid Rain Program

The MCAPS will be subject to the federal acid rain program and the regulations governing that program including:

» 40 CFR Part 72 – Acid Rain Permits Regulation – The MCAPS will apply for an Acid Rain permit following issuance by MDEQ of a preconstruction and PSD permit for the facility. MDEQ currently requires that an acid rain permit application be submitted within 12 months after certification that construction has been completed. The acid rain permitting process will be consistent with the timelines set forth in 11 MAC Part 2 Chapter 6: CAA Title V Operating Permits and 11 MAC Part 2 Chapter 7: CAA Acid Rain Program Requirements. MCAPS will be subject to and will comply with all applicable provisions of 40 CFR 72.

» 40 CFR Part 73 – Sulfur Dioxide Allowance System – Under USEPA Clean Air Markets system, MCAPS will secure one sulfur dioxide allowance for each ton of sulfur dioxide emitted every calendar year. The MCAPS will be subject to and will comply with all applicable provisions of 40 CFR 73.

» 40 CFR Part 75 – Continuous Emissions Monitoring Systems (CEMS) – The main stack (MCAPS-1A) will install all CEMS required by 40 CFR 75. The required CEMS will be O_2 CEMS and include monitoring for NOx emissions. By virtue of firing low-sulfur pipeline natural gas, the MCAPS will not be required to install a CEMS for SO_2 emissions, but instead will be able to calculate SO_2 emissions using an emission factor as specified in 40 CFR 75 Table LM-1. The MCAPS will be subject to and will comply with all applicable provisions of 40 CFR 75.

5.6 Cross-State Air Pollution Program

The MCAPS will be subject to an ozone season NO_x cap and trade program under the Cross State Air Pollution Rule, found at 40 CFR 97. The MCAPS will comply with all applicable provisions of 40 CFR 97 and any State Implementation Plan rule that MDEQ promulgates to implement federal Cross State Air Pollution Rule requirements.

5.7 Ozone Depleting Substances

The MCAPS will not have any refrigeration systems and/or coolers with greater than 50 pounds of refrigerant fluids. As a result, the MCAPS will not be subject to the substantive requirements of the Ozone Depleting Substances rule as specified in 40 CFR 82. The MCAPS will comply with all applicable provisions of 40 CFR 82 that apply to maintenance performed on comfort cooling air conditioners.

5.8 Compliance Assurance Monitoring

The CT/duct burner main stack (MCAPS-1A) is the only proposed emissions unit at the MCAPS that has potential uncontrolled emissions greater than a major source threshold as described in the Compliance Assurance Monitoring (CAM) rule as specified in 40 CFR 64.2(a)(3). This emissions unit also utilizes SCR and oxidation catalyst add-on control devices, satisfying the CAM applicability criterion specified in 40 CFR 64.2(a)(2). However, the CT/duct burner system is subject to the Acid Rain provisions of the Clean Air Act, and as such it is exempt from CAM rule requirements as specified in 40 CFR 64.2(b)(1)(iii) and 64.3(d)(2)(iv).

6.0 MISSISSIPPI AIR REGULATORY APPLICABILITY ANALYSIS

This section of the permit application addresses MAC air regulations that fall under the purview of MDEQ. This includes federally enforceable State Implementation Plan regulations which have been promulgated pursuant to Section 110 of the Clean Air Act.

6.1 11 MAC Part 2 Chapter 1: Prevention, Abatement and Control of Air Contaminants

The requirements of 11 MAC Part 2 Chapter 1 will apply to the proposed MCAPS. This regulation requires affected units and facilities to prevent, abate, and control air pollution caused by air contaminants being discharged into the atmosphere as particulates, smoke, fly ash, solvents, and other chemicals or combinations. Stack emissions testing and CEMS certifications for demonstrating compliance with these regulations will be required in accordance with USEPA test methods, which are found in 40 CFR 60 Appendices A and B. MDEQ will be notified in advance of any testing activities. For the MCAPS facility, all testing and CEMS certifications will be performed to comply with federal requirements detailed in Section 5.0. EML will comply with all applicable requirements in 11 MAC Part 2 Chapter 1.

6.2 11 MAC Part 2 Chapter 2: Permit Regulations for Air Emissions Equipment

The requirements of 11 MAC Part 2 Chapter 2 will apply to the proposed MCAPS. This regulation requires a preconstruction permit and PSD permit. This application satisfies the requirements for the preconstruction and PSD permit. A Title V operating permit will also be required, but a separate application for the Title V permit will be submitted to MDEQ after approval of the preconstruction and PSD permit. MDEQ currently requires that a Title V permit application be submitted within 12 months after certification that construction has been completed. As required, EML will not commence physical construction on the proposed MCAPS facility until MDEQ issues the preconstruction/PSD permit. As required by Rule 2.3, this application contains the seal of a Professional Engineer registered in the state of Mississippi. EML will comply with all applicable requirements in 11 MAC Part 2 Chapter 2.

6.3 11 MAC Part 2 Chapter 3: Prevention of Air Pollution Emergency Episodes

The requirements of 11 MAC Part 2 Chapter 3 will apply to the proposed MCAPS. This regulation requires affected facilities to prevent the excessive emissions of air pollutants during air pollution episodes, thereby preventing the occurrence of an emergency due to the health effects of these pollutants on exposed persons. Any facility which emits more than 0.25 ton per day or more of SO_2, PM_{10}, CO, ozone, or NO_x must prepare emission control action programs, consistent with good industrial practices and safe operating procedures, for reducing the emission of air contaminants into the outdoor atmosphere during periods of an air pollution alert, air pollution warning, and air pollution emergency. EML will comply with all applicable requirements in 11 MAC Part 2 Chapter 3.

6.4 11 MAC Part 2 Chapter 4: Ambient Air Quality Standards

The requirements of 11 MAC Part 2 Chapter 4 will apply to the proposed MCAPS. This regulation incorporates by reference the primary and secondary NAAQS promulgated by USEPA at 40 CFR 50. The PSD air quality demonstration in Section 8.0 and Appendix F of this application, once finalized, will show that operation of the proposed MCAPS facility will not cause or contribute to any NAAQS violation. EML will comply with all applicable requirements in 11 MAC Part 2 Chapter 4.

6.5 11 MAC Part 2 Chapter 5: Prevention of Significant Deterioration of Air Quality

The requirements of 11 MAC Part 2 Chapter 5 will apply to the proposed MCAPS. This regulation represents Mississippi's PSD regulation. MDEQ's PSD regulation incorporates by reference the federal PSD regulation found at 40 CFR 52.21. As documented in Section 5.1, the MCAPS project will be a new major source that requires PSD permitting for the NSR-regulated pollutants NO_x, CO, VOC, PM_{10}, $PM_{2.5}$, SAM, and GHG (expressed as CO_2e). This application meets all regulatory requirements for a PSD permit application. EML will comply with all applicable requirements in 11 MAC Part 2 Chapter 5.

6.6 11 MAC Part 2 Chapter 6: CAA Title V Operating Permits

The requirements of 11 MAC Part 2 Chapter 6 will apply to the proposed MCAPS because it will be classified as a major Title V source. This regulation represents Mississippi's Title V operating permit regulation. EML will submit a separate Title V permit application for the proposed MCAPS facility after MDEQ's issuance of the preconstruction/PSD permit application. MDEQ currently requires that a Title V permit application be submitted within 12 months after certification that construction has been completed. EML will comply with all applicable requirements in 11 MAC Part 2 Chapter 6.

6.7 11 MAC Part 2 Chapter 7: CAA Acid Rain Program Permitting Requirements

The requirements of 11 MAC Part 2 Chapter 7 will apply to the proposed MCAPS because it is an Electric Generating Unit subject to Title IV of the Clean Air Act. This regulation represents Mississippi's Title IV acid rain permit regulation. EML will submit a separate Title IV acid rain permit application for the proposed MCAPS facility after MDEQ's issuance of the preconstruction/ PSD permit application. MDEQ currently requires that an acid rain permit application be submitted within 12 months after certification that construction has been completed. The acid rain permit application will accompany the Title V permit application described above in Section 6.6. The timing for the Title IV/Title V application submittal will be set by MDEQ based on the department's policies on permitting of new Electric Generating Unit facilities. MDEQ currently requires that these permit applications be submitted within 12 months after certification that construction has been completed. EML will comply with all applicable requirements in 11 MAC Part 2 Chapter 7.

7.0 PSD TOP-DOWN BEST AVAILABLE CONTROL TECHNOLOGY DEMONSTRATION

The requirements of 11 MAC Part 2 Chapter 5 will apply to the proposed MCAPS. This regulation represents Mississippi's PSD regulation. MDEQ's PSD regulation incorporates by reference the federal PSD regulation found at 40 CFR 52.21. For each emission unit that emits an NSR regulated pollutant that is subject to PSD review, a BACT demonstration is required as specified at 40 CFR 52.21(j). This section of the MCAPS permit application provides the supporting BACT demonstrations. Information from the USEPA's RBLC is provided in Appendix C. All emission control system cost evaluations that support the BACT demonstrations are provided in Appendix D.

7.1 Top-down BACT Procedure

BACT is defined in the federal PSD regulation at 40 CFR 52.21(b)(12) as follows:

> *Best available control technology* means an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR 60, 61, or 63. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.

The selection of BACT requires consideration of cost, environmental, and energy impacts. In the USEPA's draft document New Source Review Workshop Manual (USEPA, October 1990), USEPA recommends a "top-down" approach when evaluating commercially available and demonstrated air pollution control technologies for BACT. As described further below, a top-down approach is suggested by policy and not by regulation. For certain small emission sources, the BACT demonstration may depend on what is typically used in industrial applications as detailed in the RBLC information in Appendix C. From the definition of BACT, if a facility is subject to a NSPS or NESHAP standard, the selected BACT must never result in an emission limit that is less stringent than any applicable NSPS and/or NESHAP rule. Note that it remains USEPA's policy to use the top-down process to determine BACT. According to USEPA's "PSD and Title V Permitting Guidance for Greenhouse Gases":

> EPA has not established the top-down BACT process as a binding requirement through rule. Thus, permitting authorities that implement an EPA-approved PSD

> permitting program contained in their State Implementation Plans (SIPs) may use another process for determining BACT in permits they issue … so long as that process (and each BACT determination made through that process) complies with the relevant statutory and regulatory requirements. (p. 19, internal citations omitted).

Consistent with USEPA guidance, MDEQ utilizes the "top-down" approach to determine BACT. This approach involves determining the most stringent control technique available for a similar or identical source. If it can be shown that this level of control is infeasible based on technical considerations or adverse energy, environmental, or economic impacts, it is rejected, and the next most stringent level of control is determined and similarly evaluated. This process continues until a control level is arrived at which cannot be eliminated due to technical difficulties or environmental, energy, or economic impacts. BACT may not result in emissions of any pollutant that would exceed an NSPS or NESHAP applicable standard under 40 CFR Part 60, 61 or 63. The five steps in the top-down process are described below.

Step 1: Identify Available Control Technologies

The first step in a "top-down" analysis is to identify all "available" control options. Available control options are those air pollution control technologies or techniques with a practical potential for application to the emissions unit and the regulated pollutant under evaluation. This also includes evaluating the availability for a control option in a specific geographic location.

Step 2: Eliminate Technically Infeasible Options

In the second step, the technical feasibility of each control option, starting with the top option, identified in step 1 is evaluated with respect to source-specific (or emissions unit-specific) factors. Technically infeasible control options are then eliminated from further consideration. An applicant proposing the top control alternative need not provide detailed information regarding the technical feasibility of other control options.

Step 3: Rank Remaining Options by Control Effectiveness

In step 3, all control alternatives not eliminated in step 2 are ranked in order of overall control effectiveness for the pollutant under review, with the most effective control alternative at the top. An applicant proposing the top control alternative need not provide cost and other detailed information regarding other control options.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

Next, the energy, environmental, and economic impacts of the available and technically feasible control options are considered. Control options are evaluated on a case-by-case basis using these criteria, and control options that are not environmentally or economically reasonable are eliminated. An applicant proposing the top control alternative need not provide cost and other detailed information regarding other control options.

Step 5: Select BACT

The most effective "top" control option not eliminated in step 4 is selected as BACT.

7.2 Combustion Turbine/Duct Burner Main Stack

The power generation equipment proposed for the MCAPS includes a Mitsubishi Model M501JAC CT equipped with supplementary-fired duct burners and an HRSG. Following the duct burner, the aggregate flue gas from the CT and duct burner is routed to SCR and catalytic oxidation emission control systems before exiting the main stack (MCAPS-1A). The BACT demonstration for the CT/duct burner main stack is presented as follows for each NSR regulated pollutant emitted from MCAPS-1A.

7.2.1 NO_x BACT

NO_x is generally formed during combustion by thermal oxidation of nitrogen in the combustion air (thermal NO_x) and the oxidation of nitrogen in the fuel (fuel-bound NO_x). Natural gas contains relatively small amounts of fuel-bound nitrogen and NO_x formation through the fuel NO_x mechanism is expected to be insignificant. The main variables affecting NO_x generation in the CT/duct burner installations are temperature, the availability of nitrogen, the availability of oxygen, and the extent of contact between nitrogen and oxygen during the combustion process. NO_x formation is maximized in zones of high combustion temperatures.

Step 1: Identify Available Control Technologies

Available NO_x control technologies for CT/duct burner installations include:

» Wet Injection: The injection of water directly into the combustion chamber lowers the flame temperature by absorbing heat necessary to vaporize the water and raise the temperature of the steam to that of the combustion temperature. Steam injection utilizes the same principle, although heat can only be absorbed by the steam in raising the steam's temperature to that of combustion. Injection of either water or steam results in lower "thermal NO_x" formation. This technology can achieve a flue gas NO_x concentration of 42 ppmvd at 15% O_2.

» Dry Low-NO_x Combustor/Burner Design: One method of reducing "thermal NO_x" formation is by utilizing a dry low-NO_x (DLN) combustor that premixes the air and fuel prior to entering the primary combustion chamber. This allows for a lower flame temperature due to the homogeneity of the air/fuel mix and the lack of a flame front. Advanced combustor design also includes reducing the combustion zone residence time and limiting the oxygen available to combine with nitrogen to form NO_x. EML's proposed CT and duct burner include DLN combustors. This technology can achieve a flue gas NO_x concentration between 9 and 25 ppmvd at 15% O_2.

» Selective Catalytic Reduction (SCR): SCR requires ammonia injection to participate in the NO_x reduction chemical reactions. A catalyst is present during the chemical reactions that produce nitrogen and water vapor from NO_x. EML proposes to utilize SCR for this gas turbine/duct burner installation. By itself, this technology can achieve a flue gas NO_x concentration between 2 and 3 ppmvd at 15% O_2. In conjunction with DLN burners, this technology can achieve a flue gas NO_x concentration of 2 ppmvd at 15% O_2.

» Selective Non-Catalytic Reduction (SNCR): SNCR is a process in which ammonia or urea is injected directly into the exhaust gas stream to produce nitrogen and water vapor from NO_x. The chemical reactions take place without the presence of a catalyst, and due to reaction temperature considerations, the ammonia or urea injection must occur in a location where the exhaust gas temperatures are between approximately 1,600°F and 2,000°F. The exhaust gas

temperature range for the proposed units does not allow for SNCR to be a feasible control technology, as the exhaust temperature for this project will be considerably below this range.

» Non-Selective Catalytic Reduction (NSCR): NSCR is a process that utilizes a catalyst to produce nitrogen and water vapor from NO_x without the presence of a reducing agent. This technology has not yet been developed for large-scale combustion turbine applications and is currently only utilized in reciprocating internal combustion engines. Thus, NSCR is considered technically infeasible for this application.

Step 2: Eliminate Technically Infeasible Options

Two available NO_x control technologies were determined not to be technically feasible. As described above, these technically infeasible NO_x control technologies include SNCR and NSCR.

Step 3: Rank Remaining Options by Control Effectiveness

The available and technically feasible NO_x control technologies for CT/duct burner installations are ranked in order in Table 7.1.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology.

Step 5: Select BACT

EML proposes to accept the top control technology in Table 7.1. The CT/duct burner system will utilize dry low-NO_x combustors and an ammonia-based SCR control system which will yield a vendor-guaranteed flue gas NO_x concentration of 2.0 ppmvd NO_x at 15% O_2 (24-hour-average basis). A review of RBLC confirms this control system represents the top available and technically feasible NO_x control technology for CT/duct burner systems.

During SU/SD and tuning operations, Selective Catalytic Reduction (SCR) controls are not fully functional, and the hourly NOx emission rate is expected to exceed the maximum routine NOx hourly emission rate of 40.59 lb/hr (Case 1A in Table A-6 in Appendix A). NO_x emissions, as shown in Table A-6 in Appendix A, can reach 294.00 lb/hr during combustion turbine SU/SD operations. Entergy will comply with a hourly BACT limit of 2.0 ppmvd NOx at 15% O_2 (24-hr average), or 40.59 lb/yr NO_x, provided that the air permit clearly stipulates this requirement applies only during routine combustion turbine operations and not during combustion turbine startups and shutdowns and tuning activities.

TABLE 7.1 CT/DB NO_X TECHNICALLY FEASIBLE CONTROL OPTIONS CONSIDERED FOR BACT

RANKING	CT/DB NO_X CONTROL TECHNOLOGY	NOX CONCENTRATION (PPMVD AT 15% O_2)
1	SCR + Dry Low NO_x Combustors/Burners	2.0
2	SCR	2 - 3
3	Dry Low NO_x Combustors/Burners	9 - 25
4	Water/Steam Injection	42

7.2.2 CO BACT

Carbon monoxide forms in combustion devices as a product of incomplete combustion. Production of CO results when there is a lack of oxygen and insufficient residence time at high enough temperatures to complete the final step in oxidation. Controlling these factors to decrease CO, however, also tends to result in increased emissions of NO_x. Conversely, a lower NO_x emission rate achieved through flame temperature control may result in higher levels of CO emissions. Thus, a balance must be established, whereby the flame temperature, residence time and excess oxygen are set to achieve the lowest NO_x emission rate possible to comply with BACT while keeping CO emissions to an acceptable level.

Step 1: *Identify* Available Control Technologies

The two available CO control options for CT/duct burner installations include:

» Combustion Controls/Good Combustion Techniques, and

» Catalytic Oxidation Add-on Control Device

CO combustion control performance (good combustion techniques) is a function of available oxygen, combustion temperature, turbulence, and residence time. Formation of CO is a result of incomplete combustion of the fuel. Adequate fuel residence time and high temperature in the combustion zone can ensure minimal CO formation. A properly designed combustion system is effective at limiting CO formation by maintaining the optimum combustion zone temperature and amount of excess oxygen. However, the addition of excess air and maintenance of high combustion temperatures for control of CO emissions may lead to increased NO_x emissions. Consequently, typical practice is to design the combustion system such that CO emissions are reduced as much as possible without causing NO_x levels to significantly increase.

The only add-on control device that is commercially available for controlling CO emissions from CT/duct burner installations is an oxidation catalyst. The catalyst lowers the activation energy necessary for CO to react with available oxygen in the exhaust to produce CO_2. Oxidation catalysts operate optimally at a temperature range of 500°F to 700°F and can also reduce VOC emissions.

Step 2: Eliminate Technically Infeasible Options

The two available CO control technologies for CT/duct burner installations are both technically feasible. EML is proposing to employ both CO control technologies for this CT/duct burner system.

Step 3: Rank Remaining Options by Control Effectiveness

The top CO control technology is identified as good combustion techniques along with an add-on catalytic oxidation. In conjunction, these two technologies will result in a flue gas CO concentration of 2.0 ppmvd CO at 15% O_2 (24-hour-average basis).

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top CO control technology.

Step 5: Select BACT

The CT/duct burner system will utilize good combustion techniques and an add-on catalytic oxidation control system. This will yield a vendor-guaranteed flue gas CO concentration of 2.0 ppmvd CO at 15% O_2 (24-hour-average basis). Based on a review of RBLC, this control system represents the "top" available and feasible CO control technology for CT/duct burner systems. There are several RBLC entries with a primary CO limit ranging up to 50 ppmvd with the majority of limits set at 2.0 ppmvd. As a result, catalytic oxidation with a CO performance level of 2.0 ppmvd CO at 15% O_2 (24-hour-average basis) is selected as BACT for CO.

7.2.3 VOC BACT

VOC emissions result from incomplete combustion like with CO. VOC is unburned and emitted from the stack when there is a lack of oxygen and insufficient residence time at high enough temperatures to complete the final step in oxidation.

Step 1: Identify Available Control Technologies

There are two available VOC control options for CT/duct burner installations:

» Combustion Controls/Good Combustion Techniques

» Catalytic Oxidation Add-on Control Device

Step 2: Eliminate Technically Infeasible Options

The two available VOC control technologies for CT/duct burner installations identified above are both technically feasible. EML is proposing to employ both VOC control technologies for this CT/duct burner system.

Step 3: Rank Remaining Options by Control Effectiveness

The top VOC control technology is identified as good combustion techniques along with an add-on catalytic oxidation. In conjunction, these two technologies will result in a flue gas VOC concentration of 1.5 ppmvd at 15% O_2 (annual-average basis).

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top VOC control technology.

Step 5: Select BACT

The CT/duct burner system will utilize good combustion techniques and a catalytic control system which will yield a vendor-guaranteed flue gas VOC concentration of 1.5 ppmvd VOC at 15% O_2 (annual-average basis). Based on a review of RBLC, this control system represents the top available and feasible VOC control technology for CT/duct burner systems. As a result, catalytic oxidation with a VOC performance level of 1.5 ppmvd VOC at 15% O_2 (annual-average basis) is selected as BACT for VOC. Because the "top" control technology is selected, no further VOC BACT analysis is required.

7.2.4 PM_{10} and $PM_{2.5}$ BACT

PM emissions, which include both PM_{10} and $PM_{2.5}$ emissions, from CT/duct burner installations are the result of unburned trace constituents in the fuel, unburned hydrocarbons, and the inlet air supply that may contain dust particles. PM emissions can also result from the formation of sulfates and nitrates, which are formed when certain sulfur- and nitrogen-oxide compounds react with ammonia.

Step 1: Identify Available Control Technologies

The control technologies that can potentially be used to control PM emissions include:

» Fabric Filter (Baghouse)

» Electrostatic Precipitator (ESP)

» Use of Clean Gaseous Fuels (e.g., pipeline quality natural gas)

» Good Combustion Practices

Step 2: Eliminate Technically Infeasible Options

The two available add-on PM control technologies identified above, baghouses and ESPs, were determined not to be technically feasible. The concentration of PM in the flue gas from a CT/duct burner installation is low. The sizes of particles in the flue gas stream are very small. Due to the high volumetric flow rates and low particulate concentrations in the exhaust stream from the CT/duct burner installation, use of a baghouse or ESP is considered technically infeasible and are eliminated from further BACT consideration. There are no known existing natural gas fired CT/duct burner installations that utilize add-on PM control equipment.

Step 3: Rank Remaining Options by Control Effectiveness

The use of good combustion practices and clean gaseous fuels are both technically feasible options. The use of both options is what is selected for BACT for this installation.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology.

Step 5: Select BACT

By virtue of firing clean-burning pipeline natural gas, PM species (PM_{10} and $PM_{2.5}$) are emitted in small quantities from the CT/duct burner main stack MCAPS-1A. As described in Section 4.2, use of a catalytic oxidation system results in additional PM emissions, but this tradeoff is acceptable to further control emissions of VOC and CO. Based on the ISO firing Case 4a, the expected flue gas PM concentration exiting the stack will still be very dilute. The selected PM BACT is the use of low sulfur pipeline natural gas and good combustion practices such that PM emissions will be limited to 0.0095 pound PM/MMBtu (annual-average basis). Good combustion practices include proper CT/duct burner design, performing recommended maintenance, and proper operation of the system to promote efficient combustion.

7.2.5 SAM BACT

Emissions of SO_2 occur from the oxidation of sulfur in the gaseous fuel fired in the CT/duct burner system. Most fuel sulfur is converted to SO_2. A portion of the SO_2 will be further converted to H_2SO_4, also referred to as SAM, which will exit from the main stack (MCAPS-1A).

Step 1: Identify Available Control Technologies

The two available control technologies to control SAM emissions include:

» Wet scrubbing of SAM

» Use of clean burning, low sulfur natural gas fuel

Step 2: Eliminate Technically Infeasible Options

The sulfur content in pipeline natural gas is extremely low; therefore, the SAM concentration in the flue gas will be very dilute. For this reason, wet scrubbing of SAM emissions is technically infeasible and is eliminated from BACT consideration. Additionally, wet scrubbing would have the negative impact of generating an additional wastewater stream.

Step 3: Rank Remaining Options by Control Effectiveness

The only available and technically feasible SAM control technology is the use of clean-burning, low sulfur natural gas fuel.

Step 4: Evaluate Most Effective Controls for Cost, Energy, and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology.

Step 5: Select BACT

The proposed BACT for SAM emissions includes minimizing the formation of SO_2 and H_2SO_4 by using pipeline-quality natural gas with sulfur content not exceeding 1.0 grains S/100 scf on a short-term basis, and not exceeding 0.5 grains S/100 scf on an annual-average basis. By employing a highly efficient combined cycle power generation system, the quantity of natural gas fuel required per unit of power output is minimized to the extent reasonably possible.

7.2.6 GHG BACT

For the CT/duct burner system, GHG emissions will be released from the main stack (MCAPS - 1A) in the form of CO_2, methane, and nitrous oxide. The primary GHG is CO_2, and the combined GHGs are expressed as CO_2 equivalents (CO_2e) using the procedure in the federal GHG reporting rule found at 40 CFR 98.

Important Note: EPA promulgated a new NSPS GHG regulation which impacts this installation. In the May 9, 2024, *Federal Register*, USEPA published 40 CFR 60 Subpart TTTTa (NSPS TTTTa), which establishes GHG standards for Stationary Combustion Turbine Electric Generating Units built after May 23, 2023. NSPS TTTTa implements a phased-in GHG control approach. The new regulation focuses only on CO_2 emissions and not any other GHG

constituents. USEPA's reason for phasing in GHG limits for this source category was that some of the necessary GHG control technologies are not currently commercially available. For EML's proposed new base load CT/duct burner facility, the applicable phased-in CO_2 emission limits from Table 1 of NSPS TTTTa include:

» From the start of operation until December 31, 2031, a CO_2 emissions performance level of less than 800 lb CO_2/MWh gross energy output (12-operating month average).

» For all operations after December 31, 2032, a CO_2 emissions performance level of less than 100 lb CO_2/MWh of gross energy output (12-operating month average).

In developing NSPS TTTTa, USEPA recognized that the infrastructure to support Carbon Capture Sequestration (CCS) is not currently available in all geographical areas. For this reason, in the preamble to the NSPS TTTTa rule in the May 9, 2024 *Federal Register*, USEPA described its plan to structure NSPS TTTTa to have two phased in GHG control stages for base load combined cycle power plants:

> "The BSER for base load combustion turbines includes two components to be implemented initially in two phases. The first component of the BSER for base load combustion turbines is highly efficient generation (based on the emission rates that the best performing units are achieving) and the second component for base load combustion turbines is utilization of CCS with 90 percent capture. Recognizing the lead time that is necessary for new base load combustion turbines to plan for and install the second component of the BSER (*i.e.,* 90 percent CCS), **including the time that is needed to deploy the associated infrastructure (CO_2 pipelines, storage sites,** [emphasis added] *etc*), the EPA is finalizing a second phase compliance deadline of January 1, 2032, for this second component of the standard."

The BACT demonstration below concludes that GHG BACT for the MCAPS combined cycle EGU is to employ a CT/duct burner combined cycle system with a high thermal efficiency that is fired by relatively low-carbon natural gas fuel.

Step 1: Identify Available Control Technologies

The available control technologies to lower GHG emissions from CT/duct burner installations include:

» CCS

» Combustion of fuel containing hydrogen

» Operating a system that has a high thermal efficiency with relatively low-carbon natural gas fuel

Research has been performed by the United States Department of Energy and others to limit GHG emissions from combined cycle units by employing CCS. In a CCS system, CO_2 emissions are captured, scrubbed, condensed, and routed via pipeline to an underground formation where the CO_2 is stored indefinitely (sequestered). Once the CO_2 is separated from the flue gases, it must be transported to a suitable sequestration or storage facility. Storage opportunities typically would include disposing of the CO_2 in a Class 2 well used for enhanced oil recovery or disposing of the CO_2 in a Class 6 well which is used to inject CO_2 into deep rock formations, as part of a process called Geologic Sequestration. Using CO_2 for Enhanced Oil

Recovery is unstable because the demand for the CO_2 fluctuates significantly depending on the price of oil and natural gas. Therefore, it is not a reliable means for disposing of CO_2.

There has been discussion over whether CCS technology is currently commercially available for CO_2 emissions control in all geographic regions. In some specific geographic locations, the technology and infrastructure to support CCS is present for combined cycle power plants; however, this is not the case for the proposed MCAPS. For a top-down BACT demonstration, as presented below, the first step is to evaluate whether a specific control technology is "available." In USEPA's 1990 New Source Review Workshop Manual on page B.5, USEPA states that "available control options are those air pollution control technologies or techniques with a practical potential for application to the emissions unit and the regulated pollutant under evaluation." The determination of BACT "availability" must be made for a specific emissions unit in a specific geographic location. In the GHG BACT demonstration for the proposed MCAPS combined cycle combustion turbine emissions unit, EML contends that the proposed site currently lacks the required infrastructure to make CCS a viable control technology option in the near future. For example, there is no CO_2 pipeline near the proposed MCAPS site and, to date, there are no Class 6 carbon sequestration wells permitted in the state of Mississippi. Therefore, this means CCS is not "available" at the current time for the MCAPS based on USEPA's description of "available" BACT.

The MCAPS combined cycle system is being designed such that a CCS retrofit could be accommodated in the future. For these reasons, CCS is rejected as GHG BACT for this installation. EML will consider CCS when planning for operation of the facility to meet the NSPS TTTTa CO_2 emission limit that becomes effective on January 1, 2032.

The use of hydrogen as a fuel reduces CO_2 emissions because the product of hydrogen combustion is water. Studies by CT manufacturers indicate that with current CT technology, the quantity of hydrogen fuel a CT can accommodate is approximately 30%. The remaining balance of the fuel fired must be natural gas. At the time the proposed CT/duct burner installation commences operation, the infrastructure to partially fire hydrogen fuel is not readily available (e.g., there is no hydrogen pipeline near the site to obtain hydrogen fuel). For this reason, hydrogen combustion is rejected as GHG BACT for this installation. EML will consider hydrogen combustion when planning for operation of the facility to meet the NSPS TTTTa CO_2 emission limit that becomes effective on January 1, 2032.

CT based combined cycle power plants fired with natural gas fuel represent the most thermally efficient fossil fuel fired EGUs available in the commercial marketplace. The proposed MCAPS combined cycle unit represents state-of-the art equipment in terms of thermal efficiency. This high level of thermal efficiency is achieved by employing a highly efficient CT, a highly efficient duct burner system, and a highly efficient HRSG, all deployed in a highly efficient combined cycle configuration. Combined-cycle units operate based on a combination of two thermodynamic cycles: the Brayton and the Rankine cycles. The combustion turbine operates on the Brayton cycle, while the HRSG and steam turbine operate on the Rankine cycle. Combining the two thermodynamic cycles into a single-power generation system results in the high thermal efficiency associated with combined cycle power plants.

The most thermodynamically efficient way to generate electricity from a natural gas fuel source is by employing a combined cycle design. For commercially available fossil fuel fired EGU technologies, the expected net thermal efficiency ranges from approximately 30 to 50% (HHV). A typical coal-fired Rankine cycle power plant has a base load net thermal efficiency of approximately 30% (HHV) at ISO conditions, while a modern natural gas-fired combined cycle

unit has a base load net thermal efficiency at ISO conditions of approximately 50% (HHV). The MCAPS combined cycle system exceeds these benchmarks. At the 59°F ISO design case, the MCAPS combined cycle unit will have a net thermal efficiency of 51.82% (HHV). This thermal efficiency may degrade slightly over the life of the unit, but periodic maintenance will be performed to bring the unit back to optimal efficiency. The thermal efficiency will remain high enough that the MCAPS EGU continuously complies with the NSPS TTTTa first-phase GHG control limit of less than or equal to 800 pounds CO_2/MWh of gross energy output (12-operating-month average basis).

In addition to the high-efficiency primary components of the combustion turbine, there are several other design features employed that improve the thermal efficiency of the MCAPS combined cycle EGU. These design elements include, but are not limited to, employing insulation to prevent heat loss, use of an evaporative cooler to saturate combustion air with water, and use of a blowdown heat recovery system.

Modern combustion turbines like the Mitsubishi M501JAC model have regularly scheduled maintenance programs. These maintenance programs are important to ensure reliable operation of the unit and to maintain optimal thermal efficiency. As the combustion turbine is operated, the unit experiences degradation and minor losses in thermal performance. The combustion turbine maintenance program helps restore the recoverable lost performance. The maintenance program schedule is determined by the number of hours of operation and/or turbine starts. There are three basic maintenance levels, commonly referred to as (1) combustion inspections, (2) hot gas path inspections, and (3) major overhauls. Combustion inspections are the most frequent of the maintenance cycles. As part of this maintenance activity, the combustors are tuned to restore efficiency to the combustion turbines. Other routine maintenance practices that ensure a high thermal efficiency is continuously achieved include, but are not limited to, minimizing steam leaks, minimizing air filtration, and periodic cleaning and maintenance of heat transfer surfaces.

Modern combustion turbines like the Mitsubishi M501JAC model have sophisticated instrumentation and controls to automatically control the operation of the combined cycle EGU. The digital-type control system is supplied with the combustion turbine. The distributed control system controls all aspects of the turbine's operation, including the fuel feed and burner operations, to achieve thermally efficient operation. The control system monitors the operation of the unit and modulates the fuel flow and turbine operation to achieve optimal thermal performance for full-load and partial-load conditions. The control system thereby enhances thermal efficiency and minimizes emissions of GHGs at all load conditions.

Step 2: Eliminate Technically Infeasible Options

All of the control options identified in Step 1 are technically feasible; however, at the time of this application, CCS and hydrogen combustion are <u>not</u> currently available GHG control options because of infrastructure limitations (see Step 1). These options may be available by the 2032 timeframe and will be re-evaluated later as required by NSPS Subpart TTTTa. The only remaining GHG control option at this juncture is building and operating a system that has a high thermal efficiency while burning a relatively low-carbon natural gas fuel.

Step 3: Rank Remaining Options by Control Effectiveness

EML is electing to implement the top available technology after eliminating unavailable and technically infeasible options. The remaining option, which is selected as GHG BACT, is

building and operating a system that has a high thermal efficiency while firing a relatively low-carbon natural gas fuel.

Step 4: Evaluate Most Effective Controls for Cost, Energy, and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology. However, in Table D1 of Appendix D, EML is voluntarily providing a cost estimate for CCS installation based on the assumption that the required CCS infrastructure is readily available (which it is not at the current time). This CCS cost analysis shows the current cost to control CO_2 with CCS is $99 per ton of CO_2 controlled.

Step 5: Select BACT

The remaining option for GHG BACT is to employ a CT/duct burner combined cycle system with a high thermal efficiency that is fired by relatively low-carbon natural gas fuel. This is consistent with recent BACT determinations for combined cycle systems presented in USEPA's RBLC database as shown in Appendix C. The minimum acceptable GHG BACT limit of 800 pounds CO_2/MWh gross power output is established by 40 CFR 60 Subpart TTTTa. This NSPS TTTTa CO_2 limit will represent GHG BACT for this installation. The proposed GHG BACT for the CT/duct burner system is use of natural gas fuel with efficient power generation system with a GHG performance level of 800 pounds CO_2e/MWh of gross power output.

7.3 Diesel-fired Emergency Internal Combustion Engines

The MCAPS proposes to have two emergency diesel-fired IC engines. The engines will be limited to 100 hours per year of operation or less in non-emergency operating modes due to the engines' emergency classification status. One emergency diesel-fired IC engine powers a 2,180-kW emergency standby generator (MCAPS-EMGEN). The engine is a Mitsubishi Model S16R-Y2PTAW2-1 with a 2,923 BHP rating. The other emergency diesel-fired IC engine powers a 235-kW emergency firewater pump (MCAPS-FWP). The engine is a John Deere Model 6068HFC48A with a 282 BHP rating. As required by regulation, the engines will only fire ULSD with a maximum sulfur content of 15 ppmw. The emergency standby generator is a Tier 2 USEPA-certified NSPS-compliant engine, while the emergency firewater pump is a Tier 3 USEPA-certified NSPS-compliant engine. Both are approved by regulation for emergency service operations.

7.3.1 NO_x BACT

Step 1: Identify Available Control Technologies

The control technologies that are available for emergency diesel-fired IC engines include:

» SCR

» SNCR

» Use of an IC engine that is certified to meet the applicable NO_x emission limits in 40 CFR 60 Subpart IIII, the NSPS for Compression Ignition IC engines (NSPS Subpart IIII).

Step 2: Eliminate Technically Infeasible Options

Add-on NO_x controls, such as SCR and/or SNCR systems are not technically feasible for emergency engines because of the infrequent operation. It is difficult to operate add-on NO_x control systems for short periods of emergency operation. Total annual NO_x emissions from the two engines combined are very small and can be found in Tables A-8 and A-9 in Appendix A. Therefore, add-on NO_x controls are rejected as NO_x BACT for the two emergency engines.

Step 3: Rank Remaining Options by Control Effectiveness

The only available and technically feasible NO_x control technology is use of an IC engine that is certified to comply with the applicable NO_x emission limits in NSPS IIII. This becomes the top option.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology.

Step 5: Select BACT

The proposed NO_x BACT for the emergency engines is a Tier 2 or Tier 3 engine with NO_x performance levels specified in NSPS Subpart IIII. This corresponds to the NO_x limit for emergency service engines in NSPS Subpart IIII. Both engines will be subject to and will comply with all applicable NSPS Subpart IIII NO_x requirements for certified engines that maintain an emergency classification. For the diesel-fired Emergency Standby Generator (MCAPS-EMGEN), NO_x BACT is proposed as the NSPS Subpart IIII NO_x performance level of 6.4 g NO_x/kWh for engines of this power rating. For the diesel-fired Emergency Firewater Pump (MCAPS-FWP), NO_x BACT is proposed as the NSPS Subpart IIII NO_x performance level of 4.0 g NO_x/kWh for engines of this power rating.

7.3.2 CO BACT

Step 1: Identify Available Control Technologies

The CO control technologies that are available include:

» Catalytic oxidation of CO

» Good combustion practices using an IC engine that is certified to meet NSPS Subpart IIII CO emission limits

Step 2: Eliminate Technically Infeasible Options

Both options identified above are technically feasible.

Step 3: Rank Remaining Options by Control Effectiveness

Catalytic oxidation provides the best control effectiveness, followed by use of an engine certified to meet applicable NSPS Subpart IIII CO emission limits.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

Although an add-on catalytic control system is technically feasible for the two subject emergency engines, the cost of controlling CO for this application is economically prohibitive. Total annual CO emissions from the two engines combined are very small and can be found in Tables A-8 and A-9 in Appendix A. This is due to engine operations being limited to 100 hours per year per engine. The control equipment cost calculations presented in Appendix D show the annualized cost for controlling CO emissions using a catalytic oxidizer is approximately $20,000 per ton of CO controlled. In general, CO emissions are not a significant local air pollution concern when compared to other criteria pollutants such as NOx and VOC. For this reason, catalytic oxidation is rejected as BACT for CO.

Step 5: Select BACT

The proposed CO BACT for the emergency engines is use of Tier 2 or Tier 3 engines certified to meet NSPS Subpart IIII CO emission limits. Both engines will be subject to and will comply with all applicable NSPS Subpart IIII CO requirements for engines that maintain an emergency classification. For both the diesel-fired Emergency Standby Generator (MCAPS-EMGEN) and the diesel-fired Emergency Firewater Pump (MCAPS-FWP), CO BACT is proposed as the applicable NSPS Subpart IIII CO emission limit of 3.50 g CO/kWh for engines of these power rating.

7.3.3 VOC BACT

Step 1: Identify Available Control Technologies

The VOC control technologies that are available include:

» Catalytic oxidation of VOC

» Good combustion practices using an IC engine that is certified to meet NSPS Subpart IIII VOC emission limits

Step 2: Eliminate Technically Infeasible Options

Both options identified above are technically feasible.

Step 3: Rank Remaining Options by Control Effectiveness

Catalytic oxidation provides the best control effectiveness, followed by use of an engine certified to meet applicable NSPS Subpart IIII VOC emission limits.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

Although an add-on catalytic control system is technically feasible for the two subject emergency engines, the cost of controlling VOC for this application is economically prohibitive. Total annual VOC emissions from the two engines combined are very small and can be found in Tables A-8 and A-9 in Appendix A. This is due to engine operations being limited to 100 hr/yr/engine. The control equipment cost calculations presented in Appendix D shows that the annualized cost for controlling VOC emissions using a catalytic oxidizer exceeds $100,000 per ton of VOC controlled. For this reason, catalytic oxidation is rejected as BACT for VOC.

Step 5: Select BACT

The proposed VOC BACT for the emergency engines is the use of Tier 2 or Tier 3 engines based on vendor-supplied VOC performance data. Both engines will be subject to and will comply with all applicable NSPS Subpart IIII requirements for engines that maintain an emergency classification. For the diesel-fired Emergency Standby Generator (MCAPS-EMGEN), VOC BACT is proposed as the manufacturer's guaranteed VOC performance level of 0.56 g VOC/kWh. For the diesel-fired Emergency Firewater Pump (MCAPS-FWP) VOC BACT is proposed as the manufacturer's VOC performance level of 0.11 g VOC/kWh.

7.3.4 PM BACT

Step 1: Identify Available Control Technologies

The control technologies that can potentially be used to control PM emissions include:

» Fabric Filter (Baghouse)

» ESP

» Good combustion practices using an IC engine that is certified to meet NSPS Subpart IIII PM emission limits

Step 2: Eliminate Technically Infeasible Options

It is technically infeasible to use PM add-on control equipment such as a fabric filter or ESP because operation of the two engines is so infrequent (less than 100 hours per year) and the PM concentration in the engine flue gas is so dilute.

Step 3: Rank Remaining Options by Control Effectiveness

The only remaining option is employing good combustion practices using an IC engine that is certified to meet NSPS Subpart IIII PM emission limits. This becomes the top technology.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology.

Step 5: Select BACT

The proposed PM BACT for the emergency engines is use of Tier 2 or Tier 3 engines that are certified compliant with NSPS Subpart IIII emission limits. Both engines will be subject to and will comply with all applicable NSPS Subpart IIII PM requirements for engines that maintain an emergency classification. For the diesel-fired Emergency Standby Generator (MCAPS-EMGEN), PM BACT is proposed as the NSPS Subpart IIII emission limit of 0.20 g PM/kWh for engines of this power rating. For the diesel-fired Emergency Firewater Pump (MCAPS-FWP) PM BACT is proposed as the NSPS Subpart IIII emission limit of 0.20 g PM/kWh for engines of this power rating.

7.3.5 GHG BACT

Step 1: Identify Available Control Technologies

The GHG control technologies considered this case include:

» CCS

» Good combustion practices and the use of engines that are certified to meet NSPS Subpart IIII emission limits, and the complying with NSPS Subpart IIII work practice requirements

There are no known CCS applications commercially available for emergency diesel-fired IC engines. Therefore, CCS is rejected as BACT for this application.

Step 2: Eliminate Technically Infeasible Options

The use of CCS is neither available nor technically feasible for this application. This leaves the only remaining option; employing good combustion practices and using engines that are certified to meet NSPS Subpart IIII emission requirements.

Step 3: Rank Remaining Options by Control Effectiveness

The only remaining option is the top technology for this application. This requires employing good combustion practices and the use of engines that are certified to meet NSPS Subpart IIII emission requirements.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology.

Step 5: Select BACT

Total GHG emissions for these two engines is calculated in Table A-25 of Appendix A. The proposed GHG BACT for both engines is the use of efficient NSPS Subpart IIII-compliant USEPA-certified Tier 2 and Tier 3 engines with a GHG emissions performance levels specified in Tables C-1 and C-2 of 40 CFR Part 98, the mandatory GHG reporting rule as shown in Table A-25 of Appendix A.

7.4 Natural Gas Dewpoint Heater

To prevent liquid water droplets from entering the CT and to enhance thermal efficiency, the natural gas fuel to the CT is indirectly heated in a small natural gas-fired dewpoint heater (MCAPS-NGDPHTR) that has a rated firing rate of 5.01 MMBtu/hr-HHV. The dewpoint heater will be permitted to operate continuously (8,760 hours per year).

7.4.1 NO_x BACT

Step 1: Identify Available Control Technologies

The NO_x control technologies that are available for this small gas-fired heater include:

» SCR

» SNCR

» Use of Ultra-Low NO_x Burners

Step 2: Eliminate Technically Infeasible Options

The use of add-on NO_x controls such as SCR or SNCR is not technically feasible for this small heater. The use of add-on NO_x controls for this application is therefore rejected as BACT.

Step 3: Rank Remaining Options by Control Effectiveness

The only available and technically feasible NO_x control technology for this heater is the use of Ultra Low NO_x Burners with a manufacturer's guaranteed NO_x performance level of 0.011 pounds NO_x/MMBtu. This becomes the top technology.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology.

Step 5: Select BACT

NO_x emissions from this small heater can be found in Table A-10 of Appendix A. NO_x BACT for this heater is proposed to be the use of ultra-low NO_x burner technology with a manufacturer's guaranteed NO_x performance level of 0.011 pound NO_x/MMBtu.

7.4.2 CO BACT

Step 1: Identify Available Control Technologies

The CO control technologies that are available for this small gas-fired heater include:

» Oxidation catalysts

» Employing good combustion techniques with a manufacturer's guaranteed CO performance level

Step 2: Eliminate Technically Infeasible Options

The use of add-on CO controls such as an Oxidation Catalyst Unit is not technically feasible for this small heater. The use of add-on CO controls for this application is therefore rejected as BACT.

Step 3: Rank Remaining Options by Control Effectiveness

The only available and technically feasible CO control technology remaining for this heater is employing good combustion techniques with a manufacturer's guaranteed burner CO performance level of 0.037 pound CO/MMBtu. This becomes the top technology.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology.

Step 5: Select BACT

CO emissions from this small heater can be found in Table A-10 of Appendix A. CO BACT for this heater is proposed to be the use of good combustion practices to achieve a manufacturer's guaranteed CO performance level of 0.037 pound CO/MMBtu.

7.4.3 VOC BACT

Step 1: Identify Available Control Technologies

The VOC control technologies that are available for this small gas-fired heater include:

» Oxidation catalysts

» Employing good combustion techniques with a manufacturer's guaranteed VOC performance level

Step 2: Eliminate Technically Infeasible Options

The use of add-on VOC controls such as an Oxidation Catalyst Unit is not technically feasible for this small heater. The use of add-on VOC controls for this application is therefore rejected as BACT.

Step 3: Rank Remaining Options by Control Effectiveness

The only available and technically feasible VOC control technology remaining for this heater is employing good combustion techniques with a manufacturer's guaranteed burner VOC performance level of 0.008 pound VOC/MMBtu. This becomes the top technology.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology.

Step 5: Select BACT

VOC emissions from this small heater can be found in Table A-10 of Appendix A. The use of add-on VOC controls such as an oxidation catalyst system is not technically feasible for this small heater. VOC BACT for this heater is proposed to be the use of good combustion practices to achieve a manufacturer's guaranteed VOC performance level of 0.008 pound VOC/MMBtu.

7.4.4 PM BACT

Step 1: Identify Available Control Technologies

The control technologies that can potentially be used to control PM (PM_{10} and $PM_{2.5}$) emissions from this very small heater include:

» Fabric Filter (Baghouse)

» ESP

» Good combustion practices using clean low-sulfur pipeline natural gas as a fuel with a burner manufacturer's guarantee to have low PM emissions.

Step 2: Eliminate Technically Infeasible Options

Because the heater is very small and the PM concentration in the heater flue gas is so dilute, it is technically infeasible to use PM add-on control equipment such as a fabric filter or ESP. There are no known commercial applications of add-on PM controls for natural gas fired heaters; therefore, this control option is also not "available."

Step 3: Rank Remaining Options by Control Effectiveness

The only remaining option is employing good combustion practices and by using clean natural gas as a fuel and with a burner manufacturer's guarantee to have low PM emissions. This becomes the top technology.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology.

Step 5: Select BACT

$PM_{10}/PM_{2.5}$ emissions from this small natural gas-fired heater can be found in Table A-10 of Appendix A. $PM_{10}/PM_{2.5}$ BACT for this heater is proposed to be the use of low sulfur pipeline natural gas and good combustion practices to achieve a manufacturer's guaranteed PM performance level of 0.0048 pound PM/MMBtu.

7.4.5 GHG BACT

Step 1: Identify Available Control Technologies

The GHG control technologies that are considered in this case include:

» CCS

» Good combustion practices use a thermally efficient heater that is fired by relatively low carbon emitting natural gas fuel.

There are no known CCS applications commercially available for small natural gas-fired heaters. Therefore, CCS is rejected as BACT for this application.

Step 2: Eliminate Technically Infeasible Options

The use of CCS is neither available nor technically feasible for this application. The only remaining option is employing good combustion practices with a thermally efficient heater that is fired by relatively low carbon emitting natural gas fuel.

Step 3: Rank Remaining Options by Control Effectiveness

The only remaining option is the top technology for this application. This requires employing good combustion practices with a thermally efficient heater that is fired by relatively low carbon emitting natural gas fuel.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology.

Step 5: Select BACT

Total GHG emissions for this small heater can be found in Table A-23 of Appendix A. It is not technically feasible to use CCS technology in this application. The proposed GHG BACT for this small heater is the use of clean burning and efficient pipeline natural gas fuel and the employment of good combustion practices with GHG emissions performance levels specified in Tables C-1 and C-2 of 40 CFR 98, the mandatory GHG reporting rule.

7.5 Storage Tanks

The MCAPS proposes to have two horizontal fixed-roof diesel storage tanks and two small natural gas condensate tanks. Each diesel tank provides ULSD fuel to the two emergency IC engines. The tank that will supply ULSD to the emergency generator will be a 99-bbl (4,150-gal) white, horizontal fixed-roof tank (MCAPS-TK1). The tank that will supply ULSD to the emergency firewater pump will be a 12-bbl (500-gallon) white, horizontal fixed-roof tank (MCAPS-TK2). The MCAPS is proposing to have two, 400-gallon fixed-roof natural condensate tanks (MCAPS-TK3 and MCAPS-TK4). These tanks will knock out and collect natural gas condensate to prevent it from entering the gas turbine in rare occurrences when condensate is present in the incoming pipeline natural gas.

7.5.1 VOC BACT

Step 1: Identify Available Control Technologies

The VOC control technologies that are considered in this case include:

» Use of pressurized storage tanks.

» Use of an internal floating roof tank.

» Use of an external floating roof tank.

» Use of a fixed roof tank with the tank vent routed to an add-on VOC control device.

» Use of a fixed roof tank with a submerged fill pipe and an atmospheric vent.

ULSD has a very low vapor pressure of 0.014 psia at storage conditions. As a result, the combined annual VOC emission from these two tanks will be small. There are no known diesel tanks in commercial practice that have controls that exceed use of fixed roof storage tank with an atmospheric vent. The condensate tanks are small, and it is anticipated that they will capture

natural gas condensate when necessary. The proposed BACT for these tanks is the use of white horizontal fixed-roof storage vessels with a submerged fill pipe and an atmospheric vent.

Step 2: Eliminate Technically Infeasible Options

The only available control technology remaining for these small tanks is use of a fixed roof tank with a submerged fill pipe and an atmospheric vent.

Step 3: Rank Remaining Options by Control Effectiveness

The only available control technology remaining for ULSD and condensate storage is use of a fixed roof tank with a submerged fill pipe and an atmospheric vent.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology.

Step 5: Select BACT

ULSD has a very low vapor pressure of 0.014 psia at storage conditions and the condensate tanks will rarely be in condensate service which will result in the combined annual VOC emissions from the four small tanks to be very low. The emissions can be found in Tables A-16 and A-17 in Appendix A. Therefore, the proposed BACT for these four small tanks is the use of white horizontal fixed-roof storage vessels with a submerged fill pipe and an atmospheric vent.

7.6 Lubrication Oil System Vents

The new combustion turbine and new steam turbine will each be equipped with a dedicated lubrication system. Lubrication oil will be circulated through each turbine's machinery from the systems' oil sumps. The oil sumps will be equipped with a vent that will be controlled by an oil mist eliminator. Emissions from the oil mist eliminators are based on lube oil replacement rates for similar units equipped with mist eliminators. Both VOC and PM are expected to be emitted from for the combustion turbine lube oil vent (MCAPS-LOVCT) and the steam turbine lube oil vent (MCAPS-LOVST). The lube oil vents will be permitted to operate continuously (8,760 hours per year).

7.6.1 VOC BACT

Step 1: Identify Available Control Technologies

The VOC control technologies that are considered in this case include:

» Atmospheric vent with a built-in mist eliminator.

» Atmospheric vent with no controls.

Step 2: Eliminate Technically Infeasible Options

Both options identified above are technically feasible.

Step 3: Rank Remaining Options by Control Effectiveness

The vent with a built-in mist eliminator represents the highest level of control. This becomes the top option.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology.

Step 5: Select BACT

The combined VOC emissions from both lube oil vents can be found in Table A-15 in Appendix A. Use of a mist eliminator is the only feasible VOC control technology for these small VOC sources. Therefore, use of a mist eliminator is proposed as VOC BACT for the two lubrication oil vents (MCAPS-LOVCT and MCAPS-LOVST).

PM BACT

Step 1: Identify Available Control Technologies

The PM control technologies that are considered in this case include:

» Atmospheric vent with a built-in mist eliminator.

» Atmospheric vent with no controls.

Step 2: Eliminate Technically Infeasible Options

Both options identified above are technically feasible.

Step 3: Rank Remaining Options by Control Effectiveness

The vent with a built-in mist eliminator represents the highest level of control. This becomes the top option.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

No evaluations of cost or other impacts are required because EML is proposing to accept the top control technology.

Step 5: Select BACT

The combined PM emissions from both lubrication oil vents can be found in Table A-15 in Appendix A. Use of a mist eliminator is the only feasible PM control technology for these small PM sources. Therefore, use of a mist eliminator is proposed as $PM_{10}/PM_{2.5}$ BACT for the two lube oil vents (MCAPS-LOVCT and MCAPS-LOVST).

7.7 Fugitive Emissions

The proposed equipment at the MCAPS has the potential to leak VOC and GHG from equipment components. These components include valves, flanges and connectors, pumps,

etc. For the natural gas fugitives (MCAPS-NGFUG), the VOC composition of the natural gas is only 1.58 weight percentage. The total annual fugitive VOC emissions from this source can be found in Table A-12 in Appendix A. Methane in natural gas is a GHG. Fugitive GHG emissions for MCAPS-NGFUG represents 0.01% of the facility-wide GHG annual emission rate. The GHG emissions for MCAPS-NGFUG can be found in Table A-24 of Appendix A and the facility-wide GHG annual emission rate can be found in Table A-21 of Appendix A. For the diesel fugitives (MCAPS-DSLFUG), annual fugitive VOC emissions are low due to the limited number of components in diesel service and that diesel is a low-emitting heavy liquid. The emissions from this source can be found in Table A-14 in Appendix A. There currently are no NSPS or NESHAP regulations which require a Leak Detection and Repair (LDAR) program for the fugitive sources MCAPS-NGFUG and MCAPS-DSLFUG. If an LDAR program were implemented at MCAPS, it would monitor both VOC and GHG (methane) emissions.

7.7.1 VOC BACT

Step 1: Identify Available Control Technologies

The available VOC control technologies for fugitive VOC emissions include:

» Implementing a traditional LDAR program using a portable hydrocarbon monitor.

» Implementing an Audio-Visual-Olfactory (AVO) LDAR program.

Step 2: Eliminate Technically Infeasible Options

Both LDAR program options identified above are technically feasible.

Step 3: Rank Remaining Options by Control Effectiveness

A traditional LDAR program using a portable hydrocarbon detector is expected to have better control than an AVO LDAR program.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

Implementing a traditional LDAR program using a portable hydrocarbon detector is technically feasible, but for the minor amount of VOC control offered by an LDAR program, the VOC emission reduction achieved would be cost prohibitive. The BACT cost estimates in Appendix D shows that the cost for implementing a sitewide VOC LDAR program with a portable hydrocarbon detector would result in a control cost around $50,000 per ton VOC emissions reduced. For this reason, implementing a traditional LDAR program is rejected as VOC BACT. The use of an AVO LDAR program becomes the top available option.

Step 5: Select BACT

Most fugitive VOC is emitted from natural gas components (MCAPS-NGFUG). Because pipeline natural gas is odorized with a small quantity of mercaptan, an AVO program to detect and repair leaks is technically feasible, highly effective, and is the top remaining control option. For this reason, an AVO program is proposed for VOC BACT for MCAPS-NGFUG and MCAPS-DSLFUG.

7.7.2 GHG BACT

Step 1: Identify Available Control Technologies

The primary GHG fugitive pollutant will be methane from equipment in natural gas service. The available methane control technologies for fugitive methane emissions include:

» Implementing a traditional LDAR program using a portable hydrocarbon monitor.

» Implementing an AVO LDAR program.

Step 2: Eliminate Technically Infeasible Options

Both LDAR program options identified above are technically feasible.

Step 3: Rank Remaining Options by Control Effectiveness

A traditional LDAR program using a portable hydrocarbon detector is expected to have better control than an AVO LDAR program.

Step 4: Evaluate Most Effective Controls for Cost, Energy and Other Impacts

The GHG in question is methane in the natural gas emitted from MCAPS-NGFUG. A traditional LDAR program that uses a portable hydrocarbon detector is technically feasible, but for the minor amount of GHG control offered by this LDAR program, the GHG emission reduction achieved would be cost prohibitive. The BACT cost estimates in Appendix D shows that the cost for implementing a sitewide GHG LDAR program would result in a control cost of over $578/ton CO_2e emissions reduced. For this reason, implementing a traditional LDAR program is rejected as GHG BACT. The use of an AVO LDAR program becomes the top available option.

Step 5: Select BACT

Most fugitive methane is emitted from natural gas components (MCAPS-NGFUG). Because pipeline natural gas is odorized with a small quantity of mercaptan, an AVO program to detect and repair leaks is technically feasible, highly effective and is the top remaining control option. For this reason, an AVO program is proposed for GHG BACT for MCAPS-NGFUG and MCAPS-DSLFUG.

7.7.3 AVO LDAR Program Specifics

EML will employ AVO monitoring at the MCAPS as a good engineering practice and general duty. During normal work activities, employees will be directed to immediately alert operations anytime a leak is detected by sight, sound, or smell. This will allow EML to take immediate corrective action to repair leaks detected by AVO. The following terms and conditions for the AVO program are proposed:

A. All piping components shall be inspected by AVO means at least weekly by operating personnel walk-through.

B. Immediately, but no later than one hour upon detection of a leak, plant personnel shall take at least one of the following actions:

a. Isolate the leak.

b. Commence repair or replacement of the leaking component.

c. Use a leak collection/containment system to prevent the leak until repair or replacement can be made if immediate repair is not possible.

C. Damaged or leaking valves, connectors, compressor seals, and pump seals found by visual inspection to be leaking (e.g., dripping process fluids) shall be tagged and replaced or repaired. A leaking component shall be repaired as soon as practicable, but no later than 15 days after the leak is found. If the repair of a component would require a unit shutdown, the repair may be delayed until the next scheduled shutdown. All leaking components which cannot be repaired until a scheduled shutdown shall be identified for such repair by tagging.

D. The date and time of each inspection shall be noted in the operator's log or equivalent. Records shall be maintained at the plant site of all repairs and replacements made due to AVO-detected leaks.

E. Affected operating staff shall receive annual refresher training on the AVO leak detection and repair program.

7.8 BACT Summary Table

Table 7.2 contains a table summarizing the proposed BACT for each affected emissions unit and NSR regulated pollutant.

TABLE 7.2 BACT SUMMARY TABLE FOR EML'S PROPOSED MADISON COUNTY ADVANCED POWER STATION

EMISSIONS UNIT	EMISSION POINT ID	PSD POLLUTANT	PROPOSED BACT
GAS TURBINE/DUCT BURNER COMBUSTION MAIN STACK	MCAPS-1A	NO_x/NO_2/OZONE	Low NOx Combustors and Selective Catalytic Reduction with a NOx performance level of 2.0 ppmvd NOx @ 15% O_2 (24-hour average) – applies during routine operations but not during startup/shutdown operations or tuning activities.
		CO	Catalytic oxidation with a CO performance level of 2.0 ppmvd CO @ 15% O_2 (24-hr average basis).
		VOC/OZONE	Catalytic oxidation with a VOC performance level of 1.5 ppmvd VOC @ 15% O_2 (annual-average basis).
		$PM_{10}/PM_{2.5}$	Use of low sulfur pipeline natural gas and good combustion practices that limit PM emissions to 0.0095 pound PM/MMBtu (annual-average basis).
		H_2SO_4/SAM	Use of pipeline-quality natural gas with sulfur content not exceeding 1.0 grain S/100 scf on a short-term basis, and not exceeding 0.5 grain S/100 scf (annual-average basis).
		GHG/CO_2/CO_2E	Use of natural gas fuel with efficient power generation system with a GHG performance level of 800 pounds CO_2e/MWh of gross power output (12-month average) as required by NSPS Subpart TTTTa for operations prior to January 1, 2032.

EMISSIONS UNIT	EMISSION POINT ID	PSD POLLUTANT	PROPOSED BACT
EMERGENCY STANDBY GENERATOR	MCAPS-EMGEN	NO_X/NO_2/OZONE	Use of a Tier 2 USEPA-certified NSPS-compliant engine which meets the required NSPS Subpart IIII emergency engine NOx performance level of 6.4 g NOx/kWh
		CO	Use of a Tier 2 USEPA-certified NSPS-compliant engine which meets the required NSPS Subpart IIII emergency engine CO performance level of 3.5 g CO/kWh.
		VOC/OZONE	Meet the manufacturer's guaranteed VOC performance level of 0.56 g VOC/kWh.
		$PM_{10}/PM_{2.5}$	Use of an USEPA-certified Tier 2 engine which meets the required NSPS Subpart IIII emergency engine PM performance level of 0.20 g PM/kWh.
		$GHG/CO_2/CO_{2E}$	Use of an efficient USEPA-certified Tier 2 engine which achieves a GHG performance levels specified in Tables C-1 and C-2 of 40 CFR 98.
EMERGENCY FIREWATER PUMP	MCAPS-FWP	NOx/NO_2/OZONE	Use of a Tier 3 USEPA-certified NSPS-compliant engine which meets the required NSPS Subpart IIII emergency engine NOx performance level of 4.0 g NOx/kWh
		CO	Use of a Tier 3 USEPA-certified NSPS-compliant engine which meets the required NSPS subpart IIII emergency engine CO performance level of 3.5 g CO/kWh.
		VOC/OZONE	Meet the manufacturer's guaranteed VOC performance level of 0.11 g VOC/kWh.
		$PM_{10}/PM_{2.5}$	Use of an USEPA-certified Tier 3 engine which meets the required NSPS Subpart IIII emergency engine PM performance level of 0.20 g PM/kWh.
		$GHG/CO_2/CO_{2E}$	Use of an efficient USEPA-certified Tier 3 engine which achieves a GHG performance levels specified in Tables C-1 and C-2 of 40 CFR 98.
NATURAL GAS DEWPOINT HEATER	MCAPS-NGDPHTR	NO_x/NO_2/OZONE	Use of Ultra Low NO_x Burner technology with a manufacturer's guaranteed NOx performance level of 0.011 pound NO_x/MMBtu.
		CO	Use of good combustion practices to achieve a manufacturer's guaranteed CO performance level of 0.037 pound CO/MMBtu.
		VOC/OZONE	Use of good combustion practices to achieve a manufacturer's guaranteed VOC performance level of 0.008 pound VOC/MMBtu.
		$PM_{10}/PM_{2.5}$	Use of good combustion practices to achieve a manufacturer's guaranteed PM performance level of 0.0048 pound PM//MMBtu.
		$GHG/CO_2/CO_{2E}$	Use of clean burning and efficient pipeline natural gas fuel and the employment of good combustion practices to achieve a GHG emissions performance levels prespecified in Tables C-1 and C-2 of 40 CFR 98.
DIESEL AND CONDENSATE STORAGE TANKS	MCAPS-TK1 MCAPS-TK2 MCAPS-TK3 MCAPS-TK4	VOC/OZONE	Use of white, horizontal fixed-roof storage vessel with a submerged fill pipe and a pressure-vacuum vent.

EMISSIONS UNIT	EMISSION POINT ID	PSD POLLUTANT	PROPOSED BACT
COMBUSTION TURBINE LUBE OIL VENT	MCAPS-LOVCT	VOC/OZONE	Use of a mist eliminator to reduce emissions of oil droplets from the lube oil reservoir.
		$PM_{10}/PM_{2.5}$	Use of a mist eliminator to reduce emissions of oil droplets from the lube oil reservoir.
STEAM TURBINE LUBE OIL VENT	MCAPS-LOVST	VOC/OZONE	Use of a mist eliminator to reduce emissions of oil droplets from the lube oil reservoir.
		$PM_{10}/PM_{2.5}$	Use of a mist eliminator to reduce emissions of oil droplets from the lube oil reservoir.
NATURAL GAS AND DIESEL FUGITIVE EMISSIONS	MCAPS-NGFUG AND MCAPS-DSLFUG	VOC/OZONE	Employ an audio-visual-olfactory program to detect and repair equipment component leaks.
	MCAPS-NGFUG	$GHG/CO_2/CO_{2E}$	Employ an audio-visual-olfactory program to detect and repair equipment component leaks.

8.0 PSD AIR QUALITY IMPACTS DEMONSTRATION

The PSD regulations at 40 CFR 52.21(k), (l) and (m) require an Air Quality Impacts Analysis (AQIA) to demonstrate that emissions associated with this project will not cause or contribute to an exceedance of any NAAQS or PSD increment. This AQIA is performed primarily using dispersion modeling and background data from a nearby ambient air monitoring station.

Prior to finalizing air dispersion modeling in support of a project, MDEQ requires that a dispersion modeling protocol be submitted for MDEQ's review and approval. Appendix E contains the proposed PSD Air Dispersion Modeling Protocol for MDEQ's review and approval. When dispersion modeling is finalized, an AQIA report will be provided and included as Appendix F. Appendix F is blank for now but will be provided to MDEQ under separate cover after MDEQ approves the dispersion modeling protocol and all final modeling runs have been completed. Based on preliminary unofficial modeling (not included in this application), EML is confident the AQIA report will demonstrate compliance with all PSD NAAQS and PSD increment requirements.

In addition to demonstrating compliance with NAAQS and PSD increment requirements, the AQIA will address certain PSD requirements required for the additional impacts analysis pursuant to 40 CFR 52.21(o). The PSD additional impact analysis is addressed in Section 9.0. Section 10.0 describes how the project's impact on visibility was evaluated and determined to be not necessary.

9.0 PSD ADDITIONAL IMPACTS ANALYSIS

The PSD regulations at 40 CFR 52.21(o) require a PSD additional impacts analysis to demonstrate that emissions associated with this project will not cause or contribute to adverse impacts with respect to growth, visibility, and soils and vegetation. When evaluating PSD additional impacts, it is important to consider that the MCAPS will be new, efficient, and lower-emitting compared to existing power stations. From this perspective, it can be concluded that the MCAPS will not result in any PSD additional impacts.

9.1 Growth Impacts

The Growth Impacts analysis evaluates a project's potential impact on industrial, commercial, and residential growth in the surrounding area. The MCAPS project is expected to have minimal impacts on industrial, commercial, and residential growth in the surrounding area.

9.2 Soils and Vegetation Impacts

The soils and vegetation impacts analysis is required to evaluate a project's potential adverse impacts on soil and vegetation in the surrounding area. The MCAPS project is not expected to have any adverse impacts on soil and vegetation in the surrounding area.

9.3 Visibility Impacts Analysis

The proposed project will comply with all regulatory requirements for opacity. EML has extensive experience operating natural gas-fired combustion turbine EGUs at numerous locations. Because low-sulfur pipeline-quality natural gas is such a clean burning fuel, to the best of EML's knowledge there has never been a circumstance where operation of such an EGU has caused visibility impairment at any on-site or off-site receptor or area. This statement is true for routine operations as well as maintenance, startup, and shutdown operations of EML's combustion turbine EGUs. The emissions of visibility impairing pollutants, including sulfates, NO_x, and PM/soot are very low because (1) clean burning low-sulfur pipeline quality gas will be fired and (2) state-of-the art emission controls will be employed. Based on EML's extensive experience operating natural gas-fired combustion turbine EGUs, EML is confident in asserting that the MCAPS will not cause or contribute to visibility impairment at any Class I or Class II off-site receptor or area, including all nearby airports, state forests, parks, scenic vistas, areas of special historic interest, or any other sensitive areas. Based on this information, EML has concluded that no further visibility analysis is required. When submitted, the AQIA discussed in Section 8.0 may further address the visibility impact assessment.

10.0 PSD CLASS I AREA IMPACTS ANALYSIS

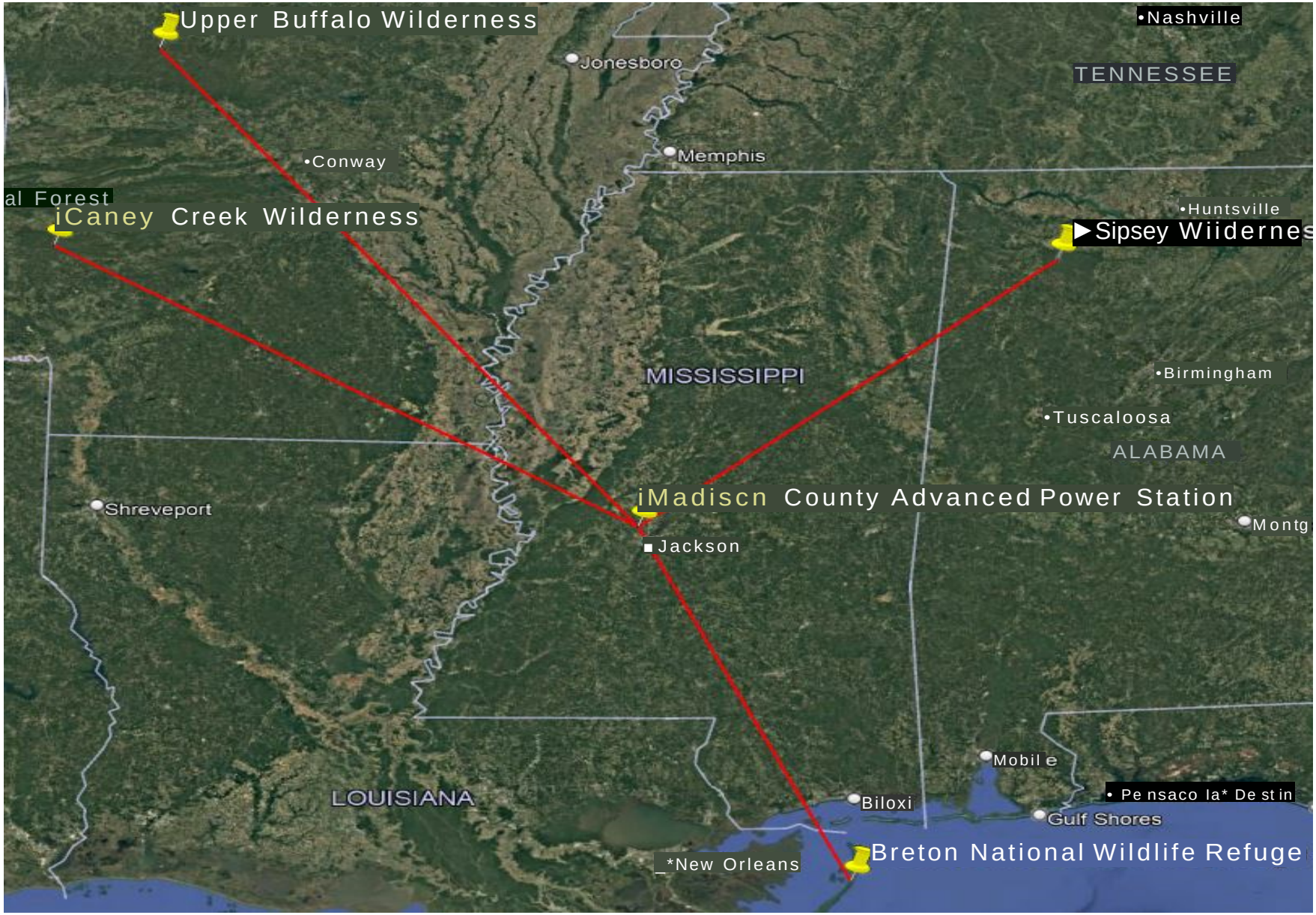
The PSD regulations at 40 CFR 52.21(p) require an evaluation of a project's impacts on federal Class I areas. Class I areas are designated to protect environmentally pristine federal lands such as national parks and wildlife refuges. Under the PSD rule, Class I areas require more restrictive ambient air and ecological impacts. These more restrictive PSD requirements for Class I areas are often referred to as Air Quality Related Values.

Proposed PSD projects within 100 kilometers of Class I areas are required to assess impacts of ambient air by comparing impacts to PSD Class I Increment standards. Federal Land Managers (FLMs) have discretion in determining which sources must complete a Class I analysis and may require an analysis for sources further than 100 kilometers from a Class I area. According to the FLMs' Air Quality Related Values Work Group guidance, a source located greater than 100 kilometers from a Class I area is considered to have a negligible impact on the Class I area. As shown in Table 10.1 below, MCAPS is over 300 kilometers away from the nearest federal Class I area.

The closest Class I area to the proposed location of the MCAPS facility is Breton National Wildlife Refuge in Louisiana, which is approximately 319 kilometers away. The locations of these Class I areas are shown below in Figure 10.1. Because the MCAPS project is over 300 kilometers away from the nearest federal Class I area, the proposed project will not have any Class I area impacts. Therefore, no additional Class I area analysis is required for this PSD application, and no formal notification of the FLM is required for the MCAPS project. When submitted, the AQIA discussed in Section 8.0 may further address the PSD Class I area assessment.

TABLE 10.1 FEDERAL CLASS I AREAS NEAREST TO THE PROPOSED MADISON COUNTY ADVANCED POWER STATION

NEAREST FEDERAL CLASS I AREAS	DISTANCE	UNITS
DISTANCE FROM MCAPS TO CANEY CREEK WILDERNESS IN ARKANSAS	421	KM
DISTANCE FROM MCAPS TO UPPER BUFFALO IN ARKANSAS	486	KM
DISTANCE FROM MCAPS TO SIPSEY WILDERNESS IN ALABAMA	336	KM
DISTANCE FROM MCAPS TO BRETON NATIONAL WILDLIFE REFUGE IN LOUISIANA	319	KM



FEDERAL CLASS I AREAS	DISTANCE TO MCAPS (KM)
CANEY CREEK WILDERNESS IN ARKANSAS	421
UPPER BUFFALO IN ARKANSAS	486
SIPSEY WILDERNESS IN ALABAMA	336
BRETON NATIONAL WILDLIFE REFGUE IN LOUISIANA	319

ENTERGY MISSISSIPPI, LLC
MADISION COUNTY ADVANCED POWER STATION (MCAPS)

FIGURE 10.1
FEDERAL CLASS I AREAS NEAREST TO PROPOSED MADISON COUNTY ADVANCED POWER STATION

POWER ENGINEERS
MEMBER OF WSP

Project No.:	Date:	Sheet:
0257075	4/17/2025	1 of 1

11.0 ENVIRONMENTAL JUSTICE CONSIDERATIONS

It has been widely publicized that USEPA's Environmental Justice (EJ) program has been minimized because of revised policy objectives of the new Trump administration. Recent EJ policy actions taken by the new administration include but are not limited to:

» Rescinded President Clinton's Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."

» Rescinded President Biden's Executive Order 14096 to Advance Environmental Justice.

» Issued Executive Order 14151 which directs each agency to "terminate, to the maximum extent allowed by law", all environmental justice offices and positions.

» Disabled the USEPA on-line Environmental Justice Screening and Mapping Tool – EJSCREEN.

Notwithstanding these recent changes to USEPA policy, EML has elected to go forward with a complete EJ assessment for the MCAPS project. This assessment was performed based on prior USEPA EJ policies and use of non-USEPA resources to develop EJ information that was previously provided using EJSCREEN. EML is fully committed to involving potential EJ communities as stakeholders in the air permitting process. EML demonstrated this commitment by holding an initial public meeting on April 11, 2025. The meeting included a Homeowners Association to represent a nearby community located southeast of the proposed MCAPS facility. Throughout the permitting process, EML will maintain an on-going and meaningful dialogue with communities near the proposed MCAPS facility. This approach is consistent with historical USEPA EJ public involvement objectives.

EJ has been defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations of policies.

EML's comprehensive desktop EJ Screening Report, based on historical USEPA EJ policy guidance, is presented in Appendix G. The report identifies a significant number of vulnerable communities within both the one-mile and five-mile study areas. The analysis revealed that two of the three block groups in the immediate 1.0-mile vicinity, and 63 of the 77 block groups within the 5.0-mile radius, meet thresholds for elevated minority and/or low-income populations. Many of these areas are also characterized by multiple layers of vulnerability, including limited English proficiency and proximity to existing environmental hazards

Even though several EJ candidate communities have been identified, the environmental impacts from the proposed MCAPS facility are expected to be minimal if not non-discernable. This is due to the relatively low levels of air pollution that will be emitted from this modern highly controlled facility. The air quality and other environmental impacts associated with the MCAPS project are presented in detail this air permit application. A major objective of the EJ public outreach campaign for this project should be to educate the public on the fact that the air emissions and other environmental impacts from the facility are expected to have a de minimis impact on surrounding communities.

The USEPA's EJ permitting principles emphasize the importance of identifying potentially impacted communities, engaging the public early, enhancing transparency, and minimizing

adverse effects to promote fair treatment. These principles should guide the permitting process to ensure environmental justice considerations are fully integrated. EML is fully committed to EJ principles as well as compliance and the robust public notice and public participation requirements of the federal PSD program and other applicable environmental regulations and statutes. With this project, EML is proposing a new state-of-the-art, highly controlled EGU which is expected to have de minimis air and water pollution impacts on all nearby communities, including potential EJ communities. Again, in accordance with historical EJ policies, EML will maintain an on-going and meaningful dialogue with communities near the proposed MCAPS facility throughout the environmental permitting process.

APPENDIX A AIR EMISSION CALCULATIONS

Table A-0
Proposed Sitewide Permitted Emissions Summary
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID	Description	Filterable PM		PM-10		PM-2.5		SO_2		NOx		CO		VOC		H_2SO_4		Ammonia		Formaldhyde		GHG/CO_2e	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
MCAPS-1A	Simple Cycle Combustion Turbine Unit 5 (Normal Operating)	43.04		56.66		56.66		13.98		40.59		24.71		10.62		21.40		75.13		1.21			
	Simple Cycle Combustion Turbine Unit 5 (Normal Operating & SUSD)	43.04	118.38	56.66	158.53	56.66	158.53	13.98	28.92	294.00	220.96	7,441.00	1,196.58	2,527.00	403.08	21.40	44.27	75.13	311.09	1.21	5.24	577,628	2,530,010
MCAPS-EMGEN	Emergency Standby Generator Diesel Engine	1.37	0.07	0.96	0.05	0.96	0.05	0.03	<0.01	30.76	1.54	16.82	0.84	2.69	0.13					<0.01	<0.01	3,614	181
MCAPS-FWP	Emergency Fire Water Pump Diesel Engine	0.10	<0.01	0.10	<0.01	0.10	<0.01	<0.01	<0.01	2.07	0.10	1.81	0.09	0.06	<0.01					<0.01	<0.01	309	15
MCAPS-NGDPHTR	Natural Gas Dewpoint Heater	<0.01	0.04	0.02	0.11	0.02	0.11	<0.01	0.02	0.06	0.24	0.19	0.81	0.04	0.18					<0.01	<0.01	587	2,572
MCAPS-NGFUG	Natural Gas Fugitive Emissions													0.09	0.37							77	336
MCAPS-AMMFUG	Ammonia Fugitive Emissions																	0.08	0.37				
MCAPS-DSLFUG	Diesel Fugitive Emissions													<0.01	0.03								
MCAPS-LOVCT	Combustion Turbine Lube Oil Vent	<0.01	0.01	<0.01	0.01	<0.01	0.01							<0.01	0.01								
MCAPS-LOVST	Steam Turbine Lube Oil Vent	<0.01	0.01	<0.01	0.01	<0.01	0.01							<0.01	0.01								
MCAPS-TK1	Emergency Generator Diesel Tank 1													0.23	<0.01								
MCAPS-TK2	Emergency Firewater Pump Diesel Tank 2													0.03	<0.01								
MCAPS-TK3	Natural Gas Condensate Tank 3													3.44	0.03								
MCAPS-TK4	Natural Gas Condensate Tank 4													3.44	0.03								
	Totals	**44.53**	**118.53**	**57.75**	**158.72**	**57.75**	**158.72**	**14.02**	**28.94**	**326.89**	**222.84**	**7,459.82**	**1,198.32**	**2,537.03**	**403.88**	**21.40**	**44.27**	**75.21**	**311.46**	**1.21**	**5.24**	**582,215**	**2,533,114**

Table A-1
Emission Source Summary
Madison County Advanced Power Station
Entergy Mississippi, LLC

Description	Emission Point ID
Combined Cycle Unit 1A	MCAPS-1A
Emergency Standby Generator	MCAPS-EMGEN
Emergency Diesel Fire Water Pump	MCAPS-FWP
Natrual Gas Dewpoint Heater	MCAPS-NGDPHTR
Natural Gas Fugitive Emissions	MCAPS-NGFUG
Ammonia Fugitive Emissions	MCAPS-AMMFUG
Diesel Fugitive Emissions	MCAPS-DSLFUG
Combustion Turbine Lube Oil Vent	MCAPS-LOVCT
Steam Turbine Lube Oil Vent	MCAPS-LOVST
Emergency Generator Diesel Tank	MCAPS-TK1
Emergency Fire Water Pump Diesel Tank	MCAPS-TK2
Natural Gas Condensate Tank	MCAPS-TK3
Natural Gas Condensate Tank	MCAPS-TK4

Table A-2
Maximum Hourly Turbine Emission Calculations
M501JAC Combined Cycle - Single Unit
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID: MCAPS-1A

OPERATING CONDITIONS:		Case 1a	Case 4a	Case 7a	Case 9a	Case 12a	Case 17a	Case 21a	Case 23a	Case 26a	Case 35a	Case 37a	Case 40a	Case 1b	Case 3b	Case 5b
Duct Firing		Fired	Fired	Fired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired
Load		Base	Base	Base	Base	Base	Base	75% Load	75% Load	75% Load	MECL	MECL	MECL	Base	Base	Base
Evap Cooler Status		Evap Off	Evap Off	Evap On	Evap Off	Evap Off	Evap On	Evap Off	Evap Off	Evap Off	Evap Off	Evap Off	Evap Off	Evap Off	Evap Off	Evap Off
Ambient Dry Bulb Temperature	ºF	10	59	97	10	59	97	10	59	97	10	59	97	10	59	95
Ambient Relative Humidity	%	69.7	60.0	56.0	69.7	60.0	56.0	69.7	60.0	56.0	69.7	60.0	56.0	69.7	60.0	49.1
Ambient Pressure	psia	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
NATURAL GAS FUEL PROPERTIES:																
Natural Gas Fuel	BTU/lb - HHV	22,642	22,642	22,642	22,642	22,642	22,642	22,642	22,642	22,642	22,642	22,642	22,642	22,642	22,642	22,642
Heating Value, Natural Gas	BTU/scf - HHV	1,017	1,017	1,017	1,017	1,017	1,017	1,017	1,017	1,017	1,017	1,017	1,017	1,017	1,017	1,017
Natural Gas MW	lb/lbmole	17.05	17.05	17.05	17.05	17.05	17.05	17.05	17.05	17.05	17.05	17.05	17.05	17.05	17.05	17.05
Sulfur Content, Natural Gas 1-Hr	grains S/100 scf	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Sulfur Content, Natural Gas Annual	grains S/100 scf	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
CTG EFFECTS:																
Evaporative Cooler On/Off		OFF	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
GT Output Power	kW	469,266	461,221	435,373	469,266	461,221	435,373	381,660	345,495	313,596	212,414	160,258	170,867	469,266	461,221	413,739
GT Heat Input	MMBTU/hr - HHV	4,120	4,089	3,920	4,122	4,091	3,922	3,471	3,158	2,993	2,758	2,360	2,449	4,122	4,091	3,741
GT Fuel Flow	scf/hr	4,050,271	4,019,796	3,853,656	4,052,237	4,021,762	3,855,622	3,412,255	3,104,553	2,942,345	2,711,322	2,320,058	2,407,552	4,052,237	4,021,762	3,677,686
DUCT BURNER EFFECTS:																
SG Output Power	kW	301,413	310,997	304,888	199,179	210,499	200,255	173,392	165,309	158,311	167,768	157,312	158,454	0	0	0
DB Firing Rate	MMBTU/hr - LHV	778	766	778	0	0	0	0	0	0	0	0	0	0	0	0
DB Firing Rate	MMBTU/hr - HHV	863	850	863	0	0	0	0	0	0	0	0	0	0	0	0
DB Fuel Flow	lb/hr	38,107	37,543	38,125	0	0	0	0	0	0	0	0	0	0	0	0
DB Fuel Flow	scf/hr	848,198	835,713	848,689	0	0	0	0	0	0	0	0	0	0	0	0
DB Fuel Flow	mol/hr	2,235	2,202	2,236	0	0	0	0	0	0	0	0	0	0	0	0
CTG & DUCT BURNER COMBINED EXHAUST:																
Net Plant Total Output	kW	748,584	750,084	718,957	649,008	652,198	617,044	535,615	491,282	454,181	360,745	298,048	311,595	449,829	441,699	395,876
HRSG Stack Exhaust Gas Mass Flow	lb_m/hr	7,590,124	7,548,487	7,214,445	7,547,385	7,506,360	7,171,659	6,453,692	5,911,484	5,638,318	6,232,688	5,493,954	5,654,404	7,547,380	7,506,354	6,910,686
HRSG Stack Gas Temperature	°F	160.0	160.0	173.6	177.6	176.8	190.2	173.9	170.4	179.0	173.1	166.8	178.8	169.8	171.4	188.9
HRSG Stack Gas O2 Volume Percentage	%	8.92	8.82	8.25	10.91	10.78	10.31	11.05	10.98	10.68	12.81	12.89	12.43	10.91	10.78	10.57
HRSG Stack Gas CO2 Volume Percentage	%	5.56	5.52	5.54	4.64	4.62	4.58	4.57	4.53	4.45	3.76	3.64	3.64	4.64	4.62	4.55
HRSG Stack Gas H2O Volume Percentage	%	10.92	11.66	14.27	9.14	9.91	12.46	9.02	9.76	11.80	7.43	8.04	10.26	9.14	9.91	11.44
HRSG Stack Gas N2 Volume Percentage	%	73.68	73.08	71.05	74.38	73.76	71.75	74.44	73.80	72.16	75.06	74.50	72.75	74.38	73.76	72.52
HRSG Stack Gas Ar Volume Percentage	%	0.92	0.92	0.89	0.93	0.93	0.90	0.93	0.93	0.91	0.94	0.93	0.92	0.93	0.93	0.91
HRSG Stack Gas Molecular Weight	lb/lbmol	28.28	28.19	27.91	28.39	28.30	28.02	28.39	28.31	28.08	28.49	28.42	28.18	28.39	28.30	28.13
HRSG Stack Gas O2 Volume Percentage - Dry Basis	%	10.02	9.98	9.62	12.01	11.97	11.77	12.14	12.17	12.11	13.83	14.01	13.85	12.01	11.97	11.94
Exit Flow Rate	lb_{mol}/hr	268,430	267,753	258,519	265,870	265,230	255,957	227,290	208,809	200,795	218,732	193,338	200,687	265,870	265,230	245,696
Exit Flow Rate	lb_{mol}/hr - dry	239,119	236,522	221,619	241,571	238,938	224,070	206,799	188,432	177,103	202,472	177,785	180,097	241,571	238,938	217,579
Exit Flow Rate	scf/hr	103,492,004	103,230,818	99,670,699	102,505,062	102,258,197	98,683,131	87,630,524	80,505,357	77,415,713	84,331,273	74,540,436	77,373,916	102,504,994	102,258,119	94,727,194
Exit Flow Rate	scf/hr - dry	92,180,258	91,179,343	85,434,119	93,125,791	92,110,685	86,379,107	79,720,886	72,640,387	68,273,244	78,052,908	68,535,945	69,427,452	93,125,729	92,110,615	83,876,520

Table A-2
Maximum Hourly Turbine Emission Calculations
M501JAC Combined Cycle - Single Unit
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID: MCAPS-1A

OPERATING CONDITIONS:		Case 1a	Case 4a	Case 7a	Case 9a	Case 12a	Case 17a	Case 21a	Case 23a	Case 26a	Case 35a	Case 37a	Case 40a	Case 1b	Case 3b	Case 5b
NO_X	ppmvd@15%O_2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
NO_X	ppmvd	3.69	3.70	3.82	3.01	3.03	3.09	2.97	2.96	2.98	2.40	2.33	2.39	3.01	3.03	3.04
NO_X as NO_2	lb/hr	40.59	40.28	38.99	33.49	33.28	31.89	28.24	25.66	24.28	22.31	19.10	19.79	33.49	33.28	30.40
CO	ppmvd@15%O_2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
CO	ppmvd	3.69	3.70	3.82	3.01	3.03	3.09	2.97	2.96	2.98	2.40	2.33	2.39	3.01	3.03	3.04
CO	lb/hr	24.71	24.52	23.74	20.39	20.26	19.42	17.20	15.62	14.78	13.58	11.63	12.05	20.39	20.26	18.51
VOC, as CH_4	ppmvd@15%O_2	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
VOC, as CH_4	ppmvd	2.77	2.78	2.87	1.51	1.51	1.55	1.48	1.48	1.49	1.20	1.17	1.19	1.51	1.51	1.52
VOC, as CH_4	lb/hr	10.62	10.53	10.20	5.84	5.80	5.56	4.92	4.47	4.23	3.89	3.33	3.45	5.84	5.80	5.30
CH2O	ppmvd@15%O_2	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091
CH2O	ppmvd	0.17	0.17	0.17	0.14	0.14	0.14	0.14	0.13	0.14	0.11	0.11	0.11	0.14	0.14	0.14
CH2O	lb/hr	1.21	1.20	1.16	0.99	0.99	0.95	0.84	0.76	0.72	0.66	0.57	0.59	0.99	0.99	0.90
NH_3	ppmvd@15%O_2	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
NH_3	ppmvd	18.45	18.51	19.12	15.07	15.14	15.47	14.84	14.80	14.90	11.98	11.67	11.94	15.07	15.14	15.18
NH_3	lb/hr	75.13	74.55	72.17	62.00	61.61	59.04	52.28	47.50	44.95	41.30	35.34	36.63	62.00	61.61	56.27
SO_2, Maximum Hourly	lb/hr	13.98	13.86	13.42	11.57	11.48	11.01	9.74	8.86	8.40	7.74	6.62	6.87	11.57	11.48	10.50
SO_2, Annual Average	lb/hr	6.99	6.93	6.71	5.78	5.74	5.50	4.87	4.43	4.20	3.87	3.31	3.44	5.78	5.74	5.25
SO_2 to SO_3 Conversion	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
H_2SO_4, Maximum Hourly (100% converted SO_3)	lb/hr	21.40	21.22	20.55	17.71	17.57	16.85	14.91	13.57	12.86	11.85	10.14	10.52	17.71	17.57	16.07
H_2SO_4, Annual Average (100% converted SO_3)	lb/hr	10.70	10.61	10.27	8.85	8.79	8.42	7.46	6.78	6.43	5.92	5.07	5.26	8.85	8.79	8.04
$(NH_4)_2SO_4$, Maximum Hourly (100% converted SO_3)	lb/hr	28.84	28.59	27.68	23.86	23.68	22.70	20.09	18.28	17.32	15.96	13.66	14.17	23.86	23.68	21.65
$(NH_4)_2SO_4$, Annual Average (100% converted SO_3)	lb/hr	14.42	14.29	13.84	11.93	11.84	11.35	10.04	9.14	8.66	7.98	6.83	7.09	11.93	11.84	10.83
PM Filterable Only (Calculated from AP-42 Section 3.1)	lb/hr	14.20	14.08	13.63	11.75	11.66	11.18	9.89	9.00	8.53	7.86	6.73	6.98	11.75	11.66	10.66
PM Filterable Only, Maximum Hourly (including Sulfates)	lb/hr	43.04	42.66	41.32	35.60	35.34	33.88	29.98	27.28	25.85	23.82	20.38	21.15	35.60	35.34	32.31
PM Filterable Only, Annual Average (including Sulfates)	lb/hr	28.62	28.37	27.47	23.68	23.50	22.53	19.94	18.14	17.19	15.84	13.56	14.07	23.68	23.50	21.49
Mitsubishi Particulate Values, PM10 Total, Maximum Hourly	lb/hr	56.66	56.08	54.67	37.42	37.11	35.42	31.51	28.65	27.03	25.04	21.41	22.12	37.42	37.11	33.91
Mitsubishi Particulate Values, PM10 Total, Annual Average	lb/hr	38.42	37.99	37.16	22.32	22.13	21.06	18.90	17.20	16.26	16.15	13.96	14.35	22.32	22.13	20.21

Table A-3
Sample Emission Calculations
M501JAC Combined Cycle - Single Unit
Madison County Advanced Power Station
Entergy Mississippi, LLC

Case 4a		
HRSG Stack Exhaust Gas Mass Flow	7 548 487	lb_m/hr
HRSG Stack Gas Molecular Weight	28.19	lb/lbmole
GT Firing Rate	4.089	MMBTU/hr - HHV
DB Firing Rate	850	MMBTU/hr - HHV
Heating Value, Natural Gas	1 017.2	BTU/scf - HHV
HRSG Stack Gas O2 Volume Percentage	8.82	% O2, wet
HRSG Stack Gas H2O Volume Percentage	11.66	% H2O

$$\text{Exhaust Exit Flow Rate} = \frac{7{,}548{,}487 \text{ lb exhaust}}{\text{hr}} \times \frac{\text{lbmole}}{28.19 \text{ lb}} \times \frac{1 - (11.66\%\ H2O)/100)}{} = 236{,}522.3 \text{ lbmole/hr (dry)}$$

$$\text{HRSG Stack Gas O2 Volume Percentage - Dry Basis} = \frac{8.82\ \%\ O2 \text{ wet}}{(1 - (11.66\ \%\ H20)/100))} = 9.98\ \%\ O2 \text{ dry}$$

$$\text{GT Fuel Flow} = \frac{4{,}089 \text{ MMBtu HHV}}{\text{hr}} \times \frac{1{,}000{,}000 \text{ Btu}}{\text{MMBtu}} \times \frac{\text{scf}}{1{,}017.2 \text{ MMBtu HHV}} = 4{,}019{,}796.0 \text{ scfh}$$

$$\text{DB Fuel Flow} = \frac{850 \text{ MMBtu HHV}}{\text{hr}} \times \frac{1{,}000{,}000 \text{ Btu}}{\text{MMBtu}} \times \frac{\text{scf}}{1{,}017.2 \text{ MMBtu HHV}} = 835{,}712.5 \text{ scfh}$$

Total NG Flow = 4,019,796.0 scfh + 835,712.5 scfh = 4,855,508.5 scfh

Sample Calculation - Oxides of Nitrogen (NOx)

Case 4a		
Emission Factor	2.0	ppmvd NOx @ 15% O_2
NO_2 MW	46.01	lb/lb_{mole}

Emission Factor Corrected for Actual Oxygen Concentration - NOx

$$\text{Emission Factor} = \frac{2.0 \text{ ppmvd @ 15\%}}{} \times \frac{(20.9 - 9.98\ O2\%\ \text{dry})}{(20.9 - 15)} = 3.7 \text{ ppmvd NOx}$$

Emission Rate Calculation - NOx

$$\text{NOx Emissions} = \frac{3.7 \text{ lbmole NOx}}{1{,}000{,}000 \text{ lbmole exhaust}} \times \frac{236{,}522 \text{ lbmole exhaust}}{\text{hr}} \times \frac{46.01 \text{ lb NOx/lb mole}}{\text{lbmole NOx}} = 40.28 \text{ lb/hr NOx as NO2}$$

Sample Calculation - Carbon Monoxide (CO)

Case 4a		
Emission Factor	2.0	ppmvd CO @ 15% O_2
CO MW	28.01	lb/lb_{mole}

Emission Factor Corrected for Actual Oxygen Concentration - CO

$$\text{Emission Factor} = \frac{2.0 \text{ ppmd @ 15\%}}{} \times \frac{(20.9 - 9.98\ O2\%\ \text{dry})}{(20.9 - 15)} = 3.7 \text{ ppmvd CO}$$

Emission Rate Calculation - CO

$$\text{CO Emissions} = \frac{3.7 \text{ lbmole CO}}{1{,}000{,}000 \text{ lbmole exhaust}} \times \frac{236{,}522 \text{ lbmole exhaust}}{\text{hr}} \times \frac{28.01 \text{ lb CO/lb mole}}{\text{lbmole CO}} = 24.52 \text{ lb/hr CO}$$

Table A-3
Sample Emission Calculations
M501JAC Combined Cycle - Single Unit
Madison County Advanced Power Station
Entergy Mississippi, LLC

Sample Calculation - Volatile Organic Compound (VOC)

Case 4a		
Emission Factor	1.5	ppmvd VOC @ 15% O_2
VOC MW	16.04	lb/lb_{mole}

Emission Factor Corrected for Actual Oxygen Concentration - VOC

$$\text{Emission Factor} = \frac{1.5 \text{ ppmd @ 15\%}}{\frac{(20.9 - 9.98 \text{ O2\% dry})}{(20.9 - 15)}} = 2.78 \text{ ppmvd VOC}$$

Emission Rate Calculation - VOC

$$\text{VOC Emissions} = \frac{2.78 \text{ lbmole VOC}}{1{,}000{,}000 \text{ lbmole exhaust}} \frac{236{,}522 \text{ lbmole exhaust}}{\text{hr}} \frac{16.04 \text{ lb VOC/lb mole}}{\text{lbmole VOC}} = 10.53 \text{ lb/hr VOC}$$

Sample Calculation - Formaldehyde (CH_2O)

Case 4a		
Emission Factor	0.091	ppmvd @ 15% O_2
CH_2O	30.03	lb/lb_{mole}

Emission Factor Corrected for Actual Oxygen Concentration - CH_2O

$$\text{Emission Factor} = \frac{0.091 \text{ ppmd @ 15\%}}{\frac{(20.9 - 9.98 \text{ O2\% dry})}{(20.9 - 15)}} = 0.17 \text{ ppmvd CH2O}$$

Emission Rate Calculation - CH_2O

$$CH_2O \text{ Emissions} = \frac{0.17 \text{ lbmole CH2O}}{1{,}000{,}000 \text{ lbmole exhaust}} \frac{236{,}522 \text{ lbmole exhaust}}{\text{hr}} \frac{30.03 \text{ lb CH2O/lb mole}}{\text{lbmole CH2O}} = 1.2 \text{ lb/hr NH3}$$

Sample Calculation - Ammonia (NH_3)

Case 4a		
Emission Factor	10	ppmvd @ 15% O_2
NH_3	17.03	lb/lb_{mole}

Emission Factor Corrected for Actual Oxygen Concentration - NH_3

$$\text{Emission Factor} = \frac{10 \text{ ppmd @ 15\%}}{\frac{(20.9 - 9.98 \text{ O2\% dry})}{(20.9 - 15)}} = 18.51 \text{ ppmvd NH3}$$

Emission Rate Calculation - NH_3

$$NH_3 \text{ Emissions} = \frac{18.51 \text{ lbmole NH3}}{1{,}000{,}000 \text{ lbmole exhaust}} \frac{236{,}522 \text{ lbmole exhaust}}{\text{hr}} \frac{17.03 \text{ lb NH3/lb mole}}{\text{lbmole NH3}} = 74.55 \text{ lb/hr NH3}$$

Table A-3
Sample Emission Calculations
M501JAC Combined Cycle - Single Unit
Madison County Advanced Power Station
Entergy Mississippi, LLC

Sample Calculation - Sulfur Dioxide (SO_2), Sulfuric Acid (H_2SO_4), and Ammonium Sulfate $(NH_4)_2SO_4$

Case 4a		
Emission Factor	1	grain S / 100 scf, Natural Gas, Max Hourly
Emission Factor	0.5	grain S / 100 scf, Natural Gas, Annual Avera e
SO2 to SO3 Conversion	100	%
S MW	32.07	lb/lb_{mole}
SO_2 MW	64.07	lb/lb_{mole}
H_2SO_4 MW	98.08	lb/lb_{mole}
$(NH_4)_2SO_4$ MW	132.14	lb/lb_{mole}

Emission Rate Calculation - SO_2

$$SO_2 \text{ Emissions, Maximum Hourly} = \frac{1 \text{ grain S}}{100 \text{ scf}} \times \frac{\text{lb}}{7{,}000 \text{ grain}} \times \frac{4{,}855{,}509 \text{ Total NG scf}}{\text{hr}} \times \frac{64.07 \text{ lbmole SO2}}{32.07 \text{ lbmole S}} = 13.86 \text{ lb/hr SO2}$$

$$SO_2 \text{ Emissions, Annual Average} = \frac{0.5 \text{ grain S}}{100 \text{ scf}} \times \frac{\text{lb}}{7{,}000 \text{ grain}} \times \frac{4{,}855{,}509 \text{ Total NG scf}}{\text{hr}} \times \frac{64.07 \text{ lbmole SO2}}{32.07 \text{ lbmole S}} = 6.93 \text{ lb/hr SO2}$$

Emission Rate Calculation - H_2SO_4

$$H_2SO_4 \text{ Emissions, Maximum Hourly} = \frac{1 \text{ grain S}}{100 \text{ scf}} \times \frac{\text{lb S}}{7000 \text{ grain}} \times \frac{4{,}855{,}509 \text{ Total NG scf}}{\text{hr}} \times \frac{98.08 \text{ lbmole H2SO4}}{32.07 \text{ lbmole S}} = 21.22 \text{ lb/hr H2SO4}$$

$$H_2SO_4 \text{ Emissions, Annual Average} = \frac{0.5 \text{ grain S}}{100 \text{ scf}} \times \frac{\text{lb S}}{7000 \text{ grain}} \times \frac{4{,}855{,}509 \text{ Total NG scf}}{\text{hr}} \times \frac{98.08 \text{ lbmole H2SO4}}{32.07 \text{ lbmole S}} = 10.61 \text{ lb/hr H2SO4}$$

Emission Rate Calculation - $(NH_4)_2SO_4$

$$(NH_4)_2SO_4 \text{ Emissions, Maximum Hourly} = \frac{21.22 \text{ lb H2SO4}}{\text{hr}} \times \frac{132.14 \text{ lbmole (NH4)2SO4}}{98.08 \text{ lbmole H2SO4}} = 28.59 \text{ lb/hr (NH4)2SO4}$$

$$(NH_4)_2SO_4 \text{ Emissions, Annual Average} = \frac{10.61 \text{ lb H2SO4}}{\text{hr}} \times \frac{132.14 \text{ lbmole (NH4)2SO4}}{98.08 \text{ lbmole H2SO4}} = 14.29 \text{ lb/hr (NH4)2SO4}$$

Sample Calculation - Particulate Matter (PM, PM_{10}, $PM_{2.5}$)

Emission Rate Calculation - PM Filterable Only (including Sulfates)

Case 4a		
Emission Factor (AP-42, Section 3.1)	0.0019	lb/MMBTU
Safety Factor	1.5	
Emission Factor (AP-42, Section 3.1) w/ Safety Factor	0.0029	lb/MMBTU
GT Heat Input	4.089	MMBTU/hr - HHV
DB Heat Rate	850	MMBTU/hr - HHV

$$\text{PM Filterable Only, Maximum Hourly (including Sulfates)} = \frac{(4{,}089 \text{ MMBTU} + 850 \text{ MMBTU})}{\text{hr}} \times \frac{0.0029 \text{ lb}}{\text{MMBTU}} + 28.59 \text{ lb/hr (NH4)2SO4} = 42.66 \text{ lb/hr PM}$$

$$\text{PM Filterable Only, Annual Average (including Sulfates)} = \frac{(4{,}089 \text{ MMBTU} + 850 \text{ MMBTU})}{\text{hr}} \times \frac{0.0029 \text{ lb}}{\text{MMBTU}} + 14.29 \text{ lb/hr (NH4)2SO4} = 28.37 \text{ lb/hr PM}$$

Emission Rate Calculation - PM, as PM10 Total (assume PM10=PM2.5)

Particulates, PM10 Total, Maximum Hourly = 56.08 lb/hr PM, PM_{10}, $PM_{2.5}$

Particulates, PM10 Total, Annual Average = 37.99 lb/hr PM, PM_{10}, $PM_{2.5}$

Table A-4
HAP Turbine Emission Calculations
M501JAC Combined Cycle - Single Unit
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID: MCAPS-1A

Calculations:

Maximum Hourly Heat Input = 4,120 MMBtu/hr + 863 MMBtu/hr = 4,983 MMBtu/hr

Annual Average Heat Input = 4,089 MMBtu/hr + 850 MMBtu/hr = 4,939 MMBtu/hr

Pollutant	Emission Factor[1] (lb/MMBtu)	Maximum Hourly Emission Rate[2] (lb/hr)	Annual Average Hourly Emission Rate[3] (lb/hr)	Annual Emission Rate[3,4] (tpy)
1,3-Butadiene	4.3E-07	0.002	0.002	0.01
Acetaldehyde	4.0E-05	0.199	0.198	0.87
Acrolein	6.4E-06	0.032	0.032	0.14
Benzene	1.2E-05	0.060	0.059	0.26
Ethylbenzene	3.2E-05	0.159	0.158	0.69
Formaldehyde	NA - 91 ppbv @ 15% O2	1.205	1.196	5.24
Naphthalene	1.3E-06	0.006	0.006	0.03
PAH	2.2E-06	0.011	0.011	0.05
Propylene Oxide	2.9E-05	0.145	0.143	0.63
Toluene	1.3E-04	0.648	0.642	2.81
Xylenes	6.4E-05	0.319	0.316	1.38
	Total HAPs	**2.79**	**2.76**	**12.10**

[1] Based on AP-42, Table 3.1-3, emission factors for HAPs from natural gas-fired stationary turbines, except formaldehyde which is manufacturer provided

[2] Based on Case 1a, duct fired, base load, evap off, 10°F

[3] Based on Case 4a, duct fired, base load, evap off, 59°F

[4] Assumes 8,760 annual hours of operation

Sample Calculations:

Maximum Hourly Emission Rate (lb/hr) = Emission Factor (lb/MMBtu) x Maximum Hourly Heat Input (MMBtu/hr)

Annual Average Hourly Emission Rate (lb/hr) = Emission Factor (lb/MMBtu) x Annual Average Hourly Heat Input (MMBtu/hr)

Annual Emission Rate (tpy) = Annual Average Hourly Emission Rate (lb/hr) x 8,760 hr/yr / 2,000 lb/ton

Table A-5
Turbine Startup/Shutdown Emission Summary
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID: MCAPS-1A

Startup/Shutdown Emissions for Mitsubishi M501JAC Combined Cycle Turbine

Type	Duration (min)	Events/yr[1]	SS hr/yr	NOx			CO			VOC		
				lb SS/event	lb SS/hr [2]	ton SS/yr	lb SS/event	lb SS/hr [2]	ton SS/yr	lb SS/event	lb SS/hr [2]	ton SS/yr
Startup-Cold, Maximum (lb/event)	178	5	14.8	800	294	2.0	14,300	7,441	35.8	4,600	2,527	11.5
Startup-Warm, Maximum (lb/event)	126	20	42.0	550	288	5.5	10,600	7,131	106.0	3,500	2,420	35.0
Startup-Hot, Maximum (lb/event)	97	200	323.3	410	264	41.0	8,400	6,414	840.0	2,800	2,156	280.0
Shutdown, Maximum (lb/event)	9	225	33.8	39	39	4.4	1,000	1,000	112.5	290	290	32.6
Maximum Hourly / Total Annual			413.9		294	52.89		7,441	1,094.3		2,527	359.1

[1] This is an estimate for purposes of calculating annual emissions. It is not a representation of total number of annual SS events.
[2] Maximum Emissions for any 60 minute period from Ignition to MECL

Table A-6
Hourly Emission Summary
Normal Operating Conditions
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID: MCAPS-1A

Assumptions:

Controlled NOx concentration	2.0	ppmvd @ 15% O2
Uncontrolled NOx concentration	25.0	ppmvd @ 15% O2
Controlled CO Concentration	2.0	ppmvd @ 15% O2
Uncontrolled CO Concentration	15.0	ppmvd @ 15% O2
Controlled VOC Concentration	1.5	ppmvd @ 15% O2
Uncontrolled VOC Concentration	4.0	ppmvd @ 15% O2

Hourly Emissions for M501JAC Combined Cycle

Pollutant	Maximum For Averaging Period	Single Turbine						
		Maximum Hourly	Uncontrolled Hourly Emissions Per MDEQ Policy for Form B.1 (lb/hr)	Uncontrolled Annual Emissions Per MDEQ Policy for Form B.1 (ton/yr)	SS Max Hourly (Cold Start)			Annual Basis
		Case 1a Fired Base Evap Off 10 °F (lb/hr)			SS Emissions (lbs)	SS Duration (minutes)	First Hour Emissions SS/Routine (lb/hr)	Case 4a Fired Base Evap Off 59 °F (lb/hr)
NO_X	1-Hour	40.59	507.37	2,222.30	800.00	178.00	294.00	
	Annual							40.28
CO	1-Hour	24.71	185.35	811.83	14,300.00	178.00	7,441.00	
	Annual							24.52
VOC [1]	1-Hour	10.62	28.31	123.99	4,600.00	178.00	2,527.00	
	Annual							10.53
SO_2	1-Hour	13.98	13.98	61.24				
	Annual							6.93
Filterable PM [2]	1-Hour	43.04	43.04	188.51				
	Annual							28.37
$PM_{10}/PM_{2.5}$ [3]	1-Hour	56.66	56.66	248.17				
	Annual							37.99
H_2SO_4	1-Hour	21.40	21.40	93.75				
	Annual							10.61
NH_3	1-Hour	75.13	75.13	329.07				
	Annual							74.55
$(NH_4)_2SO_4$	1-Hour	28.84						
	Annual							14.29

[1] VOCs are non-methane, non-ethane as CH_4

[2] Particulates are calculated using AP-42, Section 3.1 and do not include condensables

[3] Particulates are front and back half by EPA Method 5/202 and include condensables

Table A-7
Gas Turbine Annual Emission Summary
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID: MCAPS-1A

Total Annual Operating Hours:	8,760	hr/yr
Total Annual Routine Operating Hours	8,346	hr/yr
Annual SS Operating Hours[1]:	414	hr/yr

Annual Emissions for M501JAC Combined Cycle

Pollutant	Annual Emissions Based on 8,346 hr/yr of Normal Operations with Duct Firing (tpy)	Estimated Annual Emissions from SS Operations[2] (tpy)	Combined Routine/SS Annual Emissions Post-Control (tpy)
NO_X	168.07	52.89	220.96
CO	102.33	1,094.25	1,196.58
VOC	43.96	359.13	403.08
SO_2	28.92	---	28.92
Filterable PM[3]	118.38	---	118.38
$PM_{10}/PM_{2.5}$[4]	158.53	---	158.53
H_2SO_4	44.27	---	44.27
NH_3	311.09	---	311.09
$(NH_4)_2SO_4$	59.64	---	59.64

[1] The annual hours used in these calculations are estimates for purposes of calculating annual emissions. They are not represented as being the maximum operating hours for the operating mode.

[2] Only emissions of NOx, CO, and VOC are shown in the startup/shutdown columns as emissions of other pollutants are expected to be less than during normal operation.

[3] Particulates do not include condensables

[4] Particulates include condensables and non-condensables

Table A-8
Diesel-Fired Emergency Generator (Combined Cycle Option) Emission Calculations
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID: MCAPS-EMGEN

Assumptions:

Kohler 2000REOZMD

Engine Model	Mitsubishi, S16R-Y2PTAW2-1	
Max Daily Operating Schedule	1	hours/day
Annual Operating Schedule	100	hours/year
Power Rating (full load)	2,180	kW
Power Rating (full load)	2,923	BHP
Max Hourly Fuel Consumption	160.1	gal/hr
Diesel Fuel Density	7.1	lb/gal diesel
Fuel Consumption	1,137	lb/hr diesel
Grams to Pounds Conversion	453.59	g/lb
Heating Value of Diesel	0.138	MMBtu/gal
Max Heat Input	22.09	MMBtu/hr
Maximum Sulfur Content (S)	15.00	ppmw

Calculations:

Emission Rate = emission factor * power rating * hours of operation / averaging period

Pollutant	Emission Factor (g/kW-hr)	Emission Factor (lb/MMBtu)	Max. Hourly Emission Rate (lb/hr)	Max. Annual Emission Rate (tpy)
NO_x [1]	6.40	N/A	30.76	1.54
CO [1]	3.50	N/A	16.82	0.84
VOC [2]	0.56	N/A	2.69	0.13
Filterable PM [3]	N/A	0.06	1.37	0.07
$PM_{10}/PM_{2.5}$ [1]	0.20	N/A	0.96	0.05
SO_2 [1,4]	Mass Balance	N/A	0.034	0.002

[1] NSPS Subpart IIII emission limits
[2] Vendor supplied data
[3] Emission factor based on AP-42, Table 3.4-2, total filterable particulate
[4] Calculated based on maximum fuel sulfur content and max fuel consumption

Sample Calculations:

NO_x lb/hr = 6.4 g/kW-hr * 2180 kW / 1136.71 g/lb = 30.76 lb/hr
NO_x tpy = 30.76 lb/hr * 100 hr/yr / 2,000 lb/ton = 1.54 tpy
CO lb/hr = 3.5 g/kW-hr * 2180 kW / 1136.71 g/lb = 16.82 lb/hr
CO tpy = 16.82 lb/hr * 100 hr/yr / 2,000 lb/ton = 0.84 tpy
VOC lb/hr = 0.56 g/kW-hr * 2180 kW / 1136.71 g/lb = 2.69 lb/hr
VOC tpy = 2.69 lb/hr * 100 hr/yr / 2,000 lb/ton = 0.13 tpy
PM lb/hr = 0.062 lb/MMBtu * 22.0938 MMBtu/hr = 1.37 lb/hr
PM tpy = 1.37 lb/hr * 100 hr/yr / 2,000 lb/ton = 0.07 tpy
$PM_{10}/PM_{2.5}$ lb/hr = 0.2 g/kW-hr * 2180 kW / 1136.71 g/lb = 0.96 lb/hr
$PM_{10}/PM_{2.5}$ tpy = 0.96 lb/hr * 100 hr/yr / 2,000 lb/ton = 0.05 tpy
SO_2 lb/hr = 453.59 g/lb * 15 lb S/1,000,000 lb fuel * lbmol S/32 lb S * 64 lb SO2/lbmol SO2 0.0341 lb/hr
SO_2 tpy = 0.0341 lb/hr * 100 hr/yr / 2,000 lb/ton = 0.0017 tpy

HAP Calculations:

Pollutant	Emission Factor[1] (lb/MMBtu)	Max. Hourly Emission Rate (lb/hr)	Max. Annual Emission Rate[2] (tpy)
Benzene	7.76E-04	0.017	0.001
Toluene	2.81E-04	0.006	3.10E-04
Xylenes	1.93E-04	0.004	2.13E-04
Formaldehyde	7.89E-05	0.002	8.72E-05
Acetaldehyde	2.52E-05	0.001	2.78E-05
Acrolein	7.88E-06	0.000	8.70E-06
Naphthalene	1.30E-04	0.003	1.44E-04
Total HAPs		**0.03**	**0.002**

[1] Based on AP-42, Table 3.4-3 and Table 3.4-4, emission factors for HAPs from large uncontrolled diesel engines
[2] Assumes 100 hours/year

HAP Sample Calculations:

Max. Hourly Emission Rate (lb/hr) = Emission Factor (lb/MMBtu) x Max. Heat Input (MMBtu/hr)
Max. Annual Emission Rate (tpy) = Max. Hourly Emission Rate (lb/hr) x 8,760 hr/yr / 2,000 lb/ton

Table A-9
Firewater Pump Emission Calculations
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID: MCAPS-FWP

Assumptions:

Clarke JU6H-UFADW8

Engine Model	John Deere (6068HFC48A)	
Max Daily Operating Schedule	1	hours/day
Annual Operating Schedule	100	hours/year
Power Rating	235	kW
Fuel Consumption	13.70	gal/hr
Grams to Pounds Conversion	453.59	g/lb
Density of No. 2 Fuel Oil	7.10	lb/gal
Max Fuel Consumption	97.27	lb fuel/hr
Heating Value of No. 2 Fuel Oil	0.138	MMBtu/gal
Max Heat Input	1.89	MMBtu/hr
Maximum Sulfur Content (S)	15.00	ppmw

Calculations:

Emission Rate = emission factor * power rating * hours of operation / averaging period

Pollutant	Emission Factor (g/kW-hr)	Max. Hourly Emission Rate (lb/hr)	Max. Annual Emission Rate (tpy)
NO_x [1]	4.00	2.07	0.10
CO [1]	3.50	1.81	0.09
VOC [2]	0.11	0.06	0.003
$PM/PM_{10}/PM_{2.5}$ [1]	0.20	0.10	0.01
SO_2 [1,3]	Mass Balance	0.003	0.0001

[1] NSPS Subpart IIII emission limits

[2] Vendor supplied data

[3] Calculated based on maximum fuel sulfur content and max fuel consumption

Sample Calculations:

NO_x lb/hr = 4 g/kW-hr * 235 kW / 453.592 g/lb = 2.07 lb/hr

NO_x tpy = 2.07 lb/hr * 100 hr/yr / 2,000 lb/ton = 0.10 tpy

CO lb/hr = 3.5 g/kW-hr * 235 kW / 453.592 g/lb = 1.81 lb/hr

CO tpy = 1.81 lb/hr * 100 hr/yr / 2,000 lb/ton = 0.09 tpy

VOC lb/hr = 0.11 g/kW-hr * 235 kW / 453.592 g/lb = 0.06 lb/hr

VOC tpy = 0.06 lb/hr * 100 hr/yr / 2,000 lb/ton = 0.00 tpy

PM lb/hr = 0.2 g/kW-hr * 235 kW / 453.592 g/lb = 0.10 lb/hr

PM tpy = 0.10 lb/hr * 100 hr/yr / 2,000 lb/ton = 0.01 tpy

SO_2 lb/hr = 97.27 lb fuel/hr * 15 lb S/1,000,000 lb fuel * lbmol S/32 lb S * 64 lb SO2/lbmol SO2 = 0.0029 lb/hr

SO_2 tpy = 0.0029 lb/hr * 100 hr/yr / 2,000 lb/ton = 0.0001 tpy

HAP Calculations:

Pollutant	Emission Factor[1] (lb/MMBtu)	Max. Hourly Emission Rate (lb/hr)	Max. Annual Emission Rate[2] (tpy)
Benzene	9.33E-04	0.002	8.82E-05
Toluene	4.09E-04	0.001	3.87E-05
Xylenes	2.85E-04	0.001	2.69E-05
1,3-Butadiene	3.91E-05	0.000	3.70E-06
Formaldehyde	1.18E-03	0.002	1.12E-04
Acetaldehyde	7.67E-04	0.001	7.25E-05
Acrolein	9.25E-05	0.0002	8.74E-06
Naphthalene	8.48E-05	0.0002	8.02E-06
Total HAPs		**0.01**	**3.58E-04**

[1] Based on AP-42, Table 3.3-2, Emission factors for HAPs from uncontrolled diesel engines.

[2] Assumes 100 hours/year.

HAP Sample Calculations:

Max. Hourly Emission Rate (lb/hr) = Emission Factor (lb/MMBtu) x Max. Heat Input (MMBtu/hr)

Max. Annual Emission Rate (tpy) = Max. Hourly Emission Rate (lb/hr) x 8,760 hr/yr / 2,000 lb/ton

Table A-10
Natural Gas Fired Dewpoint Heater Emission Calculations
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID: MCAPS-NGDPHTR

Assumptions:

Maximum Natural Gas Firing Rate	5.01	MMBtu/hr
Hourly Fuel Gas Consumption	4,930	scf/hr
Annual Fuel Gas Consumption	43,186,800	scf/yr
Hours of Operation	8,760	hours/yr

Calculations:

Pollutant	Emission Factor (lb/MMBtu)	Emission Factor (lb/10^6 scf)	Max. Hourly Emission Rate (lb/hr)	Max. Annual Emission Rate (tpy)
NO_x[1]	0.0110	N/A	0.06	0.24
CO[1]	0.0370	N/A	0.19	0.81
VOC[1]	0.0080	N/A	0.04	0.18
Filterable PM[2]	0.0019	1.9000	0.01	0.04
$PM_{10}/PM_{2.5}$[1]	0.0048	N/A	0.02	0.11
SO_2[1]	0.001	N/A	0.005	0.022

[1] Ultra Low NOx Burner Performance Data
[2] Emission factor based on AP-42, Table 1.4-2, PM (filterable)

Sample Calculations:

NO_x lb/hr = 0.0110 lb/MMBtu * 5.01 MMBtu/hr = 0.06 lb/hr
NO_x tpy = 0.06 lb/hr * 8,760 hr/yr / 2,000 lb/ton = 0.24 tpy
CO lb/hr = 0.0370 lb/MMBtu * 5.01 MMBtu/hr = 0.19 lb/hr
CO tpy = 0.19 lb/hr * 8,760 hr/yr / 2,000 lb/ton = 0.81 tpy
VOC lb/hr = 0.0080 lb/MMBtu * 5.01 MMBtu/hr = 0.04 lb/hr
VOC tpy = 0.04 lb/hr * 8,760 hr/yr / 2,000 lb/ton = 0.18 tpy
PM lb/hr = 1.9 lb/10^6 scf * 1,000,000 *4,930 scf/hr = 0.01 lb/hr
PM tpy = 0.01 lb/hr * 8,760 hr/yr / 2,000 lb/ton = 0.04 tpy
$PM_{10}/PM_{2.5}$ lb/hr = 0.0048 lb/MMBtu * 5.01 MMBtu/hr = 0.02 lb/hr
$PM_{10}/PM_{2.5}$ tpy = 0.02 lb/hr * 8,760 hr/yr / 2,000 lb/ton = 0.11 tpy
SO_2 lb/hr = 0.0010 lb/MMBtu * 5.01 MMBtu/hr = 0.01 lb/hr
SO_2 tpy = 0.01 lb/hr * 8,760 hr/yr / 2,000 lb/ton = 0.02 tpy

HAP Calculations:

Pollutant	Emission Factor[1] (lb/10^6 scf)	Max. Hourly Emission Rate (lb/hr)	Max. Annual Emission Rate[2] (tpy)
2-Methylnaphthalene	2.4E-05	1.18E-07	5.18E-07
3-Methylcholanthrene	1.8E-06	8.87E-09	3.89E-08
7,12-Dimethylbenz(a)anthracene	1.6E-05	7.89E-08	3.45E-07
Acenapthene	1.8E-06	8.87E-09	3.89E-08
Acenaphthylene	1.8E-06	8.87E-09	3.89E-08
Anthracene	2.4E-06	1.18E-08	5.18E-08
Benz(a)anthracene	1.8E-06	8.87E-09	3.89E-08
Benzene	2.1E-03	1.04E-05	4.53E-05
Benzo(a)pyrene	1.2E-06	5.92E-09	2.59E-08
Benzo(b)fluoranthene	1.8E-06	8.87E-09	3.89E-08
Benzo(g,h,i)perylene	1.2E-06	5.92E-09	2.59E-08
Benzo(k)fluoranthene	1.8E-06	8.87E-09	3.89E-08
Chrysene	1.8E-06	8.87E-09	3.89E-08
Dibenzo(a,h)anthracene	1.2E-06	5.92E-09	2.59E-08
Dichlorobenzene	1.2E-03	5.92E-06	2.59E-05
Fluoranthene	3.0E-06	1.48E-08	6.48E-08
Fluorene	2.8E-06	1.38E-08	6.05E-08
Formaldehyde	7.5E-02	3.70E-04	1.62E-03
Hexane	1.8E+00	8.87E-03	3.89E-02
Indeno(1,2,3-cd)pyrene	1.8E-06	8.87E-09	3.89E-08
Naphthalene	6.1E-04	3.01E-06	1.32E-05
Phenanathrene	1.7E-05	8.38E-08	3.67E-07
Pyrene	5.0E-06	2.47E-08	1.08E-07
Toluene	3.4E-03	1.68E-05	7.34E-05
Arsenic	2.0E-04	9.86E-07	4.32E-06
Beryllium	1.2E-05	5.92E-08	2.59E-07
Cadmium	1.1E-03	5.42E-06	2.38E-05
Chromium	1.4E-03	6.90E-06	3.02E-05
Cobalt	8.4E-05	4.14E-07	1.81E-06
Manganese	3.8E-04	1.87E-06	8.21E-06
Mercury	2.6E-04	1.28E-06	5.61E-06
Nickel	2.1E-03	1.04E-05	4.53E-05
Selenium	2.4E-05	1.18E-07	5.18E-07
Total HAPs		**0.01**	**0.04**

[1] Based on AP-42, Table 1.4-3, emission factors for HAPs from natural gas combustion.
[2] Assumes 8,760 annual hours of operation.

HAP Sample Calculations:

Max. Hourly Emission Rate (lb/hr) = Emission Factor (lb/10^6 scf) x Hourly Fuel Gas Consumption (scf/hr)
Max. Annual Emission Rate (tpy) = Emission Factor (lb/10^6 scf) x Annual Fuel Gas Consumption (scf/yr) / 2,000 lb/ton

Table A-11
HAP Summary Table
Madison County Advanced Power Station
Entergy Mississippi, LLC

Source / Emission Point ID	Combined Cycle Unit 1A (tpy)	Standby Generator (tpy)	Diesel Fire Water Pump (tpy)	Natrual Gas Dewpoint Heater (tpy)	Total (tpy)
Pollutant	**MCAPS-1A**	**MCAPS-EMGEN**	**MCAPS-FWP**	**MCAPS-NGDPHTR**	
1,3-Butadiene	0.0093		0.0000		0.0093
Acetaldehyde	0.8653	0.0000	0.0001		0.8654
Acrolein	0.1385	0.0000	0.0000		0.1385
Benzene	0.2596	0.0009	0.0001	0.0000	0.2606
Ethylbenzene	0.6923				0.6923
Formaldehyde	5.2386	0.0001	0.0001	0.0016	5.2404
Naphthalene	0.0281	0.0001	0.0000	0.0000	0.0283
PAH	0.0476				0.0476
Propylene Oxide	0.6274				0.6274
Toluene	2.8123	0.0003	0.0000	0.0001	2.8127
Xylenes	1.3845	0.0002	0.0000		1.3848
2-Methylnaphthalene				5.18E-07	5.18E-07
3-Methylcholanthrene				3.89E-08	3.89E-08
7,12-Dimethylbenz(a)anthracene				3.45E-07	3.45E-07
Acenapthene				3.89E-08	3.89E-08
Acenaphthylene				3.89E-08	3.89E-08
Anthracene				5.18E-08	5.18E-08
Benz(a)anthracene				3.89E-08	3.89E-08
Benzo(a)pyrene				2.59E-08	2.59E-08
Benzo(b)fluoranthene				3.89E-08	3.89E-08
Benzo(g,h,i)perylene				2.59E-08	2.59E-08
Benzo(k)fluoranthene				3.89E-08	3.89E-08
Chrysene				3.89E-08	3.89E-08
Dibenzo(a,h)anthracene				2.59E-08	2.59E-08
Dichlorobenzene				2.59E-05	2.59E-05
Fluoranthene				6.48E-08	6.48E-08
Fluorene				6.05E-08	6.05E-08
Hexane				0.0389	0.0389
Indeno(1,2,3-cd)pyrene				3.89E-08	3.89E-08
Phenanathrene				3.67E-07	3.67E-07
Pyrene				1.08E-07	1.08E-07
Arsenic				7.34E-05	7.34E-05
Beryllium				4.32E-06	4.32E-06
Cadmium				2.59E-07	2.59E-07
Chromium				2.38E-05	2.38E-05
Cobalt				3.02E-05	3.02E-05
Manganese				1.81E-06	1.81E-06
Mercury				8.21E-06	8.21E-06
Nickel				5.61E-06	5.61E-06
Selenium				4.53E-05	4.53E-05
Total HAPs	**12.10**	**0.00**	**0.00**	**0.04**	12.15

Table A-12
Fuel Delivery System (Natural Gas) Emission Calculations
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID: MCAPS-NGFUG

Equipment/Service	Equipment (Counts)	Factor[1] (kg/hr-component)	Factor (lb/hr-component)	C3+ Content (% weight)	Emission Rate	
					lb/hr	tpy
Valves	400	0.00450	0.00992	1.58	0.06	0.28
Pumps	0	0.00240	0.00529	1.58	0.00	0.00
Flanges	1000	0.00039	0.00086	1.58	0.01	0.06
Compressors	0	0.00880	0.01940	1.58	0.00	0.00
Relief Valves	7	0.00880	0.01940	1.58	0.00	0.01
Open-Ended Lines	80	0.00200	0.00441	1.58	0.01	0.02
Sampling Connections[2] (hourly)	2	0.01497	0.03300	1.58	0.00	---
Sampling Connections[2, 3] (annual)	2190	0.01497	0.03300	1.58	---	0.00
				Total	0.09	0.37

[1] EPA-453/R-95-017, November 1995, Table 2-4, Oil and Gas Operation Average Emission Factors for gas

[2] TCEQ Air Permit Technical Guidance for Chemical Sources: Fugitive Guidance - Table I - TCEQ derived SOCMI without Ethylene, June 2018

Table A-13
SCR Delivery System - Plantwide Ammonia Emission Calculations
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID: MCAPS-AMMFUG

Equipment/Service		Equipment (Counts)	Factor[1] (lb/hr-component)	NH_3 (% weight)	AVO Control Credit[2]	Emission Rate	
						lb/hr	ton/yr
Valves	Gas/Vapor	0	0.0089	100	97%	0.00	0.00
	Light Liquid	300	0.0035	100	97%	0.03	0.14
	Heavy Liquid	0	0.0007	100	97%	0.00	0.00
Pumps	Light Liquid	2	0.0386	100	93%	0.01	0.02
	Heavy Liquid	0	0.0161	100	93%	0.00	0.00
Flanges	Gas/Vapor	0	0.0029	100	97%	0.00	0.00
	Light Liquid	200	0.0005	100	97%	0.00	0.01
	Heavy Liquid	0	0.00007	100	97%	0.00	0.00
Compressors		0	0.5027	100	95%	0.00	0.00
Relief Valves		4	0.2293	100	97%	0.03	0.12
Open-Ended Lines		4	0.004	100	0%	0.02	0.07
Sampling Connections		0	0.033	100	0%	0.00	0.00
					Total	0.08	0.37

[1] TCEQ Air Permit Technical Guidance for Chemical Sources: Fugitive Guidance - Table I - TCEQ derived SOCMI without Ethylene, June 2018

[2] TCEQ Air Permit Technical Guidance for Chemical Sources: Fugitive Guidance - Table V - 28AVO, June 2018

Table A-14
Fuel Delivery System (Diesel) Emission Calculations
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID: MCAPS-DSLFUG

Equipment/Service	Equipment (Counts)	Factor[1] (kg/hr-	Factor (lb/hr-component)	Emission Rate	
				lb/hr	tpy
Valves	40	8.4E-06	1.9E-05	0.0007	0.003
Flanges	60	3.9E-07	8.6E-07	0.0001	0.000
Compressors	0	3.2E-05	7.1E-05	0.0000	0.000
Relief Valves	0	3.2E-05	7.1E-05	0.0000	0.000
Open-Ended Lines	20	1.4E-04	3.1E-04	0.0062	0.027
			Total	0.0070	0.031

[1] EPA-453/R-95-017, November 1995, Table 2-4, Oil and Gas Operation Average Emission Factors for heavy oil

Table A-15
Lube Oil Vents Calculations
Madison County Advanced Power Station
Entergy Mississippi, LLC

Calculation of Emissions:

Emission Point ID	Description	Pollutant	Maximum Annual No. of Days of Operation (days/yr)	Daily Volumetric Emission Rate Per Mist Eliminator Vent (gal/day/vent)	Approx. Density (lb/gal)	No. of Mist Eliminator Vents	Daily Emission Rate (lb/day)	Hourly Emission Rate (lb/hr)	Annual Emission Rate (tpy)
MCAPS-LOVCT	Combustion Turbine Lube Oil Vent	VOC	365	0.01	7.26	1	0.07	0.003	0.01
		PM	365	0.01	7.26	1	0.07	0.003	0.01
MCAPS-LOVST	Steam Turbine Lube Oil Vent	VOC	365	0.01	7.26	1	0.07	0.003	0.01
		PM	365	0.01	7.26	1	0.07	0.003	0.01

1 - The heating of recirculating lube oil in the gas turbine housing generates oil vapor and oil condensate droplets in the oil reservoir compartments. Lube oil mist emissions in each reservoir are controlled by a mist eliminator.

2 - Unloading, storage, and heated recirculation of lube oil in gas and steam turbine reservoirs will emit less than 0.01 gallons per day of oil per turbine mist eliminator vent, based on oil consumption estimated by the manufacturer. The calculated hourly emissions are based on the daily emission rate divided by 24 hours per day.

3 - Lube oil mist will be generated and the corresponding mist eliminator fan will be operated concurrently with turbine operation, including during startup and shutdown, plus additional time after turbine operation. When the gas or steam turbines do not operate for extended periods such that lube oil is cooled to near-ambient temperatures, mist eliminators may be shut down. During this time, vapor breathing and filling losses may occur from each oil reservoir. These latter losses are significantly less than the emission rates calculated on this sheet.

Sample Calculations:

Hourly Emission Rate (lb/hr) = daily volumetric emission rate (gal/day) x density (lb/gal) x (day/24 hr)

$$\text{lb/hr} = \frac{\frac{0.01\ \text{gal}}{\text{day}} \mid \frac{7.26\ \text{lb}}{\text{gal}} \mid \frac{\text{day}}{24\ \text{hr}}}{}$$

Annual ER (tpy) = daily volumetric emission rate (gal/day) x density (lb/gal) x days of operation (days/yr) x (ton/2000 lb)

$$\text{tpy} = \frac{\frac{0.01\ \text{gal}}{\text{day}} \mid \frac{7.26\ \text{lb}}{\text{gal}} \mid \frac{365\ \text{day}}{\text{yr}} \mid \frac{\text{ton}}{2000\ \text{lb}}}{}$$

Table A-16
Storage Tank Emissions Summary
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID	Description	Tank Contents	Fixed Roof Type	Tank Volume	Pollutant	Hourly Emission Rate[1] (lb/hr)	Annual Emission Rate[1] (tpy)
MCAPS-TK1	Emergency Generator Diesel Tank	No. 2 Fuel Oil (Diesel)	Horizontal	4,150	VOC	0.23	4.16E-03
MCAPS-TK2	Emergency Fire Water Pump Diesel Tank	No. 2 Fuel Oil (Diesel)	Horizontal	500	VOC	0.03	7.30E-04
MCAPS-TK3	Natural Gas Condensate Tank	Natural Gas Condensate	Horizontal	400	VOC	3.44	2.97E-02
MCAPS-TK4	Natural Gas Condensate Tank	Natural Gas Condensate	Horizontal	400	VOC	3.44	2.97E-02
Total VOC Emissions from Storage Tanks						**7.14**	**6.42E-02**

[1] See Tables A-17 through A-20 for additional tank, product, and met data and for complete tank calculations.

Table A-17
Emissions from Fixed Roof Tanks
Madison County Advanced Power Station
Entergy Mississippi, LLC

[1] Reference 1: AP-42, Fifth Edition, Volume 1, Chapter 7.1 Organic Liquid Storage Tanks - October 2024

Total Loss from a Fixed Roof Tank (Equation 1-1):

$L_T = L_S + L_W$

where: L_T = total routine loss

L_S = standing loss

L_W = working loss

Standing Loss from a Fixed Roof Tank (Equation 1-2):

$L_S = n_d V_V W_V K_E K_S$

where: L_S = standing loss

n_d = number of days

V_V = vapor space volume = $(\pi/4) * D^2 * H_{VO}$

D = tank diameter

H_{VO} = vapor space outage

W_V = vapor density = $(M_V * P_{VA}) / (R * T_V)$

M_V = vapor molecular weight

P_{VA} = vapor pressure at average daily liquid surface temperature = exp [A - (B / T_{LA})] for petroleum liquids or log P_{VA} = A - (B / (T_{LA} + C))

R = ideal gas constant = 10.731 (psia ft^3) / (lb-mole °R)"

T_V = average vapor temperature = $((2.2 * (H_S / D) + 1.1) * T_{AA} + (0.8 * T_B) + (0.021 * \alpha_R * I) + (0.013 * (H_S/D) * \alpha_S * I)) / ((2.2 * (H_S / D)) + 1.9)$

H_S = tank shell height (H_S / D assumed = 0.5 for horizontal tanks)

T_{AA} = average daily ambient temperature = (T_{AX} + T_{AN}) / 2

T_B = liquid bulk temperature = T_{AA} + 0.003 * α_S * I

α_R = tank roof surface solar absorptance

I = average daily total solar insolation factor

α_S = tank shell surface solar absorptance

K_E = vapor space expansion factor = $\Delta T_V / T_{LA} + (\Delta P_V - \Delta P_B) / (P_A - P_{VA}) > 0$

ΔT_V = average daily vapor temperature range = $(1 - (0.8 / (2.2 * (H_s / D) + 1.9))) * \Delta T_A + ((0.042 * \alpha_R * I + 0.026 * (H_s / D) * \alpha_S * I) / (2.2 * (H_S / D) + 1.9))$

ΔT_A = average daily ambient temperature range = $T_{AX} - T_{AN}$

T_{AX} = average daily maximum ambient temperature

T_{AN} = average daily minimum ambient temperature

T_{LA} = average daily average liquid surface temperature = $(0.5 - (0.8 / (4.4 * (H_S / D) + 3.8))) * T_{AA} + (0.5 + (0.8 / (4.4 * (H_S / D) + 3.8))) * T_B + (0.021 * \alpha_R * I + 0.013 * (H_S / D) * \alpha_S * I) / (4.4 * (H_S / D) + 3.8)$

ΔP_V = average daily vapor pressure range = $P_{VX} - P_{VN}$

P_{VX} = vapor pressure at T_{LX}

T_{LX} = daily maximum liquid surface temperature = $T_{LA} + 0.25 * \Delta T_V$

P_{VN} = vapor pressure at T_{LN}

T_{LN} = daily minimum liquid surface temperature = $T_{LA} - 0.25 * \Delta T_V$

ΔP_B = breather vent pressure setting range = $P_{BP} - P_{BV}$

P_{BP} = breather vent pressure setting

P_{BV} = breather vent vacuum setting

P_A = atmospheric pressure

K_S = vented vapor saturation factor = $1 / (1 + (0.053 * P_{VA} * H_{VO}))$

Table A-17
Emissions from Fixed Roof Tanks
Madison County Advanced Power Station
Entergy Mississippi, LLC

Working Loss from a Fixed Roof Tank (Equation 1-37):

$L_W = V_Q K_N K_P W_V K_B$

where: L_W = working loss

V_Q = net working loss throughput = 5.614 * Q

Q = net throughput

K_N = working loss turnover factor

For annual turnovers (N) > 36, = (180 + N) / 6 N

For annual turnovers (N) ≤ 36, = 1

$N = (5.614 * Q / (\pi / 4 * D^2)) / (H_{LX} - H_{LN})$

H_{LX} = maximum liquid height = (H_S -1) for VFR or (π / 4 * D) for HFR

H_{LN} = minimum liquid height = (1) for VFR or (0) for HFR

K_P = working loss product factor

For crude oils, = 0.75

For all other organic liquids, = 1

K_B = vent setting correction factor = $(((P_1 + P_A) / K_N) - P_{VA}) / (P_{BP} + P_A - P_{VA})$

If $K_N * (P_{BP} + P_A) / (P_1 + P_A) > 1$, otherwise = 1

P_1 = pressure of the vapor space at normal operating conditions = 0 for atmospheric tank

[2] Reference 2: TCEQ Air Permit Reviewer Reference Guide APDG 6250 - Estimating Short Term Emission Rates from Tanks - February 2018

Maximum Short-Term Emission Rate (APDG 6250) (Equation 1):

$L_{MAX} = (M_v * P_{VAM}) / (R * T_{LM}) * F_{RM}$

where: L_{MAX} = maximum short term emission rate

M_V = vapor molecular weight

P_{VAM} = vapor pressure of tank contents at the worst case temperature

R = ideal gas constant = 80.273 (psia gal)/(lb-mole °R)

T_{LM} = worst case liquid surface temp = the higher of hourly calculation temp from the Met Data Sheet or T_{LX}

F_{RM} = maximum filling rate

Table A-17
Emissions from Fixed Roof Tanks
Madison County Advanced Power Station
Entergy Mississippi, LLC

		Data to be entered for calculation:					Data Looked up on Product Data Sheet:						Data Looked up on Met Data Sheet:				
Date	Emission Point ID	Product	Net Throughput Q (bbl)	Number of Days n_d (days)	Vapor Balance and/or Flash?	Capture Efficiency (%)	Vapor Molecular Weight M_V (lb/lb-mol)	Calculation Type	Antoine's A (unitless)	Antoine's B (°R or °C)	Antoine's C (°C)	Working Loss Product Factor K_P (unitless)	Month for Met Data	Daily Ambient Minimum Temperature T_{AN} (°F)	Daily Ambient Maximum Temperature T_{AX} (°F)	Solar Insolation Factor I (BTU/ ft^2 day)	Atmospheric Pressure Pa (psia)
												[1] Eq.1-39		[1] Table 7.1-7	[1] Table 7.1-7	[1] Table 7.1-7	
Hourly	MCAPS-TK1	No. 2 Fuel Oil (Diesel)			No	0.00%	130.00	RVP+S	12.10	8907.00	0.00	1.00	Maximum	72.1	91.2	2,025	14.53
Annual	MCAPS-TK1	No. 2 Fuel Oil (Diesel)	3,571	365	No	0.00%	130.00	RVP+S	12.10	8907.00	0.00	1.00	Annual	54.3	75.3	1,434	14.53
Hourly	MCAPS-TK2	No. 2 Fuel Oil (Diesel)			No	0.00%	130.00	RVP+S	12.10	8907.00	0.00	1.00	Maximum	72.1	91.2	2,025	14.53
Annual	MCAPS-TK2	No. 2 Fuel Oil (Diesel)	1,029	365	No	0.00%	130.00	RVP+S	12.10	8907.00	0.00	1.00	Annual	54.3	75.3	1,434	14.53
Hourly	MCAPS-TK3	Natural Gas Condensate			No	0.00%	66.00	RVP+S	11.88	5614.40	0.00	1.00	Maximum	72.1	91.2	2,025	14.53
Annual	MCAPS-TK3	Natural Gas Condensate	114	365	No	0.00%	66.00	RVP+S	11.88	5614.40	0.00	1.00	Annual	54.3	75.3	1,434	14.53
Hourly	MCAPS-TK4	Natural Gas Condensate			No	0.00%	66.00	RVP+S	11.88	5614.40	0.00	1.00	Maximum	72.1	91.2	2,025	14.53
Annual	MCAPS-TK4	Natural Gas Condensate	114	365	No	0.00%	66.00	RVP+S	11.88	5614.40	0.00	1.00	Annual	54.3	75.3	1,434	14.53

Table A-17
Emissions from Fixed Roof Tanks
Madison County Advanced Power Station
Entergy Mississippi, LLC

		Data Looked up on Tank Data Sheet:											Tank Emissions Calculation						
Date	Emission Point ID	Roof Type	Maximum Filling Rate F_{RM} (gal/hr)	Tank Roof Solar Absorptance α_R (unitless)	Tank Shell Solar Absorptance α_S (unitless)	VFR Diameter D (ft)	VFR Shell Height H_S (ft)	HFR Diameter D (ft)	Breather Vent Pressure P_{BP} (psig)	Breather Vent Vacuum P_{BV} (psig)	Vapor Space Outage H_{VO} (ft)	HFR Effective Diameter D_E (ft)	Vapor Space Volume V_V (ft^3)	Daily Avg. Ambient Temp. T_{AA} (°R)	Liquid Bulk Temp. T_B (°R)	Daily Avg. Liquid Surface Temp. T_{LA} (°R)	True Vapor Pressure @ T_{LA} P_{VA} (psia)	Average Vapor Temp. T_V (°R)	Vapor Density W_V (lb/ft^3)
				[1] Table 7.1-6	[1] Table 7.1-6						[1] Eq. 1-18		[1] Eq.1-3	[1] Eq. 1-32	[1] Eq. 1-33	[1] Eq. 1-29	[1] Eq. 1-27, 28	[1] Eq. 1-34	[1] Eq. 1-24
Hourly	MCAPS-TK1	HFR	4,150	0.25	0.25			10.3	0.03	-0.03	4.06	23.6	1,768	541.3	542.8	544.6	0.01	546.4	0.0003
Annual	MCAPS-TK1	HFR		0.25	0.25			10.3	0.03	-0.03	4.06	23.6	1,768	524.5	525.5	526.8	0.01	528.0	0.0002
Hourly	MCAPS-TK2	HFR	500	0.25	0.25			5.0	0.03	-0.03	1.96	9.8	147	541.3	542.8	544.6	0.01	546.4	0.0003
Annual	MCAPS-TK2	HFR		0.25	0.25			5.0	0.03	-0.03	1.96	9.8	147	524.5	525.5	526.8	0.01	528.0	0.0002
Hourly	MCAPS-TK3	HFR	400	0.25	0.25			3.0	0.03	-0.03	1.18	5.4	27	541.3	542.8	544.6	4.81	546.4	0.0542
Annual	MCAPS-TK3	HFR		0.25	0.25			3.0	0.03	-0.03	1.18	5.4	27	524.5	525.5	526.8	3.40	528.0	0.0396
Hourly	MCAPS-TK4	HFR	400	0.25	0.25			3.0	0.03	-0.03	1.18	5.4	27	541.3	542.8	544.6	4.81	546.4	0.0542
Annual	MCAPS-TK4	HFR		0.25	0.25			3.0	0.03	-0.03	1.18	5.4	27	524.5	525.5	526.8	3.40	528.0	0.0396

Table A-17
Emissions from Fixed Roof Tanks
Madison County Advanced Power Station
Entergy Mississippi, LLC

		Tank Emissions Calculation																			Tank Short Term Emissions Calculation			
Date	Emission Point ID	Daily Ambient Temp. Range ΔT_A (°R)	Daily Vapor Temp. Range ΔTv (°R)	Daily Max. Liquid Surface Temp. T_{LX} (°R)	Daily Min. Liquid Surface Temp. T_{LN} (°R)	True Vapor Pressure @ T_{LX} P_{VX} (psia)	True Vapor Pressure @ T_{LN} P_{VN} (psia)	Daily Vapor Pressure Range ΔP_V (psia)	Breather Vent Pressure Setting Range ΔP_B (psia)	Vapor Space Expansion Factor K_E (unitless)	Vented Vapor Saturation Factor K_S (unitless)	Standing Storage Loss L_S (ton)	Net Working Loss Throughput V_Q (ft^3)	Maximum Liquid Height H_{LX} (ft)	Minimum Liquid Height H_{LN} (ft)	Turnovers N (unitless)	Working Loss Turnover Factor K_N (unitless)	Vent Setting Correction Factor K_B (unitless)	Working Loss L_W (ton)	Total Loss L_T (ton)	Worst Case Liquid Surface Temp. T_{LM} (°R)	True Vapor Pressure @ T_{LM} P_{VAM} (psia)	Hourly Standing Storage Loss L_S (lb/hr)	Maximum Short Term Emission Rate L_{MAX} (lb/hr)
		[1] Eq. 1-11	[1] Eq. 1-6	[1] Fg. 1-17	[1] Fg. 1-17	[1] Eq. 1-27, 28	[1] Eq. 1-27, 28	[1] Eq. 1-9	[1] Eq. 1-10	[1] Eq. 1-5	[1] Eq. 1-23	[1] Eq. 1-2	[1] Eq. 1-41	[1] Eq. 1-39	[1] Eq. 1-39	[1] Eq. 1-38	[1] Eq. 1-42	[1] Eq. 1-42, 43	[1] Eq. 1-37	[1] Eq. 1-1	[2] Eq. 1	[1] Eq. 1-27, 28	[1] Eq. 1-2	[2] Eq. 1
Hourly	MCAPS-TK1	19.1	23.3	550.4	538.8	0.02	0.01	0.00	0.06	0.0390	0.9970			8.1	0.0	0.0	1.0000	0.9979			554.7	0.02	0.00	0.23
Annual	MCAPS-TK1	21.0	22.0	532.3	521.3	0.01	0.01	0.00	0.06	0.0378	0.9982	2.28E-03	20,050	8.1	0.0	5.7	1.0000	0.9979	1.88E-03	4.16E-03				
Hourly	MCAPS-TK2	19.1	23.3	550.4	538.8	0.02	0.01	0.00	0.06	0.0390	0.9985			3.9	0.0	0.0	1.0000	0.9979			554.7	0.02	0.00	0.03
Annual	MCAPS-TK2	21.0	22.0	532.3	521.3	0.01	0.01	0.00	0.06	0.0378	0.9992	1.90E-04	5,774	3.9	0.0	19.6	1.0000	0.9979	5.40E-04	7.30E-04				
Hourly	MCAPS-TK3	19.1	23.3	550.4	538.8	5.37	4.30	1.06	0.06	0.1458	0.7690			2.4	0.0	0.0	1.0000	0.9969			554.7	5.80	0.01	3.44
Annual	MCAPS-TK3	21.0	22.0	532.3	521.3	3.79	3.04	0.76	0.06	0.1042	0.8250	1.70E-02	642	2.4	0.0	11.7	1.0000	0.9973	1.27E-02	2.97E-02				
Hourly	MCAPS-TK4	19.1	23.3	550.4	538.8	5.37	4.30	1.06	0.06	0.1458	0.7690			2.4	0.0	0.0	1.0000	0.9969			554.7	5.80	0.01	3.44
Annual	MCAPS-TK4	21.0	22.0	532.3	521.3	3.79	3.04	0.76	0.06	0.1042	0.8250	1.70E-02	642	2.4	0.0	11.7	1.0000	0.9973	1.27E-02	2.97E-02				

Table A-18
Tank Data
Madison County Advanced Power Station
Entergy Mississippi, LLC

[1] Reference 1: AP-42, Fifth Edition, Volume 1, Chapter 7.1 Organic Liquid Storage Tanks - October 2024

Effective Tank Diameter (Equation 1-14):

$D_E = ((L * D) / (\pi / 4))^{0.5}$

where: D_E = effective tank diameter
L = length of horizontal tank
D = diameter of a vertical cross-section of the horizontal tank

VFR Vapor Space Outage (Equation 1-18):

$H_{VO} = H_S - H_L + H_{RO}$

where: H_{VO} = vapor space outage
H_S = tank shell height
H_L = liquid height = 0.5 * H_S
H_{RO} = roof outage

HFR Vapor Space Outage (Equation 1-15):

$H_{VO} = (\pi / 4) * D / 2$

where: H_{VO} = vapor space outage

Roof Outage (Equation 1-19, 20, 21, 22):

$H_{RO} = H_R / 3$

where: H_{RO} = roof outage
H_R for cone roof = 0.0625 * D / 2
H_R for dome roof = 0.268 * D / 2

Data to be Entered for All Tanks								Calculated for All Tanks		Data to be Entered for Fixed Roof Tanks							Calculated for Fixed Roof Tanks			
Tank ID	Roof Type	Working Capacity (bbl)	Maximum Filling Rate F_{RM} (gal/hr)	Tank Roof Paint Color & Shade	Tank Roof Paint Condition	Tank Shell Paint Color & Shade	Tank Shell Paint Condition	Tank Roof Solar Absorptance α_R (unitless)	Tank Shell Solar Absorptance α_S (unitless)	VFR Diameter D (ft)	VFR Shell Height H_S (ft)	VFR Roof Type	HFR Diameter D (ft)	HFR Shell Length (ft)	Breather Vent Pressure P_{BP} (psig)	Breather Vent Vacuum P_{BV} (psig)	Average Liquid Height H_L (ft)	Roof Outage H_{RO} (ft)	Vapor Space Outage H_{VO} (ft)	HFR Effective Diameter D_E (ft)
								[1] Table 7.1-6	[1] Table 7.1-6								$H_s/2$ (VFR)	[1] Eq. 1-19, 20, 21, 22	[1] Eq. 1-15, 18	[1] Eq. 1-14
MCAPS-TK1	HFR	99	4,150	White	Average	White	Average	0.25	0.25				10.3	42.2	0.03	-0.03	0.00	0.00	4.06	23.55
MCAPS-TK2	HFR	12	500	White	Average	White	Average	0.25	0.25				5	15	0.03	-0.03	0.00	0.00	1.96	9.77
MCAPS-TK3	HFR	10	400	White	Average	White	Average	0.25	0.25				3	8	0.03	-0.03	0.00	0.00	1.18	5.44
MCAPS-TK4	HFR	10	400	White	Average	White	Average	0.25	0.25				3	8	0.03	-0.03	0.00	0.00	1.18	5.44

Table A-19
Product Data
Madison County Advanced Power Station
Entergy Mississippi, LLC

[1] Reference 1: AP-42, Fifth Edition, Volume 1, Chapter 7.1 Organic Liquid Storage Tanks - October 2024
[2] Reference 2: Manual of Petroleum Measurement Standards, Chapter 19.4 - November 2013

Conversion of RVP to Antoine Coefficients (Figure 7.1-16):

$A = 12.82 - 0.9672 * \ln(RVP)$

$B = 7261 - 1216 * \ln(RVP)$

where: RVP = stock Reid vapor pressure (psi)
ln = natural logarithm function

Conversion of RVP+S to Antoine Coefficients (Figure 7.1-15):

$A = 15.64 - 1.854 * S^{0.5} - (0.8742 - 0.3280 * S^{0.5}) * \ln(RVP)$

$B = 8742 - 1042 * S^{0.5} - (1049 - 179.4 * S^{0.5}) * \ln(RVP)$

where: RVP = stock Reid vapor pressure (psi)
ln = natural logarithm function
S = stock ASTM-D86 distillation slope at 10 volume percent evaporation (°F/vol%)

Calculation of Working Loss Product Factor K_P (Equation 1-37):

$K_P = 0.75$ for crude oils
$K_P = 1$ for all other organic liquids
(used with fixed roof tanks)

Calculation of Product Factor K_C (Equation 2-3):

$K_C = 0.4$ for crude oils
$K_C = 1$ for all other organic liquids
(used with floating roof tanks)

Data to be Entered for All Products																Calculated Product Properties				
Product Code	**CAS No.**	**Classification**	**Vapor Molecular Weight M_V (lb/lb-mol)**	**Liquid Density W_L (lb/gal)**	**Calculation Type**	**RVP (psia)**	**S-Value (unitless)**	**Antoine's A_1 (unitless)**	**Antoine's B_1 (°R or °C)**	**Antoine's C_1 (°C)**	**Antoine's Temperature Range T_{min} (°R)**	**Antoine's Temperature Range T_{max} (°R)**	**Liquid Molecular Weight M_L (lb/lb-mol)**	**Reference**	**Other Names**	**Antoine's A (unitless)**	**Antoine's B (°R or °C)**	**Antoine's C (°C)**	**Product Factor K_C (unitless)**	**Working Loss Product Factor K_P (unitless)**
Natural Gas Condensate	N/A	VOC	66.00	5.60	RVP+S	6.00	3.0						92.00	[1] Based on Table 7.1-2		11.9	5,614.4	0.0	1.00	1.00
No. 2 Fuel Oil (Diesel)	N/A	VOC	130.00	7.10	RVP+S								188.00	[1] Table 7.1-2		12.1	8,907.0	0.0	1.00	1.00

Table A-20
Meteorological Data
Madison County Advanced Power Station
Entergy Mississippi, LLC

[1] Reference 1: AP-42, Fifth Edition, Volume 1, Chapter 7.1 Organic Liquid Storage Tanks - October 2024

Select Location:	Jackson, MS

Location	Month	Days / Month	Month Code	Daily Ambient Minimum Temperature T_{AN} (°F)	Daily Ambient Maximum Temperature T_{AX} (°F)	Solar Insolation Factor I (BTU/ ft^2 day)	Average Wind Speed v (mph)	Atmospheric Pressure Pa (psia)
Jackson, MS	JAN	31	1	37.0	56.5	783.0	6.7	14.5
Jackson, MS	FEB	29	2	39.3	60.8	1,039.0	6.9	14.5
Jackson, MS	MAR	31	3	45.9	68.1	1,369.0	7.2	14.5
Jackson, MS	APR	30	4	53.3	75.7	1,762.0	6.7	14.5
Jackson, MS	MAY	31	5	62.5	83.0	1,929.0	5.6	14.5
Jackson, MS	JUN	30	6	69.2	89.0	2,025.0	4.7	14.5
Jackson, MS	JUL	31	7	72.1	91.1	1,969.0	4.0	14.5
Jackson, MS	AUG	31	8	71.4	91.2	1,849.0	4.0	14.5
Jackson, MS	SEP	30	9	65.5	86.5	1,576.0	5.1	14.5
Jackson, MS	OCT	31	10	53.9	77.1	1,262.0	5.1	14.5
Jackson, MS	NOV	30	11	43.9	66.3	922.0	5.4	14.5
Jackson, MS	DEC	31	12	37.9	58.1	726.0	6.3	14.5
Jackson, MS	YEAR	365	Annual	54.3	75.3	1,434.0	5.6	14.5
[redacted]	[redacted]	[redacted]	Maximum	72.1	91.2	2,025	7.2	14.5
[redacted]	[redacted]	[redacted]	Hourly	95.0	95.0	2,025	7.2	14.5

Table A-21
Project GHG Emission Summary
Madison County Advanced Power Station
Entergy Mississippi, LLC

Description	Emission Point ID	CO_2 (tpy)	CH_4 (tpy)	N_2O (tpy)	Total CO_2e (tpy)
Combined Cycle Unit 1A	MCAPS-1A	2,527,455	46.9	4.7	2,530,010
Natrual Gas Dewpoint Heater	MCAPS-NGDPHTR	2,569	0.05	0.005	2,572
Natural Gas Fugitive Emissions	MCAPS-NGFUG	0.363	12.0		336
Emergency Standby Generator	MCAPS-EMGEN	180	0.0073	0.0015	181
Fire Water Pump Engine	MCAPS-FWP	15	0.0006	0.0001	15
Sitewide Emissions		2,530,220	58.9	4.7	**2,533,114**

Table A-22
GHG Annual Emission Calculations - M501JAC Combined Cycle Combustion Turbine
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID	Average Heat Input (MMBtu/hr)	Hours Per Year	Annual Heat Input (MMBtu/yr)	Pollutant	Emission Factor[3] (lb/MMBtu)	GHG Mass Emissions[4] (tpy)	Global Warming Potential[5]	CO_2e (tpy)
MCAPS-1A (Duct Burner Firing) [1]	4,939	8,346	41,222,140	CO_2	118.86	2,449,773	1	2,449,773
				CH_4	2.2E-03	45	28	1,272
				N_2O	2.2E-04	5	265	1,204
MCAPS-1A (Startup/Shutdown) [2]	3,158	414	1,307,149	CO_2	118.86	77,682	1	77,682
				CH_4	2.2E-03	1	28	40
				N_2O	2.2E-04	0	265	38
VAPS-1A Total	NA	8,760	42,529,289	CO_2	NA	2,527,455	1	2,527,455
				CH_4	NA	47	28	1,313
				N_2O	NA	5	265	1,242
					Total	**2,527,506**		**2,530,010**

[1] The average heat input for the M501JAC duct burner firing scenario is based on the HHV heat input at 100% load, with duct burner firing, at 59 ^oF ambient temperature (Operating Case 4a).

[2] The average heat input for the M501JAC startup-shutdown scenario is based on the HHV heat input at 75% load, with no duct burner firing, at 59 ^oF ambient temperature (Operating Case 23a).

[3] CH_4 and N_2O GHG factors based on Table C-2 of 40 CFR 98 Mandatory Greenhouse Gas Reporting.

[4] CO_2 emissions based on 40 CFR Part 75, Appendix G, Equation G-4

$W_{CO2} = (F_c \times H \times U_f \times MW_{CO2})/2000$

W_{CO2} = CO_2 emitted from combustion, tpy

F_c = Carbon based F-factor,1040 scf/MMBtu

H = Heat Input (MMBtu/yr)

U_f = 1/385 scf CO_2/lbmole at 14.7 psia and 68^oF

MW_{CO2} = Molecule weight of CO_2, 44.0 lb/lb-mole

[5] Global Warming Potential factors revised as part of amendments made to the Mandatory Greenhouse Gas Reporting Rule (78 FR 71904).

Table A-23
GHG Emission Calculations - Natural Gas Heater
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID	Maximum Heat Input[1] (MMBtu/yr)	Pollutant	Emission Factor[2] (lb/MMBtu)	GHG Mass Emissions (tpy)	Global Warming Potential[3]	CO_2e (tpy)
MCAPS-NGDPHTR	43,930	CO_2	116.98	2,569.4	1	2,569
		CH_4	2.2E-03	0.05	28	1.4
		N_2O	2.2E-04	0.005	265	1.3
			Total	**2,569.5**		**2,572**

[1] Annual fuel use and heating value of natural gas from Table A-10 State/PSD air permit application

[2] Factors based on Table C-1 and C-2 of 40 CFR Part 98, Mandatory Greenhouse Gas Reporting

[3] Global Warming Potential factors revised as part of amendments made to the Mandatory Greenhouse Gas Reporting Rule (78 FR 71904).

Table A-24
GHG Emission Calculations - Natural Gas Piping Fugitives
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID	Source Type	Fluid State	Count	Emission Factor[1] (scf/hr/comp)	Emission Factor[1] (lb/event)	CO_2[2] (tpy)	CH_4[3] (tpy)	Total (tpy)
MCAPS-NGFUG	Valves	Gas/Vapor	400	0.121	---	0.254	8.351	
	Flanges	Gas/Vapor	1,000	0.017	---	0.089	2.933	
	Relief Valves	Gas/Vapor	7	0.193	---	0.007	0.233	
	Open-Ended Lines	Gas/Vapor	80	0.031	---	0.013	0.428	
	Sampling Connections (Annual)	Gas/Vapor	2190	---	0.033	0.0004	0.0342	
					GHG Mass-Based Emissions	0.363	11.98	**12.34**
					Global Warming Potential[4]	1	28	
					CO_2e Emissions	0.363	335.41	**335.78**

[1] Emission factors from Table W-1A of 40 CFR 98 Mandatory Greenhouse Gas Reporting Rules, Western U.S.

[2] CO_2 emissions based on vol% of CO_2 in natural gas 1.05% from natural gas analysis

[3] CH_4 emissions based on vol% of CH_4 in natural gas: 94.55% from natural gas analysis

[4] Global Warming Potential factors revised as part of amendments made to the Mandatory Greenhouse Gas Reporting Rule (78 FR 71904).

Sample Calculation:

400 valves	0.121 scf gas	0.0105 scf CO2	lbmole	44 lb CO_2	8760 hr	ton =	0.254	tpy
	hr * valve	scf gas	385 scf	lbmole	yr	2000 lb		

Table A-25
GHG Emission Calculations - Diesel Combustion in Emergency Engines
Madison County Advanced Power Station
Entergy Mississippi, LLC

Assumptions:	**MCAPS-EMGEN**	**MCAPS-FWP**	
Annual Operating Schedule:	100	100	hours/year
Power Rating:	2,923	282	hp
Max Hourly Fuel Use:	160.1	13.7	gal/hr
Heating Value of No. 2 Fuel Oil:	0.138	0.138	MMBtu/gal
Max Hourly Heat Input:	22.09	1.89	MMBtu/hr
Annual Heat Input:	2,209.4	189.1	MMBtu/yr

Emission Point ID	Heat Input (MMBtu/yr)	Pollutant	Emission Factor[1] (kg/MMBtu)	GHG Mass Emissions (tpy)	Global Warming Potential[2]	CO_2e (tpy)
MCAPS-EMGEN	2,209.4	CO_2	73.96	180	1	180.1
		CH_4	3.0E-03	0.0073	28	0.2
		N_2O	6.0E-04	0.0015	265	0.4
			Total	**180**		**181**
MCAPS-FWP	189.1	CO_2	73.96	15	1	15.4
		CH_4	3.0E-03	0.0006	28	0.02
		N_2O	6.0E-04	0.0001	265	0.03
			Total	**376**		**15**

[1] Factors based on Table C-1 and C-2 of 40 CFR Part 98, Mandatory Greenhouse Gas Reporting

[2] Global Warming Potential factors revised as part of amendments made to the Mandatory Greenhouse Gas Reporting Rule (78 FR 71904).

Sample Calculation:

Annual Emission Rate = Annual Heat Input x Emission Factor x 2.2046 lbs/kg x Global Warming Potential / 2,000 lbs/ton

Table A-26
GHG Emission Calculations - Calculation of Design Heat Rate and Output Limits for Combustion Turbine
Madison County Advanced Power Station
Entergy Mississippi, LLC

Combined Cycle Turbine

Gross Output Basis

Base Firing Rate; 59°F Ambient Temp (with duct firing):	4,939	MMBtu/hr
Base Power Output; 59°F Ambient Temp (with duct firing):	772,219	kW
Base Heat Rate; 59°F Ambient Temp (with duct firing):	6,396	Btu/kWh (HHV) - no performance degredation
CTG/HRSG Steam Turbine Degradation Margin:	5.0%	
Adjusted Base Heat Rate with Compliance Margins:	6,716	Btu/kWh (HHV) - with performance degradation

Emission Point ID	Base Heat Rate Post Degradation (Btu/kWhr)	Electrical Output Basis	Heat Input Required to Produce 1 MW (MMBtu/MWhr)	Pollutant	Emission Factor[1] (lb/MMBtu)	lb GHG/MWhr[2]	Global Warming Potential[3]	lb CO_2e/MWhr[4]
MCAPS-1A	6,716	Gross	6.72	CO_2	118.86	798.22	1	798.22
				CH_4	2.2E-03	1.48E-02	28	4.15E-01
				N_2O	2.2E-04	1.48E-03	265	3.92E-01
				Total		**798.2**		**799.0**

[1] CH_4 and N_2O GHG factors based on Table C-2 of 40 CFR 98 Mandatory Greenhouse Gas Reporting

[2] CO_2 emissions based on 40 CFR Part 75, Appendix G, Equation G-4

$W_{CO2} = (F_c \times H \times U_f \times MW_{CO2})/2000$

W_{CO2} = CO_2 emitted from combustion, tpy

F_c = Carbon based F-factor,1040 scf/MMBtu

H = Heat Input (MMBtu/yr)

U_f = 1/385 scf CO_2/lbmole at 14.7 psia and 68°F

MW_{CO2} = Molecule weight of CO_2, 44.0 lb/lb-mole

[3] Global Warming Potential factors revised as part of amendments made to the Mandatory Greenhouse Gas Reporting Rule (78 FR 71904).

[4] Example Calculation: GHG emissions (lbs) x Global Warming Potential / 1 MW = lb CO_2e/MWhr

Table A-27
Natural Gas Analysis
Madison County Advanced Power Station
Entergy Mississippi, LLC

Name	MW	mol %	MW	Wt Fraction	Net LHV		Avg. LHV		Gross HHV		Avg. HHV	
					Btu/ft3	Btu/lb	Btu/ft3	Btu/lb	Btu/ft3	Btu/lb	Btu/ft3	Btu/lb
Nitrogen, N2	28.01	0.0118	0.330	0.019	0	0	0	0	0	0	0	0
Carbon Dioxide, CO2	44.01	0.0105	0.461	0.027	0	0	0	0	0	0	0	0
Carbon Monoxide, CO	28.01	0.0000	0.000	0.000	321	4,342	0	0	321	4,342	0	0
Hydrogen, H2	2.02	0.0000	0.000	0.000	274	51,566	0	0	324	61,022	0	0
Methane, CH4	16.04	0.9455	15.168	0.890	909	21,511	860	19,138	1,010	23,891	955	21,255
Ethane, C2H6	30.07	0.0266	0.800	0.047	1,619	20,429	43	959	1,770	22,333	47	1,049
Propane, C3H8	44.10	0.0023	0.102	0.006	2,315	19,922	5	119	2,516	21,653	6	129
Iso-Butane, C4H10	58.12	0.0006	0.035	0.002	3,000	19,590	2	40	3,252	21,232	2	43
n-Butane, C4H10	58.12	0.0005	0.030	0.002	3,011	19,658	2	35	3,262	21,300	2	38
Iso-Pentane, C5H12	72.15	0.0000	0.000	0.000	3,699	19,456	0	0	4,001	21,043	0	0
n-Pentane, C5H12	72.15	0.0006	0.040	0.002	3,704	19,481	2	46	4,009	21,085	2	50
n-Hexane, C6H14	86.18	0.0007	0.061	0.004	4,404	19,393	3	70	4,756	20,943	3	75
Ethylene, C2H4	28.05	0.0000	0.000	0.000	1,499	20,278	0	0	1,600	21,640	0	0
Propylene, C3H6	42.08	0.0000	0.001	0.000	2,182	19,678	0	1	2,333	21,039	0	2
neo-Pentane, C5H12	72.15	0.0000	0.000	0.000	3,683	19,371	0	0	3,985	20,958	0	0
Oxygen, O2	32.00	0.0006	0.019	0.001	0	0	0	0	0	0	0	0
Water, H2O	18.02	0.0000	0.000	0.000	0	0	0	0	50	1,060	0	0
Helium, He	4.00	0.0003	0.001	0.000	0	0	0	0	0	0	0	0
Total		*1.000*	*17.049*	*1.000*			917	20,408			1,017	22,641

APPENDIX B MDEQ AIR PERMIT APPLICATION FORMS

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

1. Name, Address, and Location of Facility

A. Owner/Company Name: Entergy Mississippi, LLC

B. Facility Name *(if different than A. above)*: Madison County Advanced Power Station

C. Facility Air Permit No. *(if known)*: TBD

D. Agency Interest No. *(if known)*: TBD

E. Physical Address

1. Street Address: 2098 W County Line Road
2. City: Ridgeland
3. State: MS
4. County: Madison
5. Zip Code: 39157
6. Telephone No.: TBD
7. Fax No.:

F. Mailing Address *(if different from physical address)*

1. Street Address or P.O. Box: 2107 Research Forest Drive, T-LFN-6
2. City: The Woodlands
3. State: TX
4. Zip Code: 77380

G. Latitude/Longitude Data

1. Collection Point *(check one)*:
   ☒ Plant Entrance ☐ Other:
2. Method of Collection *(check one)*:
   ☐ GPS Specify coordinate system (NAD 83, etc.)
   ☒ Map Interpolation (Google Earth, etc.) ☐ Other:
3. Latitude *(degrees/minutes/seconds)*: 32° 24' 11.43"
4. Longitude *(degrees/minutes/seconds)*: 90° 13' 01.73"
5. Elevation: 365 feet

H. SIC/NAICS Codes *(primary code listed first)*

SIC: 4911
NAICS: 22111
(NAICS Code should correspond with the SIC Code directly above.)

2. Name and Address of Facility Contact

A. Name: Jeremy Halland Title: Manager, Environmental Project Services

B. Mailing Address

1. Street Address or P.O. Box: 2107 Research Forest Drive, T-LFN-6
2. City: The Woodlands
3. State: TX
4. Zip Code: 77380
5. Email: jhallan@entergy.com
6. Telephone No.: (972) 743-9649
7. Fax No.:

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

3. Name and Address of Air Contact *(if different from Facility Contact)*

A. Name: Annisa White Title: Supervisor, Environmental Mgmt.

B. Mailing Address

1. Street Address or P.O. Box: 2107 Research Forest Drive, T-LFN-6
2. City: The Woodlands 3. State: TX
4. Zip Code: 77380 5. Email: awhite5@entergy.com
6. Telephone No.: (407) 929-2071 7. Fax No.:

4. Name and Address of the Responsible Official for the Facility

The Responsible Official is defined as one of the following:

a. For a corporation: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and the facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated in accordance with corporate procedures.

b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively.

c. For a municipality, state, federal, or other public agency: either a principal executive officer or ranking elected official. For purposes of these regulations, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of EPA). A principal executive officer of a military facility includes the facility commander, chief executive officer, or any other similar person who performs similar policy or decision-making functions for the institution.

A. Name: Lee Alexander Title: Vice President, Power Plant Operations Mississippi

B. Mailing Address

1. Street Address or P.O. Box: 2107 Research Forest Drive, T-LFN-6
2. City: The Woodlands 3. State: TX
4. Zip Code: 77380 5. Email: salexa2@entergy.com
6. Telephone No.: (281) 297-1937 7. Fax No.:

C. Is the person above a duly authorized representative and not a corporate officer? ☐ Yes ☒ No

If yes, has written notification of such authorization been submitted to MDEQ?

☐ Yes ☐ No ☐ Request for authorization is attached

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

5. Type of Permit Application *(Check all that apply)*

State Permit to Construct (i.e., non-PSD or PSD avoidance)

☐ Initial Application ☐ Modification

New Source Review (NSR) Permit to Construct (includes both Prevention of Significant Deterioration (PSD) and Nonattainment)

☒ Initial Application ☐ Modification

Title V Operating Permit

☐ Initial Application

☐ Re-issuance: *Are any modifications to the permit/facility being requested?* ☐ Yes ☐ No
(If yes, provide a separate sheet identifying the modification(s) and resulting change to emissions.)

☐ Modification (*Specify type):* ☐ Significant ☐ Minor ☐ Administrative

Synthetic Minor Operating Permit *(Appendix B must be completed and attached.)*

☐ Initial Application

☐ Re-issuance: *Are any modifications to the permit/facility being requested? If yes, address such on a separate sheet.* ☐ Yes ☐ No

☐ Modification

State Permit to Operate a Significant Minor Source *(defined in 11 Miss. Admin. Code Pt. 2, R.2.1.C(25).)*

☐ Initial Application

☐ Re-issuance: *Are any modifications to the permit/facility being requested? If yes, address such on a separate sheet.* ☐ Yes ☐ No

☐ Modification

True Minor Determination

☐ Uncontrolled potential to emit air pollutants is below the Title V thresholds

6. Process/Product Details

A. List Significant Raw Materials *(if applicable)*:
Natural Gas

B. List All Products *(if applicable)*:
Electrical Power

C. Brief Description of Principal Process(es):
Combined cycle power plant with full emission controls

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

6. Process/Product Details (continued)

D. Maximum Throughput for Raw Material(s) *(if applicable)*:

Raw Material	Throughput	Units
Natural Gas Fuel	4,904,000	SCFH

E. Maximum Throughput for Principal Product(s) *(if applicable)*:

Product	Throughput	Units

7. Facility Operating Information

A. Number of employees at the facility: 21

		Average Actual	Maximum Potential
B.	Hours per day the facility will operate:	24	24
C.	Days per week the facility will operate:	7	7
D.	Weeks per year the facility will operate:	52	52
E.	Months the facility will operate:	12	12

8. Maps

A. Attach a topographical map of the area extending to at least ½ mile beyond the property boundaries. The map must show the outline of the property boundaries. **Figure 2-2**

B. Attach a site map/diagram showing the outline of the property, an outline of all buildings and roadways on the site, and the location of each significant air emission source. **Figures 2-2 and 2-3**

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

9. Zoning

A. Is the facility (either existing or proposed) located in accordance with any applicable city and/or county zoning ordinances? If no, please explain.
Yes

B. Is the facility (either existing or proposed) required to obtain any zoning variance to locate/expand the facility at this site? If yes, please explain.
No

10. Risk Management Plan

A. Is the facility required to develop and register a risk management plan pursuant to Section 112(r), regulated under 40 CFR Part 68? ☒ Yes ☐ No

B. If yes, to whom was the plan submitted? To be submitted after construction
Date submitted: _____

11. *Is confidential information being submitted with this application?* ☐ Yes ☒ No

If so, please follow the procedures outlined in the Mississippi Code Ann. Sections 49-17-39 and 17-17-27(6), as outlined in MCEQ-2 – "Regulation regarding the review and reproduction of public records".

12. MS Secretary of State Registration / Certificate of Good Standing

No permit will be issued to a company that is not authorized to conduct business in Mississippi. If the company applying for the permit is a corporation, limited liability company, a partnership or a business trust, the application package should include proof of registration with the Mississippi Secretary of State and/or a copy of the company's Certificate of Good Standing. The name listed on the permit will include the company name as it is registered with the Mississippi Secretary of State. **See Appendix I**

It should be noted that for an application submitted in accordance with 11 Miss. Admin. Code Pt. 2, R. 2.8.B. to renew a State Permit to Operate or in accordance with 11 Miss. Admin. Code Pt. 2, R. 6.2.A(1)(c). to renew a Title V Permit to be considered timely and complete, the applicant shall be registered and in good standing with the Mississippi Secretary of State to conduct business in Mississippi.

FORM 5 MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

13. Certification

Note: If approved by MDEQ, a duly authorized representative (DAR) may sign the air permit application. The DAR must be listed in Section 4 of this application.

I certify that to the best of my knowledge and belief formed after reasonable inquiry, the statements and information in this application are true, complete, and accurate, and that as a responsible official, my signature shall constitute an agreement that the applicant assumes the responsibility for any alteration, additions, or changes in operation that may be necessary to achieve and maintain compliance with all applicable Rules and Regulations. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature of Responsible OfficiaT/DAR

6/4/25

Date

Lee Alexander

Printed Name

Vice President, Power Plant Operations Mississippi

Title

Section B.0: Emission Point Descriptions & Status

This form should list all the of the Emission Points and descriptions as proposed or as otherwise identified in an existing permit. This worksheet should be updated to reflect changes to the Status of the emission points over time. Emission Point ID's should match those assigned in the current MDEQ permit. Facility ID is optional. For proposed emission points, the facility should leave the Emission Point ID blank but may complete the Facility ID (if any). Under "Status," for Emission Points that are proposed or under construction but not yet operating, indicate their status as "Proposed." For emissions points already operating or for which construction has been certified complete, indicate their status as "Operating." Include all control devices for each emission point and the pollutant(s) the device controls. Control devices may be specified in general terms (e.g., baghouse, catalytic oxidizer, fabric filter, wet ESP, etc.). When an Emission Point is removed, indicate so by changing the "Status" to "Removed." Remove the emissions on the subsequent worksheets or indicate they are removed with a "-" for all pollutants.

Emission Point ID	Facility ID	Description	Status	Control Device	Controlled Pollutant(s)	Control Device	Controlled Pollutant(s)	Control Device	Controlled Pollutant(s)
MCAPS-1A	MCAPS ID TBD	Combined Cycle Unit 1A	Proposed	SCR	NOx	Oxidation Catalyst	CO, VOC		
MCAPS-EMGEN	MCAPS ID TBD	Emergency Standby Generator	Proposed						
MCAPS-FWP	MCAPS ID TBD	Emergency Diesel Fire Water Pump	Proposed						
MCAPS-NGDPHTR	MCAPS ID TBD	Natrual Gas Dewpoint Heater	Proposed	ULNB	NOx				
MCAPS-NGFUG	MCAPS ID TBD	Natural Gas Fugitive Emissions	Proposed	AVO Monitoring	CH4, VOC				
MCAPS-AMMFUG	MCAPS ID TBD	Ammonia Fugitive Emissions	Proposed	AVO Monitoring	NH3				
MCAPS-DSLFUG	MCAPS ID TBD	Diesel Fugitive Emissions	Proposed	AVO Monitoring	VOC				
MCAPS-LOVCT	MCAPS ID TBD	Combustion Turbine Lube Oil Vent	Proposed	Mist Eliminator	VOC, PM				
MCAPS-LOVST	MCAPS ID TBD	Steam Turbine Lube Oil Vent	Proposed	Mist Eliminator	VOC, PM				
MCAPS-TK1	MCAPS ID TBD	Emergency Generator Diesel Tank	Proposed						
MCAPS-TK2	MCAPS ID TBD	Emergency Fire Water Pump Diesel Tank	Proposed						
MCAPS-TK3	MCAPS ID TBD	Natural Gas Condensate Tank	Proposed						
MCAPS-TK4	MCAPS ID TBD	Natural Gas Condensate Tank	Proposed						

Section B.1: Maximum Uncontrolled Emissions (under normal operating conditions)

Maximum Uncontrolled Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless operating capacity and/or hours of operation are specifically limited in an enforceable permit. (Existing limits on operating conditions, not emissions or use of a control device, may be used when determining uncontrolled emissions.) Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Emissions≥ 0.01 ton/yr from a specific emission unit must be included. Please do not change the column widths on this table.

Emission Point ID	TSP[1] (PM)		PM-10[1]		PM-2.5[1]		SO_2		NOx		CO		VOC		TRS[2]		Ammonia		Total HAPs	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
MCAPS-1A	43.04	188.51	56.66	248.17	56.66	248.17	13.98	61.24	507.37	2,222.30	185.35	811.83	28.31	123.99	-	-	75.13	329.07	2.79	12.10
MCAPS-EMGEN	1.37	0.07	0.96	0.05	0.96	0.05	0.03	<0.01	30.76	1.54	16.82	0.84	2.69	0.13	-	-	-	-	0.03	<0.01
MCAPS-FWP	0.10	<0.01	0.10	<0.01	0.10	<0.01	<0.01	<0.01	2.07	0.10	1.81	0.09	0.06	<0.01	-	-	-	-	0.01	<0.01
MCAPS-NGDPHTR	0.01	0.04	0.02	0.11	0.02	0.11	<0.01	0.02	0.06	0.24	0.19	0.81	0.04	0.18	-	-	-	-	0.01	0.04
MCAPS-NGFUG	-	-	-	-	-	-	-	-	-	-	-	-	0.09	0.37	-	-	-	-	-	-
MCAPS-AMMFUG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	0.37	-	-
MCAPS-DSLFUG	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.03	-	-	-	-	-	-
MCAPS-LOVCT	<0.01	0.01	<0.01	0.01	<0.01	0.01	-	-	-	-	-	-	<0.01	0.01	-	-	-	-	-	-
MCAPS-LOVST	<0.01	0.01	<0.01	0.01	<0.01	0.01	-	-	-	-	-	-	<0.01	0.01	-	-	-	-	-	-
MCAPS-TK1	-	-	-	-	-	-	-	-	-	-	-	-	0.23	<0.01	-	-	-	-	-	-
MCAPS-TK2	-	-	-	-	-	-	-	-	-	-	-	-	0.03	<0.01	-	-	-	-	-	-
MCAPS-TK3	-	-	-	-	-	-	-	-	-	-	-	-	3.44	0.03	-	-	-	-	-	-
MCAPS-TK4	-	-	-	-	-	-	-	-	-	-	-	-	3.44	0.03	-	-	-	-	-	-
Totals	**44.53**	**188.65**	**57.75**	**248.36**	**57.75**	**248.36**	**14.02**	**61.26**	**540.26**	**2,224.18**	**204.17**	**813.57**	**38.34**	**124.78**	**-**	**-**	**75.21**	**329.44**	**2.84**	**12.14**

[1] **Condensables:** Include condensable particulate matter emissions in particulate matter calculations for PM-10 and PM-2.5, but not for TSP (PM).

[2] **TRS:** Total reduced sulfur (TRS) is the sum of the sulfur compounds hydrogen sulfide (H_2S), methyl mercaptan (CH_4S), dimethyl sulfide (C_2H_6S), and dimethyl disulfide ($C_2H_6S_2$).

Section B.2: Proposed Allowable Emissions

Proposed Allowable Emissions (Potential to Emit) are those emissions the facility is currently permitted to emit as limited by a specific permit requirement or federal/state standard (e.g., a MACT standard); or the emission rate at which the facility proposes to emit considering emissions control devices, restrictions to operating rates/hours, or other requested permit limits that reduce the maximum emission rates. Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Emissions ≥ 0.01 ton/yr from a specific emission unit must be included. Additional columns may be added if there are regulated pollutants (other than HAPs and GHGs) emitted at the facility. List HAPs in Section B.3 and GHGs in Section B.4 (if applicable).

Emission Point ID	TSP[1]		PM10[1]		PM2.5[1]		SO_2		NOx		CO		VOC		TRS[2]		Ammonia	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
MCAPS-1A - Routine	43.04	118.38	56.66	158.53	56.66	158.53	13.98	28.92	40.59	168.07	24.71	102.33	10.62	43.96	-	-	75.13	311.09
MCAPS-1A - SUSD	-	-	-	-	-	-	-	-	294.00	52.89	7,441.00	1,094.25	2,527.00	359.13	-	-	-	-
MCAPS-EMGEN	1.37	0.07	0.96	0.05	0.96	0.05	0.03	<0.01	30.76	1.54	16.82	0.84	2.69	0.13	-	-	-	-
MCAPS-FWP	0.10	<0.01	0.10	<0.01	0.10	<0.01	<0.01	<0.01	2.07	0.10	1.81	0.09	0.06	<0.01	-	-	-	-
MCAPS-NGDPHTR	0.01	0.04	0.02	0.11	0.02	0.11	<0.01	0.02	0.06	0.24	0.19	0.81	0.04	0.18	-	-	-	-
MCAPS-NGFUG	-	-	-	-	-	-	-	-	-	-	-	-	0.09	0.37	-	-	-	-
MCAPS-AMMFUG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	0.37
MCAPS-DSLFUG	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.03	-	-	-	-
MCAPS-LOVCT	<0.01	0.01	<0.01	0.01	<0.01	0.01	-	-	-	-	-	-	<0.01	0.01	-	-	-	-
MCAPS-LOVST	<0.01	0.01	<0.01	0.01	<0.01	0.01	-	-	-	-	-	-	<0.01	0.01	-	-	-	-
MCAPS-TK1	-	-	-	-	-	-	-	-	-	-	-	-	0.23	<0.01	-	-	-	-
MCAPS-TK2	-	-	-	-	-	-	-	-	-	-	-	-	0.03	<0.01	-	-	-	-
MCAPS-TK3	-	-	-	-	-	-	-	-	-	-	-	-	3.44	0.03	-	-	-	-
MCAPS-TK4	-	-	-	-	-	-	-	-	-	-	-	-	3.44	0.03	-	-	-	-
Totals	**44.53**	**118.52**	**57.75**	**158.72**	**57.75**	**158.72**	**14.02**	**28.94**	**326.89**	**222.84**	**7,459.82**	**1,198.32**	**2,537.03**	**403.88**	**-**	**-**	**75.21**	**311.46**

Note: Aside from the addition of startup and shutdown emissions to the proposed allowable emissions, the maximum uncontrolled emissions and the proposed allowable emissions for sources in which control devices and/or methods are used are the same. Emission factors for these sources are vendor provided emission factors. All of this data factors in the control device and/or method used to control the associated pollutants for the equipment.

[1] **Condensables:** Include condensable particulate matter emissions in particulate matter calculations for PM-10 and PM-2.5, but not for TSP (PM).

[2] **TRS:** Total reduced sulfur (TRS) is the sum of the sulfur compounds hydrogen sulfide (H_2S), methyl mercaptan (CH_4S), dimethyl sulfide (C_2H_6S), and dimethyl disulfide ($C_2H_6S_2$).

Section B.3: Proposed Allowable Hazardous Air Pollutants (HAPs)

Proposed Allowable HAPs (Potential to Emit) are those emissions the facility is currently permitted to emit as limited by a specific permit requirement or federal/state standard (e.g., a MACT standard); or the emission rate at which the facility proposes to emit considering emissions control devices, restrictions to operating rates/hours, or other requested permit limits that reduce the maximum emission rates. Select an inidividual HAP from the dropdown list provided. **Emissions ≥ 0.01 ton/yr of an indiviudal HAP from a specific emission unit must be provided.** Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected or are below the reporting threshold. Select the appropriate HAP from the drop down menu in the header cell of the given column in the table below. Additional columns may be added as necessary to address each HAP.

Emission Point ID	Total HAPs		1,3-Butadiene		Acetaldehyde		Acrolein		Benzene (including benzene from gasoline)		Ethyl benzene		Formaldehyde		Naphthalene		Propylene oxide		Toluene		Xylenes (isomers and mixture)		Hexane	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
MCAPS-1A	2.79	12.10	<0.01	0.01	0.20	0.87	0.03	0.14	0.06	0.26	0.16	0.69	1.21	5.24	0.01	0.03	0.14	0.63	0.65	2.81	0.32	1.38	-	-
MCAPS-EMGEN	0.03	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCAPS-FWP	0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCAPS-NGDPHTR	0.01	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	0.04
Totals:	**2.84**	**12.14**	**<0.01**	**0.01**	**0.20**	**0.87**	**0.03**	**0.14**	**0.06**	**0.26**	**0.16**	**0.69**	**1.21**	**5.24**	**0.01**	**0.03**	**0.14**	**0.63**	**0.65**	**2.81**	**0.32**	**1.38**	**0.01**	**0.04**

Section B.4: Greenhouse Gas (GHG) Emissions

This form is required for facilities that have or will require a Title V Operating Permit and for all industries in the energy and oil and gas sectors (i.e., SIC codes beginning with 13, 29, 46, and 49). Proposed Allowable GHGs (Potential to Emit) are those emissions the facility is currently permitted to emit as limited by a specific permit requirement or federal/state standard; or the emission rate at which the facility proposes to emit considering emissions control devices, restrictions to operating rates/hours, or other requested permit limits that reduce the maximum emission rates. Applicants must report potential emission rates in SHORT TONS per year, as opposed to metric tons required by Part 98. Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. Only those emission points with emissions of greenhouse gases are required to be provided on this form.

		CO_2 (non-biogenic) ton/yr	CO_2 (biogenic)[2] ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC[3] ton/yr	Total GHG Mass Basis ton/yr[5]	Total CO_2e ton/yr[6]
Emission Point ID	**GWPs [1]**	**1**	**1**	**265**	**28**	**22,800**	**footnote 4**		
MCAPS-1A	**mass GHG**	2,527,454.89	-	4.69	46.88	-	-	2,527,506	-
	CO_2e	2,527,454.89	-	1,242.32	1,312.64	-	-	-	2,530,010
MCAPS-EMGEN	**mass GHG**	180.12	-	0.001	0.01	-	-	180	-
	CO_2e	180.12	-	0.39	0.20	-	-	-	181
MCAPS-FWP	**mass GHG**	15.41	-	0.0001	0.001	-	-	15	-
	CO_2e	15.41	-	0.03	0.02	-	-	-	15
MCAPS-NGDPHTR	**mass GHG**	2,569.40	-	0.005	0.05	-	-	2,569	-
	CO_2e	2,569.40	-	1.28	1.36	-	-	-	2,572
MCAPS-NGFUG	**mass GHG**	0.36	-	-	11.98	-	-	12	-
	CO_2e	0.36	-	-	335.41	-	-	-	336
FACILITY TOTAL	**mass GHG**	2,530,220.18	0.00	4.70	58.92	0.00	0.00	2,530,284	-
	CO_2e	2,530,220.18	0.00	1,244.02	1,649.63	0.00	0.00	-	2,533,114

[1] **GWP** (Global Warming Potential): Applicants must use the most current GWPs codified in Table A-1 of 40 CFR part 98. GWPs are subject to change, therefore, applicants need to check 40 CFR 98 to confirm GWP values.

[2] Biogenic CO2 is defined as carbon dioxide emissions resulting from the combustion or decomposition of non-fossilized and biodegradable organic material originating from plants, animals, or micro-organisms.

[3] For **HFCs** or **PFCs** describe the specific HFC or PFC compound and use a separate column for each individual compound.

[4] For each new compound, enter the appropriate GWP for each HFC or PFC compound from Table A-1 in 40 CFR 98.

[5] Greenhouse gas emissions on a **mass basis** is the ton per year greenhouse gas emission before adjustment with its GWP. Include both biogenic and non-biogenic

[6] **CO_2e** means Carbon Dioxide Equivalent and is calculated by multiplying the ton/yr mass emissions of the greenhouse gas by its GWP. Include both biogenic and non-biogenic CO_2e in this total.

Section B.5: Stack Parameters and Exit Conditions

Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit.

Emission Point ID	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Base Elevation (ft)	Exit Temp. (^{0}F)	Inside Diameter or Dimensions (ft)	Velocity (ft/sec)	Moisture by Volume (%)	Geographic Position (degrees/minutes/seconds)	
									Latitude	Longitude
MCAPS-1A	V	No	200	365	160	23	81.04	12	32° 24' 14.09" N	090° 13' 12.67" W
MCAPS-EMGEN	V	No	16	365	979	1.2	299.48	NA	32° 24' 18.89" N	090° 13' 14.83" W
MCAPS-FWP	V	No	12	365	961	0.5	118.84	NA	32° 24' 15.55" N	090° 13' 6.88" W
MCAPS-NGDPHTR	V	No	20	365	250	2	13.56	NA	32° 24' 13.23" N	090° 13' 13.91" W
MCAPS-LOVCT	V	No	30	365	Ambient	0.003	0.003	NA	32° 24' 16.06" N	090° 13' 14.92" W
MCAPS-LOVST	V	No	30	365	Ambient	0.003	0.003	NA	32° 24' 17.01" N	090° 13' 12.53" W

[1] A WAAS-capable GPS receiver should be used and in the WGS84 or NAD83 coordinate system.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Fuel Burning Equipment – External Combustion Sources | Section C

1. Emission Point Description

A. Emission Point Designation (Ref. No.): MCAPS-NGDPHTR

B. Equipment Description: Forced Draft Dewpoint Heater - HORIZONTAL

C. Manufacturer: Sagebrush D. Model Yr. and No.: 2025 - TBD

E. Maximum Heat Input (higher heating value): 5.01 MMBtu/hr F. Nominal Heat Input Capacity: 5.01 MMBtu/hr

G. For units subject to NSPS Db, is the heat release rate > 70,000 Btu/hr-ft^3? ☐ Yes ☒ No

H. Use: ☐ Electrical Generation ☐ Steam ☐ Process Heat

☐ Space Heat ☐ Standby/Emergency ☒ Other (describe): Heats natural gas fuel

I. Heat Mechanism: ☐ Direct ☒ Indirect

J. Burner Type (e.g., pulverized coal, forced draft, atomizing oil, low-NO_x, etc.): Ultra Low NOx Burner

K. Additional Design Controls (e.g., FGR, etc.):

L. Status: ☐ Operating ☒ Proposed ☐ Under Construction

M. Date of construction, reconstruction, or most recent modification (for existing sources) or date of anticipated construction: New - upon permit approval

2. Fuel Type

Complete the following table, identifying each type of fuel and the amount used. Specify the units for heat content, hourly usage, and yearly usage.

FUEL TYPE[1]	HEAT CONTENT	% SULFUR	% ASH	MAXIMUM HOURLY USAGE	MAXIMUM YEARLY USAGE
Natural Gas	1,017 Btu/scf	Maximum 1.0 grains S/100 scf	NA	4,930 SCFH	43,186,800 SCF/yr

Please list any fuel components that are hazardous air pollutants and the percentage in the fuel:
NA

[1] Boilers burning solid waste may be considered "solid waste incinerators" for purposes of complying with federal regulations. However, you are only required to complete Section C, not I, of this application as long as the wastes combusted are indicated in the table above.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Fuel Burning Equipment – Internal Combustion Sources — Section D

1. Emission Point Description

A. Emission Point Designation (Ref. No.): MCAPS-1A

B. Equipment Description: Gas Turbine (GT) with Supplemental -fired Duct Burner (DB) Combine Cycle with HRSG and Steam Turbine Generator

C. Manufacturer: Mitsubishi D. Model Yr. and No.: New - M501JAC

E. Maximum Heat Input (higher heating value): 4,983 MMBtu/hr

F. Rated Power: _____ hp 772,200 kW

G. Use: ☒ Non-emergency ☐ Emergency

Complete H through O for Reciprocating (Piston) Internal Combustion Engines

H. Displacement per cylinder: ☐ < 10 Liters ☐ 10 to <30 Liters ☐ ≥ 30 Liters

I. Engine Ignition Type: ☐ Spark Ignition ☐ Compression Ignition

J. Engine Burn Type: ☐ 4-stroke ☐ 2-stroke ☐ Rich Burn ☐ Lean Burn
(J. should be answered for Compression Ignition only)

K. Design Controls (e.g., catalytic converter, diesel particulate filter, SCR, etc.) —

L. Status: ☐ Operating ☐ Proposed ☐ Under Construction

M. Engine manufactured or reconstructed date: _____ N. Engine order date: _____

O. Is the engine certified by EPA to meet the applicable emissions standards? ☐ Yes ☐ No

P. If an emergency engine, can your engine be operated for Emergency Demand Response per the NERC Reliability Standard? ☐ Yes ☐ No

Q. If an emergency engine, is it used for peak shaving or non-emergency demand response? ☐ Yes ☐ No

Complete R through T for Stationary Gas Turbines

R. Turbine Type: ☐ Simple Cycle ☐ Regenerative Cycle ☒ Combined Cycle ☐ Combined Heat and Power (Cogeneration)

S. Controls: ☐ Water-Steam Injection ☐ Lean Premix ☒ Other Controls (SCR, oxidation catalyst, etc.): SCR and Oxidation Catalyst —

T. Date of construction, reconstruction, or most recent modification (for existing sources) or date of anticipated construction: New – upon permit approval

2. Fuel Type

Complete the following table, identifying each type of fuel and the amount used. Specify units of measurement.

FUEL TYPE	HEAT CONTENT	% SULFUR	% ASH	MAXIMUM HOURLY USAGE	MAXIMUM YEARLY USAGE
Natural Gas	1,017 Btu/scf	Maximum 1.0 grains S/100 scf	NA	4.9 MMSCFH	42,534 MMSCF/yr

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Fuel Burning Equipment – Internal Combustion Sources — Section D

1. Emission Point Description

A. Emission Point Designation (Ref. No.): MCAPS-EMGEN

B. Equipment Description: Diesel-fired Emergency Standby Generator

C. Manufacturer: Mitsubishi D. Model Yr. and No.: 2022 - S16R-Y2PTAW2-1

E. Maximum Heat Input (higher heating value): 22.09 MMBtu/hr

F. Rated Power: 2,923 hp 2,180 kW

G. Use: ☐ Non-emergency ☒ Emergency

Complete H through Q for Reciprocating (Piston) Internal Combustion Engines

H. Displacement per cylinder: ☒ < 10 Liters ☐ 10 to <30 Liters ☐ ≥ 30 Liters

I. Engine Ignition Type: ☐ Spark Ignition ☒ Compression Ignition

J. Engine Burn Type: ☒ 4-stroke ☐ 2-stroke ☐ Rich Burn ☒ Lean Burn
(J. should be answered for Compression Ignition only)

K. Design Controls (e.g., catalytic converter, diesel particulate filter, SCR, etc.) Tier 2 Certified – Good combustion practices

L. Status: ☐ Operating ☒ Proposed ☐ Under Construction

M. Engine manufactured or reconstructed date: TBD N. Engine order date: TBD

O. Is the engine certified by EPA to meet the applicable emissions standards? ☒ Yes ☐ No

P. If an emergency engine, can your engine be operated for Emergency Demand Response per the NERC Reliability Standard? ☐ Yes ☒ No

Q. If an emergency engine, is it used for peak shaving or non-emergency demand response? ☐ Yes ☒ No

Complete R through T for Stationary Gas Turbines

R. Turbine Type: ☐ Simple Cycle ☐ Regenerative Cycle ☐ Combined Cycle ☐ Combined Heat and Power (Cogeneration)

S. Controls: ☐ Water-Steam Injection ☐ Lean Premix ☐ Other Controls (SCR, oxidation catalyst, etc.): _____

T. Date of construction, reconstruction, or most recent modification (for existing sources) or date of anticipated construction: _____

2. Fuel Type

Complete the following table, identifying each type of fuel and the amount used. Specify units of measurement.

FUEL TYPE	HEAT CONTENT	% SULFUR	% ASH	MAXIMUM HOURLY USAGE	MAXIMUM YEARLY USAGE
ULSD	140,000 Btu/gal	15 ppmw S	0%	1 hr/day	100 hr/yr

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Fuel Burning Equipment – Internal Combustion Sources — Section D

1. Emission Point Description

A. Emission Point Designation (Ref. No.): MCAPS-FWP

B. Equipment Description: Firewater Pump

C. Manufacturer: John Deere D. Model Yr. and No.: 2023 - 6068HFC48A

E. Maximum Heat Input (higher heating value): 1.89 MMBtu/hr

F. Rated Power: 282 hp 235 kW

G. Use: ☐ Non-emergency ☒ Emergency

Complete H through Q for Reciprocating (Piston) Internal Combustion Engines

H. Displacement per cylinder: ☒ < 10 Liters ☐ 10 to <30 Liters ☐ ≥ 30 Liters

I. Engine Ignition Type: ☐ Spark Ignition ☒ Compression Ignition

J. Engine Burn Type: ☒ 4-stroke ☐ 2-stroke ☐ Rich Burn ☒ Lean Burn
(J. should be answered for Compression Ignition only)

K. Design Controls (e.g., catalytic converter, diesel particulate filter, SCR, etc.) Tier 3 Certified – Good combustion practices

L. Status: ☐ Operating ☒ Proposed ☐ Under Construction

M. Engine manufactured or reconstructed date: TBD N. Engine order date: TBD

O. Is the engine certified by EPA to meet the applicable emissions standards? ☒ Yes ☐ No

P. If an emergency engine, can your engine be operated for Emergency Demand Response per the NERC Reliability Standard? ☐ Yes ☒ No

Q. If an emergency engine, is it used for peak shaving or non-emergency demand response? ☐ Yes ☒ No

Complete R through T for Stationary Gas Turbines

R. Turbine Type: ☐ Simple Cycle ☐ Regenerative Cycle ☐ Combined Cycle
☐ Combined Heat and Power (Cogeneration)

S. Controls: ☐ Water-Steam Injection ☐ Lean Premix
☐ Other Controls (SCR, oxidation catalyst, etc.):

T. Date of construction, reconstruction, or most recent modification (for existing sources) or date of anticipated construction:

2. Fuel Type

Complete the following table, identifying each type of fuel and the amount used. Specify units of measurement.

FUEL TYPE	HEAT CONTENT	% SULFUR	% ASH	MAXIMUM HOURLY USAGE	MAXIMUM YEARLY USAGE
ULSD	140,000 Btu/gal	15 ppmw S	0%	1 hr/day	100 hr/yr

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

1. Emission Point Description

Note: Sections 3-7 below do not have to be completed if all of the required information is provided elsewhere, such as in a report generated by EPA's TANKS software, and attached to the application.

A. Emission Point Designation (Ref. No.): MCAPS-TK1

B. Product(s) Stored: Ultra Low Sulfur Diesel (ULSD) for Emergency Generator

C. Status: ☐ Operating ☒ Proposed ☐ Under Construction

D. Date of construction, reconstruction, or most recent modification (for existing sources) or date of anticipated construction: New - upon permit approval

2. Tank Data

A. Tank Specifications:

1.	Design capacity	4,150	gallons		
2.	True vapor pressure at storage temperature:	0.01	psia @	67.12	°F
3.	Maximum true vapor pressure (as defined in §60.111b)	0.02	psia @	90.75	°F
4.	Reid vapor pressure at storage temperature:		psia @		°F
5.	Density of product at storage temperature:	7.10	lb/gal		
6.	Molecular weight of product vapor at storage temp.	130	lb/lbmol		

B. Tank Orientation: ☐ Vertical ☒ Horizontal

C. Type of Tank:

☒ Fixed Roof ☐ External Floating Roof ☐ Internal Floating Roof

☐ Pressure ☐ Variable Vapor Space ☐ Other: Submerged fill

D. Is the tank equipped with a Vapor Recovery System? ☐ Yes ☒ No
If yes, describe below and include the efficiency.

E. Closest City:

☒ Jackson, MS ☐ Meridian, MS ☐ Tupelo, MS ☐ Mobile, AL

☐ New Orleans, LA ☐ Memphis, TN ☐ Baton Rouge, LA

F. Is an EPA TANKS report included for this tank in the application? ☐ Yes ☒ No

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

3. Horizontal Fixed Roof Tank

A. Shell Length: 42.2 feet
B. Shell Diameter: 10.3 feet
C. Working Volume: 4,150 gal
D. Maximum Throughput: 150,000 gal/yr
E. Is the tank heated? ☐ Yes ☒ No
F. Is the tank underground? ☐ Yes ☒ No
G. Shell Color/Shade:
☒ ☐ Aluminum/Specular ☐ Aluminum/Diffuse
☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

H. Shell Condition: ☒ Good ☐ Poor

4. Vertical Fixed Roof Tank

A. Dimensions:
1. Shell Height: _____ feet
2. Shell Diameter: _____ feet
3. Maximum Liquid Height: _____ feet
4. Average Liquid Height: _____ feet
5. Working Volume: _____ gal
6. Turnovers per year: _____
7. Maximum throughput: _____ gal/yr
8. Is the tank heated? ☐ Yes ☐ No

B. Shell Characteristics:
1. Shell Color/Shade:
☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse
☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

2. Shell Condition: ☐ Good ☐ Poor

C. Roof Characteristics:
1. Roof Color/Shade:
☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse
☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

2. Roof Condition: ☐ Good ☐ Poor

3. Type: ☐ Cone ☐ Dome

4. Height: _____ feet

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

5. Internal Floating Roof Tank

A. Tank Characteristics:

1. Diameter: _____ feet
2. Tank Volume: _____ gal
3. Turnovers per year: _____
4. Maximum Throughput: _____ gal/yr
5. Number of Columns: _____
6. Self-Supporting Roof? ☐ Yes ☐ No
7. Effective Column Diameter:
   ☐ 9"x7" Built-up Column ☐ 8" Diameter Pipe ☐ Unknown
8. Internal Shell Condition:
   ☐ Light Rust ☐ Dense Rust ☐ Gunite Lining
9. External Shell Color/Shade:
   ☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse
   ☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer
10. External Shell Condition: ☐ Good ☐ Poor
11. Roof Color/Shade:
    ☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse
    ☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer
12. Roof Condition: ☐ Good ☐ Poor

B. Rim Seal System:

1. Primary Seal: ☐ Mechanical Shoe ☐ Liquid-mounted ☐ Vapor-mounted
2. Secondary Seal: ☐ Shoe-mounted ☐ Rim-mounted ☐ None

C. Deck Characteristics:

1. Deck Type: ☐ Bolted ☐ Welded
2. Deck Fitting Category: ☐ Typical ☐ Detail

6. External Floating Roof Tank

A. Tank Characteristics

1. Diameter: _____ feet
2. Tank Volume: _____ gal
3. Turnovers per year: _____
4. Maximum Throughput: _____ gal/yr
5. Internal Shell Condition:
   ☐ Light Rust ☐ Dense Rust ☐ Gunite Lining

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

6. External Floating Roof Tank (continued)

A. Tank Characteristics (continued):

6. Paint Color/Shade:

☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

7. Paint Condition: ☐ Good ☐ Poor

B. Roof Characteristics

1. Roof Type: ☐ Pontoon ☐ Double Deck

2. Roof Fitting Category: ☐ Typical ☐ Detail

C. Tank Construction and Rim-Seal System:

1. Tank Construction: ☐ Welded ☐ Riveted

2. Primary Seal:

☐ Mechanical Shoe ☐ Liquid-mounted ☐ Vapor-mounted

3. Secondary Seal

☐ None ☐ Shoe-mounted ☐ Rim-mounted ☐ Weather shield

7. Pollutant Emissions

A. Fixed Roof Emissions:

Pollutant[1]	Working Loss (tons/yr)	Breathing Loss (tons/yr)	Total Emissions (tons/yr)
VOC	1.88E-03	2.28E-03	4.16E-03

B. Floating Roof Emissions:

Pollutant[1]	Rim Seal Loss (tons/yr)	Withdrawal Loss (tons/yr)	Deck Fitting Loss (tons/yr)	Deck Seam Loss (tons/yr)	Landing Loss[2] (tons/yr)	Total Emissions (tons/yr)

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with the Permit Application Instructions. A list of regulated air pollutants and hazardous air pollutants is provided in the Application Instructions.

2. Landing losses should be determined according to the procedures in *Organic Liquid Storage Tanks* chapter of EPA's AP-42 emission factors. If the roof is not landed at least once/yr, enter "NA".

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

1. Emission Point Description

Note: Sections 3-7 below do not have to be completed if all of the required information is provided elsewhere, such as in a report generated by EPA's TANKS software, and attached to the application.

A. Emission Point Designation (Ref. No.): MCAPS-TK2

B. Product(s) Stored: Ultra Low Sulfur Diesel (ULSD) for Fire Water Pump

C. Status: ☐ Operating ☒ Proposed ☐ Under Construction

D. Date of construction, reconstruction, or most recent modification (for existing sources) or date of anticipated construction: New - upon permit approval

2. Tank Data

A. Tank Specifications:

1.	Design capacity	500	gallons		
2.	True vapor pressure at storage temperature:	0.01	psia @	67.12	°F
3.	Maximum true vapor pressure (as defined in §60.111b)	0.02	psia @	90.75	°F
4.	Reid vapor pressure at storage temperature:		psia @		°F
5.	Density of product at storage temperature:	7.10	lb/gal		
6.	Molecular weight of product vapor at storage temp.	130	lb/lbmol		

B. Tank Orientation: ☐ Vertical ☒ Horizontal

C. Type of Tank:

☒ Fixed Roof ☐ External Floating Roof ☐ Internal Floating Roof

☐ Pressure ☐ Variable Vapor Space ☐ Other: Submerged fill

D. Is the tank equipped with a Vapor Recovery System? ☐ Yes ☒ No
If yes, describe below and include the efficiency.

E. Closest City:

☒ Jackson, MS ☐ Meridian, MS ☐ Tupelo, MS ☐ Mobile, AL

☐ New Orleans, LA ☐ Memphis, TN ☐ Baton Rouge, LA

F. Is an EPA TANKS report included for this tank in the application? ☐ Yes ☒ No

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

3. Horizontal Fixed Roof Tank

A. Shell Length: 15 feet
B. Shell Diameter: 5 feet
C. Working Volume: 500 gal
D. Maximum Throughput: 43,200 gal/yr
E. Is the tank heated? ☐ Yes ☒ No
F. Is the tank underground? ☐ Yes ☒ No
G. Shell Color/Shade:

☒ ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

H. Shell Condition: ☒ Good ☐ Poor

4. Vertical Fixed Roof Tank

A. Dimensions:
1. Shell Height: _____ feet
2. Shell Diameter: _____ feet
3. Maximum Liquid Height: _____ feet
4. Average Liquid Height: _____ feet
5. Working Volume: _____ gal
6. Turnovers per year: _____
7. Maximum throughput: _____ gal/yr
8. Is the tank heated? ☐ Yes ☐ No

B. Shell Characteristics:
1. Shell Color/Shade:

☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

2. Shell Condition: ☐ Good ☐ Poor

C. Roof Characteristics:
1. Roof Color/Shade:

☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

2. Roof Condition: ☐ Good ☐ Poor

3. Type: ☐ Cone ☐ Dome

4. Height: _____ feet

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

5. Internal Floating Roof Tank

A. Tank Characteristics:

1. Diameter: _____ feet
2. Tank Volume: _____ gal
3. Turnovers per year: _____
4. Maximum Throughput: _____ gal/yr
5. Number of Columns: _____
6. Self-Supporting Roof? ☐ Yes ☐ No
7. Effective Column Diameter:
   ☐ 9"x7" Built-up Column ☐ 8" Diameter Pipe ☐ Unknown
8. Internal Shell Condition:
   ☐ Light Rust ☐ Dense Rust ☐ Gunite Lining
9. External Shell Color/Shade:
   ☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse
   ☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer
10. External Shell Condition: ☐ Good ☐ Poor
11. Roof Color/Shade:
    ☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse
    ☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer
12. Roof Condition: ☐ Good ☐ Poor

B. Rim Seal System:

1. Primary Seal: ☐ Mechanical Shoe ☐ Liquid-mounted ☐ Vapor-mounted
2. Secondary Seal: ☐ Shoe-mounted ☐ Rim-mounted ☐ None

C. Deck Characteristics:

1. Deck Type: ☐ Bolted ☐ Welded
2. Deck Fitting Category: ☐ Typical ☐ Detail

6. External Floating Roof Tank

A. Tank Characteristics

1. Diameter: _____ feet
2. Tank Volume: _____ gal
3. Turnovers per year: _____
4. Maximum Throughput: _____ gal/yr
5. Internal Shell Condition:
   ☐ Light Rust ☐ Dense Rust ☐ Gunite Lining

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

6. External Floating Roof Tank (continued)

A. Tank Characteristics (continued):

6. Paint Color/Shade:

☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

7. Paint Condition: ☐ Good ☐ Poor

B. Roof Characteristics

1. Roof Type: ☐ Pontoon ☐ Double Deck

2. Roof Fitting Category: ☐ Typical ☐ Detail

C. Tank Construction and Rim-Seal System:

1. Tank Construction: ☐ Welded ☐ Riveted

2. Primary Seal:

☐ Mechanical Shoe ☐ Liquid-mounted ☐ Vapor-mounted

3. Secondary Seal

☐ None ☐ Shoe-mounted ☐ Rim-mounted ☐ Weather shield

7. Pollutant Emissions

A. Fixed Roof Emissions:

Pollutant[1]	Working Loss (tons/yr)	Breathing Loss (tons/yr)	Total Emissions (tons/yr)
VOC	5.40E-04	1.90E-04	7.30E-04

B. Floating Roof Emissions:

Pollutant[1]	Rim Seal Loss (tons/yr)	Withdrawal Loss (tons/yr)	Deck Fitting Loss (tons/yr)	Deck Seam Loss (tons/yr)	Landing Loss[2] (tons/yr)	Total Emissions (tons/yr)

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with the Permit Application Instructions. A list of regulated air pollutants and hazardous air pollutants is provided in the Application Instructions.

2. Landing losses should be determined according to the procedures in *Organic Liquid Storage Tanks* chapter of EPA's AP-42 emission factors. If the roof is not landed at least once/yr, enter "NA".

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

1. Emission Point Description

Note: Sections 3-7 below do not have to be completed if all of the required information is provided elsewhere, such as in a report generated by EPA's TANKS software, and attached to the application.

A. Emission Point Designation (Ref. No.): MCAPS-TK3

B. Product(s) Stored: Natural Gas Condensate

C. Status: ☐ Operating ☒ Proposed ☐ Under Construction

D. Date of construction, reconstruction, or most recent modification (for existing sources) or date of anticipated construction: New - upon permit approval

2. Tank Data

A. Tank Specifications:

1.	Design capacity	400	gallons		
2.	True vapor pressure at storage temperature:	3.40	psia @	67.12	ºF
3.	Maximum true vapor pressure (as defined in §60.111b)	5.37	psia @	90.75	ºF
4.	Reid vapor pressure at storage temperature:	6.00	psia @	67.12	ºF
5.	Density of product at storage temperature:	5.60	lb/gal		
6.	Molecular weight of product vapor at storage temp.	66.00	lb/lbmol		

B. Tank Orientation: ☐ Vertical ☒ Horizontal

C. Type of Tank:

☒ Fixed Roof ☐ External Floating Roof ☐ Internal Floating Roof

☐ Pressure ☐ Variable Vapor Space ☐ Other: Submerged fill

D. Is the tank equipped with a Vapor Recovery System? ☐ Yes ☒ No
If yes, describe below and include the efficiency.

E. Closest City:

☒ Jackson, MS ☐ Meridian, MS ☐ Tupelo, MS ☐ Mobile, AL

☐ New Orleans, LA ☐ Memphis, TN ☐ Baton Rouge, LA

F. Is an EPA TANKS report included for this tank in the application? ☐ Yes ☒ No

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

3. Horizontal Fixed Roof Tank

A. Shell Length: 8 feet
B. Shell Diameter: 3 feet
C. Working Volume: 400 gal
D. Maximum Throughput: 4,800 gal/yr
E. Is the tank heated? ☐ Yes ☒ No
F. Is the tank underground? ☐ Yes ☒ No
G. Shell Color/Shade:

☒ ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

H. Shell Condition: ☒ Good ☐ Poor

4. Vertical Fixed Roof Tank

A. Dimensions:
1. Shell Height: _____ feet
2. Shell Diameter: _____ feet
3. Maximum Liquid Height: _____ feet
4. Average Liquid Height: _____ feet
5. Working Volume: _____ gal
6. Turnovers per year: _____
7. Maximum throughput: _____ gal/yr
8. Is the tank heated? ☐ Yes ☐ No

B. Shell Characteristics:
1. Shell Color/Shade:

☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

2. Shell Condition: ☐ Good ☐ Poor

C. Roof Characteristics:
1. Roof Color/Shade:

☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

2. Roof Condition: ☐ Good ☐ Poor

3. Type: ☐ Cone ☐ Dome

4. Height: _____ feet

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

5. Internal Floating Roof Tank

A. Tank Characteristics:

1. Diameter: _____ feet
2. Tank Volume: _____ gal
3. Turnovers per year: _____
4. Maximum Throughput: _____ gal/yr
5. Number of Columns: _____
6. Self-Supporting Roof? ☐ Yes ☐ No
7. Effective Column Diameter:
   ☐ 9"x7" Built-up Column ☐ 8" Diameter Pipe ☐ Unknown
8. Internal Shell Condition:
   ☐ Light Rust ☐ Dense Rust ☐ Gunite Lining
9. External Shell Color/Shade:
   ☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse
   ☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer
10. External Shell Condition: ☐ Good ☐ Poor
11. Roof Color/Shade:
    ☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse
    ☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer
12. Roof Condition: ☐ Good ☐ Poor

B. Rim Seal System:

1. Primary Seal: ☐ Mechanical Shoe ☐ Liquid-mounted ☐ Vapor-mounted
2. Secondary Seal: ☐ Shoe-mounted ☐ Rim-mounted ☐ None

C. Deck Characteristics:

1. Deck Type: ☐ Bolted ☐ Welded
2. Deck Fitting Category: ☐ Typical ☐ Detail

6. External Floating Roof Tank

A. Tank Characteristics

1. Diameter: _____ feet
2. Tank Volume: _____ gal
3. Turnovers per year: _____
4. Maximum Throughput: _____ gal/yr
5. Internal Shell Condition:
   ☐ Light Rust ☐ Dense Rust ☐ Gunite Lining

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

6. External Floating Roof Tank (continued)

A. Tank Characteristics (continued):

6. Paint Color/Shade:

☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

7. Paint Condition: ☐ Good ☐ Poor

B. Roof Characteristics

1. Roof Type: ☐ Pontoon ☐ Double Deck

2. Roof Fitting Category: ☐ Typical ☐ Detail

C. Tank Construction and Rim-Seal System:

1. Tank Construction: ☐ Welded ☐ Riveted

2. Primary Seal:

☐ Mechanical Shoe ☐ Liquid-mounted ☐ Vapor-mounted

3. Secondary Seal

☐ None ☐ Shoe-mounted ☐ Rim-mounted ☐ Weather shield

7. Pollutant Emissions

A. Fixed Roof Emissions:

Pollutant[1]	Working Loss (tons/yr)	Breathing Loss (tons/yr)	Total Emissions (tons/yr)
VOC	1.27E-02	1.70E-02	2.97E-02

B. Floating Roof Emissions:

Pollutant[1]	Rim Seal Loss (tons/yr)	Withdrawal Loss (tons/yr)	Deck Fitting Loss (tons/yr)	Deck Seam Loss (tons/yr)	Landing Loss[2] (tons/yr)	Total Emissions (tons/yr)

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with the Permit Application Instructions. A list of regulated air pollutants and hazardous air pollutants is provided in the Application Instructions.
2. Landing losses should be determined according to the procedures in *Organic Liquid Storage Tanks* chapter of EPA's AP-42 emission factors. If the roof is not landed at least once/yr, enter "NA".

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

1. Emission Point Description

Note: Sections 3-7 below do not have to be completed if all of the required information is provided elsewhere, such as in a report generated by EPA's TANKS software, and attached to the application.

A. Emission Point Designation (Ref. No.): MCAPS-TK4

B. Product(s) Stored: Natural Gas Condensate

C. Status: ☐ Operating ☒ Proposed ☐ Under Construction

D. Date of construction, reconstruction, or most recent modification (for existing sources) or date of anticipated construction: New - upon permit approval

2. Tank Data

A. Tank Specifications:

1.	Design capacity	400	gallons		
2.	True vapor pressure at storage temperature:	3.40	psia @	67.12	ºF
3.	Maximum true vapor pressure (as defined in §60.111b)	5.37	psia @	90.75	ºF
4.	Reid vapor pressure at storage temperature:	6.00	psia @	67.12	ºF
5.	Density of product at storage temperature:	5.60	lb/gal		
6.	Molecular weight of product vapor at storage temp.	66.00	lb/lbmol		

B. Tank Orientation: ☐ Vertical ☒ Horizontal

C. Type of Tank:

☒ Fixed Roof ☐ External Floating Roof ☐ Internal Floating Roof

☐ Pressure ☐ Variable Vapor Space ☐ Other: Submerged fill

D. Is the tank equipped with a Vapor Recovery System? ☐ Yes ☒ No
If yes, describe below and include the efficiency.

E. Closest City:

☒ Jackson, MS ☐ Meridian, MS ☐ Tupelo, MS ☐ Mobile, AL

☐ New Orleans, LA ☐ Memphis, TN ☐ Baton Rouge, LA

F. Is an EPA TANKS report included for this tank in the application? ☐ Yes ☒ No

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

3. Horizontal Fixed Roof Tank

A. Shell Length: 8 feet
B. Shell Diameter: 3 feet
C. Working Volume: 400 gal
D. Maximum Throughput: 4,800 gal/yr
E. Is the tank heated? ☐ Yes ☒ No
F. Is the tank underground? ☐ Yes ☒ No
G. Shell Color/Shade:

☒ ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

H. Shell Condition: ☒ Good ☐ Poor

4. Vertical Fixed Roof Tank

A. Dimensions:
1. Shell Height: _____ feet
2. Shell Diameter: _____ feet
3. Maximum Liquid Height: _____ feet
4. Average Liquid Height: _____ feet
5. Working Volume: _____ gal
6. Turnovers per year: _____
7. Maximum throughput: _____ gal/yr
8. Is the tank heated? ☐ Yes ☐ No

B. Shell Characteristics:
1. Shell Color/Shade:

☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

2. Shell Condition: ☐ Good ☐ Poor

C. Roof Characteristics:
1. Roof Color/Shade:

☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

2. Roof Condition: ☐ Good ☐ Poor

3. Type: ☐ Cone ☐ Dome

4. Height: _____ feet

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

5. Internal Floating Roof Tank

A. Tank Characteristics:

1. Diameter: _____ feet
2. Tank Volume: _____ gal
3. Turnovers per year: _____
4. Maximum Throughput: _____ gal/yr
5. Number of Columns: _____
6. Self-Supporting Roof? ☐ Yes ☐ No
7. Effective Column Diameter:
   ☐ 9"x7" Built-up Column ☐ 8" Diameter Pipe ☐ Unknown
8. Internal Shell Condition:
   ☐ Light Rust ☐ Dense Rust ☐ Gunite Lining
9. External Shell Color/Shade:
   ☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse
   ☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer
10. External Shell Condition: ☐ Good ☐ Poor
11. Roof Color/Shade:
    ☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse
    ☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer
12. Roof Condition: ☐ Good ☐ Poor

B. Rim Seal System:

1. Primary Seal: ☐ Mechanical Shoe ☐ Liquid-mounted ☐ Vapor-mounted
2. Secondary Seal: ☐ Shoe-mounted ☐ Rim-mounted ☐ None

C. Deck Characteristics:

1. Deck Type: ☐ Bolted ☐ Welded
2. Deck Fitting Category: ☐ Typical ☐ Detail

6. External Floating Roof Tank

A. Tank Characteristics

1. Diameter: _____ feet
2. Tank Volume: _____ gal
3. Turnovers per year: _____
4. Maximum Throughput: _____ gal/yr
5. Internal Shell Condition:
   ☐ Light Rust ☐ Dense Rust ☐ Gunite Lining

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

6. External Floating Roof Tank (continued)

A. Tank Characteristics (continued):

6. Paint Color/Shade:

☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

7. Paint Condition: ☐ Good ☐ Poor

B. Roof Characteristics

1. Roof Type: ☐ Pontoon ☐ Double Deck

2. Roof Fitting Category: ☐ Typical ☐ Detail

C. Tank Construction and Rim-Seal System:

1. Tank Construction: ☐ Welded ☐ Riveted

2. Primary Seal:

☐ Mechanical Shoe ☐ Liquid-mounted ☐ Vapor-mounted

3. Secondary Seal

☐ None ☐ Shoe-mounted ☐ Rim-mounted ☐ Weather shield

7. Pollutant Emissions

A. Fixed Roof Emissions:

Pollutant[1]	Working Loss (tons/yr)	Breathing Loss (tons/yr)	Total Emissions (tons/yr)
VOC	1.27E-02	1.70E-02	2.97E-02

B. Floating Roof Emissions:

Pollutant[1]	Rim Seal Loss (tons/yr)	Withdrawal Loss (tons/yr)	Deck Fitting Loss (tons/yr)	Deck Seam Loss (tons/yr)	Landing Loss[2] (tons/yr)	Total Emissions (tons/yr)

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with the Permit Application Instructions. A list of regulated air pollutants and hazardous air pollutants is provided in the Application Instructions.
2. Landing losses should be determined according to the procedures in *Organic Liquid Storage Tanks* chapter of EPA's AP-42 emission factors. If the roof is not landed at least once/yr, enter "NA".

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Continuous Emission Monitoring System (CEMS) — Section M2

1. Applicable Emission Point Description

A. Emission Point Designation (Ref. No.): MCAPS-1A

B. Emission Point Description: Gas Turbine/Duct Burner Main Stack

C. For what emission limit or standard does the monitoring demonstrate compliance?
NOx BACT and CO BACT

D. Is there an applicable underlying requirement to operate a CEMS? ☒ Yes ☐ No

If yes, what is that requirement (e.g., NSPS Subpart H, Permit to Construct issued…, etc.)?
40 CFR Part 75 - Acid Rain Program CEMS requirements

2. CEMS Information

A. Parameter(s)/Pollutant(s) to be monitored (e.g., opacity, NO_x, O_2, flow, etc.):
NOx, CO, and O2 - Flow will be calculated via Method 19 as per 40 CFR Part 75

B. Type of analyzer(s): NOx, CO, O2 - all will be compliant with 40 CFR Part 75
The make and model of the selected analyzers is TBD

C. Span value for each analyzer (specify units of measurement): Compliant with 40 CFR Part 75 span values and compliant with all 40 CFR Part 75 QA/QC requirements

D. Does the CEMS comply with the applicable performance specifications in 40 CFR Part 60, Appendix B?
☒ Yes ☐ No

E. Does the applicant comply with the quality assurance procedures of 40 CFR Part 60, Appendix F?
☒ Yes ☐ No

F. If answers to C or D above are no, provide an explanation of the difference in the specifications and/or QA procedures below.

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Stack Testing — Section M6

1. Applicable Emission Point Description

A. Emission Point Designation (Ref. No.): MCAPS-1A

B. Emission Point Description: Gas Tubine/Duct Burner Main Stack

C. For what emission limit or standard does the stack test demonstrate compliance?
Relative Accuracy Test Audit (RATA) testing of CEMS annually as per 40 CFR Part 75
This testing satisfies the NOx performance test required by 40 CFR 60 Subpart KKKK

D. Is there an applicable underlying requirement for stack testing?
☒ Yes ☐ No

If yes, what is that requirement (e.g., MACT Subpart MM, Permit to Construct issued…, etc.)?

2. Stack Testing Information

A. Test method(s) and corresponding pollutant(s):
RATA testing specification in 40 CFR 75 and 40 CFR 60 Appendices A and B

B. Testing frequency: ☒ Annual ☐ Biennial ☐ Other: _____

C. Has EPA approved an alternative method or has the applicant proposed an alternative test method?
☐ Yes ☒ No

If yes, provide details on the alternative method and the date the alternative method was approved (if applicable).

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Recordkeeping — Section M8

1. Applicable Emission Point Description

A. Emission Point Designation (Ref. No.): MCAPS-1A

B. Emission Point Description: Gas Turbine/Duct Burner Main Stack

C. For what emission limit or standard does the recordkeeping demonstrate compliance?
Emission limits specified in 40 CFR 60 Subpart KKKK - GT/DBs, 40 CFR 72-75 - Acid Rain Program, PSD BACT per 40 CFR 52.21(j), CSAPR per 40 CFR 97

D. Is there an applicable underlying requirement for the recordkeeping?
☒ Yes ☐ No

If yes, what is that requirement (e.g., NSPS Subpart QQ, Permit to Construct issued…, etc.)?
See citations above

2. Recordkeeping Information

A. Data/information recorded:

Parameter/Material	Units	Recordkeeping Frequency	Sampling and analysis method (e.g., EPA Method 24)
NOx	ppmvd	Continuous	CEMS per 40 CFR 75
CO	ppmvd	Continuous	CEMS per 40 CFR 75
O_2	% Dry	Continuous	CEMS per 40 CFR 75
Fuel Fired -HHV	MMBtu/hr	Continuous	CEMS per 40 CFR 75

B. Compliance is determined…:

☐ Daily ☐ Weekly ☐ Monthly

☒ Other: Hourly

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Applicable Requirements and Status — Section N

1. Summary of Applicable Requirements

Provide a list of all applicable federal standards for which your facility is or will be subject to, as well as a list of all Construction Permits establishing limits or restrictions issued to your facility. The specific emission standards and limitations applicable to each emission point shall be provided on the following pages (Parts 2 and 3).

Federal Regulations:

40 CFR Part	60	Subpart	A
	60		KKKK/KKKKa
	60		TTTTa
	60		IIII
	63		A
	63		ZZZZ
	68		All applicable
	72		All applicable
	73		All applicable
	75		All applicable
	97		GGGGG
	82		All applicable
	52.21		NA - PSD

State Construction Permits[1]:

	MM/DD/YY[2]	PSD	PSD Avoidance[3]	Other
Permit to Construct issued:	NA - New	☒	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐

[1] Any Construction Permits containing requirements that are currently applicable to the facility should be addressed in this section.
[2] If the permit has been modified, give the most recent modification date.
[3] Because permits are issued on a pollutant-by-pollutant basis, a PSD permit may be significant for one pollutant while also containing PSD avoidance limits for another pollutant. Therefore, you may check multiple boxes for each permit.

Applicable Requirements and Status | Section N

2. Current Applicable Requirements

List all applicable state and federal requirements to the level of detail needed to identify each applicable emission standard and/or work practice standard and the applicable test methods or monitoring used to demonstrate compliance with each applicable requirement. Applicable provisions from any relevant Permit to Construct shall also be listed. Provide the compliance status as of the day the application is signed.

EMISSION POINT NO.	APPLICABLE REQUIREMENT (Regulatory citation)	POLLUTANT	LIMITS/ REQUIREMENTS	TEST METHOD/ COMPLIANCE MONITORING	COMPLIANCE STATUS (In/Out)[1,2]
MCAPS-1A	52.21(j) – PSD BACT	NOx	2.0 ppmvd @ 15% O2d	CEMS	NA - new
MCAPS-1A	NSPS Subpart KKKK – Table 1	NOx	15 ppmvd @ 15% O2d	CEMS	NA - new
MCAPS-1A	52.21(j) – PSD BACT	CO	2.0 ppmvd @ 15% O2d	CEMS	NA - new
MCAPS-1A	52.21(j) – PSD BACT	VOC	1.5 ppmvd @ 15% O2d	Initial Performance Test	NA - new
MCAPS-1A	52.21(j) – PSD BACT	PM-10/PM-2.5	0.0095 lb PM/MMBtu	Use good combustion practices	NA - new
MCAPS-1A	52.21(j) – PSD BACT	SO2/H2SO4	Fuel S < 1.0 grains/scf	Annual Natural Gas S Analysis	NA - new
MCAPS-1A	NSPS Subpart KKKK – 60.4330(a)(2)	SO2	0.060 lb SO2/MMBtu	Fuel Monitoring	NA - new
MCAPS-1A	52.21(j) – PSD BACT	GHG – CO2e	800 lb CO_2/MWh gross output	Fuel Monitoring	NA - new
MCAPS-1A	NSPS Subpart TTTTa – Table 1	GHG – CO2	800 lb CO_2/MWh gross output	Fuel Monitoring	NA - new
MCAPS-EMERG	52.21(j) – PSD BACT – NSPS IIII	NOx	6.4 g NOx/kWh	Use EPA Certified Tier 2 Engine	NA - new
MCAPS-EMERG	52.21(j) – PSD BACT – NSPS IIII	CO	3.5 g CO/kWh	Use EPA Certified Tier 2 Engine	NA - new
MCAPS-EMERG	52.21(j) – PSD BACT – NSPS IIII	PM-10/PM-2.5	0.20 g PM/kWh	Use EPA Certified Tier 2 Engine	NA - new
MCAPS-EMERG	52.21(j) – PSD BACT	VOC	0.56 g VOC/kWh	Manufacturer's Guarantee	NA - new
MCAPS-EMERG	52.21(j) – PSD BACT	SO2	ULSD Fuel < 15 ppmw S	Use only ULSD Fuel	NA - new
MCAPS-EMERG	52.21(j) – PSD BACT	GHG	Efficient combustion	Use EPA Certified Tier 2 Engine	NA - new
MCAPS-FWP	52.21(j) – PSD BACT – NSPS IIII	NOx	4.0 g NOx/kWh	Use EPA Certified Tier 3 Engine	NA - new
MCAPS-FWP	52.21(j) – PSD BACT – NSPS IIII	CO	3.5 g CO/kWh	Use EPA Certified Tier 3 Engine	NA - new
MCAPS-FWP	52.21(j) – PSD BACT – NSPS IIII	PM-10/PM-2.5	0.20 g PM/kWh	Use EPA Certified Tier 3 Engine	NA - new
MCAPS-FWP	52.21(j) – PSD BACT	VOC	0.11 g VOC/kWh	Manufacturer's Guarantee	NA - new
MCAPS-FWP	52.21(j) – PSD BACT	SO2	ULSD Fuel < 15 ppmw S	Use only ULSD Fuel	NA - new
MCAPS-FWP	52.21(j) – PSD BACT	GHG	Efficient combustion	Use EPA Certified Tier 3 Engine	NA - new
MCAPS-NGDPHTR	52.21(j) – PSD BACT	NOx	0.011 lb NOx/MMBtu via ULNB	Manufacturer's Guarantee	NA - new
MCAPS-NGDPHTR	52.21(j) – PSD BACT	CO	0.037 lb CO/MMBtu via ULNB	Manufacturer's Guarantee	NA - new
MCAPS-NGDPHTR	52.21(j) – PSD BACT	VOC	0.008 lb VOC/MMBtu via ULNB	Manufacturer's Guarantee	NA - new

[1] Per 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(b)(1) for Title V sources, by specifying that the source is in compliance with the applicable requirement(s), I (the applicant) am certifying that I will continue to operate and maintain this source to assure compliance for the duration of the permit term.

[2] Per 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(b)(3) for Title V sources, by specifying that the source is out of compliance with the applicable requirement(s), I (the applicant) am submitting a schedule, attached herein, which includes a description of the problems and proposed solutions in accordance with 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(c).

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Applicable Requirements and Status — Section N

2. Current Applicable Requirements

List all applicable state and federal requirements to the level of detail needed to identify each applicable emission standard and/or work practice standard and the applicable test methods or monitoring used to demonstrate compliance with each applicable requirement. Applicable provisions from any relevant Permit to Construct shall also be listed. Provide the compliance status as of the day the application is signed.

EMISSION POINT NO.	APPLICABLE REQUIREMENT (Regulatory citation)	POLLUTANT	LIMITS/ REQUIREMENTS	TEST METHOD/ COMPLIANCE MONITORING	COMPLIANCE STATUS (In/Out)[1,2]
MCAPS-NGDPHTR	52.21(j) – PSD BACT	PM-10/PM-2.5	0.0048 lb PM/MMBtu via ULNB	Manufacturer's Guarantee	NA - new
MCAPS-NGDPHTR	52.21(j) – PSD BACT	SO2	Fuel S < 1.0 grains/scf	Annual Natural Gas S Analysis	NA - new
MCAPS-NGDPHTR	52.21(j) – PSD BACT	GHG	Efficient combustion	Use good combustion practices	NA - new

[1] Per 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(b)(1) for Title V sources, by specifying that the source is in compliance with the applicable requirement(s), I (the applicant) am certifying that I will continue to operate and maintain this source to assure compliance for the duration of the permit term.

[2] Per 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(b)(3) for Title V sources, by specifying that the source is out of compliance with the applicable requirement(s), I (the applicant) am submitting a schedule, attached herein, which includes a description of the problems and proposed solutions in accordance with 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(c).

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Applicable Requirements and Status — Section N

3. Future Applicable Requirements

List all future applicable state and federal requirements, including emission limits, operating restrictions, etc., and the applicable test methods or monitoring to be used to demonstrate compliance with each applicable requirement. Applicable provisions from any Permit to Construct for which certification of construction has not yet been submitted shall also be listed.

EMISSION POINT NO.	FUTURE APPLICABLE REQUIREMENT (Regulation citation)	POLLUTANT	LIMITS/ REQUIREMENTS	TEST METHOD/ COMPLIANCE MONITORING	COMPLIANCE DATE[1]
MCAPS-1A	Proposed NSPS KKKKa – Table 1	NOx	3 ppmvd @ 15% O2	CEMS	TBD
MCAPS-1A	Proposed NSPS KKKKa – 60.4330a	SO2	0.060 lb SO2/MMBtu	Fuel Monitoring	TBD

[1] Per 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(b)(2). for Title V sources, I (the applicant) am certifying that I will meet future applicable requirements which will become effective during the permit term on a timely basis.

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Insignificant Activities *(for Title V facilities only)* — Appendix A

1. List of Insignificant Activities

List all insignificant activities identified in 11 Miss. Admin. Code Pt. 2, R. 6.7., with the exception of those in 11 Miss. Admin. Code Pt. 2, R.6.7.A.

Air intake filter maintenance
CEMS calibration
Analytical equipment
Sludge maintenance
Boiler tube cleaning
Small equipment maintenace

2. Emissions Information

List the total emissions for each regulated pollutant from the combined insignificant activities listed above in accordance with the Permit Application Instructions *(calculations not needed unless requested by DEQ)*.

POLLUTANT	POTENTIAL TO EMIT	
	lb/hr	tons/yr
NOx	<0.01	<0.01
CO	<0.01	<0.01
PM-10	<0.01	<0.01
PM-2.5	<0.01	<0.01
VOC	0.12	<0.01
NH3	<0.01	<0.01

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Air Quality Analysis Checklist — Appendix C

SUBMIT		
Yes	N/A	
		This checklist will be submitted in final form in the Air Quality Impacts Assessment, which will be completed and submitted as described in the PSD application. The responses below reflect information addressed in the Appendix E Air Modeling Protocol and elsewhere in the PSD permit application

Note: Appendix C must be completed and included with the application for a Prevention of Significant Deterioration (PSD) Permit to Construct. All elements of the checklist should be addressed. See the Application Instructions for further information.

☒ ☐

I. Applicant and Consultant Information

a. Name, address, and location of facility
b. Facility Air Permit Number
c. Facility contact name and phone number
d. Modeling contact name, phone number, and e-mail address

☒ ☐

II. Description of Facility Operations

A brief description of each process to be carried out in the facility and the function of the equipment used in the process. The descriptions must be complete and particular attention must be given to explaining all stages in the process where the discharge of any materials might contribute in any way to air pollution. Control procedures must be described in sufficient detail to show the extent of control of air contaminants anticipated in the design, specifying the expected efficiencies of the capture systems and the control devices. All obtainable data must be supplied concerning the nature, volumes, particle size, weights, chemical composition and concentrations of all types of air contaminants.

☒ ☐

III. Project Description

A written description of the proposed project to include, but not limited to, a description of the project purpose and scope, general geographical location, types of emission sources and scenarios, pollutants evaluated, applicable averaging periods, and any special considerations (e.g., startup and shutdown operations, varying operational loads, operating restrictions, alternative operating scenarios) that will be included in the compliance demonstration modeling.

☒ ☐

IV. Modeling Protocol

Prior to submitting the PSD application and prior to performing any significant air dispersion modeling, the applicant is required to submit a modeling protocol to MDEQ for review. Upon review, the applicant will receive notification of acceptance of the modeling approach as well as guidance on any outstanding issues. Please be advised, an approved modeling protocol does not necessarily limit the extent of the modeling that will be required to demonstrate compliance with the applicable standards.

Submittal Date: June 2025 **Approval Date:** _____

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Air Quality Analysis Checklist — Appendix C

SUBMIT		
Yes	N/A	
		This checklist will be submitted in final form in the Air Quality Impacts Assessment, which will be completed and submitted as described in the PSD application. The responses below reflect information addressed in the Appendix E Air Modeling Protocol and elsewhere in the PSD permit application
☒	☐	**V. Model Selection**

The Preferred/Recommended dispersion models are listed in 40 CFR 51Appendix W and are required to be used. All air quality analyses should be performed using the most currently available versions of EPA guideline models. Access to all current models is possible through the EPA Web Page http://www.epa.gov/scram/.

a. Discuss the general modeling approach (e.g., project impacts vs. cumulative impacts) and highlight any unique items.
b. Identify the dispersion model(s), including the version number that was used in the modeling analysis.
c. Discuss modeling options used and why they were considered appropriate for the proposed project.
d. List the time-averaged pollutants modeled.
e. Discuss any other modeling parameters or considerations used in the modeling analysis.

Alternative Model or Modeling Technique
Any deviation from an EPA preferred air quality model or development of an alternative modeling technique is subject to the alternative modeling requirements of Appendix W – Guideline on Air Quality Models, Section 3.2. Appropriate justification for the proposed alternative model or modeling technique must be provided to the EPA Regional Office for consideration and approval with concurrence of the EPA Model Clearinghouse.

☒	☐	**VI. Meteorological Data**

The meteorological data should be the most recent available and adequately representative. It may be site-specific data, data from a nearby National Weather Service (NWS) or comparable station, or prognostic meteorological data.

The use of five (5) years of adequately representative NWS or comparable meteorological data, at least one (1) year of site-specific data, or at least three (3) years of prognostic meteorological data are required. If one (1) year or more (up to 5 years) of site-specific data are available, these data are preferred for use in air quality analyses, provided that the data meets quality-assurance requirements. The submittal must include a discussion of meteorological site representation based on recommendations in Appendix W, Guideline on Air Quality Models, Section 8.4.2(b).

☒	☐	**VII. Receptor and Terrain Discussion**

Receptor grids may be polar, cartesian, or discrete with receptor placement along the property boundary of the land owned or controlled by the facility and precluded from access by the general public through physical barriers or other measures and extending sufficiently outward to identify the maximum impacts from both the onsite and offsite emission sources for each pollutant and pollutant averaging periods evaluated. Receptor resolution may vary; however, receptors near the facility fenceline and in the area of controlling concentrations must be no greater than 100-meters. Controlling concentrations are those receptors that indicate a predicted concentration greater than 90% of an applicable standard.

The most recent version of AERMAP should be used to import terrain and source elevations.

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Air Quality Analysis Checklist — Appendix C

SUBMIT		
Yes	N/A	
		This checklist will be submitted in final form in the Air Quality Impacts Assessment, which will be completed and submitted as described in the PSD application. The responses below reflect information addressed in the Appendix E Air Modeling Protocol and elsewhere in the PSD permit application
☒	☐	**VIII. Emission Source Information**

Tables are required for identifying all baseline and increment sources used in the modeling, including all applicable stack parameters (UTM coordinate locations, emission rate, stack height, exit velocity, exit temperature and inner diameter), area source parameters (emission rate, southwest coordinates, height, width), and volume source parameters (emission rate, center coordinates, height, horizontal and vertical dimensions).

a. Identify all emission units included in the modeling analysis. Provide a listing of the identifiers assigned to these sources for modeling purposes.

b. Identify maximum potential short-term emission rates for all modeled pollutants in lb/hr and the associated g/sec emission rate. The maximum short-term emission rates for each source should be used to demonstrate compliance with all short-term averaging standards and guidelines.

c. Identify maximum potential long-term emission rates for all modeled pollutants in ton/yr and the associated g/sec emission rate.

d. Identify any operational limitation assumed for an emission unit.

☐ ☒ **IX. Modeling Analysis**

a. Significant Impact Analysis

The preliminary analysis evaluates the potential increase in emissions from the project or the net increase in emissions associated with the modification. The results of the preliminary analysis determines whether or not a full impact analysis is required. If predicted concentrations from the project are below the applicable PSD Significant Impact Levels, a Full Impact Analysis is not required.

b. Preconstruction Monitoring Analysis

The initial screening modeling analysis must address pre-construction monitoring requirements for all proposed sources whose predicted ambient impact exceeds any of the PSD De Minimis Impact Levels (to support ambient monitoring exemption).

c. Full Impact Analysis

A full impact analysis consists of separate analysis for the National Ambient Air Quality Standards (NAAQS) and PSD Increments and will consider emissions from the proposed source or source modification, any existing on-onsite sources, off-site sources, and for the NAAQS analysis, background concentrations. The full impact analysis is conducted for Class II and Class I Areas. Each of these topics are discussed in detail in the EPA New Source Review Workshop Manual.

i. NAAQS Analysis
ii. PSD Increment Analysis

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Air Quality Analysis Checklist — Appendix C

SUBMIT		
Yes	N/A	
		This checklist will be submitted in final form in the Air Quality Impacts Assessment, which will be completed and submitted as described in the PSD application. The responses below reflect information addressed in the Appendix E Air Modeling Protocol and elsewhere in the PSD permit application

IX. Modeling Analysis (continued)

iii. Additional Impact Analysis
Discuss the impacts the proposed project will have on residential, commercial, and industrial growth in the area, and on soils, vegetation and visibility in the vicinity of the proposed project location.
1. Vegetation and Soils Impact
2. Associated Growth Impact
3. Class I Area Impact Analysis
Comprised of the Class I Increment Analysis and the Air Quality Related Value (AQRV) Analysis. When a Class I AQRV Analysis is required, the National Parks Service (NPS) - Air Resources Division, FWS - Air Quality Branch and FS - Air Quality Program have produced a guidance document entitled Federal Land Managers' Air Quality Related Values Workgroup (Flag) Phase I Report – Revised (2010). The guidance set forth in this document is followed in PSD review for Class I area impacts.

☒ ☐

X. Figures, Maps, Electronic Data, etc.

Figures and maps should be inserted with the narrative, when possible. Large maps, data CD's, etc., should be referenced in the text and included in the appendices.

a. The Air Quality Analysis should include or reference a scaled site plan showing:
i. Emission release locations
ii. Nearby buildings
iii. Property lines
iv. Fence lines
v. Roads
vi. Coordinates (preferably UTM). If UTM coordinates are used, the datum should be specified (e.g., NAD27 or NAD83)
vii. True North arrow
viii. Other pertinent items (as applicable)

b. The Air Quality Analysis Should include a topographic map and/or aerial photograph showing:

i. Source location
ii. Facility boundaries
iii. Terrain features
iv. Nearby buildings, roads, and adjacent facilities (e.g., other major existing sources, other major sources subject to PSD requirements
v. NWS meteorological tower/observations (surface and upper air)
vi. On-site/local meteorological tower/observations (surface and upper air)
vii. State/local/on-site air quality monitoring stations
viii. Pre-construction monitoring site (if applicable)
ix. Nearby Class I Areas

c. Provide an electronic file of the facility plot plans (e.g., GIS or other mapping file)

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Air Quality Analysis Checklist — Appendix C

SUBMIT		
Yes	N/A	
		This checklist will be submitted in final form in the Air Quality Impacts Assessment, which will be completed and submitted as described in the PSD application. The responses below reflect information addressed in the Appendix E Air Modeling Protocol and elsewhere in the PSD permit application
		X. Figures, Maps, Electronic Data, etc. (continued) d. Provide all electronic modeling files, including: i. "Readme" textfile that describes the submitted files, including any files that are provided in a compressed format. ii. Model Input/Output files iii. BPIP Input/Output files iv. Meteorological data files v. Post processing programs and files (including spreadsheets)

APPENDIX C PSD RBLC AND OTHER BACT SUPPORT INFORMATION

Table C-1
RACT/BACT/LAER Clearing House Summary for NOx Emissions from Combined Cycle Turbines

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0371	WABASH VALLEY RESOURCES, LLC	IN	167-45208-00091	1/11/2024	Integrated Gasification Combined Cycle Combustion Turbine	Natural gas	2292	MMBtu/HR	NOx	Steam Injection/SCR and Good Combustion Practices	2	PPMV	15% OXYGEN WHEN COMBUSTING >50% NAT. GAS	BACT-PSD	16.5	LB/HR	WHEN COMBUSTING >50% NAT. GAS	
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGB	Natural gas	4200	MMBtu per hour	NOx	Selective Catalytic Reduction system and dry-low-NOx combustors.	2	PPMVD	15% O2 BASED ON A 3-HR AVERAGE	BACT-PSD	0.0073	LB PER MMBTU		
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGA SU/SD	Natural gas	3800	MMBtu per hour	NOx		20.7	TONS PER YEAR	FOR DURATION OF THE COMBINED SU/SD EVENT	BACT-PSD	0			The NOX emissions from the combined cycle combustion turbine stack shall not exceed 20.7 tons per twelve (12) consecutive month period, for the duration of the combined startup and shutdown events, with compliance determined at the end of each month.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGB SU/SD		0		NOx		35.8	TONS YEAR	FOR DURATION OF COMBINED SU/SD EVENTS	BACT-PSD	0			The NOx emissions from the combined cycle combustion turbine stack shall not exceed 35.8 tons per twelve (12) consecutive month period, for the duration of the combined startup and shutdown events, with compliance determined at the end of each month.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGA	Natural Gas	3800	MMBtu per hour	NOx	Selective catalytic reduction system and dry-low-NOx combustors	0.0085	POUND PER MMBTU		BACT-PSD	2	PPMVD	@15% O2 BASED ON A 3-HR AVERAGE	The NOx emissions from the combustion turbine generator shall be controlled by a Selective Catalytic Reduction system and dry-low-NOx combustors.
MI-0455	MIDLAND COGENERATION VENTURE LIMITED PARTNERSHIP	MI	45222	2/1/2023	EUCTGHRSG1 Natural gas combined-cycle power plant	Natural gas	4197.6	MMBTU/H	NOx	Selective catalytic regeneration	2	PPM	PPMVD AT 15%O2; 24-HR ROLL AVG EXC SU/SD	BACT-PSD	39.6	LB/H	HOURLY EXCEPT SU/SD	There are 4 NOx emission limits, all listed below:□ □ Emission limit 1 = 2.0 ppmvd at 15% oxygen on a 24-hour rolling average except during SU/SD.□ □ Emission limit 2 = 39.6 lb/hr on an hourly basis except during SU/SD.□ □ Emission limit 3 = 15 ppmvd at 15% oxygen on a 4-hour rolling average except during operations less than 75% of peak load. This is a BACT + NSPS limit.□ □ Emission limit 4 = 851.2 lb/hr during SU/SD.
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUCTGHRSG1 Natural gas combined-cycle power plant	Natural gas	667	MMBTU/H	NOx	Dry low NOx burners and selective catalytic reduction for NOx control for each CTG/HRSG unit.	3	PPM	PPMVD AT 15%O2; 24-HR ROLL AVG EXC SU/SD	BACT-PSD	60	LB/H	HOURLY INCL SU/SD IN COMB CYC MODE	There are 5 NOx emission limits with only 2 listed above. All 5 are detailed below:□ □ Emission limit 1 (above) = 3.0 ppmvd at 15%O2 on a 240hour rolling average as determined each operating hour, except during startup (SU) and shutdown (SD).□ □ Emission limit 2 (above) = 60.0 lbs/hr on an hourly basis including startup or shutdown in combined cycle mode.□ □ Emission limit 3 = 60.0 lbs/hr on a 24-hour rolling average as determined each operating hour. Applies in HRSG bypass mode.□ □ Emission limit 4 = 25 ppmvd at 15%O2 based on a 4-hour rolling average except during operation less than 75% of peak load. Applies in HRSG bypass mode. (NSPS limit).□ □ Emission limit 5 = 25 ppmvd at 15%O2 on a 30-day rolling average except during operation less than 75% of peak load. Applies in combined cycle mode. (NSPS limit).□ □ The use of SCR with the DLNB is the highest ranked control system and was selected as BACT; therefore, an economic analysis was not performed.
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUCTGHRSG2 Natural gas combined-cycle power plant	Natural gas	667	MMBTU/H	NOx	Dry low NOx burners and selective catalytic reduction for NOx control for each CTG/HRSG unit.	3	PPM	@15%OX; 24-HR ROLL AVG EXCEPT START/SHUT	BACT-PSD	60	LB/H	HOURLY INCLU START/SHUT IN COMBINE CYCLE	There are 5 NOx emission limits, all of which are listed below: Emission Limit 1 = 3.0 ppmvd at 15% Oxygen (O2) on a 24-hour rolling average as determined each operating hour, except during startup and shutdown. Emission Limit 2 = 25 ppmvd at 15% Oxygen (O2) on a 4-hour rolling average, except during operation less than 75% of peak load. Applies in HRSG bypass mode (NSPS limit). Emission Limit 3 = 25 ppmvd at 15% Oxygen (O2) on a 30-day rolling average, except during operation less than 75% of peak load. Applies in combined cycle mode. (NSPS limit). Emission Limit 4 = 60.0 lb/hr on an hourly basis, including startup or shutdown in combined cycle mode. Emission Limit 5 = 60.0 lb/hr on a 24-hour rolling average as determined each operating hour. Applies in HRSG bypass mode. The use of SCR with the DLNB is the highest ranked control system and was selected as BACT; therefore, an economic analysis was not performed.
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Combined-Cycle Combustion Turbines Two combined-cycle generating units, each with a Siemens combustion turbine (3,647 mmBtu/hr) and a heat recovery steam generator (HRSG) with duct burners (35 mmBtu/hr); fired by natural gas only.	Natural Gas	3647	mmBtu/hour	NOx	Dry low-NOx combustion with ultra-low NOx combustors; low-NOx duct burners; and selective catalytic reduction (SCR)	2	PPMV @ 15% O2	SEE NOTES	BACT-PSD	0			Emission limit 1 is applicable during normal operation, excluding startup and shutdown; averaging time: 3-operating hour, rolled hourly. Beginning 36 months after completion of shakedown, the averaging time: 1-operating hour.□ □ Emission Limit 2 is applicable during startup and shutdown: 130 pounds/hour (cold start/shakedown); 71 pounds/hour (non-cold start); 55 pounds/hour (shutdown). Limits for startup and shutdown are applicable for each clock hour that includes a startup, shutdown or shakedown.□ □ Compliance demonstrated using a continuous emissions monitoring system (CEMS)
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	Four Combined Cycle Gas-Fired Turbines LNG Plant	Natural Gas	384	MMBtu/hr	NOx	SCR, DLN combustors, and good combustion practices	2	PPMV @ 15% O2	3-HOURS	BACT-PSD	0			Allowed 40 hours per year per turbine of operation without SCR and OxCat.

Table C-1
RACT/BACT/LAER Clearing House Summary for NOx Emissions from Combined Cycle Turbines

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
MI-0451	MEC NORTH, LLC	MI	167-17B	6/23/2022	EUCTGHRSG (North Plant): A combined cycle natural gas fired combustion turbine generator with heat recovery steam generator	Natural gas	3064	MMBTU/H	NOx	SCR with DLNB (Selective catalytic reduction with Dry low NOx burners)	2.5	PPM	24-HR ROLLING AVG	BACT-PSD	29.2	LB/H	24-HR ROLLING AVG	There are 4 NOx emission limits with only 2 noted in table above: Emission limit 1 above = 2 ppmvd based on a 24-hour rolling avg as determined each operating hour, except during startup and shutdown. The underlying applicable requirement (UAR) for this limit is BACT. Emission limit 2 above = 29.2 lbs/hr based on a 24-hour rolling avg as determined each operating hour, except during startup and shutdown. The UARs are BACT, NAAQS and PSD Increment. Emission limit 3 = 15 ppmvd at 15% O2 based on a 30-day rolling average as determined each operating day and does not include startup and shutdown. The UAR is NSPS KKKK. Emission limit 4 is 126.5 lbs/hr, each operating hour during startup or shutdown. The UAR for this limit is BACT, NAAQS and PSD increment. Startup is defined as the period of time from initiation of the combustion process (flame-on) from shutdown status and continues until steady state operation (loads greater than a demonstrated percent of design capacity) is achieved. Shutdown is defined as that period of time from the lowering of the turbine output below the demonstrated steady state level, with the intent to shut down, until the point at which the fuel flow to the combustor is terminated. The demonstrated percent of design capacity, or demonstrated steady state level, shall be described in the plan required in SC III.2. Startup and Shutdown hours are limited to 300 hours per 12 month rolling time period.
MI-0452	MEC SOUTH, LLC	MI	168-17B	6/23/2022	EUCTGHRSG (South Plant): A combined-cycle natural gas-fired combustion turbine generator with heat recovery steam generator.	Natural gas	3064	MMBTU/H	NOx	SCR with DLNB [Selective Catalytic Reduction with Dry Low NOx Burners]	2	PPM	24-HR ROLLING AVG	BACT-PSD	29.2	LB/H	24-HR ROLLING AVG EXCEPT SU/SD	There are 4 NOx emission limits, all 4 will be described below:□ □ Emission limit 1 = 2 ppmvd based on a 24-hour rolling average as determined each operating hour, except during startup and shutdown. The applicable requirement is BACT.□ □ Emission limit 2 = 29.2 lbs/hr based on a 24-hour rolling average as determined each operating hour except during startup and shutdown. The applicable requirements are BACT, NAAQS and PSD increment.□ □ Emission limit 3 = 15 ppmvd at 15%O2 based on a 30-day rolling average as determined each operating day. The applicable requirement is NSPS KKKK.□ □ Emission limit 4 = 126.5 lbs/hr based on an operating hour during startup or shutdown. The applicable requirements are BACT, NAAQS and PSD increment.□ □ Estimated efficiency of SCR with DLNB is a range of 80-90%□ □ Startup is defined as the period of time from initiation of the combustion process (flame-on) from shutdown status and continues until steady state operation (loads greater than a demonstrated percent of design capacity) is achieved. Shutdown is defined as that period of time from the lowering of the turbine output below the demonstrated steady state level, with the intent to shut down, until the point at which the fuel flow to the combustor is terminated. The demonstrated percent of design capacity, or demonstrated steady state level, shall be described in the plan required in SC III.2.□ □ Startup and Shutdown hours are limited to 300 hours per 12 month rolling time period.
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Combined Cycle Gas Turbine w/ Duct Burners and HRSG	Natural Gas	5081	mm BTU/h	NOx	Dry low-NOx combustor design, selective catalytic reduction (SCR), and good combustion practices.	2	PPMVD	24-HR ROLLING AVG BASED ON 1-HR AVG	BACT-PSD	0			Units are ppmvd@15% O2 on a 24-hour rolling average based on a one-hour average.
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Combined Cycle Gas Turbine Startup and Shutdown	Natural Gas	5081	mm BTU/h	NOx	Good combustion practices.	260	LB/HR		BACT-PSD	0			
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Combustion Turbine; Duct Burner (CT-01/HRSG1; CT-02/HRSG2)	Pipeline Natural Gas	1275	mw	NOx	Dry Low NOx Combustion w/ SCR	2	PPMDV @ 15% O2	3-HOUR ROLLING AVERAGE	BACT-PSD	32.09	LB/HR	3-HOUR ROLLING AVERAGE	Concentration and Mass limits apply at all times excluding startup and shutdown events.
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Combustion Turbine; Duct Burner (CT-01/HRSG1; CT-02/HRSG2)	Pipeline Natural Gas	1275	mw	NOx	Dry Low NOx Combustor with SCR	2	PPMDV @ 15% O2	3-HOUR ROLLING AVERAGE	BACT-PSD	34.09	LB/HR	3-HOUR ROLLING AVERAGE	Concentration and Mass limits apply at all times excluding startup and shutdown events.
FL-0371	SHADY HILLS COMBINED CYCLE FACILITY	FL	1010524-003-AC (PSD-FL-444A)	6/7/2021	GE 7HA.02 Combustion Turbine and HRSG with Duct Firing	Natural Gas	3622.1	MMBtu/hour	NOx	Dry low-NOX combustors and Selective Catalytic Reduction (SCR)	2	PPMVD AT 15% O2	24-HOUR BLOCK AVERAGE BASIS (BACT)	BACT-PSD	15	PPMVD AT 15% O2	30-OPERATING-DAY ROLLING AVG. (NSPS)	2nd Limit of 15 ppmvd @ 15% O2 (for turbine loads ≥ 75%), 30-operating-day rolling avg. (NSPS Subpart KKKK) 3rd Limit: 96 ppmvd @15% O2 (for turbine loads < 75%), 30-operating-day rolling avg. (NSPS Subpart KKKK)
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	COMBUSTION TURBINE GENERATORS, (3) with Alternate Operating Scenario - Turbine Tuning	Natural gas	667	MMBTU/H	NOx	Dry low NOx burners and selective catalytic reduction for NOx control for each CTG/HRSG unit.	60	LB/H	HOURLY; INCL STRT/SHUT IN COMBINED CYCLE	BACT-PSD	60	LB/H	24-H ROLL AVG EACH OP HR; IN HRSG BYPASS	There are 5 NOx emission limits in the permit with 2 listed above. All five will be listed here including the two above so that everything is included.□ □ Emission limit 1 = 60.0 lb/hr; hourly including startup or shutdown in combined cycle mode.□ □ Emission Limit 2 = 60.0 lb/hr based on a 24-hour rolling average as determined each operating hour. Applies in HRSG bypass mode.□ □ Emission Limit 3 = 3.0 ppmvd at 15% oxygen (O2) based on a 24-hour rolling average as determined each operating hour, except during startup and shutdown.□ □ Emission Limit 4 = 25 ppmvd at 15% oxygen (O2) based on a 4-hour rolling average, except during operation less than 75% of peak load. Applies in HRSG bypass mode (NSPS limit).□ □ Emission Limit 5 = 25 ppmvd at 15% oxygen (O2) based on a 30-day rolling average, except during operation less than 75% of peak load. Applies in combined cycle mode (NSPS limit).□ □ The use of SCR with the DLNB is the highest ranked control system and was selected as BACT; therefore, an economic analysis was not performed.

Table C-1
RACT/BACT/LAER Clearing House Summary for NOx Emissions from Combined Cycle Turbines

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	COMBUSTION TURBINE GENERATORS, (3) with Alternate Operating Scenario - Turbine Blade Water Washing	Natural gas	667	MMBTU/H	NOx	Dry low NOx burners and selective catalytic reduction for NOx control for each CTG/HRSG unit.	60	LB/H	HOURLY; INCL STRT/SHUT IN COMBINED CYCLE	BACT-PSD	60	LB/H	24-HR ROLL AVG IN HRSG BYPASS MODE	There are 5 emission limits total for this emission unit and all will be listed here; including the two listed in the table above.□ □ Emission limit 1 = 60.0 lb/hr; hourly including startup or shutdown in combined cycle mode.□ □ Emission limit 2 = 60.0 lb/hr based on a 24-hour rolling average as determined each operating hour. Applies in HRSG bypass mode.□ □ Emission limit 3 = 3.0 ppmvd at 15% oxygen (O2); based on a 24-hour rolling average as determined each operating hour, except during startup and shutdown.□ □ Emission limit 4 = 25 ppmvd at 15% oxygen (O2); based on a 4-hour rolling average, except during operation less than 75% of peak load. Applies in HRSG bypass mode (NSPS limit).□ □ Emission limit 5 = 25 ppmvd at 15% oxygen (O2) based on a 30-day rolling average, except during operation less than 75% of peak load. Applies in combined cycle mode (NSPS limit).□ □ The use of SCR with the DLNB is the highest ranked control system and was selected as BACT; therefore, an economic analysis was not performed.
VA-0334	DOMINION ENERGY - BRUNSWICK	VA	52404-5	12/1/2020	Natural-Gas-Fired Combined-Cycle Turbine (P01)	natural gas	3442	MMBTU/H	NOx	Dry, low NOx burners and selective catalytic reduction (SCR) with a NOx performance of 2.0 ppmvd at 15% O2.	604	LBS	CALENDAR DAY/PER TURBINE	BACT-PSD	0			NOx will be continually monitored with CEMS and the facility must track the duration and frequency of tuning events for the turbines, including date and times. The NOx CEMS must be operational during these events, as well as the SCR.
VA-0334	DOMINION ENERGY - BRUNSWICK	VA	52404-5	12/1/2020	Natural Gas-Fired Combined-Cycle Turbine (P01) Start-up and Shutdown (Natural Gas)	Natural Gas	3442	MMBTU/H	NOx	Dry, low NOx burners and selective catalytic reduction (SCR) with a NOx performance of 2.0 ppmvd at 15% O2.	604	LBS	CALENDAR DAY/PER TURBINE	BACT-PSD	0			NOx will be continually monitored with CEMS and the facility must track the duration and frequency of water washing events for the turbines, including date and times. The NOx CEMS must be operational during these events, as well as the SCR.
AL-0328	PLANT BARRY	AL	503-1001	11/9/2020	Natural-Gas-Fired Combined-Cycle Turbine (P01) Start-Up and Shutdown (diesel)	Natural Gas	744	MW	NOx	SCR	2	PPM	3 HOUR AVG / @15% O2	BACT-PSD	39.1	LB/HR	3 HOUR AVG	
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Six (6) Cogeneration Gas-Fired Turbines (Treated Gas Compressor Turbines)	Natural Gas	4671	MMBTU/H	NOx	Selective Catalytic Reduction (SCR), low-NOx burners, Water injection when firing diesel fuel oil	2	PPM AT 15% O2	24-HR ROLLING AVG., NATURAL GAS	BACT-PSD	6	PPM AT 15% O2	24-HR ROLLING AVG., DIESEL	Except during start-up and shutdown
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Six (6) Cogeneration Gas-Fired Turbines (CO2 Compressor Turbines))	Natural Gas	0		NOx		335	LB/START-UP		BACT-PSD	59	LB/SHUTDOWN		Total start-up and shutdown emissions: 108.3 T/YR. (based on 1525 hours per year for start-up and shutdown, combined, for natural gas operation)
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas Fired Combustion Turbine (P20 P21) Phase I Commissioning	Natural Gas	0		NOx		860	LB/START-UP		BACT-PSD	108	LB/SHUTDOWN		Total start-up and shutdown emissions: 20.3 T/YR. (based on 42 start-ups and 42 shutdowns per year using diesel)
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Natural Gas Fired Combustion Turbine (P20 P21)- Startup operation during Phase I Commissioning	Natural Gas	576	MMBtu/hr	NOx	DLN combustors and Good Combustion Practices	17	PPMV @ 15% O2	3-HOUR AVERAGE	BACT-PSD	0			Potential NOx emissions of 105.24 tpy for each cogeneration turbine including supplemental firing duct burner for WHRU.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Natural Gas Fired Combustion Turbine (P20 P21) Phase II Commissioning	Natural Gas	431	MMBtu/hr	NOx	DLN combustors and good combustion practices	17	PPMV @ 15% O2	3-HOUR AVERAGE	BACT-PSD	0			Potential NOx emissions of 80.46 tpy for each cogeneration turbine including supplemental firing duct burner for WHRU.
WI-0306	WPL- RIVERSIDE ENERGY CENTER	WI	19-POY-212	2/28/2020	Natural Gas Fired Combustion Turbine (P20 P21)- Startup operation during Phase II Commissioning	Natural Gas	2208	MMBTU/H	NOx		110	PPMVD, 15% OXYGEN	AVG. ANY 24-HR OPERATIONAL PERIOD	BACT-PSD	335.4	LB	IN ANY HOUR	
WI-0306	WPL- RIVERSIDE ENERGY CENTER	WI	19-POY-212	2/28/2020	Cogeneration Units	Natural Gas	2208	MMBTU/H	NOx		110	PPMVD, 15% OXYGEN	AVG. ANY 24-HR OPERATIONAL PERIOD	BACT-PSD	335.4	LB	IN ANY HOUR	
WI-0306	WPL- RIVERSIDE ENERGY CENTER	WI	19-POY-212	2/28/2020	FGCTGHRSG	Natural Gas	2208	MMBTU/H	NOx		55	PPMVD, 15% OXYGEN	AVG. ANY 24-HR OPERATIONAL PERIOD	BACT-PSD	476	LB	IN ANY HOUR	Nitrogen oxide emissions may not exceed the limit from any turbine.
WI-0306	WPL- RIVERSIDE ENERGY CENTER	WI	19-POY-212	2/28/2020	FGCTGHRSG	Natural Gas	2208		NOx		55	PPMVD, 15% OXYGEN	AVG. ANY 24-HR OPERATIONAL PERIOD	BACT-PSD	476	LB	IN ANY HOUR	
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	250 MW COMBINED CYCLE COMBUSTION TURBINE FIRING NATURAL GAS	Natural Gas	2222	mm btu/h	NOx	Dry low NOx combustor design along with SCR.	2	PPMVD	12-MONTH ROLLING AVERAGE	BACT-PSD	0			BACT limit is corrected to 15% oxygen.

Table C-2
RACT/BACT/LAER Clearing House Summary for CO Emissions from Combined Cycle Turbines

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0382	DUKE ENERGY INDIANA, INC.-CAYUGA GENERATING STATION	IN	165-47430-00001	2/14/2025	Combustion Turbines (6A and 6B)	Natural Gas	4254	MMBtu/hr	Carbon Monoxide	Oxidation Catalyst and good combustion practices	2	PPMVD@15% O2	3-HOUR ROLLING AVERAGE EXCL. SU/SD	BACT-PSD	19.75	LB/HR	EXCL. SU/SD PERIODS	CO emissions from each GE CCCT shall be controlled using an Oxidation Catalyst and conducting good combustion practices The CO emissions from each of the combined cycle combustion turbine stacks 6A and 6B shall not exceed 4,579.75 lb/hr for the duration of any startup and shutdown events.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGB	Natural Gas	4200	MMBtu per hour	CO	oxidation catalyst	2	PPMVD	@ 15% O2 BASED ON A 3-HR AVERAGE	BACT-PSD	0.0044	POUNDS PER MMBTU		The CO emissions from the GE combustion turbine generator shall be controlled using good combustion practices and an oxidation catalyst.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGA	Natural Gas	3800	MMBtu per hour	CO	Oxidation catalyst	2	PPMVD	15% O2 BASED ON A 3-HR AVERAGE	BACT-PSD	0.0051	POUNDS PER MMBTU		The CO emissions from the Siemens combustion turbine generator shall be controlled using good combustion practices and an oxidation catalyst.
TX-0939	ORANGE COUNTY ADVANCED POWER STATION	TX	166032 PSDTX1598 GHGPSDTX210	3/13/2023	2 natural gas-fired combined cycle turbines with a maximum total nominal output of 1,215 MW. The turbines can also be fired with up to 30% volume hydrogen co-firing (blended fuel)	Natural Gas	1215	MW	CO	Oxidation Catalyst and good combustion practices	2	PPMVD	15% O2 24-HR AVERAGE	BACT-PSD	2.4	PPMVD	15% O2 ON HOURLY AVERAGE	
MI-0455	MIDLAND COGENERATION VENTURE LIMITED PARTNERSHIP	MI	23-Oct	2/1/2023	EUCTGHRSG1	Natural gas	4197.6	MMBTU/H	CO	Oxidation catalyst	2	PPM	PPMVD AT 15%O2; 24-HR ROLL AVG EXC SU/SD	BACT-PSD	24.2	LB/H	HOURLY EXCEPT SU/SD	There are 3 CO emission limits listed below: Emission limit 1 = 2.0 ppmvd at 15% oxygen on a 24-hour rolling average, except during SU/SD. Emission limit 2 = 24.2 lb/hr on an hourly basis except during SU/SD. Emission limit 3 = 1486.0 lb/hr during SU/SD.
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUCTGHRSG2 Natural gas combined-cycle power plant	Natural gas	667	MMBTU/H	CO	An oxidation catalyst for CO control for each CTG/HRSG unit, good combustion practices.	4	PPM	PPMVD AT 15%O2; 24-HR ROLL AVG EXC SU/SD	BACT-PSD	9	LB/H	HOURLY, EXC. SU/SD; APPLY IN HRSG BYPASS	There are 3 CO emission limits, all listed below: Emission limit 1 = 4 ppmvd at 15%O2 on a 24-hour rolling average as determined each operating hour, except during startup (SU) and shutdown (SD). Applies in combined cycle mode. Emission limit 2 = 9 lb/hr on an hourly basis except during startup and shutdown. Applies in HRSG bypass mode. Emission limit 3 = 289 lb/hr on an hourly basis including startup and shutdown. Applies in combined cycle mode. Thermal oxidation and NSCR were considered not technically feasible for these applications.
TX-0878	LNG EXPORT TERMINAL	TX	158420, PSDTX1572, GHGPSDTX198	9/15/2022	Refrigeration Compression Turbines LNG Terminal	Natural Gas	26.92	MMTON/Y	CO	good combustion practices.	25	PPM	24-HR AVG	BACT-PSD	0			
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Combined-Cycle Combustion Turbines Two combined-cycle generating units, each with a Siemens combustion turbine (3,647 mmBtu/hr) and a heat recovery steam generator (HRSG) with duct burners (35 mmBtu/hr); fired by natural gas only.	Natural Gas	3647	mmBtu/hour	CO	Oxidation catalyst and good combustion practices	1.5	PPMV @ 15% O2	TURBINE LOAD > OR = 60% W/O DUCT BURNERS	BACT-PSD	1.8	PPMV @ 15% O2	TURBINE LOAD > OR= 60% WITH DUCT BURNERS	Emission Limits 1 and 2 are averaged on a rolling 3-operating hour basis. Emission Limit 3: 2.0 ppmv @ 15% O2 for turbine load < 60% on a rolling 3-operating hour operating basis. Emission Limits 1, 2 and 3 do not include startup, shutdown or breakdown. Emission Limit 4: During any clock hour, including startup, shutdown and breakdown, emissions shall not exceed 923 pounds/hour (cold start/shakedown); 325 pounds/hour (non-cold start); 216 pounds/hour (shutdown). Compliance is demonstrated using a continuous emissions monitoring system (CEMS).
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	Four Combined Cycle Gas-Fired Turbines LNG Plant	Natural Gas	384	MMBtu/hr	CO	Oxidation Catalyst and good combustion practices	2	PPMV @ 15% O2	3-HOURS	BACT-PSD	0			Allowed 40 hours per year per turbine of operation without SCR and OxCat.
MI-0451	MEC NORTH, LLC	MI	167-17B	6/23/2022	EUCTGHRSG (North Plant): A combined cycle natural gas fired combustion turbine generator with heat recovery steam generator	Natural gas	3064	MMBTU/H	CO	Oxidation catalyst technology and good combustion practices.	2	PPM	24-HR ROLLING AVG	BACT-PSD	788.6	LB/H	OPERATING HR DURING STARTUP/SHUTDOWN	Emission limit 1 above is 2 ppmvd based on a 24-hour rolling average as determined each operating hour except during startup and shutdown. Emission limit 2 above is 788.6 lb/hr, operating hour during startup or shutdown. See below for further clarification on startup/shutdown. Startup is defined as the period of time from initiation of the combustion process (flame-on) from shutdown status and continues until steady state operation (loads greater than a demonstrated percent of design capacity) is achieved. Shutdown is defined as that period of time from the lowering of the turbine output below the demonstrated steady state level, with the intent to shut down, until the point at which the fuel flow to the combustor is terminated. The demonstrated percent of design capacity, or demonstrated steady state level, shall be described in the plan required in SC III.2. Startup and Shutdown hours are limited to 300 hours per 12 month rolling time period.
MI-0452	MEC SOUTH, LLC	MI	168-17B	6/23/2022	EUCTGHRSG (South Plant): A combined-cycle natural gas-fired combustion turbine generator with heat recovery steam generator.	Natural gas	3064	MMBTU/H	CO	Oxidation Catalyst Technology and Good Combustion Practices	2	PPM	24-HR ROLLING AVG	BACT-PSD	788.6	LB/H	OPERATING HR DURING STARTUP/SHUTDOWN	Emission limit 1 above = 2 ppmvd based on 24-hour rolling average as determined each operating hour, except during startup and shutdown. The applicable requirement is BACT. Emission limit 2 above = 788.6 lb/hr based on operating hour during startup or shutdown. The applicable requirement is BACT and NAAQS. Startup is defined as the period of time from initiation of the combustion process (flame-on) from shutdown status and continues until steady state operation (loads greater than a demonstrated percent of design capacity) is achieved. Shutdown is defined as that period of time from the lowering of the turbine output below the demonstrated steady state level, with the intent to shut down, until the point at which the fuel flow to the combustor is terminated. The demonstrated percent of design capacity, or demonstrated steady state level, shall be described in the plan required in SC III.2. Startup and Shutdown hours are limited to 300 hours per 12 month rolling time period.
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	730 MW Combined Cycle Gas Turbine w/ Duct Burners and HRSG	Natural Gas	5081	mm BTU/h	CO	Catalytic oxidation and good combustion practices.	2	PPMVD	24-HR ROLLING AVG BASED ON 1-HR AVG	BACT-PSD	0			BACT is 2.0 ppmvd @ 15% O2 on a 24-hour rolling average based on a one-hour average.
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Combustion Turbine; Duct Burner (CT-01/HRSG1; CT-02/HRSG2) 2x1	Pipeline Natural Gas	1275	mw	CO	Good Combustion Practices and OxCat	2	PPMDV @ 15% O2	3-HOUR BLOCK AVERAGE	BACT-PSD	19.54	LB/HR	3-HOUR ROLLING AVERAGE	Concentration and Mass limits apply at all times excluding startup and shutdown events.
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Combustion Turbine; Duct Burner (CT-01/HRSG1; CT-02/HRSG2) 2x1	Pipeline Natural Gas	1275	mw	CO	Good Combustion Practices and Oxidation catalyst	2	PPMDV @ 15% O2	3-HOUR BLOCK AVERAGE	BACT-PSD	20.76	LB/HR	3-HOUR ROLLING AVERAGE	Concentration and Mass limits apply at all times excluding startup and shutdown events.
FL-0371	SHADY HILLS COMBINED CYCLE FACILITY	FL	1010524-003-AC (PSD-FL-444A)	6/7/2021	573 MW GE 7HA.02 Combustion Turbine and HRSG with Duct Firing	Natural Gas	3622.1	MMBtu/hour	CO	Clean burning fuel with good combustion practices	4.3	PPMVD AT 15% O2	(TURBINE LOADS â‰¥ 90%); THREE 1-HR	BACT-PSD	7.1	PPMVD AT 15% O2	(TURBINE LOADS < 90%); THREE 1-HR	Initial and annual stack testing required.
TX-0915	UNIT 5	TX	160538, PSDTX1528, GHGPSDTX204	3/17/2021	COMBINED CYCLE TURBINE	NATURAL GAS	0		CO	OXIDATION CATALYST	4	PPMVD	3-HR ROLLING	BACT-PSD	0			
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	EUCTGHRSG1 Natural gas combined-cycle power plant	Natural gas	667	MMBTU/H	CO	An oxidation catalyst for CO control for each CTG/HRSG unit, good combustion practices.	4	PPM	24-HR ROLL AVG EXCEPT STARTUP/SHUTDOWN	BACT-PSD	9	LB/H	24-HR ROLL AVG EXCEPT STARTUP/SHUTDOWN	There are 3 CO emission limits. Two are listed above but all 3 will also be listed here. Emission limit 1 = 4 ppmvd at 15% O2, based on a 24-hour rolling average as determined each operating hour, except during startup and shutdown. Applies in combined cycle mode. Emission limit 2 = 9 lb/hr; hourly except during startup and shutdown. Applies in HRSG bypass mode. Emission limit 3 = 389 lb/hr; hourly including startup and shutdown. Applies in combined cycle mode. Thermal oxidation and NSCR were considered not technically feasible for the application.

Table C-2
RACT/BACT/LAER Clearing House Summary for CO Emissions from Combined Cycle Turbines

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	EUCTGHRSG2 Natural gas combined-cycle power plant	Natural gas	667	MMBTU/H	CO	An oxidation catalyst for CO control for each CTG/HRSG unit, good combustion practices.	4	PPM	24-HR ROLL AVG EXCEPT STARTUP/SHUTDOWN	BACT-PSD	9	LB/H	24-HR ROLL AVG EXCEPT STARTUP/SHUTDOWN	There are 3 CO emission limits. Emission limit 1 = 4 ppmvd at 15% O2 based on a 24-hour rolling average as determined each operating hour, except during startup and shutdown. Applies in combined cycle mode. Emission limit 2 = 9 lb/hr; hourly except during startup and shutdown. Applies in HRSG bypass mode. Emission limit 3 = 289 lb/hr; hourly including startup and shutdown. Applies in combined cycle mode. Thermal oxidation and NSCR were considered not technically feasible for these applications.
*VA-0335	PANDA STONEWALL LLC	VA	73826-6	12/8/2020	Combustion Turbines, Two (2) and HRSG Duct Burners	Natural Gas	2.55	MMBTU/H	CO	Catalytic Oxidizer	2	PPMVD @ 15% O2	NORMAL OPERATION W & W/O DUCT BURNING	BACT-PSD	0			Emission Limit 1: 2.0 ppmvd at 15% O2 - normal operations with and w/o duct burner Emission Limit 2: 1900/1700/1200/85 lb/event - cold start/warm start/hot start/shutdown
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural-Gas-Fired Combined-Cycle Turbine (P01)	Natural Gas	4671	MMBTU/H	CO	Oxidation Catalyst and good combustion controls	1.5	PPM AT 15% O2	168-HR ROLLING AVG., NATURAL GAS	BACT-PSD	1.5	PPM AT 15% O2	168-HR ROLLING AVG., DIESEL	*Except during start-up and shutdown
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Six (6) Cogeneration Gas-Fired Turbines (Treated Gas Compressor Turbines)	Natural Gas	576	MMBtu/hr	CO	Oxidation catalyst and good combustion practices	5	PPMV @ 15% O2	3-HOUR AVERAGE	BACT-PSD	0			Potential CO emissions of 18.84 tpy per turbine including supplemental firing duct burner for WHRU.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Six (6) Cogeneration Gas-Fired Turbines (CO2 Compressor Turbines))	Natural Gas	431	MMBtu/hr	CO	Oxidation catalyst and good combustion control practices	5	PPMV @ 15% O2	3-HOUR AVERAGE	BACT-PSD	0			Potential particulate matter emissions of 14.41 tpy per turbine including supplemental firing duct burners for WHRU.
WI-0306	WPL- RIVERSIDE ENERGY CENTER	WI	19-POY-212	2/28/2020	Natural Gas Fired Combustion Turbine (P20, P21) Phase I Commissionin	Natural Gas	2208	MMBTU/H	CO		1750	PPMVD, 15% OXYGEN	AVG. ANY 24-HR OPERATIONAL	BACT-PSD	3203	LB	IN ANY HOUR	
WI-0306	WPL- RIVERSIDE ENERGY CENTER	WI	19-POY-212	2/8/2020	Natural Gas Fired Combustion Turbine (P20, P21) Phase II Commissioning	Natural Gas	2208	MMBTU/H	CO		150	PPMVD, 15% OXYGEN	AVG. ANY 24-HR OPERATIONAL PERIOD	BACT-PSD	1500	LB	IN ANY HOUR	Carbon monoxide emissions may not exceed the limits from either turbine for the first 240 hours of Phase II operation of that turbine. After 240 hours, emissions limitation from prior permits apply.
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	Cogeneration Units	Natural Gas	2222	mm btu/h	CO	Good combustion practices and catalytic oxidation	4	PPMVD		BACT-PSD	0			BACT limit is 4 ppmvd at 15% O2.

Table C-3
RACT/BACT/LAER Clearing House Summary for VOC Emissions from Combined Cycle Turbines

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0382	DUKE ENERGY INDIANA, INC.- CAYUGA GENERATING STATION	IN	165-47430-00001	2/14/2025	Combustion Turbines (6A and 6B)	Natural Gas	4254	MMBtu/hr	VOC	Oxidation Catalyst and Good Combustion Practices	1	PPMVD@15% O2	3-HOUR AVERAGE W/O DB EXCL. SU/SD	BACT-PSD	2	PPMVD@15% O2	3-HOUR AVERAGE W/ DB EXCL. SU/SD	(a) VOC emissions from each combustion turbine identified as 6A and 6B shall not exceed 1.0 ppmvd @ 15% O2 based on a 3-hr average w/o duct burner firing, excluding periods of startup and shutdown. (b) VOC emissions from each combustion turbine identified as 6A and 6B shall not exceed 2.0 ppmvd @ 15% O2 based on a 3-hr average with duct burner firing, excluding periods of startup and shutdown. (c) VOC emissions from the CCCTs 6A and 6B shall be controlled using an Oxidation Catalyst and conducting good combustion practices. (d) The VOC emissions from each combined cycle combustion turbine stack shall not exceed 46 tons per twelve (12) consecutive month period, including startup and shutdown operations, with compliance determined at the end of each month.
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Combined-Cycle Combustion Turbines Two combined-cycle generating units, each with a Siemens combustion turbine (3,647 mmBtu/hr) and a heat recovery steam generator (HRSG) with duct burners (35 mmBtu/hr); fired by natural gas only.	Natural Gas	3647	mmBtu/hour	VOC	Oxidation catalyst and good combustion practices.	1	PPMV, ADJ. TO 15% O2	ROLLING 3-OPERATING HOUR	BACT-PSD	1.1	PPMV, ADJ. TO 15% O2	ROLLING 3-OPERATING HOUR	Emission Limits 1 and 2 exclude startup and shutdown. Emission Limit 3: 56 pounds/hour (cold start); 48 pounds/hour (non-cold start); and 44 pounds/hour (shutdown) during each hour that includes a startup or shutdown and shakedown.
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	730 MW Combined Cycle Gas Turbine w/ Duct Burners and HRSG	Natural Gas	5081	mm BTU/h	VOC	Catalytic oxidation and good combustion practices.	1	PPMVD	3 1-HR TEST AVERAGE	BACT-PSD	2	PPMVD	3 1-HR TEST AVERAGE	1.0 and 2.0 ppmvd at 15% O2 based on a three one-hour test average without and with duct firing, respectively.
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Combustion Turbine; Duct Burner (CT-01/HRSG1; CT-02/HRSG2) 2x1	Pipeline Natural Gas	1275	mw	VOC	good combustion practices and oxidation catalyst	1	PPMDV @ 15% O2	AVG OF 3 1-HR TEST RUNS (W/O DUCT FIRING	BACT-PSD	2	PPMDV @ 15% O2	AVG OF 3 1-HR TEST RUNS (W DUCT FIRING	Concentration and Mass limits apply at all times excluding startup and shutdown events.
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Combustion Turbine; Duct Burner (CT-01/HRSG1; CT-02/HRSG2) 2x1	Pipeline Natural Gas	1275	mw	VOC	good combustion practices and oxidation catalyst	1	PPMDV @ 15% O2	AVG OF 3 1-HR TEST RUNS (W/O DUCT FIRING	BACT-PSD	2	PPMDV @ 15% O2	AVG OF 3 1-HR TEST RUNS (W DUCT FIRING	Concentration and Mass limits apply at all times excluding startup and shutdown events.
TX-0915	UNIT 5	TX	160538, PSDTX1528, GHGPSDTX204	3/17/2021	COMBINED CYCLE TURBINE	NATURAL GAS	0		VOC	OXIDATION CATALYST	1	PPMVD	3-HR ROLLING	BACT-PSD	0			

Table C-4
RACT/BACT/LAER Clearing House Summary for SO2 Emissions from Combined Cycle Turbines

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGA	Natural Gas	3800	MMBtu per hour	SO2	SO2 shall be controlled through the use of pipeline-quality natural gas.	0.0017	LB PER MMBTU	3-HR AVERAGE	BACT-PSD	0			
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGB	natural gas	4200	MMBtu per hour	SO2	SO2 shall be controlled through the use of pipeline-quality natural gas.	0.0019	LB PER MMBTU	3-HR AVERAGE	BACT-PSD	0			
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Combined-Cycle Combustion Turbines Two combined-cycle generating units, each with a Siemens combustion turbine (3,647 mmBtu/hr) and a heat recovery steam generator (HRSG) with duct burners (35 mmBtu/hr); fired by natural gas only.	Natural Gas	3647	mmBtu/hour	SO2	Good combustion practices and use of natural gas with a sulfur content of no more than 0.5 grains (gr)/100 standard cubic feet (scf).	5.5	POUNDS/HOUR	ROLLING 3-OPERATING HOUR	BACT-PSD	0			Compliance is determined by performance testing.
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	Four Combined Cycle Gas-Fired Turbines LNG Plant	Natural Gas	384	MMBtu/hr	SO2	pipeline quality natural gas and good combustion practices	16	PPMV SULFUR IN FUEL		BACT-PSD	0			
MI-0451	MEC NORTH, LLC	MI	167-17B	6/23/2022	EUCTGHRSG (South Plant): A combined-cycle natural gas-fired combustion turbine generator with heat recovery steam generator.	Natural gas	3064	MMBTU/H	SO2	Good combustion practices and the use of pipeline quality natural gas.	6.6	LB/H	HOURLY	BACT-PSD	0.6	GR/SCF	0.6 GR SULFUR/100 SCF; FUEL SUPPLIER REC	There are 3 SO2 emission limits, see below: Emission limit 1 is 6.6 lbs/hr, hourly with underlying applicable requirements of BACT, NAAQS and PSD increment. Emission limit 2 is 0.060 lb/MMBTU, hourly, with an underlying applicable requirement of NSPS. Emission limit 3 is 0.6 gr sulfur/100 scf, based on fuel supplier records, with applicable requirements of BACT, NAAQS and PSD increment. There is also a NSPS natural gas material limit of 20 grains of sulfur per 100 scf. Even though MEC determined FGD to be technically infeasible due to the low SO2 content in the flue gas, they also provided an economic analysis. The use of pipeline quality natural gas and good combustion practices were used for the emission calculations. All reductions in emissions were with these potential control options already incorporated as baseline conditions. They concluded that with costs of over $200,000 per ton of controlled SO2 and H2SO4 combined, FGD also would not be economically feasible.
MI-0452	MEC SOUTH, LLC	MI	168-17B	6/23/2022	EUCTGHRSG (North Plant): A combined cycle natural gas fired combustion turbine generator with heat recovery steam generator	Natural gas	3064	MMBTU/H	SO2	Good Combustion Practices and the use of pipeline quality natural gas	6.6	LB/H	HOURLY	BACT-PSD	0.6	GR/SCF	FUEL SUPPLIER RECORDS	There are 3 SO2 emission limits described below: Emission limit 1 = 6.6 lbs/hr on an hourly basis. The applicable requirements are BACT, NAAQS and PSD increment Emission limit 2 = 0.6 gr sulfur/100 scf based on fuel supplier records. The applicable requirements are BACT, NAAQS and PSD increment. Emission limit 3 = 0.060 lb/MMBTU on an hourly basis. The applicable requirement is the NSPS. There is also a NSPS natural gas material limit of 20 grains of sulfur per 100 scf. Even though MEC determined FGD to be technically infeasible due to the low SO2 content in the flue gas, they also provided an economic analysis. The use of pipeline quality natural gas and good combustion practices were used for the emission calculations. All reductions in emissions were with these potential control options already incorporated as baseline conditions. They concluded that with costs of over $200,000 per ton of controlled SO2 and H2SO4 combined, FGD also would not be economically feasible.
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	EUCTGHRSG (South Plant): A combined-cycle natural gas-fired combustion turbine generator with heat recovery steam generator.	Pipeline Natural Gas	1275	mw	SO2	Low Sulfur Fuel	0.4	GR-S/100 SCF	SEE APPENDIX D OF 40CFR75	N/A	6.02	LB/HR	DAILY AVERAGE USING FUEL ANALYSIS	Annual SO2 emission per turbine limited to 19.9 tons per year on 12-month rolling average basis to avoid major for SO2
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Combustion Turbine & Duct Burner (CT-01/HRSG1 & CT-02/HRSG2)	Pipeline Natural Gas	1275	mw	SO2	Low Sulfur Fuel	0.4	GR-S/100 SCF	SEE APPENDIX D OF 40CFR75	N/A	6.02	LB/HR	DAILY AVERAGE USING FUEL ANALYSIS	Annual SO2 emission per turbine limited to 19.9 tons per year on 12-month rolling average basis to avoid major for SO2
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2021	Combustion Turbine & Duct Burner (CT-01/HRSG1 & CT-02/HRSG2)	natural gas	4200	MMBtu per hour	SO2		0.0019	LB PER MMBTU	BASED ON 3-HR AVERAGE	BACT-PSD	0			SO2 shall be controlled through the use of pipeline-quality natural gas.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2021	Combined Cycle Turbine CTGB	Natural Gas	3800	MMBtu per hour	SO2		0.0017	POUND PER MMBTU	3-HR AVERAGE	BACT-PSD	0			SO2 shall be controlled through the use of pipeline-quality natural gas.
FL-0371	SHADY HILLS COMBINED CYCLE FACILITY	FL	1010524-003-AC (PSD-FL-444A)	6/7/2021	Combined Cycle Turbine CTGA	Natural Gas	3622.1	MMBtu/hour	SO2	Low sulfur fuel	1.4	GR. S/100 SCF NG		BACT-PSD	0			
AL-0328	PLANT BARRY	AL	503-1001	11/9/2020	Natural-Gas-Fired Combined-Cycle Turbine (P01)	Natural Gas	744	MW	SO2		0.6	GR S/100 SCF FUEL		BACT-PSD	0			
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Six (6) Cogeneration Gas-Fired Turbines (Treated Gas Compressor Turbines)	Natural Gas	4671	MMBTU/H	SO2	Only use pipeline quality natural gas and diesel fuel, and use good combustion control	0			BACT-PSD	0			The sulfur content of the diesel fuel oil fired may not exceed 15 ppm
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Six (6) Cogeneration Gas-Fired Turbines (CO2 Compressor Turbines))	Natural Gas	576	MMBtu/hr	SO2	Good combustion practices and clean burning fuel low sulfur natural gas	96	PPMV SULFUR IN FUEL	PRIOR TO COMPLETING TREATMENT TRAINS	BACT-PSD	16	PPMV SULFUR IN FUEL	AFTER COMPLETING TREATMENT TRAINS	Potential SO2 emissions of 37.84 tpy and 6.32 tpy per turbine including supplemental firing duct burners for WHRU @ 96ppmv and 16 ppmv total sulfur in fuel respectively.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Cogeneration Units	Natural Gas	431	MMBtu/hr	SO2	Good combustion practices and clean burning fuel low sulfur natural gas	96	PPMV SULFUR IN FUEL	PRIOR TO COMPLETING TREATMENT TRAINS	BACT-PSD	16	PPMV SULFUR IN FUEL	AFTER COMPLETING TREATMENT TRAINS	Potential SO2 emissions of 28.50 tpy and 4.76 tpy per turbine including supplemental firing duct burners for WHRU @ 96ppmv and 16 ppmv total sulfur in fuel respectively.
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	FGCTGHRSG	Natural Gas	2222	mm btu/h	SO2	Use of pipeline quality natural gas or fuel gas.	1.24	LB/H		BACT-PSD	0			

Table C-5
RACT/BACT/LAER Clearing House Summary for PM Emissions from Combined Cycle Turbines

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0382	DUKE ENERGY INDIANA, INC.-CAYUGA GENERATING STATION	IN	165-47430-00001	2/14/2025	Combustion Turbines (6A and 6B)	Natural Gas	4254	MMBtu/hr	TPM	Good Combustion Practices and combusting pipeline-quality natural gas	0.0042	LB/MMBTU	3-HOUR AVERAGE EXCL. SU/SD	BACT-PSD	0			(a) The CCCTs identified as 6A and 6B shall combust pipeline-quality natural gas. (b) PM emissions from the combined-cycle combustion turbines identified as 6A and 6B shall be limited through the use of good combustion practices.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGB	natural gas	4200	MMBtu per hour	TPM10	good combustion practices	0.0074	LB PER MMBTU		BACT-PSD	0			PM10 emissions from the combined-cycle combustion turbine generator shall be limited through the use of good combustion practices.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGB	natural gas	4200	MMBtu per hour	TPM2.5	good combustion practices	0.0074	LB PER MMBTU		BACT-PSD	0			PM2.5 emissions from the combined-cycle combustion turbine generator shall be limited through the use of good combustion practices.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGB	natural gas	4200	MMBtu per hour	TPM	good combustion practices	0.0074	POUND PER MMBTU		BACT-PSD	0			PM emissions from the combined-cycle combustion turbine generator shall be limited through the use of good combustion practices.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGA SU/SD	Natural gas	3800	MMBtu per hour	TPM10		5.3	LB/EVENT		BACT-PSD	0			An event is defined as: Exactly one (1) startup or exactly one (1) shutdown For PM10/PM2.5 (24-hour), the source determined the worst-case operating scenario that results in the highest modeled impacts to be a cold start of the CCCT.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGA SU/SD	Natural gas	3800	MMBtu per hour	TPM2.5		5.3	LB/EVENT		BACT-PSD	0			An event is defined as: Exactly one (1) startup or exactly one (1) shutdown For PM10/PM2.5 (24-hour), the source determined the worst-case operating scenario that results in the highest modeled impacts to be a cold start of the CCCT.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGB SU/SD		0		TPM10		14	LB/EVENT	HOT START	BACT-PSD	0			An event is defined as: (1) Exactly one (1) startup or exactly one (1) shutdown.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGB SU/SD		0		TPM2.5		14	LB/EVENT	HOT START	BACT-PSD	0			An event is defined as: (1) Exactly one (1) startup or exactly one (1) shutdown.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGA	Natural Gas	3800	MMBtu per hour	TPM	good combustion practices	0.0049	POUND PER MMBTU		BACT-PSD	0			PM emissions from the combined-cycle combustion turbine generator shall be controlled through the use of good combustion practices.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGA	Natural Gas	3800	MMBtu per hour	TPM10	good combustion practices	0.0049	LB PER MMBTU		BACT-PSD	0			PM10 emissions from the combined-cycle combustion turbine generator shall be limited through the use of good combustion practices.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Combined Cycle Turbine CTGA	Natural Gas	3800	MMBtu per hour	TPM2.5	good combustion practices	0.0049	LB PER MMBTU		BACT-PSD	0			PM2.5 emissions from the combined-cycle combustion turbine generator shall be limited through the use of good combustion practices.
TX-0939	ORANGE COUNTY ADVANCED POWER STATION	TX	166032 PSDTX1598 GHGPSDTX210	3/13/2023	2 natural gas-fired combined cycle turbines with a maximum total nominal output of 1,215 MW. The turbines can also be fired with up to 30% volume hydrogen co-firing (blended fuel)	NATURAL GAS	1215	MW	FPM	good combustion practices	0.005	LB/MMBTU		BACT-PSD	0			
TX-0939	ORANGE COUNTY ADVANCED POWER STATION	TX	166032 PSDTX1598 GHGPSDTX210	3/13/2023	2 natural gas-fired combined cycle turbines with a maximum total nominal output of 1,215 MW. The turbines can also be fired with up to 30% volume hydrogen co-firing (blended fuel)	NATURAL GAS	1215	MW	FPM10	good combustion practices	0.005	LB/MMBTU		BACT-PSD	0			
TX-0939	ORANGE COUNTY ADVANCED POWER STATION	TX	166032 PSDTX1598 GHGPSDTX210	3/13/2023	2 natural gas-fired combined cycle turbines with a maximum total nominal output of 1,215 MW. The turbines can also be fired with up to 30% volume hydrogen co-firing (blended fuel)	NATURAL GAS	1215	MW	FPM2.5	good combustion practices	0.005	LB/MMBTU		BACT-PSD	0			
TX-0939	ORANGE COUNTY ADVANCED POWER STATION	TX	166032 PSDTX1598 GHGPSDTX210	3/13/2023	2 natural gas-fired combined cycle turbines with a maximum total nominal output of 1,215 MW. The turbines can also be fired with up to 30% volume hydrogen co-firing (blended fuel)		0		TPM	On-line turbine washing, turbine filter changeouts, catalyst handling, fuel venting, CEMS calibration, fugitive/small equipment maintenance Good air pollution control practices and safe operating practices.	0			BACT-PSD	0			
TX-0939	ORANGE COUNTY ADVANCED POWER STATION	TX	166032 PSDTX1598 GHGPSDTX210	3/13/2023	2 natural gas-fired combined cycle turbines with a maximum total nominal output of 1,215 MW. The turbines can also be fired with up to 30% volume hydrogen co-firing (blended fuel)		0		TPM10	On-line turbine washing, turbine filter changeouts, catalyst handling, fuel venting, CEMS calibration, fugitive/small equipment maintenance Good air pollution control practices and safe operating practices.	0			BACT-PSD	0			
TX-0939	ORANGE COUNTY ADVANCED POWER STATION	TX	166032 PSDTX1598 GHGPSDTX210	3/13/2023	2 natural gas-fired combined cycle turbines with a maximum total nominal output of 1,215 MW. The turbines can also be fired with up to 30% volume hydrogen co-firing (blended fuel)		0		TPM2.5	On-line turbine washing, turbine filter changeouts, catalyst handling, fuel venting, CEMS calibration, fugitive/small equipment maintenance Good air pollution control practices and safe operating practices.	0			BACT-PSD	0			
MI-0455	MIDLAND COGENERATION VENTURE LIMITED PARTNERSHIP	MI	23-Oct	2/1/2023	EUCTGHRSG1	Natural gas	4197.6	MMBTU/H	FPM	Use of pipeline quality natural gas and good combustion practices.	34.4	LB/H	HOURLY	BACT-PSD	0			Baghouse: average of $35,112 per ton Dry ESP: average of $48,511 per ton Wet ESP: average of $120,515 per ton Wet Scrubber: average of $40,720 per ton
MI-0455	MIDLAND COGENERATION VENTURE LIMITED PARTNERSHIP	MI	23-Oct	2/1/2023	EUCTGHRSG1	Natural gas	4197.6	MMBTU/H	TPM10	Use of pipeline quality natural gas and good combustion practices.	34.4	LB/H	HOURLY	BACT-PSD	0			Baghouse: average of $35,112 per ton Dry ESP: average of $48,511 per ton Wet ESP: average of $120,515 per ton Wet Scrubber: average of $40,720 per ton
MI-0455	MIDLAND COGENERATION VENTURE LIMITED PARTNERSHIP	MI	23-Oct	2/1/2023	EUCTGHRSG1	Natural gas	4197.6	MMBTU/H	TPM2.5	Use of pipeline quality natural gas and good combustion practices.	34.4	LB/H	HOURLY	BACT-PSD	0			Baghouse: average of $35,112 per ton Dry ESP: average of $48,511 per ton Wet ESP: average of $120,515 per ton Wet Scrubber: average of $40,720 per ton
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUCTGHRSG1	Natural gas	667	MMBTU/H	TPM10	Pipeline quality natural gas, inlet air conditioning, and good combustion practices.	6.02	LB/H	HOURLY; APPLIES DURING ALL OPER. MODES	BACT-PSD	0			Add-on control technology was not technically feasible; however, options were evaluated, and it was determined they were not economically feasible.
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUCTGHRSG1	Natural gas	667	MMBTU/H	TPM2.5	Pipeline quality natural gas, inlet air conditioning, and good combustion practices.	6.02	LB/H	HOURLY; APPLIES DURING ALL OPERAT. MODES	BACT-PSD	0			Add-on control technology was not technically feasible; however, options were evaluated, and it was determined they were not economically feasible.
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUCTGHRSG2	Natural gas	667	MMBTU/H	TPM10	Pipeline quality natural gas, inlet air conditioning, and good combustion practices.	6.02	LB/H	HOURLY; APPLIES DURING ALL MODES	BACT-PSD	0			Add-on control technology was not technically feasible; however, options were evaluated, and it was determined they were not economically feasible.
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUCTGHRSG2	Natural gas	667	MMBTU/H	TPM2.5	Pipeline quality natural gas, inlet air conditioning, and good combustion practices.	6.02	LB/H	HOURLY, APPLY DURING ALL OPERATING MODES	BACT-PSD	0			Add-on control technology was not technically feasible; however, options were evaluated, and it was determined they were not economically feasible.

Table C-5
RACT/BACT/LAER Clearing House Summary for PM Emissions from Combined Cycle Turbines

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
TX-0878	LNG EXPORT TERMINAL	TX	158420, PSDTX1572, GHGPSDTX198	9/15/2022	Refrigeration Compression Turbines	NATURAL GAS	26.92	MMTON/Y	TPM	Dry low NOx burners and good combustion practices.	11	LB/HR		BACT-PSD	0			
TX-0878	LNG EXPORT TERMINAL	TX	158420, PSDTX1572, GHGPSDTX198	9/15/2022	Refrigeration Compression Turbines	NATURAL GAS	26.92	MMTON/Y	TPM10	Good combustion practices and use of pipeline quality natural gas	0			BACT-PSD	0			
TX-0878	LNG EXPORT TERMINAL	TX	158420, PSDTX1572, GHGPSDTX198	9/15/2022	Refrigeration Compression Turbines	NATURAL GAS	26.92	MMTON/Y	TPM2.5	Good combustion practices and use of pipeline quality natural gas	0			BACT-PSD	0			
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Combined-Cycle Combustion Turbines	Natural Gas	3647	mmBtu/hour	TPM	Good combustion practices	0.0032	POUNDS/MMBTU	WITH DUCT BURNER; ROLLING 3-OPERATING HR	BACT-PSD	0.0031	POUNDS/MMBTU	W/O DUCT BURNER; ROLLING 3-OPERATING HR	Compliance is determined by performance testing.
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Combined-Cycle Combustion Turbines	Natural Gas	3647	mmBtu/hour	TPM10	Good combustion practices.	0.0041	POUNDS/MMBTU	ROLLING 3-OPERATING HOUR	BACT-PSD	0			Limit for PM10 also includes PM2.5, i.e., PM10/PM2.5. Compliance is demonstrated by performance testing.
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	Four Combined Cycle Gas-Fired Turbines	Natural Gas	384	MMBtu/hr	TPM10	Good combustion practices and burning clean fuel (natural gas)	0.007	LB/MMBTU	3-HOURS	BACT-PSD	10	% OPACITY	6 CONSECUTIVE MINUTES	
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	Four Combined Cycle Gas-Fired Turbines	Natural Gas	384	MMBtu/hr	TPM2.5	Good combustion practices and burning clean fuel (natural gas)	0.007	LB/MMBTU	3-HOURS	BACT-PSD	10	% OPACITY	6 CONSECUTIVE MINUTES	
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	Four Combined Cycle Gas-Fired Turbines	Natural Gas	384	MMBtu/hr	TPM	Good combustion practices and burning clean fuel (natural gas)	0.007	LB/MMBTU	3-HOURS	BACT-PSD	10	% OPACITY	6 CONSECUTIVE MINUTES	
MI-0451	MEC NORTH, LLC	MI	167-17B	6/23/2022	EUCTGHRSG (North Plant): A combined cycle natural gas fired combustion turbine generator with heat recovery steam generator	Natural gas	3064	MMBTU/H	FPM	Good combustion practices, inlet air conditioning, and the use of pipeline quality natural gas.	5.7	LB/H	HOURLY	BACT-PSD	0			(5.7 pph is equivalent to 0.002 lb/MMBTU, which is about 30 percent of PM10 and PM2.5) The cost analysis was for the best scenario: 100 percent capture of PM2.5/PM10, which are higher emitting than PM. PM cost effectiveness would be worse than the numbers provided. Pulse Jet Fabric Filter Baghouse: average of $334,000 per ton Mechanical Shaker Fabric Filter Baghouse: average of $370,500 per ton Reverse-Air Fabric Filter Baghouse: average of $437,000 per ton Dry ESP (Wire-Plate Type): average of $438,500 per ton Dry ESP (Wire-Pipe Type): average of $278,500 per ton Wet ESP (Wire-Plate Type): average of $528,500 per ton Wet ESP (Wire-Pipe Type): average of $403,000 per ton Venturi Scrubber: average of $1,321,000 per ton
MI-0451	MEC NORTH, LLC	MI	167-17B	6/23/2022	EUCTGHRSG (North Plant): A combined cycle natural gas fired combustion turbine generator with heat recovery steam generator	Natural gas	3064	MMBTU/H	TPM10	Good combustion practices, inlet air conditioning and the use of pipeline quality natural gas.	19.1	LB/H	HOURLY	BACT-PSD	0			The underlying applicable requirements for the emission limit above are BACT, NAAQS and PSD increment. (19.1 pph is equivalent to 0.005 lb/MMBTU, which includes startup and shutdown) The cost analysis was for the best scenario: 100 percent capture of PM2.5/PM10, which are higher emitting than PM. PM cost effectiveness would be worse than the numbers provided. Pulse Jet Fabric Filter Baghouse: average of $334,000 per ton Mechanical Shaker Fabric Filter Baghouse: average of $370,500 per ton Reverse-Air Fabric Filter Baghouse: average of $437,000 per ton Dry ESP (Wire-Plate Type): average of $438,500 per ton Dry ESP (Wire-Pipe Type): average of $278,500 per ton Wet ESP (Wire-Plate Type): average of $528,500 per ton Wet ESP (Wire-Pipe Type): average of $403,000 per ton Venturi Scrubber: average of $1,321,000 per ton
MI-0451	MEC NORTH, LLC	MI	167-17B	6/23/2022	EUCTGHRSG (North Plant): A combined cycle natural gas fired combustion turbine generator with heat recovery steam generator	Natural gas	3064	MMBTU/H	TPM2.5	Good combustion practices, inlet air conditioning, and the use of pipeline quality natural gas.	19.1	LB/H	HOURLY	BACT-PSD	0			The underlying applicable requirements for the emission limit above are BACT, NAAQS and PSD increment. (19.1 pph is equivalent to 0.005 lb/MMBTU, which includes startup and shutdown) The cost analysis was for the best scenario: 100 percent capture of PM2.5/PM10, which are higher emitting than PM. PM cost effectiveness would be worse than the numbers provided. Pulse Jet Fabric Filter Baghouse: average of $334,000 per ton Mechanical Shaker Fabric Filter Baghouse: average of $370,500 per ton Reverse-Air Fabric Filter Baghouse: average of $437,000 per ton Dry ESP (Wire-Plate Type): average of $438,500 per ton Dry ESP (Wire-Pipe Type): average of $278,500 per ton Wet ESP (Wire-Plate Type): average of $528,500 per ton Wet ESP (Wire-Pipe Type): average of $403,000 per ton Venturi Scrubber: average of $1,321,000 per ton

Table C-5
RACT/BACT/LAER Clearing House Summary for PM Emissions from Combined Cycle Turbines

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
MI-0452	MEC SOUTH, LLC	MI	168-17B	6/23/2022	EUCTGHRSG (South Plant): A combined-cycle natural gas-fired combustion turbine generator with heat recovery steam generator.	Natural gas	3064	MMBTU/H	FPM	Good Combustion Practices, inlet air conditioning, and the use of pipeline quality natural gas	5.7	LB/H	HOURLY	BACT-PSD	0			(5.7 pph is equivalent to 0.002 lb/MMBTU, which is about 30 percent of PM10 and PM2.5) The cost analysis was for the best scenario: 100 percent capture of PM2.5/PM10, which are higher emitting than PM. PM cost effectiveness would be worse than the numbers provided. Pulse Jet Fabric Filter Baghouse: average of $334,000 per ton Mechanical Shaker Fabric Filter Baghouse: average of $370,500 per ton Reverse-Air Fabric Filter Baghouse: average of $437,000 per ton Dry ESP (Wire-Plate Type): average of $438,500 per ton Dry ESP (Wire-Pipe Type): average of $278,500 per ton Wet ESP (Wire-Plate Type): average of $528,500 per ton Wet ESP (Wire-Pipe Type): average of $403,000 per ton Venturi Scrubber: average of $1,321,000 per ton
MI-0452	MEC SOUTH, LLC	MI	168-17B	6/23/2022	EUCTGHRSG (South Plant): A combined-cycle natural gas-fired combustion turbine generator with heat recovery steam generator.	Natural gas	3064	MMBTU/H	TPM10	Good Combustion Practices, inlet air conditioning, and the use of pipeline quality natural gas	19.1	LB/H	HOURLY	BACT-PSD	0			(19.1 pph is equivalent to 0.005 lb/MMBTU, which includes startup and shutdown) The cost analysis was for the best scenario: 100 percent capture of PM2.5/PM10, which are higher emitting than PM. PM cost effectiveness would be worse than the numbers provided. Pulse Jet Fabric Filter Baghouse: average of $334,000 per ton Mechanical Shaker Fabric Filter Baghouse: average of $370,500 per ton Reverse-Air Fabric Filter Baghouse: average of $437,000 per ton Dry ESP (Wire-Plate Type): average of $438,500 per ton Dry ESP (Wire-Pipe Type): average of $278,500 per ton Wet ESP (Wire-Plate Type): average of $528,500 per ton Wet ESP (Wire-Pipe Type): average of $403,000 per ton Venturi Scrubber: average of $1,321,000 per ton
MI-0452	MEC SOUTH, LLC	MI	168-17B	6/23/2022	EUCTGHRSG (South Plant): A combined-cycle natural gas-fired combustion turbine generator with heat recovery steam generator.	Natural gas	3064	MMBTU/H	TPM2.5	Good Combustion Practices, inlet air conditioning, and the use of pipeline quality natural gas	19.1	LB/H	HOURLY	BACT-PSD	0			(19.1 pph is equivalent to 0.005 lb/MMBTU, which includes startup and shutdown) The cost analysis was for the best scenario: 100 percent capture of PM2.5/PM10, which are higher emitting than PM. PM cost effectiveness would be worse than the numbers provided. Pulse Jet Fabric Filter Baghouse: average of $334,000 per ton Mechanical Shaker Fabric Filter Baghouse: average of $370,500 per ton Reverse-Air Fabric Filter Baghouse: average of $437,000 per ton Dry ESP (Wire-Plate Type): average of $438,500 per ton Dry ESP (Wire-Pipe Type): average of $278,500 per ton Wet ESP (Wire-Plate Type): average of $528,500 per ton Wet ESP (Wire-Pipe Type): average of $403,000 per ton Venturi Scrubber: average of $1,321,000 per ton
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Combined Cycle Gas Turbine w/ Duct Burners and HRSG	Natural Gas	5081	mm BTU/h	TPM10	Use of gaseous fuel (pipeline-quality natural gas) and good combustion practices.	0.008	LB/MM BTU	3 ONE-HOUR TEST AVERAGE	BACT-PSD	0			
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Combined Cycle Gas Turbine w/ Duct Burners and HRSG	Natural Gas	5081	mm BTU/h	TPM2.5	Use of gaseous fuel (pipeline-quality natural gas) and good combustion practices.	0.008	LB/MM BTU	3 ONE-HOUR TEST AVERAGE	BACT-PSD	0			
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Combined Cycle Gas Turbine Startup and Shutdown	Natural Gas	5081	mm BTU/h	TPM10	Good combustion practices.	18	LB/HR		BACT-PSD	0			
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Combined Cycle Gas Turbine Startup and Shutdown	Natural Gas	5081	mm BTU/h	TPM2.5	Good combustion practices	18	LB/HR		BACT-PSD	0			
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Combustion Turbine & Duct Burner (CT-01/HRSG1 & CT-02/HRSG2)	Pipeline Natural Gas	1275	mw	TPM	Clean Fuels and Good Combustion Practice	0.006	LB/MMBTU	AVG OF 3 4-HR TEST RUNS	BACT-PSD	25.32	LB/HR	12-HR AVERAGE	Concentration and Mass limits apply at all times excluding startup and shutdown events. These limits apply with or without duct firing. Same information above also applies to PM10 and PM2.5 including emission limits.
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Combustion Turbine & Duct Burner (CT-01/HRSG1 & CT-02/HRSG2)	Pipeline Natural Gas	1275	mw	TPM	Good Combustion Practice and Clean Fuel	0.006	LB/MMBTU	AVG OF 3 4-HR TEST RUNS	BACT-PSD	23.36	LB/HR	12-HR AVERAGE	Concentration and Mass limits apply at all times excluding startup and shutdown events. These limits apply with or without duct firing. Same information above also applies to PM10 and PM2.5 including emission limits.
FL-0371	SHADY HILLS COMBINED CYCLE FACILITY	FL	1010524-003-AC (PSD-FL-444A)	6/7/2021	GE 7HA.02 Combustion Turbine and HRSG with Duct Firing	Natural Gas	3622.1	MMBtu/hour	FPM	Low sulfur fuel	1.4	GR. S/100 SCF NG		BACT-PSD	0			
FL-0371	SHADY HILLS COMBINED CYCLE FACILITY	FL	1010524-003-AC (PSD-FL-444A)	6/7/2021	GE 7HA.02 Combustion Turbine and HRSG with Duct Firing	Natural Gas	3622.1	MMBtu/hour	TPM10	Clean fuels	1.4	GR. S/100 SCF NG		BACT-PSD	0			
FL-0371	SHADY HILLS COMBINED CYCLE FACILITY	FL	1010524-003-AC (PSD-FL-444A)	6/7/2021	GE 7HA.02 Combustion Turbine and HRSG with Duct Firing	Natural Gas	3622.1	MMBtu/hour	TPM2.5	Clean fuels	1.4	GR. S/100 SCF NG		BACT-PSD	0			

Table C-5
RACT/BACT/LAER Clearing House Summary for PM Emissions from Combined Cycle Turbines

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
TX-0915	UNIT 5	TX	160538, PSDTX1528, GHGPSDTX204	3/17/2021	COMBINED CYCLE TURBINE	NATURAL GAS	0		FPM	Low sulfur natural gas fuel	0			BACT-PSD	0			
TX-0915	UNIT 5	TX	160538, PSDTX1528, GHGPSDTX204	3/17/2021	EUCTGHRSG1	NATURAL GAS	0		FPM10	Low sulfur natural gas fuel	0			BACT-PSD	0			
TX-0915	UNIT 5	TX	160538, PSDTX1528, GHGPSDTX204	3/17/2021	EUCTGHRSG1	NATURAL GAS	0		FPM2.5	Low sulfur natural gas fuel	0			BACT-PSD	0			
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	EUCTGHRSG2	Natural gas	667	MMBTU/H	TPM10	Pipeline quality natural gas, inlet air conditioning, and good combustion practices.	6.02	LB/H	HOURLY; APPLIES DURING ALL OPERAT. MODES	BACT-PSD	0			Add-on control technology was not technically feasible; however, options were evaluated, and it was determined they were not economically feasible.
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	EUCTGHRSG2	Natural gas	667	MMBTU/H	TPM2.5	Pipeline quality natural gas, inlet air conditioning, and good combustion practices.	6.02	LB/H	HOURLY; APPLIES DURING ALL OPERAT. MODES	BACT-PSD	0			Add-on control technology was not technically feasible; however, options were evaluated, and it was determined they were not economically feasible.
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	Combustion Turbines, Two (2) and HRSG Duct Burners	Natural gas	667	MMBTU/H	TPM10	Pipeline quality natural gas, inlet air conditioning, and good combustion practices.	6.02	LB/H	HOURLY; APPLIES DURING ALL OPERAT. MODES	BACT-PSD	0			Add-on control technology was not technically feasible; however, options were evaluated, and it was determined they were not economically feasible.
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	Two 744 MW Combined Cycle Units	Natural gas	667	MMBTU/H	TPM2.5	Pipeline quality natural gas, inlet air conditioning, and good combustion practices.	6.02	LB/H	HOURLY; APPLIES DURING ALL OPERAT. MODES	BACT-PSD	0			Add-on control technology was not technically feasible; however, options were evaluated, and it was determined they were not economically feasible.
*VA-0335	PANDA STONEWALL LLC	VA	73826-6	12/18/2020	Two 744 MW Combined Cycle Units	Natural Gas	2.55	MMBTU/H	TPM2.5	Good combustion practices and use of low-sulfur fuels	0.0037	LB/MMBTU	AT FULL LOAD W & W/O DB	BACT-PSD	0			
AL-0328	PLANT BARRY	AL	503-1001	11/9/2020	Natural-Gas-Fired Combined-Cycle Turbine (P01)	Natural Gas	744	MW	TPM10		0.004	LB/MMBTU	3 HOUR AVG	BACT-PSD	21.51	LB/HR	3 HOUR AVG	
AL-0328	PLANT BARRY	AL	503-1001	11/9/2020	Natural-Gas-Fired Combined-Cycle Turbine (P01)	Natural Gas	744	MW	FPM2.5		0.004	LB/MMBTU	3 HOUR AVG	BACT-PSD	21.51	LB/HR	3 HOUR AVG	
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural-Gas-Fired Combined-Cycle Turbine (P01)	Natural Gas	4671	MMBTU/H	TPM	Only combust pipeline quality natural gas and diesel fuel oil and use good combustion control according to the manufacturer's recommendations.	36.3	LB/H	NATURAL GAS, DUCT FIRING	BACT-PSD	21.8	LB/H	NATURAL GAS, W/O DUCT FIRING	Other limits: PM may not exceed 54.5 lb/hr when firing diesel fuel oil and with duct firing. (f) PM may not exceed 39.4 lb/hr when firing diesel fuel oil and without duct firing. Note: The limits include front and back half PM, PM10, and PM2.5 emissions, take into account emissions from the ammonium sulfate produced from sulfur and ammonia slip that could be emitted as PM, PM10, and PM2.5 emissions, and include the duct burner emissions.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Combined-Cycle Turbine (P01) Start-up and Shutdown (Natural Gas)	Natural Gas	4671	MMBTU/H	TPM10	Only pipeline quality natural gas and diesel fuel oil may be combusted and use good combustion control according to the manufacturer's recommendations.	36.3	LB/H	NATURAL GAS, DUCT FIRING	BACT-PSD	21.8	LB/H	NATURAL GAS, W/O DUCT FIRING	Other limits: PM10 may not exceed 54.5 lb/hr when firing diesel fuel oil and with duct firing. PM10 may not exceed 39.4 lb/hr when firing diesel fuel oil and without duct firing. Note: The limits include front and back half PM, PM10, and PM2.5 emissions, take into account emissions from the ammonium sulfate produced from sulfur and ammonia slip that could be emitted as PM, PM10, and PM2.5 emissions, and include the duct burner emissions.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Combined-Cycle Turbine (P01) Start-up and Shutdown (Natural Gas)	Natural Gas	4671	MMBTU/H	TPM2.5	Only combust pipeline quality natural gas and diesel fuel oil and use good combustion control according to the manufacturer's recommendations.	36.3	LB/H	NATURAL GAS, DUCT FIRING	BACT-PSD	21.8	LB/H	NATURAL GAS, W/O DUCT FIRING	PM2.5 may not exceed 54.5 lb/hr when firing diesel fuel oil and with duct firing. PM2.5 may not exceed 39.4 lb/hr when firing diesel fuel oil and without duct firing. Note: The above limits include front and back half PM, PM10, and PM2.5 emissions, take into account emissions from the ammonium sulfate produced from sulfur and ammonia slip that could be emitted as PM, PM10, and PM2.5 emissions, and include the duct burner emissions.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Combined-Cycle Turbine (P01) Start-up and Shutdown (Natural Gas)	Natural Gas	0		TPM		43.6	LB/START-UP		BACT-PSD	10.9	LB/SHUTDOWN		Total start-up and shutdown emissions: 16.6 T/YR. (based on 1525 hours per year for start-up and shutdown, combined, for natural gas operation)
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural-Gas-Fired Combined-Cycle Turbine (P01) Start-Up and Shutdown (diesel)	Natural Gas	0		TPM10		43.6	LB/START-UP		BACT-PSD	10.9	LB/SHUTDOWN		Total start-up and shutdown emissions: 16.6 T/YR. (based on 1525 hours per year for start-up and shutdown, combined, for natural gas operation)
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural-Gas-Fired Combined-Cycle Turbine (P01) Start-Up and Shutdown (diesel)	Natural Gas	0		TPM2.5		43.6	LB/START-UP		BACT-PSD	10.9	LB/SHUTDOWN		Total start-up and shutdown emissions: 16.6 T/YR. (based on 1525 hours per year for start-up and shutdown, combined, for natural gas operation)
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural-Gas-Fired Combined-Cycle Turbine (P01) Start-Up and Shutdown (diesel)	Natural Gas	0		TPM		78.9	LB/START-UP		BACT-PSD	19.7	LB/SHUTDOWN		Total start-up and shutdown emissions: 2.1 T/YR. (based on 42 start-ups and 42 shutdowns per year using diesel)
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Six (6) Cogeneration Gas-Fired Turbines (Treated Gas Compressor Turbines)	Natural Gas	0		TPM10		78.9	LB/START-UP		BACT-PSD	19.7	LB/SHUTDOWN		Total start-up and shutdown emissions: 2.1 T/YR. (based on 42 start-ups and 42 shutdowns per year using diesel)
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Six (6) Cogeneration Gas-Fired Turbines (Treated Gas Compressor Turbines)	Natural Gas	0		TPM2.5		78.9	LB/START-UP		BACT-PSD	19.7	LB/SHUTDOWN		Total start-up and shutdown emissions: 2.1 T/YR. (based on 42 start-ups and 42 shutdowns per year using diesel)
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Six (6) Cogeneration Gas-Fired Turbines (Treated Gas Compressor Turbines)	Natural Gas	576	MMBtu/hr	TPM	Good Combustion Practices and burning clean fuels (NG)	0.0063	LB/MMBTU	3-HOUR AVERAGE	BACT-PSD	0			Potential particulate matter emissions of 15.92 tpy per turbine including supplemental firing duct burners for WHRU.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Six (6) Cogeneration Gas-Fired Turbines (CO2 Compressor Turbines))	Natural Gas	576	MMBtu/hr	TPM2.5	Good combustion practices and burning clean fuel (NG)	0.0063	LB/MMBTU	3-HOUR AVERAGE	BACT-PSD	0			Potential particulate matter emissions of 15.92 tpy per turbine including supplemental firing duct burners for WHRU.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Six (6) Cogeneration Gas-Fired Turbines (CO2 Compressor Turbines))	Natural Gas	576	MMBtu/hr	TPM10	Good combustion practices and clean burning fuel (NG)	0.0063	LB/MMBTU	3-HOUR AVERAGE	BACT-PSD	0			Potential particulate matter emissions of 15.92 tpy per turbine including supplemental firing duct burners for WHRU.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Six (6) Cogeneration Gas-Fired Turbines (CO2 Compressor Turbines))	Natural Gas	431	MMBtu/hr	TPM	Good Combustion Practices and burning clean fuels (NG)	0.0063	LB/MMBTU	3-HOUR AVERAGE	BACT-PSD	0			Potential particulate matter emissions of 11.99 tpy per turbine including supplemental firing duct burners for WHRU.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Cogeneration Units	Natural Gas	431	MMBtu/hr	TPM2.5	Good Combustion Practices and burning clean fuels (NG)	0.0063	LB/MMBTU	3-HOUR AVERAGE	BACT-PSD	0			Potential particulate matter emissions of 11.99 tpy per turbine including supplemental firing duct burners for WHRU.

Table C-5
RACT/BACT/LAER Clearing House Summary for PM Emissions from Combined Cycle Turbines

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Cogeneration Units	Natural Gas	431	MMBtu/hr	TPM10	Good Combustion Practices and burning clean fuels (NG)	0.0063	LB/MMBTU	3-HOUR AVERAGE	BACT-PSD	0			Potential particulate matter emissions of 11.99 tpy per turbine including supplemental firing duct burners for WHRU.
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	FGCTGHRSG	Natural Gas	2222	mm btu/h	TPM10	Use of pipeline quality natural gas or fuel gas and good combustion practices.	12.46	LB/H		BACT-PSD	0			
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	FGCTGHRSG	Natural Gas	2222	mm btu/h	TPM2.5	Use of pipeline quality natural gas or fuel gas and good combustion practices.	12.46	LB/H		BACT-PSD	0			

Table C-6

RACT/BACT/LAER Clearing House Summary for CO2e Emissions from Combined Cycle Turbines

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0382	DUKE ENERGY INDIANA, INC.-CAYUGA GENERATING STATION	IN	165-47430-00001	2/14/2025	Combustion Turbines (6A and 6B)	Natural Gas	4254	MMBtu/hr	CO2e	good combustion practices and efficient turbine design	850	LB/MW-HR	PER TWELVE (12) CONSECUTIVE MONTH PERIOD	BACT-PSD	0			CO2e emissions from the combined-cycle combustion turbines identified as 6A and 6B shall be limited through the use of good combustion practices and efficient turbine design.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/9/2023	Combined Cycle Turbine CTGB	natural gas	4200	MMBtu per hour	CO2e		826	LB/MW-HR (GROSS)	CORRECTED TO ISO CONDITIONS	BACT-PSD	2292966	TONS PER YEAR		CO2e emissions from the GE CTG shall be limited through the use of good combustion practices.
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/9/2023	Combined Cycle Turbine CTGA	Natural Gas	3800	MMBtu per hour	CO2e		726	LB/MW-HR (GROSS)	CORRECTED TO ISO CONDITIONS	BACT-PSD	204033S	TONS PER YEAR		CO2e emissions from the Siemens CTG shall be limited through the use of good combustion practices.
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Combined-Cycle Combustion Turbines	Natural Gas	3647	mmBtu/hour	CO2e	Inherently lower-polluting design, good combustion practices and operational energy efficiency	850	LB/MW-HR (GROSS)	12 CONSECUTIVE OPERATING MONTHS	BACT-PSD	0			Compliance is based on quantification procedures of 40 CFR 98 Subpart D except where testing for nitrous oxide (N2O) and methane (CH4) are higher than in 40 CFR 98 Subpart D, emission factors based on these tests shall be used.
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Combined Cycle Gas Turbine w/ Duct Burners and HRSG	Natural Gas	5081	mm BTU/h	CO2e	Use of gaseous fuel (pipeline-quality natural gas), thermally efficient turbines, and good combustion practices.	875	LB/MW-H	ANNUAL AVERAGE	BACT-PSD	0			
FL-0371	SHADY HILLS COMBINED CYCLE FACILITY	FL	1010524-003-AC (PSD-FL-444A)	6/7/2021	GE 7HA.02 Combustion Turbine and HRSG with Duct Firing	Natural Gas	3622.1	MMBtu/hour	CO2e	Low-emitting fuel	875	LB/MWH	12-MO ROLLING (PRIMARY BACT)	BACT-PSD	1000	LB/MWH	12-MO ROLLING (NSPS TTTT SECONDARY	
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural-Gas-Fired Combined-Cycle Turbine (P01)	Natural Gas	4671	MMBTU/H	CO2e	Efficient turbine design, only combust pipeline quality natural gas and diesel fuel oil, Oxidation Catalyst	850	LB CO2/MW-H	12-MO ROLLING AVG., NATURAL GAS	BACT-PSD	1180	LB CO2/MW-H	12-MO ROLLING AVG, DIESEL	Shall be equipped with oxygen monitors as part of a continuous emissions monitoring (CEM) system.

Table C-7
RACT/BACT/LAER Clearing House Summary for NOx Emissions from Heaters

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0371	WABASH VALLEY RESOURCES, LLC	IN	167-45208-00091	01/11/2024	Dewpoint Heater	Natural Gas	1.44	MMBtu/hr	NOx	Low NOx burners and good combustion practices	50	LB/MMSCF		BACT-PSD	0			
AL-0329	COLBERT COMBUSTION TURBINE PLANT	AL	701-0010	9/21/2021	Three Gas Heaters	Natural Gas	10	MMBtu/hr	NOx		0.011	LB/MMBTU	3 HOUR AVG	BACT-PSD	0			
TX-0908	NEWMAN POWER STATION	TX	N284, PSDTX1090M1, GHGPSDTX199	8/27/2021	LINE HEATER	NATURAL GAS	0		NOx	Low NOx burner, pipeline natural gas and goo combustion practices.	0.03	LB/MMBTU		BACT-PSD	0			
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Heater (P04)	Natural Gas	10	MMBTU/H	NOx	Low-NOx burners, only use pipeline quality natural gas, maintain and operate according to manufacturer's recommendations.	0.049	LB/MMBTU		BACT-PSD	0			The permittee shall tune P04 within 120 days of the initial operation of P04, and within 24-months of each preceding tune-up.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Heater (P05)	Natural Gas	10	MMBTU/H	NOx	Low-NOx burners, only combust pipeline quality natural gas, and operate and maintain the heater according to the manufacturer's recommendations.	0.049	LB/MMBTU		BACT-PSD	0			Tune the heater within 120 days of the initial operation, and within 24-months of each preceding tune-up.
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	Hot Oil Heaters 1 and 2	Natural Gas	0		NOx	LNB	0.06	LB/MMBTU		BACT-PSD	0			

Table C-8
RACT/BACT/LAER Clearing House Summary for CO Emissions from Heaters

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0382	DUKE ENERGY INDIANA, INC.-CAYUGA GENERATING STATION	IN	165-47430-00001	2/14/2025	Turbine Fuel Heaters	Natural Gas	10	MMBtu/hr	Carbon Monoxide	good combustion practices	0.08	LB/MMBTU	3-HOUR AVERAGE	BACT-PSD	0			CO emissions from each of the natural gas fired turbine fuel heaters shall be controlled by good combustion practices. The Permittee shall only combust pipeline quality natural gas in the natural gas fired turbine fuel heaters.
AL-0329	COLBERT COMBUSTION TURBINE PLANT	AL	701-0010	9/21/2021	Three Gas Heaters	Natural Gas	10	MMBtu/hr	CO		0.08	LB/MMBTU	3 HOUR AVG	BACT-PSD	0			
TX-0908	NEWMAN POWER STATION	TX	N284, PSDTX1090M1, GHGPSDTX199	8/27/2021	LINE HEATER	NATURAL GAS	0		CO	Good combustions practices and pipeline natural gas	50	PPMVD		BACT-PSD	0			
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Heater (P04)	Natural Gas	10	MMBTU/H	CO	Only combust pipeline quality natural gas and operate and maintain the process according to manufacturer's recommendations.	0.08	LB/MMBTU		BACT-PSD	0			Tune-up heater within 120 days of the initial operation, and within 24-months of each preceding tune-up.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Heater (P05)	Natural Gas	10	MMBTU/H	CO	Only combust pipeline quality natural gas and operate and maintain heater according to the manufacturer's recommendations.	0.08	LB/MMBTU		BACT-PSD	0			Tune the heater within 120 days of the initial operation, and within 24-months of each preceding tune-up.
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	Hot Oil Heaters 1 and 2	Natural Gas	0		CO	Good combustion practices and compliance with the applicable provisions of 40 CFR 63 Subpart DDDDD.	0.037	LB/MMBTU		BACT-PSD	0			

Table C-9
RACT/BACT/LAER Clearing House Summary for VOC Emissions from Heaters

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0382	DUKE ENERGY INDIANA, INC.-CAYUGA GENERATING STATION	IN	165-47430-00001	2/14/2025	Turbine Fuel Heaters	Natural Gas	10	MMBtu/hr	VOC	good combustion practices	0.01	LB/MMBTU	3-HOUR AVERAGE	BACT-PSD	0			VOC emissions from each of the natural gas fired turbine fuel heaters shall be controlled by good combustion practices. The Permittee shall only combust pipeline quality natural gas in the
TX-0908	NEWMAN POWER STATION	TX	N284, PSDTX1090M1, GHGPSDTX199	8/27/2021	LINE HEATER	NATURAL GAS	0		VOC	Good combustions practices and pipeline natural gas	0			BACT-PSD	0			
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Heater (P04)	Natural Gas	10	MMBTU/H	VOC	Only combust pipeline quality natural gas, operate and maintain process according to manufacturer's recommendations.	0.005	LB/MMBTU		BACT-PSD	0			Tune heater within 120 days of the initial operation, and within 24-months of each preceding tune-up.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Heater (P05)	Natural Gas	10	MMBTU/H	VOC	Only combust pipeline quality natural gas and operate and maintain according to manufacturer's recommendations.	0.005	LB/MMBTU		BACT-PSD	0			Tune heater within 120 days of the initial operation, and within 24-months of each preceding tune-up.

Table C-10

RACT/BACT/LAER Clearing House Summary for SO2 Emissions from Heaters

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process	Facility Description	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
TX-0908	NEWMAN POWER STATION	TX	N284, PSDTX1090M1, GHGPSDTX199	8/27/2021	LINE HEATER	a new natural gas simple cycle turbine along with ancillary equipment.	LINE HEATER	NATURAL GAS	0		SO2	Good combustions practices and pipeline natural gas. Fuel to contain less than 5 grains of sulfur per dscf	5	GR/DSCF		BACT-PSD	0			
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Three (3) Building Heat Medium Heaters	The Gas Treatment Plant (GTP) is part of one integrated liquefied natural gas (LNG) project to bring natural gas from Alaska's North Slope to international markets in the form of LNG, as well as for in-state deliveries in the form of natural gas. The GTP will take gas from the Prudhoe Bay Unit and the Point Thomson Unit and treat/process the gas, before it is sent 807 miles through a 42-inch diameter pipeline to a	Three (3) Building Heat Medium Heaters	Natural Gas	275	MMBtu/hr	SO2	Good Combustion Practices and Clean Fuel (NG)	96	PPMV SULFUR IN FUEL	PRIOR TO COMPLETING TREATMENT TRAINS	BACT-PSD	16	PPMV SULFUR IN FUEL	AFTER COMPLETING TREATMENT TRAINS	Potential SO2 emissions of 4.13 tpy and 0.69 tpy per heater @ 96ppmv and 16 ppmv total sulfur in fuel respectively.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Two (2) Buyback Gas Bath Heaters and Three (3) Operations Camp Heaters	The Gas Treatment Plant (GTP) is part of one integrated liquefied natural gas (LNG) project to bring natural gas from Alaska's North Slope to international markets in the form of LNG, as well as for in-state deliveries in the form of natural gas. The GTP will take gas from the Prudhoe Bay Unit and the Point Thomson Unit	Two (2) Buyback Gas Bath Heaters and Three (3) Operations Camp Heaters	Natural Gas	32	MMBtu/hr	SO2	Good Combustion Practices, Clean Fuels (NG), and Limited Operation of 500 hours per year per heater.	96	PPMV SULFUR IN FUEL	PRIOR TO COMPLETING TREATMENT TRAINS	BACT-PSD	16	PPMV SULFUR IN FUEL	AFTER COMPLETING TREATMENT TRAINS	EUs 34 and 35 have 500 hour per year limit per heater, EUs 36 -38 have no hour limit.

Table C-11
RACT/BACT/LAER Clearing House Summary for PM Emissions from Heaters

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0382	DUKE ENERGY INDIANA, INC.- CAYUGA GENERATING STATION	IN	165-47430-00001	2/14/2025	Turbine Fuel Heaters	Natural Gas	10	MMBtu/hr	Particulate matter, total (TPM)	good combustion practices and use of pipeline quality gas	0.0019	LB/MMBTU	3-HOUR AVERAGE	BACT-PSD	1/0/1900			
AL-0329	COLBERT COMBUSTION TURBINE PLANT	AL	701-0010	9/21/2021	Three Gas Heaters	Natural Gas	10	MMBtu/hr	FPM10		0.008	LB/MMBTU	3 HOUR AVG	BACT-PSD	0			
AL-0329	COLBERT COMBUSTION TURBINE PLANT	AL	701-0010	9/21/2021	Three Gas Heaters	Natural Gas	10	MMBtu/hr	FPM2.5		0.008	LB/MMBTU	3 HOUR AVG	BACT-PSD	0			
TX-0908	NEWMAN POWER STATION	TX	N284, PSDTX1090M1, GHGPSDTX199	8/27/2021	LINE HEATER	NATURAL GAS	0		FPM	Good combustions practices and pipeline natural gas to limit opacity to 5%	0			BACT-PSD	0			
TX-0908	NEWMAN POWER STATION	TX	N284, PSDTX1090M1, GHGPSDTX199	8/27/2021	LINE HEATER	NATURAL GAS	0		FPM2.5	Good combustions practices and pipeline natural gas to limit opacity to 5%	0			BACT-PSD	0			
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Heater (P05)	Natural Gas	10	MMBTU/H	TPM	Operate and maintain heaters according to manufacturer's recommendations. Only combust pipeline quality natural gas.	0.01	LB/MMBTU		BACT-PSD	0			The permittee shall tune heater within 120 days of the initial operation of heater, and within 24-months of each preceding tune-up
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Heater (P05)	Natural Gas	10	MMBTU/H	TPM10	Operate and maintain according to manufacturer's recommendations. Only combust pipeline quality natural gas.	0.01	LB/MMBTU		BACT-PSD	0			The permittee shall tune heater within 120 days of the initial operation of heater, and within 24-months of each preceding tune-up.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Heater (P05)	Natural Gas	10	MMBTU/H	TPM2.5	Operate and maintain heater according to manufacturer's recommendations. Only combust pipeline quality natural gas.	0.01	LB/MMBTU		BACT-PSD	0			The permittee shall tune heater within 120 days of the initial operation of heater, and within 24-months of each preceding tune-up.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Heater (P05)	Natural Gas	10	MMBTU/H	TPM	Operate and maintain heater according to the manufacturer's recommendations and only combust pipeline quality natural gas.	0.01	LB/MMBTU		BACT-PSD	0			The permittee shall tune heater within 120 days of the initial operation and within 24-months of each preceding tune-up.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Heater (P05)	Natural Gas	10	MMBTU/H	TPM10	Operate and maintain heater according to the manufacturer's recommendations and only combust pipeline quality natural gas.	0.01	LB/MMBTU		BACT-PSD	0			The permittee shall tune heater within 120 days of the initial operation and within 24-months of each preceding tune-up.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Heater (P05)	Natural Gas	10	MMBTU/H	TPM2.5	Operate and maintain heater according to the manufacturer's recommendations and only combust pipeline quality natural gas.	0.01	LB/MMBTU		BACT-PSD	0			The permittee shall tune heater within 120 days of the initial operation and within 24-months of each preceding tune-up.

Table C-12
RACT/BACT/LAER Clearing House Summary for CO2e Emissions from Heaters

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0382	DUKE ENERGY INDIANA, INC.- CAYUGA GENERATING STATION	IN	165-47430-00001	2/14/2025	Turbine Fuel Heaters	Natural Gas	10	MMBtu/hr	Carbon Dioxide Equivalent (CO2e)	good combustion practices and use of pipeline quality natural gas	10258	TONS	PER TWELVE (12) CONSECUTIVE MONTH PERIOD	BACT-PSD	0			
*IN-0371	WABASH VALLEY RESOURCES, LLC	IN	167-45208-00091	01/11/2024	Dewpoint Heater	Natural Gas	1.44	MMBtu/hr	CO2e	Good Combustion Practices	117	LB/MMBTU		BACT-PSD	0			
AL-0329	COLBERT COMBUSTION TURBINE PLANT	AL	701-0010	9/21/2021	Three Gas Heaters	Natural Gas	10	MMBtu/hr	CO2e		117.1	LB/MMBTU		BACT-PSD	0			
TX-0908	NEWMAN POWER STATION	TX	N284, PSDTX1090M1, GHGPSDTX199	8/27/2021	FGPREHEAT	NATURAL GAS	0		CO2e	Good combustions practices and properly maintaining the unit	0			BACT-PSD	0			
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Natural Gas-Fired Heater (P05)	Natural Gas	10	MMBTU/H	CO2e	Low-NOx burners, only combust pipeline quality natural gas, and operate and maintain heater according to manufacturer's recommendations.	0			BACT-PSD	0			Tune heater within 120 days of the initial operation of P04, and within 24 months of each preceding tune-up.

Table C-13
RACT/BACT/LAER Clearing House Summary for NOx Emissions from Generators

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6A - C/A Emergency Generator A	Diesel	2346	hp	NOx	Compliance with 40 CFR 60 Subpart IIII	18.41	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6B - C/A Emergency Generator B	Diesel	2346	hp	NOx	Compliance with 40 CFR 60 Subpart IIII	18.41	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6C - C/A Emergency Generator C	Diesel	2346	hp	NOx	Compliance with 40 CFR 60 Subpart IIII	18.41	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-10 - Utility Emergency Generator	Diesel	2012	hp	NOx	Compliance with 40 CFR 60 Subpart IIII	15.79	LB/HR		BACT-PSD	0.51	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-11 - Substation Emergency Generator	Diesel	70	hp	NOx	Compliance with 40 CFR 60 Subpart IIII	0.4	LB/HR		BACT-PSD	0.02	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-12 - VCM/CA/UT CCR Emergency Generator	Diesel	760	hp	NOx	Compliance with 40 CFR 60 Subpart IIII	5.97	LB/HR		BACT-PSD	0.19	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11A - VCM Emergency Generator A	Diesel	2346	hp	NOx	Compliance with 40 CFR 60 Subpart IIII	18.41	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11B - VCM Emergency Generator B	Diesel	2346	hp	NOx	Compliance with 40 CFR 60 Subpart IIII	18.41	LB/HR		BACT-PSD	0			
*IN-0371	WABASH VALLEY RESOURCES, LLC	IN	167-45208-00091	1/11/2024	Emergency generator	Diesel	619	hp	NOx	Good Combustion Practices and meeting NSPS Subpart IIII requirements.	2.29	G/HP-HR		BACT-PSD	0			
*IN-0371	WABASH VALLEY RESOURCES, LLC	IN	167-45208-00091	1/11/2024	Emergency generator	Diesel	1000	kw	NOx	Good Combustion Practices and meeting NSPS Subpart IIII requirements.	3.81	G/HP-HR		BACT-PSD	0			
*IN-0371	WABASH VALLEY RESOURCES, LLC	IN	167-45208-00091	1/11/2024	Emergency generator	Diesel	2000	kw	NOx	Good Combustion Practices and meeting NSPS Subpart IIII requirements.	3.81	G/HP-HR		BACT-PSD	0			
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Emergency generator	Diesel	3634	hp	NOx	Compliance with 40 CFR 60 Subpart IIII	38.24	LB/HR		BACT-PSD	0			
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Emergency generator	Diesel	2923	hp	NOx	Compliance with the requirements of 40 CFR 60 Subpart IIII	28.48	LB/HR		BACT-PSD	0			
*LA-0394	GEISMAR PLANT	LA	PSD-LA-647(M-9)	12/12/2023	Emergency generator	Diesel	670	hp	NOx	Use of good combustion practices and compliance with NSPS Subpart IIII	4.24	LB/HR	HOURLY MAXIMUM	BACT-PSD	0			
IN-0359	NUCOR STEEL	IN	107-45480-00038	03/30/2023	Emergency generator	Diesel	500	hp	NOx	certified engine	3	G/HP-HR		BACT-PSD	0			
*LA-0324	COMMONWEALTH LNG FACILITY	LA	PSD-LA-841	3/28/2023	Emergency generator	Diesel	4290	kW	NOx	Compliance with 40 CFR 60 Subpart IIII and operating engines per manufacturers' instructions and written procedures designed to maximize combustion efficiency and minimize fuel usage.	8.46	G/KW-HR		BACT-PSD	0			
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Emergency Generator	ULSD	2100	hp	NOx	Combustion Control (retarded timing and/or lean burn)	24.6	LB/HR		BACT-PSD	6.4	G/BKW	G/BKW	Certified Engine
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	One (1) Black Start Generator Engine	ULSD	186.6	gph	NOx	Good combustion practices, limit operation to 500 hours per year.	3.3	G/HP-HR	3-HOUR AVERAGE	BACT-PSD	0			EU 39 is an EPA Tier 4 Final Engine. 3.3 g/hp-hr limit includes 25% not to exceed factor of safety.
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	Emergency Generator Diesel Engines	Diesel Fuel	550	hp	NOx	Compliance with the limitations imposed by 40 CFR 63 Subpart IIII and operating the engine in accordance with the engine manufacturer's instructions and/or written procedures designed to maximize combustion efficiency and minimize fuel usage.	0			BACT-PSD	0			Engines are limited to 100 hours of non-emergency use.

Table C-13
RACT/BACT/LAER Clearing House Summary for NOx Emissions from Generators

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Three (3) Firewater Pump Engines and two (2) Emergency Diesel Generators	ULSD	19.4	gph	NOx	Good combustion practices, limit operation to 500 hours per year per engine	3.6	G/HP-HR	3-HOUR AVERAGE	BACT-PSD	0			EUs 40 - 44 are required to achieve EPA Tier 3 emission status. 3.6 g/hp-hr limit is 95% of the total for NMHC + NOx and includes a 25% not to exceed factor of safety.

Table C-14
RACT/BACT/LAER Clearing House Summary for CO Emissions from Generators

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0382	DUKE ENERGY INDIANA, INC.- CAYUGA GENERATING STATION	IN	165-47430-00001	2/14/2025	Emergency Generators	Diesel	2000	HP	CO	good combustion practices	2.61	G/HP-HR		BACT-PSD	0			CO emissions from each diesel-fired emergency generator shall be controlled by good combustion practices. The Permittee shall comply with the requirements of 40 CFR 60, Subpart IIII.
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6A - C/A Emergency Generator A	Diesel	2346	hp	CO	Compliance with 40 CFR 60 Subpart IIII.	13.5	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6B - C/A Emergency Generator B	Diesel	2346	hp	CO	Compliance with 40 CFR 60 Subpart IIII	13.5	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6C - C/A Emergency Generator C	Diesel	2346	hp	CO	Compliance with 40 CFR 60 Subpart IIII	13.5	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-10 - Utility Emergency Generator	Diesel	2012	hp	CO	Compliance with 40 CFR 60 Subpart IIII	11.57	LB/HR		BACT-PSD	0.38	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-11 - Substation Emergency Generator	Diesel	70	hp	CO	Compliance with 40 CFR 60 Subpart IIII	0.58	LB/HR		BACT-PSD	0.03	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-12 - VCM/CA/UT CCR Emergency Generator	Diesel	760	hp	CO	Compliance with 40 CFR 60 Subpart IIII	4.37	LB/HR		BACT-PSD	0.14	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11A - VCM Emergency Generator A	Diesel	2346	hp	CO	Compliance with 40 CFR 60 Subpart IIII	13.5	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11B - VCM Emergency Generator B	Diesel	2346	hp	CO	Compliance with 40 CFR 60 Subpart IIII	13.5	LB/HR		BACT-PSD	0			
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 5 (EQUI 43)	Ultra low sulfur diesel	772	hp	CO	Good combustion practices	2.6	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	6.06	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 6 (EQUI 43)	Ultra low sulfur diesel	772	hp	CO	Emergency classification, hourly restriction, good combustion practices, and NSPS compliance	2.6	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	6.06	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 2 (EQUI 26)	Ultra low sulfur diesel	1049	hp	CO	Emergency classification, hourly restriction, good combustion practices, and NSPS compliance	2.6	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	6.06	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 3 (EQUI 27)	Ultra low sulfur diesel	1049	hp	CO	Emergency classification, hourly restriction, good combustion practices, and NSPS compliance	2.6	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	4.44	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 4 (EQUI 28)	Ultra low sulfur diesel	1049	hp	CO	Emergency classification, hourly restriction, good combustion practices, and NSPS compliance	2.6	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	4.44	LB/HR	3 HOUR AVERAGE	
MI-0459	LANSING BOARD OF WATER AND LIGHT--DELTA ENERGY PARK	MI	71-24	6/27/2024	EUEMGEN	Diesel	762	bhp	CO	Emergency classification, hourly restriction, good combustion practices, and NSPS compliance	3.5	G/KW-H	HOURLY	BACT-PSD	0			
*IL-0134	CRONUS CHEMICALS, LLC	IL	19110020	12/21/2023	Emergency generator engine	diesel fuel	3985	hp	CO		3.5	G/KW-HR	3-HR AVG	BACT-PSD	75	HR/YR		
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Emergency generator	Diesel	3634	hp	CO	Compliance with 40 CFR 60 Subpart IIII	20.91	LB/HR		BACT-PSD	0			
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Emergency generator	Diesel	2923	hp	CO	Compliance with the requirements of 40 CFR 60 Subpart IIII	2.9	LB/HR		BACT-PSD	0			
*LA-0394	GEISMAR PLANT	LA	PSD-LA-647(M-9)	12/12/2023	Emergency generator	Diesel	670.5	hp	CO	Use of good combustion practices, compliance with NSPS Subpart IIII	3.81	LB/HR	HOURLY MAXIMUM	BACT-PSD	0			
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Emergency generator	ULSD	2012	hp	CO		2.6	G/HP-HR		BACT-PSD	0			
IN-0359	NUCOR STEEL	IN	107-45480-00038	3/30/2023	Emergency Generator (CC-GEN1)	diesel	3000	hp	CO	oxidation catalyst and certified engine	2.61	G/HP-HR		BACT-PSD	0			
IN-0359	NUCOR STEEL	IN	107-45480-00038	03/30/2023	Emergency generator	Diesel	500	hp	CO	oxidation catalyst and certified engine	2.61	G/HP-HR		BACT-PSD	0			
*LA-0324	COMMONWEALTH LNG FACILITY	LA	PSD-LA-841	3/28/2023	Emergency generator	Diesel	4290	kW	CO	Compliance with 40 CFR 60 Subpart IIII and operating engines per manufacturers' instructions and written procedures designed to maximize combustion efficiency and	1.21	G/KW-HR		BACT-PSD	0			
TX-0939	ORANGE COUNTY ADVANCED POWER STATION	TX	166032 PSDTX1598 GHGPSDTX210	3/13/2023	EUEMGD	DIESEL	18.7	MMBTU/HR	CO	GOOD COMBUSTION PRACTICES, LIMITED TO 100 HR/YR	0.006	LB/HP HR		BACT-PSD	0			
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	Emergency Engines	Diesel	4474.2	KW	CO	Good combustion practices and will be NSPS compliant.	3.5	G/KW-H	HOURLY	BACT-PSD	0			Catalytic oxidation was the control considered technically feasible. However, it was not considered economically feasible.
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Emergency Diesel Generator Engine	ULSD	1250	kW	CO		3.5	GRAMS	KILOWATT-HOUR	BACT-PSD	0			Emission Limit 1 is consistent with the NSPS, 40 CFR 60 Subpart IIII.
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Emergency Generator	ULSD	2937	hp	CO	Compliance with 40 CFR 60 Subpart IIII, good combustion practices, and the use of ultra-low sulfur diesel fuel.	2.6	G/HP-HR		BACT-PSD	0			BACT limit is 2.6 g/BHP-hr. Compliance with 40 CFR 60 Subpart IIII (Tier 2 non-road engines) standards, good combustion practices, and the use of ultra-low sulfur diesel fuel.

Table C-14
RACT/BACT/LAER Clearing House Summary for CO Emissions from Generators

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Emergency Generator	ULSD	2100	hp	CO	Good Combustion Practices w/ OxCat. Applicant did not justify why an oxcat is infeasible for an emergency engine	1.94	LB/HR		BACT-PSD	0.41	G/BKW	NMHC+NOX	Certified Engine
FL-0371	SHADY HILLS COMBINED CYCLE FACILITY	FL	1010524-003-AC (PSD-FL-444A)	6/7/2021	FGPREHEAT	ULSD	14.82	MMBtu/hour	CO		3.5	G/KW-HOUR		BACT-PSD	0			
TX-0915	UNIT 5	TX	160538, PSDTX1528, GHGPSDTX204	3/17/2021	DIESEL GENERATOR	DIESEL	0		CO	LIMITED 500 HR/YR OPERATION	2.61	G/HPHR		BACT-PSD	0			
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	EUEMGD--emergency engine	diesel fuel	4474.2	KW	CO	Good combustion practices and will be NSPS compliant.	3.5	G/KW-H	HOURLY	BACT-PSD	0			Catalytic oxidation was the control considered technically feasible. However, it was not considered economically feasible.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Emergency Diesel Generator (P07)	Diesel	1490	HP	CO	Operation limited to 500 hours/year, and operate and maintain generator according to the manufacturer's recommendations.	2.6	G/HP-H		BACT-PSD	0			
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	One (1) Black Start Generator Engine	ULSD	186.6	gph	CO	Oxidation Catalyst, Good Combustion Practices, and 500 hour limit per year.	3.3	G/HP-HR	3-HOUR AVERAGE	BACT-PSD	0			EU 39 is an EPA Tier 4 Final Engine. 3.3 g/hp-hr limit includes 25% not to exceed factor of safety.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Three (3) Firewater Pump Engines and two (2) Emergency Diesel Generators	ULSD	19.4	gph	CO	Good combustion practices, limit operation to 500 hours per year per engine	3.3	G/HP-HR	3-HOUR AVERAGE	BACT-PSD	0			EUs 40 - 44 are required to achieve EPA Tier 3 emission status. 3.3 g/hp-hr limit includes a 25% not to exceed factor of safety.
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	Emergency Generator Diesel Engines	Diesel Fuel	550	hp	CO	Compliance with the limitations imposed by 40 CFR 63 Subpart IIII and operating the engine in accordance with the engine manufacturer's instructions and/or written procedures designed to maximize combustion efficiency and minimize fuel usage.	0			BACT-PSD	0			Engines are limited to 100 hours of non-emergency use.

Table C-15
RACT/BACT/LAER Clearing House Summary for VOC Emissions from Generators

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0382	DUKE ENERGY INDIANA, INC.-CAYUGA GENERATING STATION	IN	165-47430-00001	2/14/2025	Emergency Generators	Diesel	2000	HP	VOC		6.4	G/KW-HR	3-HOUR AVERAGE	BACT-PSD	0			The Permittee shall comply with the requirements of 40 CFR 60, Subpart IIII.
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6A - C/A Emergency Generator A	Diesel	2346	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	6.27	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6B - C/A Emergency Generator B	Diesel	2346	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	6.27	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6C - C/A Emergency Generator C	Diesel	2346	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	6.27	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-10 - Utility Emergency Generator	Diesel	2012	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	5.38	LB/HR		BACT-PSD	0.17	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-11 - Substation Emergency Generator	Diesel	70	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	0.14	LB/HR		BACT-PSD	0.01	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-12 - VCM/CA/UT CCR Emergency Generator	Diesel	760	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	2.03	LB/HR		BACT-PSD	0.07	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11A - VCM Emergency Generator A	Diesel	2346	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	6.27	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11B - VCM Emergency Generator B	Diesel	2346	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	6.27	LB/HR		BACT-PSD	0			
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 5 (EQUI 43)	Ultra low sulfur diesel	772	hp	VOC	Emergency classification, hourly restriction, good combustion practices, and NSPS compliance	4.8	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	11.03	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 6 (EQUI 43)	Ultra low sulfur diesel	772	hp	VOC	Emergency classification, hourly restriction, good combustion practices, and NSPS compliance	4.8	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	11.03	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 2 (EQUI 26)	Ultra low sulfur diesel	1049	hp	VOC	Emergency classification, hourly restriction, good combustion practices, and NSPS compliance	4.8	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	11.03	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 3 (EQUI 27)	Ultra low sulfur diesel	1049	hp	VOC	Emergency classification, hourly restriction, good combustion practices, and NSPS compliance	4.8	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	8.12	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 4 (EQUI 28)	Ultra low sulfur diesel	1049	hp	VOC	Emergency classification, hourly restriction, good combustion practices, and NSPS compliance	4.8	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	8.12	LB/HR	3 HOUR AVERAGE	
MI-0459	LANSING BOARD OF WATER AND LIGHT--DELTA ENERGY PARK	MI	71-24	6/27/2024	EUEMGEN	Diesel	762	bhp	VOC	Good combustion practices	6.4	G/KW-H	HOURLY	BACT-PSD	0			Emission limit is expressed as NOx + NMHC
*IL-0134	CRONUS CHEMICALS, LLC	IL	19110020	12/21/2023	Emergency generator engine	Diesel	3985	hp	VOC		6.4	G/KW-HR	3-HR AVG	BACT-PSD	75	HR/YR		
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Emergency generator	Diesel	3634	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	2.29	LB/HR		BACT-PSD	0			
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Emergency generator	Diesel	2923	hp	VOC	Compliance with the requirements of 40 CFR 60 Subpart IIII	2.06	LB/HR		BACT-PSD	0			
*LA-0394	GEISMAR PLANT	LA	PSD-LA-647(M-9)	12/12/2023	Emergency generator	Diesel	670	hp	VOC	Use of good combustion practices and compliance with NSPS Subpart IIII	0.11	LB/HR	HOURLY MAXIMUM	BACT-PSD	0			
IN-0359	NUCOR STEEL	IN	107-45480-00038	03/30/2023	Emergency generator	Diesel	3000	hp	VOC	certified engine	0.32	G/HP-HR		BACT-PSD	0			
IN-0359	NUCOR STEEL	IN	107-45480-00038	03/30/2023	Emergency generator	Diesel	500	hp	VOC	certified engine	0.15	G/HP-H		BACT-PSD	0			
*LA-0324	COMMONWEALTH LNG FACILITY	LA	PSD-LA-841	3/28/2023	Emergency generator	Diesel	4290	kW	VOC	Compliance with 40 CFR 60 Subpart IIII and operating engines per manufacturers' instructions and written procedures designed to maximize	0.322	G/KW-HR		BACT-PSD	0			
TX-0939	ORANGE COUNTY ADVANCED POWER STATION	TX	166032 PSDTX1598 GHGPSDTX210	3/13/2023	EMERGENCY GENERATOR	DIESEL	18.7	MMBTU/HR	VOC	GOOD COMBUSTION PRACTICES, LIMITED TO 100 HR/YR	0.001	LB/HP HR		BACT-PSD	0			
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Emergency Diesel Generator Engine	ULSD	2937	hp	VOC	Compliance with 40 CFR 60 Subpart IIII standards, good combustion practices, and the use of ultra-low sulfur diesel fuel.	4.8	G/HP-HR		BACT-PSD	0			BACT limit is 4.8 g/BHP-hr (NOx + NMHC). Compliance with 40 CFR 60 Subpart IIII (Tier 2 non-road engines) standards, good combustion practices, and the use of ultra-low sulfur diesel fuel.
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Emergency Generator	ULSD	2100	hp	VOC	Good Combustion Practices w/ OxCat. Applicant did not justify why an oxcat is infeasible for an emergency engine	0.46	LB/HR		BACT-PSD	6.4	G/BKW	NMHC+NOX	Certified Engine
TX-0915	UNIT 5	TX	160538, PSDTX1528, GHGPSDTX204	3/17/2021	DIESEL GENERATOR	DIESEL	0		VOC	LIMITED 500 HR/YR OPERATION	0.5	G/HPHR		BACT-PSD	0			

Table C-15
RACT/BACT/LAER Clearing House Summary for VOC Emissions from Generators

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Emergency Diesel Generator (P07)	Diesel	1490	HP	VOC	Operation limited to 500 hours/year and operate and maintain generator according to the manufacturer's recommendations	0.32	G/HP-H		BACT-PSD	0			
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Diesel Fuel Generator Tank (T02)		0		VOC		0			BACT-PSD	0			Use of fixed roof tanks, perform submerged-filling or bottom loading of each fixed roof storage tank; and storage tanks may only store diesel fuel.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	One (1) Black Start Generator Engine	ULSD	186.6	gph	VOC	Oxidation Catalyst, Good combustion practices, and limit operation to 500 hours per year.	0.18	G/HP-HR	3-HOUR AVERAGE	BACT-PSD	0			EU 39 is required to achieve EPA Tier 4 emission status. The 0.18 g/hp-hr limit includes a 25% not to exceed factor of safety.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	FGPREHEAT	ULSD	19.4	gph	VOC	Good combustion practices, ULSD, and limit operation to 500 hours per year.	0.19	G/HP-HR	3-HOUR AVERAGE	BACT-PSD	0			EUs 40 - 44 are required to achieve EPA Tier 3 emission status. The 0.19 g/hp-hr limit includes a 25% not to exceed factor of safety.
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	Emergency Generator Diesel Engines	Diesel Fuel	550	hp	VOC	Compliance with the limitations imposed by 40 CFR 63 Subpart IIII and operating the engine in accordance with the engine manufacturer's instructions and/or	0			BACT-PSD	0			Engines are limited to 100 hours of non-emergency use.

Table C-16
RACT/BACT/LAER Clearing House Summary for SO2 Emissions from Generators

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Emergency generator	ULSD	2012	hp	SO2		0.0016	LB PER MMBTU		BACT-PSD	0			The sulfur content of diesel fuel burned in the emergency generator shall not exceed 0.0015%. Emergency generator shall use good combustion design.
IN-0359	NUCOR STEEL	IN	107-45480-00038	3/30/2023	Emergency Generator (CC-GEN1)	diesel	3000	hp	SO2	ultra-low sulfur diesel fuel (0.0015%S)	0			BACT-PSD	0			
IN-0359	NUCOR STEEL	IN	107-45480-00038	03/30/2023	Emergency Generator (CC-GEN2)	Diesel	500	hp	SO2	ultra-low sulfur diesel fuel (0.0015%S)	0			BACT-PSD	0			
*LA-0324	COMMONWEALTH LNG FACILITY	LA	PSD-LA-841	3/28/2023	Generator Engines (EQT0016)	Diesel	4290	kW	SO2	Compliance with 40 CFR 60 Subpart IIII and operating engines per manufacturers' instructions and written procedures designed to maximize combustion efficiency and minimize fuel usage.	0.0015	LB/MM BTU		BACT-PSD	0			
AR-0177	NUCOR STEEL ARKANSAS	AR		11/21/2022	SN-230 Galvanizing Line No, 2 Emergency Generator	Diesel	3634	hp	SO2	Fuel Specification	15	PPM FUEL		BACT-PSD	0			
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Emergency Engines	ULSD	1250	kW	SO2	Use of ultra-low sulfur diesel, with a sulfur content < 15 ppm sulfur.	0			BACT-PSD	0			Use of ultra-low sulfur diesel represents BACT.
FL-0371	SHADY HILLS COMBINED CYCLE FACILITY	FL	1010524-003-AC (PSD-FL-444A)	6/7/2021	1,500 kW Emergency Diesel Generator	ULSD	14.82	MMBtu/hour	SO2		15	PPM S IN FUEL		BACT-PSD	0			Fueled by ULSD only
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	One (1) Black Start Generator Engine	ULSD	186.6	gph	SO2	Good combustion practices, ULSD, and limit operation to 500 hours per year.	15	PPMW SULFUR IN FUEL		BACT-PSD	0			EU 39 is required to burn ULSD.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Three (3) Firewater Pump Engines and two (2) Emergency Diesel Generators	ULSD	19.4	gph	SO2	Good combustion practices, ULSD, and limit operation to 500 hours per year.	15	PPMW SULFUR IN FUEL		BACT-PSD	0			EUs 40 - 44 are required to burn ULSD.
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	Emergency Generator Diesel Engines	Diesel Fuel	550	hp	SO2	Compliance with the limitations imposed by 40 CFR 63 Subpart IIII and operating the engine in accordance with the engine manufacturer's instructions and/or written procedures designed to maximize combustion efficiency and minimize fuel usage.	0			BACT-PSD	0			Engines are limited to 100 hours of non-emergency use.

Table C-17
RACT/BACT/LAER Clearing House Summary for PM Emissions from Generators

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0382	DUKE ENERGY INDIANA, INC.-CAYUGA GENERATING STATION	IN	165-47430-00001	2/14/2025	Emergency Generators	Diesel	2000	hp	TPM	good combustion practices	0.15	G/HP-HR	3-HOUR AVERAGE	BACT-PSD	0			PM emissions from each emergency generator shall be controlled through the use of good combustion practices. The Permittee shall comply with the requirements of 40 CFR 60, Subpart IIII.
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6A - C/A Emergency Generator A	Diesel	2346	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.77	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6A - C/A Emergency Generator A	Diesel	2346	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.76	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6B - C/A Emergency Generator B	Diesel	2346	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.77	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6B - C/A Emergency Generator B	Diesel	2346	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.76	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6C - C/A Emergency Generator C	Diesel	2346	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.77	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6C - C/A Emergency Generator C	Diesel	2346	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.76	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-10 - Utility Emergency Generator	Diesel	2012	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.66	LB/HR		BACT-PSD	0.02	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-10 - Utility Emergency Generator	Diesel	2012	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.66	LB/HR		BACT-PSD	0.02	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-11 - Substation Emergency Generator	Diesel	70	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.05	LB/HR		BACT-PSD	0.01	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-11 - Substation Emergency Generator	Diesel	70	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.05	LB/HR		BACT-PSD	0.01	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-12 - VCM/CA/UT CCR Emergency Generator	Diesel	760	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.25	LB/HR		BACT-PSD	0.01	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-12 - VCM/CA/UT CCR Emergency Generator	Diesel	760	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.25	LB/HR		BACT-PSD	0.01	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11A - VCM Emergency Generator A	Diesel	2346	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.77	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11A - VCM Emergency Generator A	Diesel	2346	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.76	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11B - VCM Emergency Generator B	Diesel	2346	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.77	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11B - VCM Emergency Generator B	Diesel	2346	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.76	LB/HR		BACT-PSD	0			
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 2 (EQUI 26)	Ultra low sulfur diesel	1049	hp	TPM10	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.16	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.39	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 2 (EQUI 26)	Ultra low sulfur diesel	1049	hp	TPM2.5	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.16	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.39	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 2 (EQUI 26)	Ultra low sulfur diesel	1049	hp	FPM	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.15	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.35	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 3 (EQUI 27)	Ultra low sulfur diesel	1049	hp	TPM10	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.16	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.39	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 3 (EQUI 27)	Ultra low sulfur diesel	1049	hp	TPM2.5	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.16	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.39	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 3 (EQUI 27)	Ultra low sulfur diesel	1049	hp	FPM	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.15	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.35	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 4 (EQUI 28)	Ultra low sulfur diesel	1049	hp	TPM10	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.16	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.39	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 4 (EQUI 28)	Ultra low sulfur diesel	1049	hp	TPM2.5	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.16	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.39	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 4 (EQUI 28)	Ultra low sulfur diesel	1049	hp	FPM	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.15	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.35	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 5 (EQUI 43)	Ultra low sulfur diesel	772	hp	TPM10	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.16	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.29	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 5 (EQUI 43)	Ultra low sulfur diesel	772	hp	TPM2.5	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.16	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.29	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 5 (EQUI 43)	Ultra low sulfur diesel	772	hp	FPM	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.15	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.25	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 6 (EQUI 43)	Ultra low sulfur diesel	772	hp	TPM10	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.16	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.29	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 6 (EQUI 43)	Ultra low sulfur diesel	772	hp	TPM2.5	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.16	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.29	LB/HR	3 HOUR AVERAGE	
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 6 (EQUI 43)	Ultra low sulfur diesel	772	hp	FPM	Emergency classification, hourly restriction, ULSD, and NSPS compliance	0.15	G/HP-HR	24 HOUR ROLLING AVERAGE	BACT-PSD	0.25	LB/HR	3 HOUR AVERAGE	
MI-0459	LANSING BOARD OF WATER AND LIGHT--DELTA ENERGY PARK	MI	71-24	6/27/2024	EUEMGEN	Diesel	762	bhp	TPM10	Good combustion practices; use of ULSD.	0.3	LB/H	HOURLY	BACT-PSD				

Table C-17
RACT/BACT/LAER Clearing House Summary for PM Emissions from Generators

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
MI-0459	LANSING BOARD OF WATER AND LIGHT--DELTA ENERGY PARK	MI	71-24	6/27/2024	EUEMGEN	Diesel	762	bhp	TPM2.5	Good combustion practices, use of ULSD	0.3	LB/H	HOURLY	BACT-PSD				
MI-0459	LANSING BOARD OF WATER AND LIGHT--DELTA ENERGY PARK	MI	71-24	6/27/2024	EUEMGEN	Diesel	762	bhp	FPM	Good combustion practices, use of ULSD	0.2	G/KW-H	HOURLY	BACT-PSD				
*IL-0134	CRONUS CHEMICALS, LLC	IL	19110020	12/21/2023	Emergency generator engine	Diesel	3985	hp	TPM2.5		0.2	G/KW-HR	3-HR AVG	BACT-PSD	75	HR/YR		
*IL-0134	CRONUS CHEMICALS, LLC	IL	19110020	12/21/2023	Emergency generator engine	Diesel	3985	hp	TPM10		0.2	G/KW-HR	3-HR AVG	BACT-PSD	75	HR/YR		
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Emergency generator	Diesel	3634	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	1.19	LB/HR		BACT-PSD	0			
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Emergency generator	Diesel	3634	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	1.19	LB/HR		BACT-PSD	0			
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Emergency generator	Diesel	2923	hp	TPM2.5	Compliance with the requirements of 40 CFR 60 Subpart IIII	0.84	LB/HR		BACT-PSD	0			
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Emergency generator	Diesel	2923	hp	TPM10	Compliance with the requirements of 40 CFR 60 Subpart IIII	0.84	LB/HR		BACT-PSD	0			
*LA-0394	GEISMAR PLANT	LA	PSD-LA-647(M-9)	12/12/2023	Emergency generator	Diesel	670	hp	TPM2.5	Use of good combustion practices and compliance with NSPS Subpart IIII	0.22	LB/HR	HOURLY MAXIMUM	BACT-PSD	0			
*LA-0394	GEISMAR PLANT	LA	PSD-LA-647(M-9)	12/12/2023	Emergency generator	Diesel	670	hp	TPM10	Use of good combustion practices and compliance with NSPS Subpart IIII	0.22	LB/HR	HOURLY MAXIMUM	BACT-PSD	0			
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Emergency generator	ULSD	2012	hp	TPM		0.15	G PER HP-HR		BACT-PSD	0			
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Emergency generator	ULSD	2012	hp	TPM10		0.15	G PER HP-HR		BACT-PSD	0			
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Emergency generator	ULSD	2012	hp	TPM2.5		0.15	G/HP-HR		BACT-PSD	0			
IN-0359	NUCOR STEEL	IN	107-45480-00038	3/30/2023	Emergency generator	diesel	3000	hp	TPM10	certified engine	0.15	G/HP-HR		BACT-PSD	0			
IN-0359	NUCOR STEEL	IN	107-45480-00038	3/30/2023	Emergency generator	diesel	3000	hp	TPM2.5	certified engine	0.15	G/HP-HR		BACT-PSD	0			
IN-0359	NUCOR STEEL	IN	107-45480-00038	3/30/2023	Emergency generator	diesel	500	hp	TPM10	certified engine	0.15	G/HP-HR		BACT-PSD	0			
IN-0359	NUCOR STEEL	IN	107-45480-00038	3/30/2023	Emergency generator	diesel	500	hp	TPM2.5	certified engine	0.15	G/HP-HR		BACT-PSD	0			
*LA-0324	COMMONWEALTH LNG FACILITY	LA	PSD-LA-841	3/28/2023	Emergency generator	diesel	4290	kW	FPM10	Compliance with 40 CFR 60 Subpart IIII and operating engines per manufacturers' instructions and written procedures designed to maximize combustion efficiency and minimize	0.067	G/KW-HR		BACT-PSD	0			
*LA-0324	COMMONWEALTH LNG FACILITY	LA	PSD-LA-841	3/28/2023	Emergency generator	diesel	4290	kW	FPM2.5	Compliance with 40 CFR 60 Subpart IIII and operating engines per manufacturers' instructions and written procedures designed to maximize combustion efficiency and minimize	0.067	G/KW-HR		BACT-PSD	0			
TX-0939	ORANGE COUNTY ADVANCED POWER STATION	TX	166032 PSDTX1598 GHGPSDTX210	3/13/2023	EMERGENCY GENERATOR	DIESEL	18.7	MMBTU/HR	FPM	GOOD COMBUSTION PRACTICES, LIMITED TO 100 HR/YR	0.0003	LB/HP HR		BACT-PSD	0			
TX-0939	ORANGE COUNTY ADVANCED POWER STATION	TX	166032 PSDTX1598 GHGPSDTX210	3/13/2023	EMERGENCY GENERATOR	DIESEL	18.7	MMBTU/HR	FPM10	GOOD COMBUSTION PRACTICES, LIMITED TO 100 HR/YR	0.0003	LB/HP HR		BACT-PSD	0			
TX-0939	ORANGE COUNTY ADVANCED POWER STATION	TX	166032 PSDTX1598 GHGPSDTX210	3/13/2023	EMERGENCY GENERATOR	DIESEL	18.7	MMBTU/HR	FPM2.5	GOOD COMBUSTION PRACTICES, LIMITED TO 100 HR/YR	0.003	LB/HP HR		BACT-PSD	0			
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUEMGD	ULSD	4474.2	KW	TPM10	Good combustion practices, burn ultra-low diesel fuel, and be NSPS compliant.	1	LB/H	HOURLY	BACT-PSD	0			The control considered technically feasible was burning ultra-low sulfur diesel fuel.
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUEMGD	ULSD	4474.2	KW	TPM2.5	Ultra-low sulfur diesel fuel	1	LB/H	HOURLY	BACT-PSD	0			The control considered technically feasible was burning ultra-low sulfur diesel fuel.
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Emergency Engines	ULSD	1250	kW	TPM		0.2	GRAMS	KILOWATT-HOUR	BACT-PSD	0			Emission Limit 1 includes PM10 and PM2.5, i.e., PM/PM10/PM2.5.
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Emergency Diesel Generator Engine	ULSD	2937	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII, good combustion practices, and use of ultra-low sulfur diesel fuel.	0.15	G/HP-HR		BACT-PSD	0			BACT limit is 0.15 g/BHP-hr. Compliance with 40 CFR 60 Subpart IIII (Tier 2 non-road engines) standards, good combustion practices, and the use of ultra-low sulfur diesel fuel.
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Emergency Diesel Generator Engine	ULSD	2937	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII (Tier 2 non-road engines) standards, good combustion practices, and the use of ultra-low sulfur diesel fuel.	0.15	G/HP-HR		BACT-PSD	0			BACT limit is 0.15 g/BHP-hr. Compliance with 40 CFR 60 Subpart IIII (Tier 2 non-road engines) standards, good combustion practices, and the use of ultra-low sulfur diesel fuel.

Table C-17
RACT/BACT/LAER Clearing House Summary for PM Emissions from Generators

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Emergency Generator	ULSD	2100	hp	TPM	Clean Fuels and Good Combustion Practices.	0.23	LB/HR		BACT-PSD	0			Certified Engine. Assumed to be PM2.5 or less including condensables.
FL-0371	SHADY HILLS COMBINED CYCLE FACILITY	FL	1010524-003-AC (PSD-FL-444A)	6/7/2021	1,500 kW Emergency Diesel Generator	ULSD	14.82	MMBtu/hour	TPM		0.2	G/KW-HOUR		BACT-PSD	0			
TX-0915	UNIT 5	TX	160538, PSDTX1528, GHGPSDTX204	3/17/2021	DIESEL GENERATOR	DIESEL	0		FPM	LIMITED 500 HR/YR OPERATION	0.022	G/HPHR		BACT-PSD	0			
TX-0915	UNIT 5	TX	160538, PSDTX1528, GHGPSDTX204	3/17/2021	DIESEL GENERATOR	DIESEL	0		FPM10	LIMITED 500 HR/YR OPERATION	0.022	G/HPHR		BACT-PSD	0			
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	EUEMGD--emergency engine	ULSD	4474.2	KW	TPM10	Good combustion practices, burn ultra-low diesel fuel and be NSPS compliant.	1	LB/H	HOURLY	BACT-PSD	0			The control considered technically feasible was burning ultra-low sulfur diesel fuel. The underlying applicable requirements for the emission limit are state rules R336.1205(1)(a)&(b), R336.1331(1)(c). Also NSPS 40 CFR 60.4205(c).
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	EUEMGD--emergency engine	ULSD	4474.2	KW	TPM2.5	ultra-low sulfur diesel fuel	1	LB/H	HOURLY	BACT-PSD	0			The control considered technically feasible was burning ultra-low sulfur diesel fuel.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Emergency Diesel Generator (P07)	Diesel	1490	HP	TPM	Limited to operate 500 hours/year, sulfur content of the diesel fuel oil fired may not exceed 15 ppm, and operate and maintain according to the manufacturer's recommendations.	0.15	G/HP-H		BACT-PSD	0			
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Emergency Diesel Generator (P07)	Diesel	1490	HP	TPM10	Limited to operate 500 hours/year, sulfur content of the diesel fuel oil fired may not exceed 15 ppm, and operate and maintain according to the manufacturer's recommendations.	0.15	G/HP-H		BACT-PSD	0			
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Emergency Diesel Generator (P07)	Diesel	1490	HP	TPM2.5	Limited to operate 500 hours/year, sulfur content of the diesel fuel oil fired may not exceed 15 ppm, and operate and maintain according to the manufacturer's recommendations.	0.15	G/HP-H		BACT-PSD	0			
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	One (1) Black Start Generator Engine	ULSD	186.6	gph	TPM	Good combustion practices, ULSD, and limit operation to 500 hours per year.	0.045	G/HP-HR	3-HOUR AVERAGE	BACT-PSD	0			EU 39 is required to achieve EPA Tier 4 emission status. The 0.045 g/hp-hr limit includes a 50% not to exceed factor of safety.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	One (1) Black Start Generator Engine	ULSD	186.6	gph	TPM10	Good combustion practices, ULSD, and limit operation to 500 hours per year.	0.045	G/HP-HR	3-HOUR AVERAGE	BACT-PSD	0			EU 39 is required to achieve EPA Tier 4 emission status. The 0.045 g/hp-hr limit includes a 50% not to exceed factor of safety
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	One (1) Black Start Generator Engine	ULSD	186.6	gph	TPM2.5	Good combustion practices, ULSD, and limit operation to 500 hours per year.	0.045	G/HP-HR	3-HOUR AVERAGE	BACT-PSD	0			EU 39 is required to achieve EPA Tier 4 emission status. The 0.045 g/hp-hr limit includes a 50% not to exceed factor of safety
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Three (3) Firewater Pump Engines and two (2) Emergency Diesel Generators	ULSD	19.4	gph	TPM	Good combustion practices, ULSD, and limit operation to 500 hours per year per engine	0.19	G/HP-HR	3-HOUR AVERAGE	BACT-PSD	0			EUs 40 - 44 are required to achieve EPA Tier 3 emission status. The 0.19 g/hp-hr limit includes a 25% not to exceed factor of safety.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Three (3) Firewater Pump Engines and two (2) Emergency Diesel Generators	ULSD	19.4	gph	TPM10	Good combustion practices, ULSD, and limit operation to 500 hours per year per engine	0.19	G/HP-HR	3-HOUR AVERAGE	BACT-PSD	0			EUs 40 - 44 are required to achieve EPA Tier 3 emission status. The 0.19 g/hp-hr limit includes a 25% not to exceed factor of safety.
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Three (3) Firewater Pump Engines and two (2) Emergency Diesel Generators	ULSD	19.4	gph	TPM2.5	Good combustion practices, ULSD, and limit operation to 500 hours per year per engine	0.19	G/HP-HR	3-HOUR AVERAGE	BACT-PSD	0			EUs 40 - 44 are required to achieve EPA Tier 3 emission status. The 0.19 g/hp-hr limit includes a 25% not to exceed factor of safety.
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	Emergency Generator Diesel Engines	Diesel Fuel	550	hp	TPM10	Compliance with the limitations imposed by 40 CFR 63 Subpart IIII and operating the engine in accordance with the engine manufacturer's instructions and/or written procedures designed to maximize combustion efficiency and minimize fuel usage.	0			BACT-PSD	0			Engines are limited to 100 hours of non-emergency use.
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	Emergency Generator Diesel Engines	Diesel Fuel	550	hp	FPM2.5	Compliance with the limitations imposed by 40 CFR 63 Subpart IIII and operating the engine in accordance with the engine manufacturer's instructions and/or written procedures designed to maximize combustion efficiency and minimize fuel usage.	0			BACT-PSD	0			Engines are limited to 100 hours of non-emergency use.

Table C-18
RACT/BACT/LAER Clearing House Summary for CO2e Emissions from Generators

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0382	DUKE ENERGY INDIANA, INC.-CAYUGA GENERATING STATION	IN	165-47430-00001	2/14/2025	Emergency Generators	Diesel	2000	HP	Carbon Dioxide Equivalent (CO2e)	good combustion practices	0			BACT-PSD	0			CO2e emissions from each emergency generator shall be controlled through the use of good combustion practices.
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6A - C/A Emergency Generator A	Diesel	2346	horsepower	Carbon Dioxide Equivalent (CO2e)	BACT is determined to be the implementation of the following energy efficiency measures: Improved Combustion Measures, Insulation, and Minimization of Air Infiltration	0			BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6B - C/A Emergency Generator B	Diesel	2346	horsepower	Carbon Dioxide Equivalent (CO2e)	BACT is determined to be the implementation of the following energy efficiency measures: Improved Combustion Measures, Insulation, and Minimization of Air Infiltration	0			BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4C-6C - C/A Emergency Generator C	Diesel	2346	horsepower	Carbon Dioxide Equivalent (CO2e)	BACT is determined to be the implementation of the following energy efficiency measures: Improved Combustion Measures, Insulation, and Minimization of Air Infiltration	0			BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-10 - Utility Emergency Generator	Diesel	2012	horsepower	Carbon Dioxide Equivalent (CO2e)	BACT is determined to be the implementation of the following energy efficiency measures: Improved Combustion Measures, Insulation, and Minimization of Air Infiltration	0			BACT-PSD	75	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-11 - Substation Emergency Generator	Diesel	70	horsepower	Carbon Dioxide Equivalent (CO2e)	BACT is determined to be the implementation of the following energy efficiency measures: Improved Combustion Measures, Insulation, and Minimization of Air Infiltration	0			BACT-PSD	4	TONS/YEAR		
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-12 - VCM/CA/UT CCR Emergency Generator	Diesel	760	horsepower	Carbon Dioxide Equivalent (CO2e)	BACT is determined to be the implementation of the following energy efficiency measures: Improved Combustion Measures, Insulation, and Minimization of Air Infiltration	0			BACT-PSD	28	TONS/YEAR		
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 2 (EQUI 26)	Ultra low sulfur diesel	1049	hp	Carbon Dioxide Equivalent (CO2e)	Emergency classification, hourly restriction, and good combustion practices	314	TON/YR	12 MONTH ROLLING SUM	BACT-PSD	0			
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 3 (EQUI 27)	Ultra low sulfur diesel	1049	hp	Carbon Dioxide Equivalent (CO2e)	Emergency classification, hourly restriction, good combustion practices, and NSPS compliance	314	TON/YR	12 MONTH ROLLING SUM	BACT-PSD	0			
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 4 (EQUI 28)	Ultra low sulfur diesel	1049	hp	Carbon Dioxide Equivalent (CO2e)	Emergency classification, hourly restriction, good combustion practices, and NSPS compliance	314	TON/YR	12 MONTH ROLLING SUM	BACT-PSD	0			
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 5 (EQUI 43)	Ultra low sulfur diesel	772	hp	Carbon Dioxide Equivalent (CO2e)	Emergency classification, hourly restriction, good combustion practices, and NSPS compliance	231	TON/YR	12 MONTH ROLLING SUM	BACT-PSD	0			
MN-0095	BLUE LAKE	MN	13900010-105	8/7/2024	Emergency Generator 6 (EQUI 43)	Ultra low sulfur diesel	772	hp	Carbon Dioxide Equivalent (CO2e)	Emergency classification, hourly restriction, good combustion practices, and NSPS compliance	231	TON/YR	12 MONTH ROLLING SUM	BACT-PSD	0			
MI-0459	LANSING BOARD OF WATER AND LIGHT--DELTA ENERGY PARK	MI	71-24	6/27/2024	EUEMGEN	Diesel	762	bhp	Carbon Dioxide Equivalent (CO2e)	Good combustion practices, use of current energy efficiency measures.	205	T/YR	12-MONTH ROLLING TIME PERIOD	BACT-PSD	0			
*IN-0371	WABASH VALLEY RESOURCES, LLC	IN	167-45208-00091	1/11/2024	Emergency generator	Diesel	500	kw	CO2e	Good Combustion Practices	219	TONS PER YEAR	PER TWELVE (12) CONSECUTIVE MONTH PERIOD	BACT-PSD	0			
*IN-0371	WABASH VALLEY RESOURCES, LLC	IN	167-45208-00091	1/11/2024	Emergency generator	Diesel	619	hp	CO2e	Good Combustion Practices	180	TONS PER YEAR	PER TWELVE (12) CONSECUTIVE MONTH PERIOD	BACT-PSD	0			
*IN-0371	WABASH VALLEY RESOURCES, LLC	IN	167-45208-00091	1/11/2024	Emergency generator	Diesel	1000	kw	CO2e	Good Combustion Practices	389	TONS PER YEAR	PER TWELVE (12) CONSECUTIVE MONTH PERIOD	BACT-PSD	0			
*IN-0371	WABASH VALLEY RESOURCES, LLC	IN	167-45208-00091	1/11/2024	Emergency generator	Diesel	2000	kw	CO2e	Good Combustion Practices	778	TONS PER YEAR	PER TWELVE (12) CONSECUTIVE MONTH PERIOD	BACT-PSD	0			
*IL-0134	CRONUS CHEMICALS, LLC	IL	19110020	12/21/2023	Emergency generator engine	Diesel	3985	hp	CO2e		160	TONS/YEAR		BACT-PSD	75	HR/YR		
*LA-0394	GEISMAR PLANT	LA	PSD-LA-647(M-9)	12/12/2023	Emergency generator	Diesel	670	hp	CO2e	Use of good combustion practices and compliance with NSPS Subpart IIII	0			BACT-PSD	39	TONS/YR		
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Emergency generator	ULSD	2012	hp	CO2e		625	TONS PER YEAR		BACT-PSD	0			Emergency generator shall use good engineering design and fuel efficient design.
IN-0359	NUCOR STEEL	IN	107-45480-00038	3/30/2023	Emergency Generator	diesel	3000	hp	CO2e	Good engineering design and manufacturers recommended operating and maintenance procedures.	163.6	LB/MMBTU		BACT-PSD	920	TONS/YR		
IN-0359	NUCOR STEEL	IN	107-45480-00038	03/30/2023	Emergency generator	Diesel	500	hp	CO2e	Good engineering design and manufacturers recommended operating and maintenance procedures.	163.6	LB/MMBTU		BACT-PSD	153	TONS PER YEAR		

Table C-18
RACT/BACT/LAER Clearing House Summary for CO2e Emissions from Generators

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
TX-0939	ORANGE COUNTY ADVANCED POWER STATION	TX	166032 PSDTX1598 GHGPSDTX210	3/13/2023	EMERGENCY GENERATOR	DIESEL	18.7	MMBTU/HR	CO2e	GOOD COMBUSTION PRACTICES, LIMITED TO 100 HR/YR	0			BACT-PSD	0			
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUEMGD	Diesel	4474.2	KW	CO2e	low carbon fuel (pipeline quality natural gas), good combustion practices, and energy efficiency measures.	590	T/YR	12-MO ROLLING TIME PERIOD	BACT-PSD	0			Carbon capture and sequestration (CCS) would not be economically feasible based upon a qualitative assessment based upon the CTG/HRSG train analysis.
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Emergency Engines	ULSD	1250	kW	CO2e		508	TONS/YEAR		BACT-PSD	0			Limit 1 is applicable to each engine.
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Emergency Diesel Generator Engine	ULSD	2937	hp	CO2e	Compliance with 40 CFR 60 Subpart IIII, good combustion practices, and the use of ultra-low sulfur diesel fuel.	74.21	KG/MM BTU		BACT-PSD	0			BACT limit is 74.21 kg/MM BTU (163.61 lb/MM BTU). Compliance with 40 CFR 60 Subpart IIII (Tier 2 non-road engines) standards, good combustion practices, and the use of ultra-low sulfur diesel fuel.
TX-0915	UNIT 5	TX	160538, PSDTX1528, GHGPSDTX204	3/17/2021	DIESEL GENERATOR	DIESEL	0		CO2e	LIMITED 500 HR/YR OPERATION	0			BACT-PSD	0			
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	EUEMGD--emergency engine	diesel fuel	4474.2	KW	CO2e	low carbon fuel (pipeline quality natural gas), good combustion practices, and energy efficiency measures.	590	T/YR	12-MO ROLLING TIME PERIOD	BACT-PSD	0			Emission Limit 1 = 590 tons/year based upon a 12-month rolling time period as determined at the end of each calendar month. Carbon capture and sequestration (CCS) would not be economically feasible based upon a qualitative assessment based upon the CTG/HRSG train analysis.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Emergency Diesel Generator (P07)	Diesel	1490	HP	CO2e	Certified to at least meet EPA's criteria for Tier 2 reciprocating internal combustion engines and the 40 CFR 60, Subpart IIII emission limitations, operation limited to 500 hours/year, and operate and maintain generator according to the manufacturer's recommendations.	0			BACT-PSD	0			
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	One (1) Black Start Generator Engine	ULSD	186.6	gph	CO2e	Good combustion practices and limit operation to 500 hours per year	163.6	LB/MMBTU	3-HOUR AVERAGE	BACT-PSD	0			163.6 lb/MMBtu is the CO2e emissions rates for burning diesel fuel in 40 CFR Part 98: Mandatory Greenhouse Gas Reporting. The total CO2e emissions rate is calculated with the equation CO2(1) + CH4(25) + N2O(298).
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Three (3) Firewater Pump Engines and two (2) Emergency Diesel Generators	ULSD	19.4	gph	CO2e	Good combustion practices and limit operation to 500 hours per year per engine	163.6	LB/MMBTU	3-HOUR AVERAGE	BACT-PSD	0			163.6 lb/MMBtu is the CO2e emissions rates for burning diesel fuel in 40 CFR Part 98: Mandatory Greenhouse Gas Reporting. The total CO2e emissions rate is calculated with the equation CO2(1) + CH4(25) + N2O(298).
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	Emergency Generator Diesel Engines	Diesel Fuel	550	hp	CO2e	Compliance with the limitations imposed by 40 CFR 63 Subpart IIII and operating the engine in accordance with the engine manufacturer's instructions and/or written procedures designed to maximize combustion efficiency and minimize fuel usage.	0			BACT-PSD	0			Engines are limited to 100 hours of non-emergency use.

Table C-19
RACT/BACT/LAER Clearing House Summary for NOx Emissions from Firepumps

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
MI-0459	LANSING BOARD OF WATER AND LIGHT--DELTA ENERGY PARK	MI	71-24	6/27/2024	EUFIREPUMP	Diesel	500	bhp	NOx		4	G/KW-H	HOURLY	BACT-PSD	0			Emission limit is expressed as NOx + NMHC
*IL-0134	CRONUS CHEMICALS	IL	19110020	12/21/2023	Firewater Pump Engine	Diesel	369	hp	NOx		4	G/KW-HR	3-HR AVG	BACT-PSD	100	HR/YR	OPERATIONAL LIMIT	Limit 1 includes NMHC, i.e., NOx + NMHC, consistent with the NSPS, 40 CFR 60 Subpart IIII
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUFPRICE--A 315 HP diesel-fueled emergency engine	Diesel	2.5	MMBTU/H	NOx	Good combustion practices.	3	G/HP-H	HOURLY	BACT-PSD	0			The limit is actually in NMHC+NOx (nonmethane hydrocarbon plus NOx). Did not consider the additional control to be technically feasible; many controls don't function properly for small emitters and intermittent sources.
*NE-0064	NORFOLK CRUSH, LLC	NE	CP22-017	11/21/2022	Emergency Water Pumps	Diesel	510	hp	NOx		2.38	G/HP-HR	3-HOUR OR TEST METHOD AVERAGE	BACT-PSD	0			Emission standard as required in NSPS Subpart IIII Table 4 for stationary emergency fire pump engines. The standard was calculated using a ratio of 79.4% NOx for the NMHC+NOx emisssion standard of 3.0 g/hp-hr. This unit is limited to 100 hours of operation for non-emergency use, this is to ensure the engine meets the definition of limited use engine.
OH-0387	INTEL OHIO SITE	OH	P0132323	9/20/2022	Fire Water Pump Engine	Diesel	275	hp	NOx	Certified to meet the standards in Table 4 of 40 CFR Part 60, Subpart IIII and good combustion practices	4	G/KW-H	4.0 GRAMS NOX + NMHC/KW-HR	BACT-PSD	8.5	LB/H	SEE NOTES	2.1 tons per rolling, 12-month period
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	Diesel Fire Pump Engine	Diesel	27.9	Gal/hr	NOx	Good Combustion Practices; Limited Operation; 40 CFR 60 Subpart IIII	3.6	G/HP-HR		BACT-PSD	500	HRS/YR		NOx emissions from diesel firewater pump engine EU 11 will not exceed 3.6 g/hp-hr @ 15% O2 (95% of NMHC + NOx from Table 4 of NSPS Subpart IIII, also equivalent to EPA Tier 3, includes 25% not to exceed factor of safety);
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	EUFPENGINE (North Plant): Fire Pump Engine	Diesel	27.9	Gal/hr	NOx	Good Combustion Practices; Limited Operation; 40 CFR 60 Subpart IIII	3.6	G/HP-HR		BACT-PSD	500	HRS/YR		NOx emissions from diesel firewater pump engine EU 11 will not exceed 3.6 g/hp-hr @ 15% O2 (95% of NMHC + NOx from Table 4 of NSPS Subpart IIII, also equivalent to EPA Tier 3, includes 25% not to exceed factor of safety);
MI-0451	MEC NORTH, LLC	MI	167-17B	6/23/2022	EUFPENGINE (South Plant): Fire pump engine	Diesel	300	HP	NOx	Good combustion practices and meeting NSPS Subpart IIII requirements.	3	G/B-HP-H	HOURLY	BACT-PSD	0			The limit is actually in NMHC+NOx (nonmethane hydrocarbon plus NOx), which is what is required in the NSPS.
MI-0452	MEC SOUTH, LLC	MI	168-17B	6/23/2022	Emergency Diesel Fired Water Pump Engine	Diesel	300	HP	NOx	Good Combustion Practices and meeting NSPS Subpart IIII requirements	3	G/B-HP-H	HOURLY	BACT-PSD	0			The limit is actually in NMHC+NOx (nonmethane hydrocarbon plus NOx), which is what is required in the NSPS.
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Fire Water Pump	ULSD	355	hp	NOx	Compliance with 40 CFR 60 Subpart IIII, good combustion practices, and use of ultra-low sulfur diesel fuel.	3	G/HP-HR		BACT-PSD	0			BACT limit is 3.0 g/BHP-hr (NOx + NMHC). Compliance with 40 CFR 60 Subpart IIII (Tier 2 non-road engines) standards, good combustion practices, and the use of ultra-low sulfur diesel fuel.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Three (3) Firewater Pump Engines and two (2) Emergency Diesel Generators	Diesel	282	HP	NOx	Operation limited to 500 hours/year and shall be operated and maintained according to the manufacturer's recommendations.	3	G/HP-H		BACT-PSD	0			
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Emergency Fire Water Pumps	ULSD	19.4	gph	NOx	Good combustion practices, limit operation to 500 hours per year per engine	3.6	G/HP-HR	3-HOUR AVERAGE	BACT-PSD	0			EUs 40 - 44 are required to achieve EPA Tier 3 emission status. 3.6 g/hp-hr limit is 95% of the total for NMHC + NOx and includes a 25% not to exceed factor of safety.
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	EUFPENGINE (Emergency engine-diesel fire pump	Diesel Fuel	550	hp	NOx	Compliance with the limitations imposed by 40 CFR 63 Subpart IIII and operating the engine in accordance with the engine manufacturer's instructions and/or written procedures designed to maximize combustion efficiency and minimize fuel usage.	0			BACT-PSD	0			Engines are limited to 100 hours of non-emergency use.

Table C-20
RACT/BACT/LAER Clearing House Summary for CO Emissions from Firepumps

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
MI-0459	LANSING BOARD OF WATER AND LIGHT--DELTA ENERGY PARK	MI	71-24	6/27/2024	EUFIREPUMP	bhp	500	bhp	CO	Good combustion practices	3.5	G/KW-H	HOURLY	BACT-PSD	0			
*IL-0134	CRONUS CHEMICALS	IL	19110020	12/21/2023	Firewater Pump Engine	Diesel	369	hp	CO		3.5	G/KW-HR	3-HR AVG	BACT-PSD	100	HR/YR	OPERATIONAL LIMIT	Limit 1 is consistent with NSPS IIII
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Emergency fire pump	Diesel	420	brake hp	CO		3.5	G/KW-HR		BACT-PSD	0			
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUFPRICE--A 315 HP diesel-fueled emergency engine	Diesel	2.5	MMBTU/H	CO	Good combustion practices.	2.6	G/HP-H	HOURLY	BACT-PSD	0			Cost analysis considered Oxidation Catalyst for a 1MW emergency engine. The control considered technically feasible was catalytic oxidation; however, it was not considered economically feasible.
OH-0387	INTEL OHIO SITE	OH	P0132323	9/20/2022	Emergency Water Pumps	Diesel	275	hp	CO	Certified to meet the standards in Table 4 of 40 CFR Part 60, Subpart IIII and good combustion practices	3.5	G/KW-H		BACT-PSD	1.8	LB/H	SEE NOTES	0.5 tons per rolling, 12-month period
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Fire Water Pump Engine	ULSD	320	horsepower	CO		3.5	GRAMS	KILOWATT-HOUR	BACT-PSD	0			Emission Limit 1 is consistent with the NSPS, 40 CFR 60 Subpart IIII.
MI-0451	MEC NORTH, LLC	MI	167-17B	6/23/2022	EUFPENGINE (North Plant): Fire Pump Engine	Diesel	300	HP	CO	Good combustion practices and meeting NSPS Subpart IIII requirements	2.6	G/B-HP-H	HOURLY	BACT-PSD	0			An oxidation catalyst is $39,500/ton for PM10, CO, and VOC together.
MI-0452	MEC SOUTH, LLC	MI	168-17B	6/23/2022	EUFPENGINE (South Plant): Fire pump engine	Diesel	300	HP	CO	Good Combustion Practices and meeting NSPS Subpart IIII requirements	2.6	G/B-HP-H	HOURLY	BACT-PSD	0			An oxidation catalyst is $39,500/ton for PM10, CO, and VOC together.
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Emergency Diesel Fired Water Pump Engine	ULSD	355	hp	CO	Compliance with 40 CFR 60 Subpart IIII, good combustion practices, and the use of ultra-low sulfur diesel fuel.	2.6	G/HP-HR		BACT-PSD	0			BACT limit is 2.6 g/BHP-hr. Compliance with 40 CFR 60 Subpart IIII (Tier 2 non-road engines) standards, good combustion practices, and the use of ultra-low sulfur diesel fuel.
FL-0371	SHADY HILLS COMBINED CYCLE FACILITY	FL	1010524-003-AC (PSD-FL-444A)	6/7/2021	Emergency Fire Pump Engine (347 HP)	ULSD	2.46	MMBtu/hour	CO		3.5	G/KW-HOUR		BACT-PSD	0			
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	EUFPRICE--A 315 HP diesel fueled emergency engine	Diesel	2.5	MMBTU/H	CO	Good combustion practices	2.6	G/HP-H	HOURLY	BACT-PSD	0			Cost analysis considered oxidation catalyst for a 1MW emergency engine. The control considered technically feasible was catalytic oxidation; however, it was not considered economically feasible.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Emergency Diesel Fire Pump (P06)	Diesel	282	HP	CO	Operation limited to 500 hours/year and shall be operated and maintained according to the manufacturer's recommendations.	2.6	G/HP-H		BACT-PSD	0			

Table C-21
RACT/BACT/LAER Clearing House Summary for VOC Emissions from Firepumps

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0382	DUKE ENERGY INDIANA, INC.-CAYUGA GENERATING STATION	IN	165-47430-00001	2/14/2025	Emergency fire pump	Diesel	300	hp	VOC	good combustion practices	4	G/KW-HR	3-HOUR AVERAGE	BACT-PSD	0			The Permittee shall comply with the requirements of 40 CFR 60, Subpart IIII
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-7A - Fire Water Pump A	Diesel	552	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	0.92	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-7B - Fire Water Pump B	Diesel	552	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	0.92	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-7C - Fire Water Pump C	Diesel	552	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	0.92	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11C - VCM Emergency Pump A	Diesel	200	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	0.33	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11D - VCM Emergency Pump B	Diesel	200	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	0.33	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11E - VCM Emergency Pump C	Diesel	200	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	0.33	LB/HR		BACT-PSD	0			
MI-0459	LANSING BOARD OF WATER AND LIGHT--DELTA ENERGY PARK	MI	71-24	6/27/2024	EUFIREPUMP	bhp	500	hp	VOC	Good combustion practices	4	G/KW-H	HOURLY	BACT-PSD	0			Emission limit is expressed as NOx + NMHC
*IL-0134	CRONUS CHEMICALS	IL	19110020	12/21/2023	Firewater Pump Engine	Diesel	369	hp	VOC		4	G/KW-HR	3-HR AVG	BACT-PSD	100	HR/YR	OPERATIONAL LIMIT	Limit 1 includes NMHC, i.e., NOx + NMHC, consistent with the NSPS, 40 CFR 60 Subpart IIII
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Firewater Pump Engine	Diesel	422	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	1.47	LB/HR		BACT-PSD	0			
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Firewater Pump Engine	Diesel	422	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	1.47	LB/HR		BACT-PSD	0			
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Firewater Pump Engine	Diesel	237	hp	VOC	Compliance with the requirements of 40 CFR 60 Subpart IIII	0.61	LB/HR		BACT-PSD	0			
*LA-0402	DESTREHAN OIL PROCESSING FACILITY	LA	PSD-LA-855	12/13/2023	Emergency diesel firepump engine	Diesel	200	hp	VOC	Compliance with 40 CFR 60 Subpart IIII	0.14	LB/H	HOURLY MAXIMUM	BACT-PSD	0.01	T/YR	ANNUAL MAXIMUM	Compliance with 40 CFR 60 Subpart IIII VOC<=3.00 g/BHP-hr
*NE-0064	NORFOLK CRUSH, LLC	NE	CP22-017	11/21/2022	Emergency Firewater Pump Engine	Diesel	510	hp	VOC		0.62	G/HP-HR	3-HOUR OR TEST METHOD AVERAGE	BACT-PSD	0			Emission standard as required in NSPS Subpart IIII Table 4 for stationary emergency fire pump engines. The standard was calculated using a ratio of 20.6% VOC for the NMHC+NOx emisssion standard of 3.0 g/hp-hr. This unit is limited to 100 hours of operation for non-emergency use, this is to ensure the engine meets the definition of limited use engine.
OH-0387	INTEL OHIO SITE	OH	P0132323	9/20/2022	Emergency Water Pumps	Diesel	275	hp	VOC	Certified to meet the standards in Table 4 of 40 CFR Part 60, Subpart IIII and good combustion practices	0.7	LB/H		BACT-PSD	0.2	T/YR	PER ROLLING 12 MONTH PERIOD	
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	Fire Water Pump Engine	Diesel	27.9	Gal/hr	VOC	Oxidation Catalyst; Limited Operation; 40 CFR 60 Subpart IIII	0.19	G/HP-HR		BACT-PSD	500	HRS/YR		VOC emissions from the diesel firewater pump engine EU 11 will not exceed 0.19 g/hp-hr @ 15% O2 (5% of NOx + NMHC value from Table 4 from NSPS Subpart IIII, also equivalent to EPA Tier 3, includes 25% not to exceed factor of safety).
MI-0451	MEC NORTH, LLC	MI	167-17B	6/23/2022	Diesel Fire Pump Engine	Diesel	300	HP	VOC	Good combustion practices.	0.75	LB/H	HOURLY	BACT-PSD	0			An oxidation catalyst is $39,500/ton for PM10, CO, and VOC together.
MI-0452	MEC SOUTH, LLC	MI	168-17B	6/23/2022	EUFPENGINE (North Plant): Fire Pump Engine	Diesel	300	HP	VOC	Good Combustion Practices	0.75	LB/H	HOURLY	BACT-PSD	0			An oxidation catalyst is $39,500/ton for PM10, CO, and VOC together.
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Emergency Diesel Fired Water Pump Engine	ULSD	355	hp	VOC	Compliance with 40 CFR 60 Subpart IIII, good combustion practices, and the use of ultra-low sulfur diesel fuel.	3	G/HP-HR		BACT-PSD	0			BACT limit is 3.0 g/BHP-hr (NOx + NMHC). Compliance with 40 CFR 60 Subpart IIII (Tier 2 non-road engines) standards, good combustion practices, and the use of ultra-low sulfur diesel fuel.
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Fire Water Pump	ULSD	240	bhp	VOC	Good Combustion Practices w/ OxCat. Applicant did not justify why an oxcat is infeasible for an emergency engine	1.59	LB/HR		BACT-PSD	4	G/BKW	NMHC+NOX	Certified Engine
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Emergency Diesel Fire Pump (P06)	Diesel	282	HP	VOC	Operation limited to 500 hours/year and operate and maintain according to the manufacturer's recommendations.	1.1	G/HP-H		BACT-PSD	0			
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	Emergency Fire Water Pumps	Diesel Fuel	550	hp	VOC	Compliance with the limitations imposed by 40 CFR 63 Subpart IIII and operating the engine in accordance with the engine manufacturer's instructions and/or written procedures designed to maximize combustion efficiency and minimize fuel usage.	0			BACT-PSD	0			Engines are limited to 100 hours of non-emergency use.

Table C-22
RACT/BACT/LAER Clearing House Summary for SO2 Emissions from Firepumps

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Emergency fire pump	ULSD	420	brake hp	SO2		0.0016	LB PER MMBTU		BACT-PSD	0			The sulfur content of diesel fuel burned in the emergency fire pump shall not exceed 0.0015%.
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Fire Water Pump Engine	ULSD	320	HP	SO2	Use of ultra-low sulfur diesel, with a sulfur content < 15 ppm sulfur.	0			BACT-PSD	0			Use of ultra-low sulfur diesel represents BACT.
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	Diesel Fire Pump Engine	ULSD	27.9	Gal/hr	SO2	Good Combustion Practices; ULSD; Limited Operation;	15	PPMW SULFUR IN FUEL		BACT-PSD	500	HRS/YR		
MI-0451	MEC NORTH, LLC	MI	167-17B	6/23/2022	EUFPENGINE (South Plant): Fire pump engine	ULSD	300	HP	SO2	Good combustion practices and meeting NSPS Subpart IIII requirements.	15	PPM	FUEL SUPPLIER RECORDS OR SAMPLE TEST	BACT-PSD	0			Emission Limit 1 above = 15 ppm (0.0015 percent) by weight based on fuel supplier certification records or fuel sample test data, for each delivery of diesel fuel oil. The applicable requirements are
MI-0452	MEC SOUTH, LLC	MI	168-17B	6/23/2022	Emergency Fire Pump Engine (347 HP)	ULSD	300	HP	SO2	Good Combustion Practices and meeting NSPS Subpart IIII requirements	15	PPM	FUEL SUPPLIER RECORDS OR SAMPLE TEST	BACT-PSD	0			Emission limit 1 above is 15 ppm (0.0015 percent) by weight based on fuel supplier certification records or fuel sample test data, for each delivery of diesel fuel oil.
FL-0371	SHADY HILLS COMBINED CYCLE FACILITY	FL	1010524-003-AC (PSD-FL-444A)	6/7/2021	Emergency diesel fire pump	ULSD	2.46	MMBtu/hour	SO2		15	PPM S IN FUEL		BACT-PSD	0			
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	EMERGENCY DIESEL ENGINE FOR FIRE WATER PUMP	Diesel Fuel	550	hp	SO2	Compliance with the limitations imposed by 40 CFR 63 Subpart IIII and operating the engine in accordance with the engine manufacturer's instructions and/or written procedures designed to maximize combustion efficiency and minimize fuel usage.	0			BACT-PSD	0			Engines are limited to 100 hours of non-emergency use.

Table C-23
RACT/BACT/LAER Clearing House Summary for PM Emissions from Firepumps

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-7A - Fire Water Pump A	Diesel	552	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.18	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-7A - Fire Water Pump A	Diesel	552	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.18	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-7B - Fire Water Pump B	Diesel	552	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.18	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-7B - Fire Water Pump B	Diesel	552	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.18	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-7C - Fire Water Pump C	Diesel	552	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.18	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4U-7C - Fire Water Pump C	Diesel	552	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.18	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11C - VCM Emergency Pump A	Diesel	200	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.07	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11C - VCM Emergency Pump A	Diesel	200	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.07	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11D - VCM Emergency Pump B	Diesel	200	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.07	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11D - VCM Emergency Pump B	Diesel	200	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.07	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11E - VCM Emergency Pump C	Diesel	200	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.07	LB/HR		BACT-PSD	0			
*LA-0403	SHINTECH PLAQUEMINE PLANT 4	LA	PSD-LA-857	12/16/2024	4M-11E - VCM Emergency Pump C	Diesel	200	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.76	LB/HR		BACT-PSD	0			
MI-0459	LANSING BOARD OF WATER AND LIGHT--DELTA ENERGY PARK	MI	71-24	6/27/2024	EUFIREPUMP	Diesel	500	bhp	TPM10	Good combustion practices, use of ULSD	1.1	LB/H	HOURLY	BACT-PSD	0			
MI-0459	LANSING BOARD OF WATER AND LIGHT--DELTA ENERGY PARK	MI	71-24	6/27/2024	EUFIREPUMP	Diesel	500	bhp	TPM2.5	Good combustion practices, use of ULSD	1.1	LB/H	HOURLY	BACT-PSD	0			
MI-0459	LANSING BOARD OF WATER AND LIGHT--DELTA ENERGY PARK	MI	71-24	6/27/2024	EUFIREPUMP	Diesel	500	bhp	FPM	Good combustion practices, use of ULSD	0.2	G/KW-H	HOURLY	BACT-PSD	0			
*IL-0134	CRONUS CHEMICALS	IL	19110020	12/21/2023	Firewater Pump Engine	Diesel	369	hp	TPM10		0.2	G/KW-HR	3-HR AVG	BACT-PSD	100	HR/YR	OPERATIONAL LIMIT	Limit 1 is consistent with NSPS IIII. NSPS PM limit serves as BACT for PM10/PM2.5
*IL-0134	CRONUS CHEMICALS	IL	19110020	12/21/2023	Firewater Pump Engine	Diesel	369	hp	TPM2.5		0.2	G/KW-HR	3-HR AVG	BACT-PSD	100	HR/YR	OPERATIONAL LIMIT	Limit 1 is consistent with NSPS IIII. NSPS PM limit serves as BACT for PM10/PM2.5
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Firewater Pump Engine	Diesel	422	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.2	LB/HR		BACT-PSD	0			
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Firewater Pump Engine	Diesel	422	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.2	LB/HR		BACT-PSD	0			
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Firewater Pump Engine	Diesel	422	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.2	LB/HR		BACT-PSD	0			
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Firewater Pump Engine	Diesel	422	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.2	LB/HR		BACT-PSD	0			
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Firewater Pump Engine	Diesel	237	hp	TPM10	Compliance with the requirements of 40 CFR 60 Subpart IIII	0.06	LB/HR		BACT-PSD	0			
*LA-0401	KOCH METHANOL (KME) FACILITY	LA	PSD-LA-851	12/20/2023	Firewater Pump Engine	Diesel	237	hp	TPM2.5	Compliance with the requirements of 40 CFR 60 Subpart IIII	0.06	LB/HR		BACT-PSD	0			
*LA-0402	DESTREHAN OIL PROCESSING FACILITY	LA	PSD-LA-855	12/13/2023	Emergency diesel firepump engine	Diesel	200	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII	0.14	LB/H	HOURLY MAXIMUM	BACT-PSD	0.01	T/YR	ANNUAL MAXIMUM	Compliance with 40 CFR 60 Subpart IIII PM<=0.15 g/BHP-hr
*LA-0402	DESTREHAN OIL PROCESSING FACILITY	LA	PSD-LA-855	12/13/2023	Emergency diesel firepump engine	Diesel	200	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII	0.14	LB/H	HOURLY MAXIMUM	BACT-PSD	0.01	T/YR	ANNUAL MAXIMUM	Compliance with 40 CFR 60 Subpart IIII PM<=0.15 g/BHP-hr
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Emergency fire pump	Diesel	420	brake hp	TPM		0.2	G/KW-HR		BACT-PSD	0			
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Emergency fire pump	Diesel	420	brake hp	TPM10		0.2	G/KW-HR)		BACT-PSD	0			
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Emergency fire pump	Diesel	420	brake hp	TPM2.5		0.2	G/KW-HR		BACT-PSD	0			
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUFPRICE--A 315 HP diesel-fueled emergency engine	ULSD	2.5	MMBTU/H	TPM10	Ultra low sulfur diesel fuel and good combustion practices.	0.69	LB/H	HOURLY	BACT-PSD	0			The control considered technically feasible was burning ultra-low sulfur diesel fuel.
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUFPRICE--A 315 HP diesel-fueled emergency engine	ULSD	2.5	MMBTU/H	TPM2.5	Ultra low sulfur diesel fuel and good combustion practices.	0.69	LB/H	HOURLY	BACT-PSD	0			The control considered technically feasible was burning ultra-low sulfur diesel fuel.

Table C-23
RACT/BACT/LAER Clearing House Summary for PM Emissions from Firepumps

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*NE-0064	NORFOLK CRUSH, LLC	NE	CP22-017	11/21/2022	Emergency Firewater Pump Engine	Diesel	510	hp	TPM		0.15	G/HP-HR	3-HOUR OR TEST METHOD AVERAGE	BACT-PSD	0			Emission standard as required in NSPS Subpart IIII Table 4 for stationary emergency fire pump engines. This unit is limited to 100 hours of operation for non-emergency use, this is to ensure the engine meets the definition of limited use engine. Assumes PM=PM10=PM2.5
OH-0387	INTEL OHIO SITE	OH	P0132323	9/20/2022	Emergency Water Pumps	Diesel	275	hp	TPM10	Certified to meet the standards in Table 4 of 40 CFR Part 60, Subpart IIII and good combustion practices	0.2	G/KW-H		BACT-PSD	0.6	LB/H	SEE NOTES	0.2 tons per rolling, 12-month period
OH-0387	INTEL OHIO SITE	OH	P0132323	9/20/2022	Emergency Water Pumps	Diesel	275	hp	TPM10	Certified to meet the standards in Table 4 of 40 CFR Part 60, Subpart IIII and good combustion practices	0.6	LB/H		BACT-PSD	0.2	T/YR	PER ROLLING 12 MONTH PERIOD	
OH-0387	INTEL OHIO SITE	OH	P0132323	9/20/2022	Emergency Water Pumps	Diesel	275	hp	TPM2.5	Certified to meet the standards in Table 4 of 40 CFR Part 60, Subpart IIII and good combustion practices	0.6	LB/H		BACT-PSD	0.2	T/YR	PER ROLLING 12 MONTH PERIOD	
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Fire Water Pump Engine	ULSD	320	horsepower	TPM		0.2	GRAMS	KILOWATT-HOUR	BACT-PSD	0			Emission Limit 1 includes PM10 and PM2.5, i.e., PM/PM10/PM2.5.
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	Diesel Fire Pump Engine	Diesel	27.9	Gal/hr	TPM	Good Combustion Practices; Limited Operation; 40 CFR 60 Subpart IIII	0.19	G/HP-HR		BACT-PSD	10	% OPACITY	6 CONSECUTIVE MINUTES	Particulate emissions from the diesel firewater pump engine EU 11 will not exceed 0.19 g/hp-hr @ 15% O2 (Table 4 of NSPS Subpart IIII, also equivalent to EPA Tier 3, includes 25% not to exceed factor of safety).
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	Diesel Fire Pump Engine	Diesel	27.9	Gal/hr	TPM10	Good Combustion Practices; Limited Operation; 40 CFR 60 Subpart IIII	0.19	G/HP-HR		BACT-PSD	10	% OPACITY	6 CONSECUTIVE MINUTES	Particulate emissions from the diesel firewater pump engine EU 11 will not exceed 0.19 g/hp-hr @ 15% O2 (Table 4 of NSPS Subpart IIII, also equivalent to EPA Tier 3, includes 25% not to exceed factor of safety).
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	Diesel Fire Pump Engine	Diesel	27.9	Gal/hr	TPM2.5	Good Combustion Practices; Limited Operation; 40 CFR 60 Subpart IIII	0.19	G/HP-HR		BACT-PSD	10	% OPACITY	6 CONSECUTIVE MINUTES	Particulate emissions from the diesel firewater pump engine EU 11 will not exceed 0.19 g/hp-hr @ 15% O2 (Table 4 of NSPS Subpart IIII, also equivalent to EPA Tier 3, includes 25% not to exceed factor of safety).
MI-0451	MEC NORTH, LLC	MI	167-17B	6/23/2022	EUFPENGINE (North Plant): Fire Pump Engine	Diesel	300	HP	TPM2.5	Diesel particulate filter, good combustion practices and meeting NSPS Subpart IIII requirements.	0.66	LB/H	HOURLY	BACT-PSD	0			
MI-0451	MEC NORTH, LLC	MI	167-17B	6/23/2022	EUFPENGINE (North Plant): Fire Pump Engine	Diesel	300	HP	FPM	Diesel particulate filter, good combustion practices and meeting NSPS Subpart IIII requirements.	0.15	G/B-HP-H	HOURLY	BACT-PSD	0			
MI-0451	MEC NORTH, LLC	MI	167-17B	6/23/2022	EMERGENCY DIESEL ENGINE FOR FIRE WATER PUMP	Diesel	300	HP	TPM10	Diesel particulate filter, good combustion practices and meeting NSPS Subpart IIII requirements.	0.66	LB/H	HOURLY	BACT-PSD	0			An oxidation catalyst is $39,500/ton for PM10, CO, and VOC together.
MI-0452	MEC SOUTH, LLC	MI	168-17B	6/23/2022	EUFPENGINE (South Plant): Fire pump engine	Diesel	300	HP	FPM	Diesel particulate filter, Good Combustion Practices and meeting NSPS Subpart IIII requirements	0.15	G/B-HP-H	HOURLY	BACT-PSD	0			
MI-0452	MEC SOUTH, LLC	MI	168-17B	6/23/2022	EUFPENGINE (South Plant): Fire pump engine	Diesel	300	HP	TPM10	Diesel particulate filter, Good Combustion Practices and meeting NSPS Subpart IIII requirements	0.66	LB/H	HOURLY	BACT-PSD	0			An oxidation catalyst is $39,500/ton for PM10, CO, and VOC together.
MI-0452	MEC SOUTH, LLC	MI	168-17B	6/23/2022	EUFPENGINE (South Plant): Fire pump engine	Diesel	300	HP	TPM2.5	Diesel particulate filter, Good Combustion Practices and meeting NSPS Subpart IIII requirements	0.66	LB/H	HOURLY	BACT-PSD	0			

Table C-23
RACT/BACT/LAER Clearing House Summary for PM Emissions from Firepumps

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Emergency Fire Water Pump	ULSD	355	hp	TPM10	Compliance with 40 CFR 60 Subpart IIII standards, good combustion practices, and the use of ultra-low sulfur diesel fuel.	0.15	G/HP-HR		BACT-PSD	0			BACT limit is 0.15 g/BHP-hr. Compliance with 40 CFR 60 Subpart IIII (Tier 2 non-road engines) standards, good combustion practices, and the use of ultra-low sulfur diesel fuel.
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Emergency Diesel Fired Water Pump Engine	ULSD	355	hp	TPM2.5	Compliance with 40 CFR 60 Subpart IIII, good combustion practices, and the use of ultra-low sulfur diesel fuel.	0.15	G/HP-HR		BACT-PSD	0			BACT limit is 0.15 g/BHP-hr. Compliance with 40 CFR 60 Subpart IIII (Tier 2 non-road engines) standards, good combustion practices, and the use of ultra-low sulfur diesel fuel.
*WV-0033	MAIDSVILLE	WV	R14-0038	1/5/2022	Fire Water Pump	ULSD	240	bhp	TPM	Clean Fuels & Good Combustion Practices	0.08	LB/HR		BACT-PSD	0			Certified Engine. Assumed to be PM2.5 or less including condensables.
FL-0371	SHADY HILLS COMBINED CYCLE FACILITY	FL	1010524-003-AC (PSD-FL-444A)	6/7/2021	Emergency Fire Pump Engine (347 HP)	ULSD	2.46	MMBtu/hour	TPM		0.2	G/KW-HOUR		BACT-PSD	0			
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	EUFPRICE--A 315 HP diesel fueled emergency engine	ULSD	2.5	MMBTU/H	TPM10	Ultra low sulfur diesel fuel and good combustion practices	0.12	LB/H	HOURLY	BACT-PSD	0			The control considered technically feasible was burning ultra-low sulfur diesel fuel.
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	EUFPRICE--A 315 HP diesel fueled emergency engine	ULSD	2.5	MMBTU/H	TPM2.5	Ultra low sulfur diesel fuel and good combustion practices.	0.12	LB/H	HOURLY	BACT-PSD	0			The control considered technically feasible was burning ultra low sulfur diesel fuel.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Emergency Diesel Fire Pump (P06)	ULSD	282	HP	TPM	Operation limited to 500 hours/year, sulfur content of diesel fuel oil fired may not exceed 15 ppm, and shall be operated and maintained according to the manufacturer's recommendations.	0.15	G/HP-H		BACT-PSD	0			
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Emergency Diesel Fire Pump (P06)	ULSD	282	HP	TPM10	Operation limited to 500 hours/year, sulfur content of diesel fuel oil fired may not exceed 15 ppm, and operate and maintain according to the manufacturer's recommendations.	0.15	G/HP-H		BACT-PSD	0			
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Emergency Diesel Fire Pump (P06)	ULSD	282	HP	TPM2.5	Operation limited to 500 hours/year, sulfur content of diesel fuel oil fired may not exceed 15 ppm, and shall be operated and maintained according to the manufacturer's recommendations.	0.15	G/HP-H		BACT-PSD	0			
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	Emergency Fire Water Pumps	Diesel Fuel	550	hp	TPM10	Compliance with the limitations imposed by 40 CFR 63 Subpart IIII and operating the engine in accordance with the engine manufacturer's instructions and/or written procedures designed to maximize combustion efficiency and minimize fuel usage.	0			BACT-PSD	0			Engines are limited to 100 hours of non-emergency use.
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	Emergency Fire Water Pumps	Diesel Fuel	550	hp	TPM2.5	Compliance with the limitations imposed by 40 CFR 63 Subpart IIII and operating the engine in accordance with the engine manufacturer's instructions and/or written procedures designed to maximize combustion efficiency and minimize fuel usage.	0			BACT-PSD	0			Engines are limited to 100 hours of non-emergency use.

Table C-24
RACT/BACT/LAER Clearing House Summary for CO2e Emissions from Firepumps

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*IN-0382	DUKE ENERGY INDIANA, INC.- CAYUGA GENERATING STATION	IN	165-47430-00001	2/14/2025	Emergency fire pump	Diesel	300	hp	CO2e	good combustion practices	0			BACT-PSD	0			CO2e emissions from the emergency fire pump shall be controlled through the use of good combustion practices and the Permittee shall comply with the requirements of 40 CFR 60, Subpart IIII
MI-0459	LANSING BOARD OF WATER AND LIGHT--DELTA ENERGY PARK	MI	71-24	6/27/2024	EUFIREPUMP	Diesel	500	bhp	Carbon Dioxide Equivalent (CO2e)	Good combustion practices, use of current energy efficiency measures.	27	T/YR	12-MONTH ROLLING TIME PERIOD	BACT-PSD	0			
*IL-0134	CRONUS CHEMICALS	IL	19110020	12/21/2023	Fire Water Pump Engine	ULSD	320	hp	CO2e		92	TONS/YEAR		BACT-PSD	0			
*IN-0365	MAPLE CREEK ENERGY LLC	IN	T153-45909-00056	6/19/2023	Emergency fire pump	Diesel	420	brake hp	CO2e		123	TONS PER YEAR		BACT-PSD	0			The emergency fire pump shall use good engineering design and fuel efficient design.
MI-0454	LBWL-ERICKSON STATION	MI	74-18D	12/20/2022	EUFPRICE--A 315 HP diesel-fueled emergency engine	Diesel	2.5	MMBTU/hr	CO2e	Low carbon fuel (pipeline quality natural gas), good combustion practices, and energy efficiency measures.	20	T/YR	12-MO ROLLING TIME PERIOD	BACT-PSD	0			The emission limit above is 20 tons/year based upon a 12-month rolling time period as determined at the end of each calendar month. Carbon capture and sequestration (CCS) would not be economically feasible based upon a qualitative assessment based upon the CTG/HRSG train analysis.
*LA-0402	DESTREHAN OIL PROCESSING FACILITY	LA	PSD-LA-855	12/13/2023	Emergency diesel firepump engine	Diesel	200	hp	CO2e	Good Combustion Practices	12	T/YR	ANNUAL MAXIMUM	BACT-PSD	0			BACT shall include monitoring all parameters recommended by the manufacturer (e.g., flue gas oxygen content, combustion air flow, fuel consumption, and flue gas temperature). Parameters shall be maintained within the manufacturer's recommended operating guidelines or within a range that is otherwise indicative of proper operation of the emission unit.
IL-0133	LINCOLN LAND ENERGY CENTER	IL	18040008	7/29/2022	Fire Water Pump Engine	ULSD	320	horsepower	CO2e		92	TONS/YEAR		BACT-PSD	0			
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	Diesel Fire Pump Engine	Diesel	27.9	Gal/hr	CO2e	Good Combustion Practices; Limited Operation;	163.6	LB/MMBTU	3-HOURS	BACT-PSD	500	HRS/YR		
MI-0451	MEC NORTH, LLC	MI	167-17B	6/23/2022	EUFPENGINE (North Plant): Fire Pump Engine	Diesel	300	HP	CO2e	Good combustion practices	85.6	T/YR	12-MO ROLLING TIME PERIOD	BACT-PSD	0			
MI-0452	MEC SOUTH, LLC	MI	168-17B	6/23/2022	EUFPENGINE (South Plant): Fire pump engine	Diesel	300	HP	CO2e	Good combustion practices.	85.6	T/YR	12-MO ROLLING TIME PERIOD	BACT-PSD	0			
LA-0391	MAGNOLIA POWER GENERATING STATION UNIT 1	LA	PSD-LA-839	6/3/2022	Emergency Diesel Fired Water Pump Engine	ULSD	355	HP	CO2e	Compliance with 40 CFR 60 Subpart IIII, good combustion practices, and the use of ultra-low sulfur diesel fuel.	74.21	KG/MM BTU		BACT-PSD	0			BACT limit is 74.21 kg/MM BTU (163.61 lb/MM BTU). Compliance with 40 CFR 60 Subpart IIII (Tier 2 non-road engines) standards, good combustion practices, and the use of ultra-low sulfur diesel fuel.
MI-0447	LBWL--ERICKSON STATION	MI	74-18A	1/7/2021	EUFPRICE--A 315 HP diesel fueled emergency engine	Diesel	2.5	MMBTU/hr	CO2e	Low carbon fuel (pipeline quality natural gas), good combustion practices and energy efficiency measures.	20	T/YR	12-MO ROLLING TIME PERIOD	BACT-PSD	0			The emission limit is 20 tons/year based on a 12-month rolling time period as determined at the end of each calendar month. Carbon capture and sequestration (CCS) would not be economically feasible based upon a qualitative assessment based upon the CTG/HRSG train analysis.
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Emergency Diesel Fire Pump (P06)	Diesel	282	HP	CO2e	Be certified by manufacturer to EPA's criteria for Tier 3 reciprocating internal combustion engines and to the 40 CFR 60, Subpart IIII emission limitations, operation limited to 500 hours/year, and operate and maintain according to the manufacturer's recommendations.	0			BACT-PSD	0			

Table C-24
RACT/BACT/LAER Clearing House Summary for CO2e Emissions from Firepumps

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
LA-0364	FG LA COMPLEX	LA	PSD-LA-812	1/6/2020	Emergency Fire Water Pumps	Diesel Fuel	550	HP	CO2e	Compliance with the limitations imposed by 40 CFR 63 Subpart IIII and operating the engine in accordance with the engine manufacturer's instructions and/or written procedures designed to maximize combustion efficiency and minimize fuel usage.	0			BACT-PSD	0			Engines are limited to 100 hours of non-emergency use.

Table C-25
RACT/BACT/LAER Clearing House Summary for VOC Emissions for ULSD Tanks

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
*TX-0967	QUAIL RUN CARBON CAPTURE PLANT	TX	173197, HAP83, PSDTX1622	2/5/2024	Fixed Roof Storage Tanks		0		Volatile Organic Compounds (VOC)	Submerged fill and uninsulated exterior surfaces exposed to the sun are painted white. Send liquid to a covered vessel when draining the tank.	0			BACT-PSD	0			VOC emissions of 1.7 tpy for all fuel tanks EUs 126 through 157.
*TX-0937	VALERO CORPUS CHRISTI REFINERY EAST PLANT	TX	135622, PSDTX1023M3	7/20/2023	FIXED ROOF STORAGE TANKS		0		Volatile Organic Compounds (VOC)	Vertical fixed roof tanks storing low vapor pressure products (vp < 0.5 psia) with submerged fill, painted white.	0			BACT-PSD	0			EUs 53 - 61 have a combined PTE of 0.59 tpy.
*TX-0937	VALERO CORPUS CHRISTI REFINERY EAST PLANT	TX	135622, PSDTX1023M3	7/20/2023	FIXED ROOF TANK MSS		0		Volatile Organic Compounds (VOC)	Fixed roof tank draining: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device (portable combustor) has a minimum DRE of 99%. Maintain fixed roof tanks only when warranted by inspection.	0			BACT-PSD	0			
TX-0939	ORANGE COUNTY ADVANCED POWER STATION	TX	166032 PSDTX1598 GHGPSDTX210	3/13/2023	STORAGE TANKS		0		Volatile Organic Compounds (VOC)	Bottom fill, exterior surfaces are painted white, unpainted stainless steel, or unpainted aluminum.	0			BACT-PSD	0			Use of fuel with vapor pressure below Subpart Kb threshold
*LA-0399	TEAL JONES-PLAIN DEALING SAW MILL	LA	PSD-LA-845	10/31/2022	Small Gasoline and Diesel Tanks		0		Volatile Organic Compounds (VOC)	Light color, fixed roofs, submerged fill/bottom loading, and good operating practice	0			BACT-PSD	0			
KY-0116	NOVELIS CORPORATION - GUTHRIE	KY	V-22-011	7/25/2022	EU 044 - Diesel Fuel Storage and Refueling Station		68000	gal/yr	Volatile Organic Compounds (VOC)	Spill & overfill protection, Submerged fill pipes, & Good Work Practices (GWP) Plan	0			BACT-PSD	0			
AK-0088	LIQUEFACTION PLANT	AK	AQ1539CPT01	7/7/2022	Three Diesel Storage Tanks	Diesel	0		Volatile Organic Compounds (VOC)	Submerged Fill	0.01	TPY COMBINED		BACT-PSD	0			40 CFR 60, subpart GGGa□ 40 CFR 63, subparts CC and WW
TX-0936	BILL GREEHEY REFINERY EAST PLANT	TX	2937, PSDTX1023M3	3/29/2022	FIXED ROOF STORAGE TANKS		0		Volatile Organic Compounds (VOC)	Vertical fixed roof tanks storing low vapor pressure products (vp < 0.5 psia) with submerged fill, painted white.	0			BACT-PSD	0			
TX-0930	CENTURION BROWNSVILLE	TX	147681, PSDTX1522, GHGPSDTX172	10/19/2021	Fixed Roof Storage Tanks		1260000	GAL/HR/TANK	Methane	Tanks must be painted white or unpainted aluminum, utilize submerged fill, and designed to be drain-dry.	0			BACT-PSD	0			Limits do not include operation during emergencies.
TX-0930	CENTURION BROWNSVILLE	TX	147681, PSDTX1522, GHGPSDTX172	10/19/2021	Fixed Roof Storage Tanks		1260000	GAL/HR/TANK	Volatile Organic Compounds (VOC)	Tanks must be painted white or unpainted aluminum, utilize submerged fill, and designed to be drain-dry.	0			BACT-PSD	0			Work Practice Requirements only.
TX-0930	CENTURION BROWNSVILLE	TX	147681, PSDTX1522, GHGPSDTX172	10/19/2021	Fixed Roof Storage Tanks MSS		0		Methane	tanks containing VOC liquids alone or in combination with other liquids shall be depressurized and degassed to control until the vapor space concentration has been verified to be less than or equal to 4,000 ppmv. Tanks may be opened without restriction and ventilated without control when there is either no liquid and/or sludge remaining in the tank, or the vapor pressure of the liquid and/or sludge remaining in the tank has a vapor pressure less than 0.02 psia.	0			BACT-PSD	0			Initial compliance demonstration with BACT is through development of a GWP plan within 180 days of equipment startup, and implementation of the GWP. Continuous compliance is demonstrated through monitoring and recordkeeping of throughputs for the equipment.□ □ Emissions calculated using AP-42 Section 5.2 and TanksESP.
TX-0930	CENTURION BROWNSVILLE	TX	147681, PSDTX1522, GHGPSDTX172	10/19/2021	Fixed Roof Storage Tanks MSS		0		Volatile Organic Compounds (VOC)	tanks containing VOC liquids alone or in combination with other liquids shall be depressurized and degassed to control until the vapor space concentration has been verified to be less than or equal to 4,000 ppmv. Tanks may be opened without restriction and ventilated without control when there is either no liquid and/or sludge remaining in the tank, or the vapor pressure of the liquid and/or sludge remaining in the tank has a vapor pressure less than 0.02 psia.	0			BACT-PSD	0			
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Diesel Fuel Day Tank (T01)		0		Volatile Organic Compounds (VOC)		0			BACT-PSD	0			VP<.0002 psia
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Diesel Fuel Generator Tank (T02)		0		Volatile Organic Compounds (VOC)		0			BACT-PSD	0			
WI-0300	NEMADJI TRAIL ENERGY CENTER	WI	18-MMC-168	9/1/2020	Diesel Fuel Fire Pump Tank (T03)		0		Volatile Organic Compounds (VOC)		0			BACT-PSD	0			40CFR60 Subparts A and Kb□ Tanks store jet fuel, gas oil, and diesel. All materials have a vapor pressure < 0.5 psia
AK-0085	GAS TREATMENT PLANT	AK	AQ1524CPT01	8/13/2020	Fuel Tanks	ULSD	0		Volatile Organic Compounds (VOC)	Submerged Fill	0.59	TPY	YEAR	BACT-PSD	0			40CFR60 Subparts A and Kb□ Tanks store jet fuel, gas oil, and diesel. All materials have a vapor pressure < 0.5 psia

Table C-25
RACT/BACT/LAER Clearing House Summary for VOC Emissions for ULSD Tanks

RBLCID	Facility Name	State	Permit #	Permit Issuance Date	Process/Facility Info	Fuel	Throughput	Units	Pollutant	Control Device	Primary Limit	Primary Limit Units	Primary Limit Averaging Period	Case By Case Basis	Secondary Limit	Secondary Limit Units	Secondary Limit Averaging Period	Pollutant Compliance Notes
TX-0888	ORANGE POLYETHYLENE PLANT	TX	155952 PSDTX1556 GHGPSDTX192	4/23/2020	FIXED ROOF STORAGE TANKS		0		Volatile Organic Compounds (VOC)	submerge fill piping or bottom fill piping and painted white	0			BACT-PSD	0			40CFR60 Subparts A and Kb□ Tanks store jet fuel, gas oil, and diesel. All materials have a vapor pressure < 0.5 psia
TX-0888	ORANGE POLYETHYLENE PLANT	TX	155952 PSDTX1556 GHGPSDTX192	4/23/2020	FIXED ROOF STORAGE TANKS		0		Carbon Dioxide Equivalent (CO2e)	submerge fill piping or bottom fill piping and painted white	0			BACT-PSD	0			

APPENDIX D PSD BACT COST EVALUATIONS

Table D1 - Carbon Capture and Sequestration Estimated Cost - Madison County Advanced Power Station

Capital Cost[1] [3]			
Total Cost CC Plant w/o CCS	$	1,371	/kW
Total Cost CC Plant w/ CCS	$	2,952	/kW
Capital Cost of CCS only	$	1,581	/kW
ETI Legend Output	$	750	MW
Capital Cost of CCS	**$**	**1,185,530,882**	

Annual O&M Cost			
Total O&M Cost CC Plant w/o CCS	$	7.0	/MWh
Total O&M Cost CC Plant w/ CCS	$	15.0	/MWh
Total O&M for plant w/ CCS	$	8.0	/MWh
ETI Legend Output	$	750	MW
Annual O&M Cost	**$**	**52,835,720**	

Fuel Cost			
HHV Net Plant Heat Rate w/o CCS		6,462	Btu/kWh
HHV Net Plant Heat Rate w/ CCS		7,257	Btu/kWh
% increase in heat rate w/ CCS		12%	%
Natural Gas Cost	$	4.42	/MMBtu
Annual Fuel Cost	**$**	**23,081,270**	

Pipeline Transport Costs[2]			
Pipeline Distance		10.00	miles
CO2 produced		2,530,220	tons/yr
CO2 Sequestered Annually		2,277,198	tons/yr
Total CO2 Sequestered Daily		6,239	tons/day
Pipeline Diameter		12	inches
Pipeline Capital Cost (Marsh, Wetland)	$	100,000	/inch-Diameter/mile
Pipeline Capital Cost	$	12,000,000	
CO2 Surge Tank	$	1,240,000	
Pipeline Control System	$	112,000	
Total Pipeline Capital Cost	**$**	**13,352,000**	
Annual Fixed O&M Costs	**$**	**86,320**	/yr

Geologic Storage Capital Costs			
		Capital Costs	
Site Screening and Evaluation	$	4,738,488	
No. of Injection Wells (approx 1 per 10K daily CO2 tons)		1	No. of Wells
Injection Well Cost	$	647,041	
Injection Equipment	$	94,029	
Liability Bond	$	5,000,000	
Total:	**$**	**10,479,559**	
Pore Space Acquisition		**Declining Capital Funds**	
	$	0.33	/ton CO2
Annual Cost of Pore Space Acquisition	$	760,584	/yr
Total Cost of Pore Space Acquisition	$	15,211,684	

Storage O&M			
Normal Annual Expenses (Fixed O&M)	$	4.22	Million $/yr
Annual Consumables (Variable O&M)	$	18.69	Million $/yr
Annual Surface Maintenance (Fixed O&M)	$	0.12	Million $/yr
Annual Subsurface Maintenance (Fixed O&M)	$	10.48	Million $/yr
Annual Storage O&M:	**$**	**33,504,254**	**/yr**

Annualized Cost Estimate			
Ecomonic Life (n)		20	years
Interest Rate (i)		7%	
Capital Recovery Factor (CRF)		0.0944	Capital recovery factor (CRF) 1 = i(1+i)n/((1+i)n - 1)
Capital Costs	$	1,224,574,125	
O&M Costs (Annual)	$	109,507,564	
Capital Recovery	$	115,591,134	
Total Annualized Cost	$	225,098,698	
Total CO2 Controlled		2,277,198	tpy
Total Power Output		6,570,000,000	KW-hr
CO2 Cost Effectiveness	**$**	**99**	**/ton**
CO2 Cost Effectiveness	$	0.034	/KW-h

[1] Adapted from Cost and Performance Baseline For Fossil Energy Plants, Volume 1: Bituminous and Natural Gas to Electricity, National Energy Technology Laboratory, October 14, 2022.

[2] Adapted from Pipeline and Geologic Storage cost estimates based on National Energy Technology Laboratory (US DOE) document, Estimating Carbon Dioxide Transport and Storage Costs, DOE/NETL-2022/3218, March 2022.

[3] Adjusted from 2018 dollars to 2024 dollars utilizing Chemical Engineering Plant Cost Index.

Table D2 - Add-on Control Equipment Cost Effectiveness for Madison County Advanced Power Station's Emergency IC Engines		
Parameter	**Value**	**Units**
Emergency Generator HP Rating	2,923	BHP
Emergency Generator CO Emissions	0.840	ton/yr CO
Emergency Generator VOC Emissions	0.135	ton/yr VOC
Emergency Generator PM Emissions	0.050	ton/yr PM
Emergency Generator Catalyst Annual Operating Cost	15,066	$/yr
Emergency Generator PM Filter Annual Operating Cost	35,321	$/yr
Emergency Generator Cost of CO Control Via Catalyst	17,935	$/ton CO controlled
Emergency Generator Cost of VOC Control Via Catalyst	111,598	$/ton VOC controlled
Emergency Generator Cost of PM Control Via PM Filter	706,416	$/ton PM controlled
Fire Pump HP Rating	282	BHP
Fire Pump CO Emissions	0.090	ton/yr CO
Fire Pump VOC Emissions	0.003	ton/yr VOC
Fire Pump PM Emissions	0.005	ton/yr PM
Fire Pump Catalyst Annual Operating Cost	1,887	$/yr
Fire Pump PM Filter Annual Operating Cost	4,685	$/yr
Fire Pump Cost of CO Control Via Catalyst	20,969	$/ton CO controlled
Fire Pump Cost of VOC Control Via Catalyst	629,060	$/ton VOC controlled
Fire Pump Cost of PM Control Via PM Filter	937,040	$/ton PM controlled
Referenc: January 29, 2010 memo "Control Cost for Existing Stationary CI RICE" prepared for EPA's Office of Air Quality Planning and Standards. Note that this analysis is conservative in that it is based on 2008 dollars, and it does not consider the capital cost of adding the control equipment.		

Table D3 - Cost-Effectiveness of an LDAR Program to Control Fugitive VOC and GHG Emissions At the Madison County Advanced Power Station		
Parameter	**Value**	**Units**
Annual VOC Emissions from Source EPN MCAPS-DSLFUG	0.03	ton VOC/yr
Annual VOC Emissions from Source EPN MCAPS-NGFUG	0.37	ton VOC/yr
Sitewide Annual Fugitive VOC Emissions	0.40	ton VOC/yr
Sitewide Annual GHG Emissions from Source EPN MCAPS-NGFUG	298.98	ton CO_2e/yr (as CH_4)
LDAR Program Estimated VOC/GHG Control Effectiveness	30%	
Sitewide Annual VOC Emissions with LDAR Program Control	0.12	ton VOC/yr
Sitewide Annual GHG Emissions with LDAR Control Program	89.69	ton CO_2e/yr (as CH_4)
Estimated LDAR Program Annualized Cost	50,000	$/yr
LDAR Program Cost-Effectiveness for VOC Control	416,667	$/ton VOC reduced
LDAR Program Cost-Effectiveness for GHG Control	557.45	$/ton CO_2e reduced
The annualized LDAR program cost is based on the esimated cost to implement the system and hire an outisde contractor to conduct LDAR monitoring and leak repairs. The LDAR program control efficiency is the low end of the control range estimated by the Texas Department of Environmental Quality.		

APPENDIX E PSD AIR DISPERSION MODELING PROTOCOL

June 2025

AIR QUALITY ANALYSIS PROTOCOL

In Support of a PSD Air Permit Application

Entergy Mississippi, LLC
Madison County Advanced Power Station
Ridgeland, Mississippi

Submitted To:
Mississippi Department of Environmental Quality
Office of Pollution Control
Air Division
515 East Amite Street
Jackson, MS 39201

PROJECT NUMBER:
0247630_0000.09.01

POWER ENGINEERS
MEMBER OF WSP

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1.0 PROJECT IDENTIFICATION INFORMATION

This document presents the proposed air quality impacts analysis protocol (protocol) for evaluating the air quality impacts resulting from the proposed construction of an electrical generating plant. This protocol is submitted in support of the *Preconstruction and Prevention of Significant Deterioration Air Permit Application, May 2024.* This protocol document corresponds to Item IV of MDEQ Form 5 Appendix C – Air Quality Analysis Checklist. A copy of this Checklist is included as Appendix A to this protocol. The final Air Quality Impact Analysis document will contain Items I through III and V through X of this Checklist. However, discussion regarding the proposed modeling methods that will be included in the final Air Quality Impacts Analysis is provided within this protocol.

POWER Engineers, Inc. (POWER) has prepared this protocol following written methodologies and procedures of the Mississippi Department of Environmental Quality (MDEQ) and the United States Environmental Protection Agency (USEPA).

Applicant:	Entergy Mississippi, LLC
Facility:	Madison County Advanced Power Station
Facility Air Permit Number:	TBD
Nearest City:	Ridgeland
County in Which Plant is Located:	Madison County
Air Contact:	Jeremy Halland Manager, Environmental Project Services 2107 Research Forest Drive, T-LFN-6 The Woodlands, TX 77380 jhallan@entergy.com 972-743-9649
Applicant's Modeler:	POWER Engineers, Inc. David Castro Senior Air Quality Specialist 2600 Via Fortuna, Suite 450 Austin, TX 78746 david.castro@powereng.com 512-579-3820

2.0 PROJECT OVERVIEW

Entergy Mississippi, LLC (EML) is proposing to build a new natural gas-fired 1x1 combined cycle power plant in Ridgeland, Madison County, Mississippi. EML has submitted an air permit application for the proposed new base load power plant which will be referred to as the Madison County Advanced Power Station (MCAPS). MCAPS will be constructed on a greenfield site.

An Air Quality Analysis (AQA) will be conducted to demonstrate that emissions associated with this project will not cause or contribute to an exceedance of the National Ambient Air Quality Standards (NAAQS) or Prevention of Significant Deterioration (PSD) increment consumption limits. Impacts from the proposed project will not cause or contribute to adverse effects with respect to growth, visibility, and soils.

2.1 Type of Permit Review

The entire state of Mississippi is currently designated as attainment/unclassifiable with the NAAQS for all pollutants. The applicability of federal permitting to the permit application is discussed in the air permit application. A summary of the PSD emission significance for each PSD-regulated pollutant is provided in Table 2-1.

TABLE 2-1 PSD SIGNIFICANCE SUMMARY

AIR CONTAMINANT	TRIGGERS PSD REVIEW
Nitrogen oxides (NO_X, as NO_2 and as an ozone precursor))	Yes
Carbon monoxide (CO)	Yes
Sulfur dioxide (SO_2)	No
Particulate matter (PM)	Yes
PM with a diameter of less than 10 microns (PM_{10})	Yes
PM with a diameter of less than 2.5 microns ($PM_{2.5}$)	Yes
Volatile organic compounds (VOC) (as an ozone precursor)	Yes
Sulfuric Acid Mist (H_2SO_4)	Yes
Ozone (O_3)	Yes

2.2 Air Constituents Evaluated

As discussed in Section 2.1, the project will trigger PSD review for NO_X, CO, PM, PM_{10}, $PM_{2.5}$, H_2SO_4, and O_3. To satisfy PSD review requirements, NO_2, CO, PM_{10}, $PM_{2.5}$, and O_3 will be evaluated for comparison with the NAAQS and PSD increment consumption limits. There are no NAAQS established for H_2SO_4. EML will provide modeling of this pollutant at MDEQ's request.

3.0 PLOT PLAN

A copy of the plot plan submitted with the application is provided as Appendix B. Detailed plot plans showing the names and locations of emission points and structures relative to MCAPS property boundary will be provided with the AQA. The proposed MCAPS will be completely fenced.

4.0 AREA MAPS

The following maps and figures illustrate the area surrounding the proposed project:

» A copy of the **area map** is provided as Appendix C.

» An area map illustrating the **terrain features** within the Area of Significant Impacts (AOI) will be provided in the AQA.

» A map showing the location of the local **meteorological station** will be provided in the AQA.

» A map showing the locations of the State/local **ambient air monitoring sites** will be provided in the AQA.

» There are no **PSD Class I areas** within 100 kilometers (km). The MCAPS site is located approximately 319 km from the Breton Wilderness Area (the nearest Class I area). The Sipsey Wilderness Area is approximately 336 km from the site. The EML understands that the MDEQ will inform the Federal Land Manager of the proposed MCAPS. A figure illustrating the location of all nearby Class I areas will be provided in the AQA.

5.0 MODELS PROPOSED AND GENERAL MODELING APPROACH

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD), Version 24142, will be used to perform the dispersion modeling in this AQA. AERMOD is the latest generation of atmospheric dispersion models suitable for industrial sources and is the model preferred by the USEPA for such applications. To facilitate the running of AERMOD, the Providence/ORIS, LLC's "BEE-Line BEEST for Windows" graphic user interface (Version 12.12) will be used.

5.1 Model Options

The following model options will be used in the application of the AERMOD modeling:

A. Regulatory default option will be enabled for all pollutants.

B. Elevated terrain will be used for modeling the area around MCAPS.

C. MCAPS sources will be modeled at their actual release heights. None of the MCAPS stacks exceed the calculated GEP height or 65 meters, whichever is greater.

D. The NAD83 datum will be used for source, structure, and receptor location coordinates.

E. Modeling receptors will be placed to a distance that clearly identifies the area of impact. The receptor grid spacing is discussed in Section 7.0 of this AQA.

5.2 Modeling Approach – Preliminary Impact Determination

A preliminary impact determination will be conducted to commence the AQA. The purpose of the preliminary analysis is to determine whether proposed emissions from the project sources have a "significant" impact on the existing air quality. The various preliminary modeling analyses are described in the sections below.

5.2.1 Modeled Emission Rates for Precursors Analysis

A Tier 1 approach will be used to estimate the secondary $PM_{2.5}$ and O_3 impacts associated with the precursor emissions. The secondary $PM_{2.5}$ and ozone impacts will be estimated using guidance from the USEPA's *Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program, December 2, 2016*, and *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program, April 30, 2019*. MERPs derived using the USEPA's photochemical modeling results for hypothetical sources located in Mississippi will be used to estimate the air quality of secondary $PM_{2.5}$ and ozone impacts associated with project-related emissions of NO_X, SO_2, and VOCs. These secondary $PM_{2.5}$ and ozone impacts will be included in the preliminary impact determination, full impact NAAQS, and full impact PSD increment consumption analyses.

The USEPA hypothetical source photochemical modeling and the MERP analysis are both based on annual project emission rates. The proposed project's annual emissions will be used for the annual $PM_{2.5}$ analysis. The maximum daily project emissions will be converted to tons per year (tpy) values for use in the short-term $PM_{2.5}$ and O_3 analyses. The turbine emission

contributions will be based on one hot startup each day and the remainder of the day at the turbine load scenario with the maximum hourly emission rates (base load operation with maximum duct burner firing at a 10°F ambient temperature day). This is extremely conservative since most days will not have a hot startup and the load scenario chosen for this analysis has higher emissions than those associated with alternative load scenarios.

The USEPA's Smith County hypothetical source (CUS 9) is located within the same airshed as the MCAPS. The majority of project-related NO_X, SO_2, and VOC emissions exhaust through the 61-meter-tall stack. This height is more similar to the "High" (90-meter) hypothetical source than the "Low" (10-meter) hypothetical source. The "High" Smith County hypothetical source MERP values were used for this analysis. The proposed project includes an (annualized daily) increase of 308 tpy NO_X emissions and 54 tpy SO_2 emissions. These emissions are closer to the modeled emissions for the USEPA's 500 tpy hypothetical source than the USEPA's 1,000 tpy or 3,000 tpy hypothetical source emission rates. The 500 tpy NO_X and SO_2 hypothetical source MERP values will be used for this analysis. The proposed project includes an (annualized daily) increase 881 tpy VOC emissions. These emissions are closer to the modeled emissions for the USEPA's 1,000 tpy hypothetical source than the USEPA's 500 tpy or 3,000 tpy hypothetical source emission rates. The 1,000 tpy VOC hypothetical source MERP values will be used for this analysis.

The conservative O_3 and secondary $PM_{2.5}$ impacts estimated using the MERP analysis will be included in the preliminary impact determination and full-impact modeling analyses. The MERP analysis estimates will be provided in Section 12.1.1.

5.2.2 Area of Significant Impact Analysis

A preliminary impact determination is conducted to determine if the predicted off-property concentrations associated with the proposed increase in PSD-significant emissions are greater than the USEPA's Significant Impact Levels (SILs). No further modeling is required to demonstrate compliance if the maximum predicted concentration is below the SIL. If the maximum predicted concentration is equal to or greater than the SIL, all on-site sources must be included in a full impact modeling analysis. Contributions from off-site sources that may impact the AOI are accounted for using ambient air monitoring data or by direct inclusion in the full impact modeling analysis. The AOI is defined as all locations with predicted concentrations that are equal to or greater than the established SILs. An ambient background concentration is added to the full impact modeling results to complete the NAAQS demonstration.

Preliminary impact determination modeling will be conducted for PSD-significant emissions of NO_X, CO, PM_{10}, and $PM_{2.5}$ to determine whether a full impact modeling analysis is required for each pollutant and averaging period. The modeling results will be used to determine whether the predicted concentrations are greater than the SIL for each pollutant and averaging period.

The estimated ozone impacts obtained using the MERP analysis described in Section 5.2.1 will be used to determine whether a full impact modeling analysis is required for this pollutant. The MERP results will be used to determine whether the project-related impacts are greater than the SIL.

The AOI analysis results will be provided in Section 12.1.2.

5.2.3 PSD Pre-Application Analysis

For PSD analyses, a preliminary impact determination is conducted to determine if the predicted off-property concentrations associated with the proposed increase in PSD-significant emissions are greater than the USEPA's Significant Monitoring Concentrations (SMCs). If the maximum predicted concentration is less than the SMC, the demonstration is complete and no preconstruction ambient air quality monitoring is required. If the maximum concentration is greater than the SMC, representative monitoring background concentrations are collected to establish the existing air quality for the area.

Preliminary impact determination modeling will be conducted for PSD-significant emissions of NO_2, CO, and PM_{10} for comparison with the SMCs. A preliminary impact determination will be conducted for $PM_{2.5}$. Representative monitoring background $PM_{2.5}$ concentrations will be collected to establish the existing air quality for the area.

The PSD pre-application analysis results will be provided in Section 12.1.3.

5.2.4 Class I PSD Increment Near Field Analysis

USEPA guidance requires an analysis of potential impacts to Air Quality Related Values (AQRVs) and an assessment of Class I increment consumption in Federal Class I areas within 100 km of the project. However, in certain cases, the Federal Land Manager may request an analysis of AQRV impacts for Class I areas beyond 100 km of a project.

As stated in Section 4, the nearest Class I areas (Breton Wilderness Area) is located approximately 319 km from the project. Following USEPA guidance provided in Appendix W to 40 Code of Federal Regulations (C.F.R.) 51, a near field assessment will be conducted using the AERMOD dispersion model to determine the ambient impacts at, or around, 50 km from the project sources. The 50-km impacts (in any direction) will be compared with the PSD increment Class I SILs. The $PM_{2.5}$ near field analysis will include both direct $PM_{2.5}$ modeling impacts and secondary $PM_{2.5}$ impact estimates. No further assessment is required if the near field results are less than the Class I SILs.

5.3 Modeling Approach – Full Impact Analysis

Full impact modeling analyses will be conducted for comparison with the NAAQS and PSD increment consumption limits for pollutants and averaging periods with preliminary impacts equal to or greater than the SIL. These modeling analyses are described in the sections below.

5.3.1 NAAQS Analysis

NAAQS have been established for NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$ and O_3. Compliance with the NAAQS must be demonstrated for sources with PSD-significant emissions. As discussed in Section 2.1, PSD applies for proposed emissions of NO_2, CO, PM_{10}, $PM_{2.5,}$ and O_3.

A preliminary impacts determination will first be conducted using project-related emissions to determine if a detailed NAAQS analysis is required. This process is described in greater detail in Section 5.2.2. A full impact analysis will then be performed for applicable NO_2, CO, PM_{10}, $PM_{2.5,}$ and O_3 emissions to predict ambient concentrations for comparison to the NAAQS. This

analysis will include emissions from sitewide MCAPS sources and from sources affecting the project's impact area.

The full impact modeling analysis will utilize receptor grids following the MDEQ guidelines. Only receptors with predicted concentrations equal to or greater than the SIL in the preliminary modeling analysis will be used. Background concentrations will be added to the full impact modeling results.

The NAAQS analysis results will be provided in Section 12.2.1.

5.3.2 PSD Class II Increment Consumption Analysis

PSD increment consumption limits currently exist for NO_2, SO_2, PM_{10}, and $PM_{2.5}$. Compliance with the PSD increment consumption limits must be demonstrated for sources with PSD-significant emissions. As discussed in Section 2.1, PSD applies to the proposed emissions of NO_2, PM_{10}, and $PM_{2.5}$.

A preliminary impacts determination will first be conducted using project-related emissions to determine if a detailed PSD increment consumption analysis is required. This process is described in greater detail in Section 5.2.2. A full impact analysis will then be performed for applicable NO_2, PM_{10}, and $PM_{2.5}$ emissions for comparison to the PSD increment consumption limits. This analysis will include PSD increment-consuming emissions from sitewide MCAPS sources and from PSD increment-consuming emission sources affecting the project's impact area. Increment consuming sources include:

» Direct and precursor allowable emissions from the proposed new source.

» Direct and precursor actual emission changes that have occurred at existing sources since the minor source baseline date for the proposed source's baseline area.

» Direct and precursor actual emissions from any major stationary source permitted prior to October 20, 2010 (major source baseline date for $PM_{2.5}$) on which construction commenced after October 20, 2010.

» Direct and precursor allowable emissions of sources permitted after the minor source baseline date that are not yet fully operative, if applicable.

The USEPA defines the baseline area to include (1) the facility submitting the first PSD application after the pollutant's trigger date and (2) any areas where the proposed emissions of this facility have a significant impact. For this purpose, a significant impact is defined as an annual increase greater than 1 microgram per cubic meter ($\mu g/m^3$) of the pollutant. In Mississippi, attainment status is listed by individual counties.

The full impact modeling analysis will utilize receptor grids following the MDEQ guidelines. Only receptors with predicted concentrations equal to or greater than the SIL in the preliminary modeling analysis will be used.

The PSD increment consumption analysis results will be provided in Section 12.2.2.

5.4 Modeling Approach – Ozone Analysis

An ozone impacts analysis is required for PSD projects with the potential to emit 100 tpy or more of NO_x and/or VOC emissions. Since the proposed net increase of NO_X and VOC emissions are both greater than 100 tpy, an ozone analysis is required.

Guidance from the 2018 USEPA Regional, State, and Local Modelers' Workshop in Boston, Massachusetts, June 5, 2018 and the MDEQ's *AQMG* will be followed in the modeling of ozone emissions. The ozone impacts from NO_X and VOC emissions will be assessed using a Tier 1 approach. These ozone impacts will be included in the preliminary impact determination analysis and full impact NAAQS analysis, if required.

5.5 Modeling Approach – Class I Air Quality Analysis

A preliminary Near Field Analysis will be conducted using project-related emissions to determine if a Class I Area Quality Analysis is required. No further assessment will be required if the near field results are less than the Class I SILs.

6.0 METEOROLOGICAL DATA

Current MDEQ guidance was followed concerning meteorological data for AERMOD modeling for sources located in Madison County. The MDEQ has created county-specific preprocessed meteorological data sets using AERMET for use in AERMOD air dispersion modeling. Pre-processed meteorological data was obtained from the MDEQ. Madison County is located within the Central region of the State. Within the Central region, the nearest pre-processed meteorological data consisted of surface data from the Jackson International Airport meteorological station (KJAN) and upper air data from the Jackson International station Airport is available. This meteorological station is located approximately 16 kilometers southeast of the MCAPS. However, the Hawkins Field Airport meteorological surface station (KHKS) is located approximately 7 kilometers south of the MCAPS in the Southwest regions of the state. Both meteorological stations were considered for the analysis.

Guidance from the USEPA's Guideline on Air Quality Models, Appendix W 40 C.F.R. 51, EPA-HQ-OAR-2015-0310, January 17, 2017 and the AERMOD Implementation Guide, 454-B-23-009, October 12, 2023 was followed to assess the representativeness of the data from this meteorological station location. These documents state that the determination of representativeness should include a comparison of the surface characteristics (albedo, Bowen ratio and surface roughness length) between the measurement site and the source location. The surface characteristics at both locations were determined using the USEPA's AERSURFACE tool using land cover data from the National Land Cover Database.

TABLE 6-1 SURFACE CHARACTERISTICS

POLLUTANT	ALBEDO	BOWEN RATIO	SURFACE ROUGHNESS LENGTH (m)
MCAPS	0.16	0.62	0.135
Hawkings Field Airport	0.17	0.78	0.033
Jackson International Airport	0.16	0.51	0.037

The albedo and Bowen ratios of each meteorological location are similar to that of the MCAPS location. The surface characteristics of each meteorological station are similar to each other. Surface roughness lengths vary between 0.001 to 1.5 meters. The surface roughness at the MCAPS location and these meteorological stations are at the lower end of this range. Additionally, surface roughness at most airports are lower than non-airport locations due to the runway surfaces. The land use immediately surrounding each location is rural in nature. The terrain surrounding each location and the terrain between each location is flat.

The surface characteristics at the Hawkins Field Airport and Jackson International Airport are nearly identical to each other. The nearest meteorological stations – Hawkings Field Airport – was selected to provide the most representative meteorological data for the MCAPS location.

The MDEQ processed the data using AERMET version 24142 and incorporates the AERMINUTE data along with the low wind speed threshold of 0.5 m/s. The most recent five years of representative National Weather Service meteorological data available from the MDEQ on the date of the AQA (2020, 2021, 2022, 2023, and 2024) will be utilized in the NAAQS and PSD increment analyses. The base elevation for the Hawkings Field Airport surface station is 101.6 meters.

7.0 RECEPTOR GRIDS

The receptor grids to be used in the preliminary and full impacts analyses are described in this Section. The NAD83 datum was used for the receptor UTM coordinates. Providence/ORIS, LLC's "BEE-Line BEEST for Windows" was used to calculate the appropriate domain boundaries. The USEPA AERMAP program will be used to calculate (interpolate) the terrain elevations and local terrain maximums using 1-arc-second (~30 meters) United States Geological Survey's National Elevation Dataset.

7.1 Preliminary Impact Modeling Receptor Grids

The receptor coverage utilized for the preliminary impact analyses will consist of the following:

» 1,000-meter spaced receptors to a distance of 30 km from the MCAPS sources to ensure that (1) the maximum predicted concentration is located, (2) all locations with predicted concentrations greater than the SILs were identified, and (3) that concentration gradients associated with the project related emissions clearly decrease in magnitude outside of the AOIs

» 500-meter spaced receptors to a distance of 5 km from the MCAPS sources

» 100-meter spaced receptors to a distance of 1 km from the MCAPS sources

» 25-meter spaced receptors to a distance of 300 meters from any MCAPS fence line

» 25-meter spaced receptors along the MCAPS fence line

As discussed in Section 3.0, the entire MCAPS facility will be fenced. These receptor grids will be designed to capture the maximum off-property ground-level concentrations for all pollutants, operating scenarios, and review types. EML will ensure that the receptor spacing surrounding the location of the modeled maximum concentration will be 100 meters or less.

7.2 Full Impact Modeling Receptor Grids

Only receptors with predicted concentrations greater than or equal to the respective SILs will be included in the full impact NAAQS and PSD increment consumption analyses. Full impact modeling receptor grids will be developed using the preliminary modeling output.

Tier 1 estimates of the secondary $PM_{2.5}$ impacts calculated using the project-related NO_X and SO_2 precursor emissions will be added to the direct $PM_{2.5}$ modeling results for each individual modeling receptor for the significant receptor determination analyses. This is conservative since secondary $PM_{2.5}$ formed through chemical reactions will occur in the atmosphere gradually over time (hours or days depending on atmospheric conditions and other variables) and the estimated secondary $PM_{2.5}$ impact will not be likely to occur near the receptors with direct $PM_{2.5}$ impacts that are greater than the SILs.

8.0 MODELING EMISSIONS INVENTORY

The proposed emissions, operating parameter limitations, and design parameter limitations for the proposed project are defined and discussed in the air quality permit application. The application submitted to the MDEQ includes detailed information regarding the items addressed in this section.

8.1 On-Property Sources

As discussed in Section 2, EML is submitting a permit application to authorize the MCAPS. The MCAPS project will consist of the following:

» A natural gas-fired Mitsubishi Model M501JAC Gas Turbine (GT) equipped with supplementary natural gas-fired duct burners and a Heat Recovery Steam Generator (HRSG).

» A steam turbine which is fed steam generated in the HRSG.

» Lube oil vents for the gas turbine and steam turbine lube oil recirculation systems.

» A natural gas-fired dew point heater.

» A diesel-fired emergency standby power generator.

» A diesel-fired emergency fire pump.

» Diesel, ammonia and condensate storage tanks.

» Natural gas and ammonia piping, handling, and metering equipment.

A table summarizing the source identifiers and preliminary exhaust assumptions for the proposed project's modeling sources is included as Appendix D.

8.2 Off-Property Sources

Based on the draft Preliminary Impact Determination results, full impact PSD increment consumption modeling may be required for 24-hour $PM_{2.5}$.

The MDEQ website indicates that there is no Minor Source Baseline date established for $PM_{2.5}$ in Madison County. Therefore, the proposed project itself would establish the Minor Source Baseline date. The proposed emissions associated with the MCAPS are the only emissions required to be included in the cumulative increment consumption analyses. An inventory of off-property increment consuming sources will not be required.

8.3 Stack Parameter Details

8.3.1 Good Engineering Practice Stack Height

Each source will be modeled at its physical release height or at the BPIP-calculated GEP stack height, whichever is lower.

8.3.2 Stack Parameter - MCAPS Sources

The emission release parameters for on-site sources are discussed below.

Turbine Stack

Turbine emissions will be modeled using the physical dimensions of the proposed stack. The proposed GT is expected to operate at base load. The exhaust parameters for this unit corresponded to those associated with base load operations.

The exhaust parameters for the proposed GT will vary with load. The exhaust parameters at various loads were determined and documented within the permit application. The GT will be modeled at varying load rates using those varying exhaust assumptions. Additional discussion is provided in Section 6.3.3.

Lube Oil Vents

Lube oil vents were modeled as pseudo point sources with release heights and temperatures corresponding to the equipment properties.

Dew Point Heater

Emissions associated with the proposed dew point heater were modeled using the physical dimensions of the proposed stack.

8.3.3 Operating Load Levels

EML expects to operate the GT continuously at full load and at reduced loads. The maximum short-term emissions and exhaust parameters associated with various full load and reduced load operations are summarized in the table provided as Appendix E. To ensure that the most conservative off-property concentrations are determined, the GT will be modeled using three short-term operating scenarios:

» The maximum proposed short-term emission rates for 100% load operations will be modeled using corresponding stack exhaust properties. This corresponds to the turbines operating at this full load and 10ºF ambient conditions (Case 1a of the emission rate calculations).

» The maximum proposed short-term emission rates for 75% load operations will be modeled using corresponding stack exhaust properties. This corresponds to the turbines operating at 75% load and 10ºF ambient conditions (Case 21a of the emission rate calculations).

» The maximum proposed short-term emissions for minimum emissions-compliant load operations will be modeled using corresponding stack exhaust properties. This corresponds to the turbines operating near 50% load and 10ºF ambient conditions (Case 35a of the emission rate calculations).

Exhaust parameters during annual operations of the GT will be assumed to be identical to those at full load (100%) operations.

8.3.4 Turbine Startup and Shutdown Activities

The proposed combustion turbine for the MCAPS Project is a Mitsubishi Model M501JAC combined cycle combustion turbine. In a combined cycle unit, electricity is generated in the turbine from expanding gas; the turbine exhaust is routed through a heat recovery steam generator; and additional electricity is generated in a steam turbine. A combined cycle combustion turbine takes longer to startup than a simple cycle turbine due to the time required to heat up the heat recovery steam generator, steam piping and the steam turbine and is typically not used for electrical peaking service. The MCAPS combustion turbine will be used as a baseload power plant, meaning it is designed to run at its maximum output year-round.

The combustion turbine will be dispatched as required by Midcontinent Independent System Operator (MISO). The Mitsubishi Model M501JAC combustion turbine will be among the most efficient combustion turbines in the MISO fleet and is expected to be dispatched as much as possible to provide low-cost electricity. The MCAPS air permit application includes emissions associated with worst-case annual startup events for purposes of the annual average impacts analysis but a more realistic estimate of startup events per year using actual emission rate data from an existing and identical combustion turbine unit. EML obtained acid rain data for an identical M501JAC combined cycle combustion turbine – the Alabama Power Barry 8 Unit for the time period December 12, 2023 through March 31, 2025. An average hourly NOx emission rate was calculated based on all of the startup events identified in the Barry Unit 8 CEMs data. These actual hourly NO_X Startup/Shutdown emissions were modeled from the MCAPS turbine.

The CO startup emissions for the 1-hour averaging period will be conservatively modeled using the maximum expected hourly startup/shutdown emission rate. This maximum hourly rate will be modeled assuming startup operations occur every hour of the year. Separate analyses will be conducted for cold startup, warm startup and hot startup operations. The CO startup emissions expected for the 8-hour time period will be calculated using the maximum emission rate for a startup event and adding the maximum hourly emissions rate for 100% load operations for the remaining hours to obtain a conservative 8-hour average emission rate. Separate analyses will be conducted for cold startup, warm startup and hot startup operations. The hourly PM_{10}, $PM_{2.5,}$ and H_2SO_4 emissions are not expected to exceed the short-term emission allowable emission rates during startup and shutdown periods.

Annual startup/shutdown emissions associated with the proposed unit will be modeled with the annual emission rates from other sitewide sources.

8.3.5 Emergency Equipment Emissions

A diesel-fired emergency electrical generator engine and a diesel-fired emergency fire water pump are included in the proposed application. Emissions associated with the emergency readiness testing of these emergency engines were modeled.

EML plans to test the proposed emergency engines for a period of 30 minutes per month. The modeling of the proposed equipment included a maximum of 30 minutes of testing emissions for the following modeled averaging periods: 3-hour, 8-hour, and 24-hour. No testing is conducted during GT startup/shutdown operations.

The USEPA's *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard, March 1, 2011*, states that compliance demonstrations for the 1-hour NO_2 and SO_2 NAAQS be based on emission

scenarios that can logically be assumed to be relatively continuous or which occur frequently enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations. As such, the 1-hour NO_2 emissions associated with these intermittent sources were modeled per USEPA guidelines, multiplying the maximum hourly emission rate by the ratio of the proposed hours per year and total available hours per year. Although expected operations correspond to each proposed engine being tested a total of six hours per year, the permit includes a conservative annual emissions estimate corresponding to 100 hours per year. Therefore, the modeling of 1-hour NO_2 emissions associated with the intermittent sources will be conservatively modeled using these higher annual emission assumptions. As previously described, EML typically tests a single engine at a time. However, the modeling of emergency readiness testing will be conservatively conducted assuming both diesel engines are tested simultaneously.

The emissions associated with emergency equipment operating during an actual emergency were not modeled because the proposed authorization does not include such emissions.

8.3.6 Modeling Source Groups

Modeling source groups were used to obtain conservative estimates for the various emission scenarios. Additional details regarding these emission scenarios are provided in Sections 8.3.3, 8.3.4, and 8.3.5). A table describing the source groups used for preliminary and full impact modeling for each pollutant is provided as Appendix F.

8.3.7 NO_X-to-NO_2 Conversion

Following guidance included in the USEPA's *Guideline on Air Quality Models; Appendix W to 40 CFR Part 51; November 29, 2024* (Section 4.2.3.4)*;* the Tier 2 Ambient Ratio Method 2 NO_X-to-NO_2 conversion will be utilized within the AERMOD model. The modeling guidance provided by the USEPA in this 2024 guidance document supersedes any previously issued modeling guidance. Appendix W guidance states that the reviewing agency can establish alternative minimum ambient NO_2/NO_X ratios based on source-specific data following USEPA quality assurance procedures. Additionally, EML can utilize manufacture test data to establish a project-specific NO_2/NO_X ratio for this analysis. EML proposes to utilize the Appendix W national default minimum ambient NO_2/NO_X ratio of 0.5 and the maximum ambient ratio of 0.9 for this analysis.

8.3.8 $PM_{2.5}$ Emissions

Guidance from the 2018 USEPA Regional, State, and Local Modelers' Workshop in Boston, Massachusetts, June 5, 2018 will be followed in the modeling of $PM_{2.5}$ emissions. As stated in Section 5.2.1, the secondary $PM_{2.5}$ impacts will be estimated using guidance from the USEPA's *Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program, December 2, 2016* and *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program, April 30, 2019*. MERPs derived using the USEPA's photochemical modeling results for hypothetical sources located in Mississippi will be used to estimate the air quality $PM_{2.5}$ impacts associated with project-related emissions of NO_X and SO_2. These conservative secondary $PM_{2.5}$ impact

estimates were included in the preliminary impact determination, full impact NAAQS, and full impact PSD increment consumption analyses.

8.3.9 Ozone Emissions

Guidance from the 2018 USEPA Regional, State, and Local Modelers' Workshop in Boston, Massachusetts, June 5, 2018 will be followed in the modeling of O_3 emissions. As stated in Section 5.2.1, the ozone impacts will be estimated using guidance the USEPA's *Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program, December 2, 2016* and *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program, April 30, 2019*. MERPs derived using the USEPA's photochemical modeling results for hypothetical sources located in Mississippi will be used to estimate the air quality ozone impacts associated with project-related emissions of NO_X and VOCs. These conservative ozone impact estimates were included in the preliminary impact determination and full impact NAAQS analyses.

8.4 Scaling Factors

Scaling factors will be not utilized in the AQA.

9.0 SELECTION OF DISPERSION OPTION

EML does not propose the use of the optional AERMOD URBANOPT option for this analysis.

The AERMOD URBANOPT can be used to model select sources that may be affected by the dispersive nature of convective-like boundary layers that form during nighttime conditions due to the urban heat island effect. The USEPA's AERMOD guidance documents describe the information that is required to justify the use of this modeling option. Alternatively, current USEPA guidance does not require any information to justify not using this (URBANOPT) option. Not using the URBANOPT option corresponds to using the regulatory default AERMOD algorithms. These have historically been referred to as the "rural" option.

10.0 BUILDING WAKE EFFECTS

Building downwash effects were included in the modeling based on guidance provided in the USEPA's *User's Guide to the Building Profile Input Program, October 1993.* The USEPA currently requires that all building downwash be determined using the USEPA Building Profile Input Program subroutine. Providence/Oris LLC's "BEE-Line BEEST for Windows" will be used for calculating downwash parameters for this analysis. This program includes downwash software which uses the latest Building Profile Input Program subroutine (version 04274) in its calculations.

Information regarding MCAPS's proposed structures will be entered into the BPIP-based software program. MCAPS downwash structures that may affect the dispersion of emissions from modeled sources were identified in the AQA. The downwash parameter values were calculated for each point source by the software program and inserted into the AERMOD input files in the appropriate locations and formats.

Downwash summary tables created by the Building Profile Input Program subroutines are included as part of the electronic files included in the AQA submitted to the MDEQ.

11.0 AIR QUALITY MONITORING DATA

Estimates for the current ambient air background concentrations at the proposed project site may be required for two distinct and separate purposes: (1) to demonstrate that the ambient air concentrations of PSD-significant pollutants are currently in compliance with the NAAQS and (2) for use in a full impact NAAQS modeling analysis. Based on draft Preliminary Impact Determination results, background ambient air concentration data may be required for $PM_{2.5}$ and O_3. EML proposes to use ambient air quality data from existing air quality monitoring stations to establish representative background concentrations for these contaminants.

11.1 Available Background Concentrations

Based on a review of the USEPA's *AirData* website, EML proposes using data collected at the following monitoring stations to establish representative background concentrations and for use in the NAAQS compliance demonstrations:

» $PM_{2.5}$ – Hinds CC (EPA ID 28-049-0021)

» O_3 – Hinds CC (EPA ID 28-049-0021)

USEPA Guidance will be followed in selecting the form of the monitored concentration for each pollutant and averaging period. The proposed background concentrations are summarized in Table 11-1. Tables summarizing the monitor concentration data for the individual years are provided as Appendix G.

TABLE 11-1 PROPOSED BACKGROUND CONCENTRATION

CONTAMINANT	MONITORING STATION	COUNTY	AVERAGING PERIOD	CONCENTRATION ($\mu G/M^3$)	FORM
$PM_{2.5}$	Hinds CC	Hinds, MS	24-Hour	24.00	3-Year Average of 98th Percentiles of the Daily Maximums 2022-2024
			Annual	9.700	3-Year Average of 1st Highs 2022-2024
O_3	Hinds CC	Hinds, MS	8-Hour	62 PPB	3-Year Average of the 4th Highest Daily 8-Hour Maximums 2022-2024

The $PM_{2.5}$ and O_3 concentrations were calculated using data obtained from annual summary tables obtained on the USEPA website. The data collected from these monitors meet the USEPA requirements for completeness.

11.2 Representativeness of the Selected Monitoring Stations

Following guidance contained in USEPA's *Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD)*, EPA-450/4-87-007, May 1987; and USEPA's *Guidance on Developing Background Concentrations for Use in Modeling Demonstrations*, November 20, 2024. EML concludes that the air quality monitoring data used to establish background concentrations is representative of the area around the MCAPS facility.

The MCAPS facility is located outside the "same general area" of the proposed monitoring stations. There are no $PM_{2.5}$ or O_3 ambient air monitoring stations located within Madison County. Therefore, topography, population and air emission information compiled for Madison County were compared to the proposed monitor locations.

11.2.1 Topography

The MCAPS facility location and the proposed monitor location share similar topography. The area within several kilometers of each location is relatively flat, and largely undeveloped with rural characteristics.

11.2.2 Population Density

Population estimates were obtained from the U.S. Census Bureau for year 2024. Using these estimates, the population of Madison County was compared to the populations the Counties where the proposed monitor stations are located. The comparison of county population data is presented in Table 11-2.

TABLE 11-2 POPULATION COMPARISON ANALYSIS

COUNTY	POPULATION ESTIMATE FOR YEAR 2024
Madison, MS	114,247
Hinds, MS	211,975

Hinds County has a greater population than Madison County. Hence, air emissions associated with population density (e.g., automobile traffic) and corresponding ambient air concentrations monitored by the station will be greater than the emissions associated with population density expected to exist near the MCAPS facility. EML believes the Hinds CC monitoring station would offer representative $PM_{2.5}$ concentration estimates for the MCAPS location.

Ozone is formed through photochemical reactions involving the emission of precursor compounds such as NO_X and VOC. These chemical transformations occur in the atmosphere gradually over time. Due to the required formation distances, comparison of nearby (i.e. county-wide) ozone precursor emissions (i.e., NO_X and VOC) is not appropriate. However, it is noted that the county-wide population of Hinds County supports the proposed Hinds CC O_3 monitor selection for representative concentration estimates for the MCAPS location.

11.2.3 County-wide Emissions

Air emission rate data for Madison and the proposed monitor Counties were obtained from USEPA's National Emissions Inventory (NEI) Database through the USEPA AirData website. These USEPA AirData correspond to the point source and non-point/mobile source criteria pollutant emissions for the 2020 NEI analysis (Version March 30, 2023). The USEPA is currently developing the 2023 NEI analysis and 2023 data is not yet available. Total air emissions from the NEI Database for each county are summarized in Table 11-3.

TABLE 11-3 COMPARISON OF COUNTY-WIDE AIR EMISSIONS

COUNTY	COUNTY-WIDE AIR EMISSION ESTIMATES (TPY)		
	$PM_{2.5}$	NO_2	VOC
Madison, MS	1,679	2,053	25,213
Hinds, MS	1,953	4,055	34,373

The county-wide air $PM_{2.5}$ emissions for Hinds County are greater than those in Madison County. EML believes the proposed Hinds CC monitor offers representative $PM_{2.5}$ concentrations for the MCAPS location.

Ozone is formed through photochemical reactions involving the emission of precursor compounds such as NO_X and VOC. These chemical transformations occur in the atmosphere gradually over time. Due to the required formation distances, comparison of nearby (i.e., county-wide) ozone precursor emissions (i.e., NO_X and VOC) is not appropriate. However, it is noted that the county-wide NO_2 and VOC emissions in Hinds County support the proposed Hinds CC O_3 monitor selection for representative concentration estimates for the MCAPS location.

11.2.4 Nearby Source Emissions

The emissions from electrical power generating facilities located near the proposed $PM_{2.5}$ and NO_2 monitors was compared with those near the project site. The USEPA's Power Plants and Neighboring Communities Map website was used to identify power plants within 100 km of each monitoring station and their emissions. These nearby power plant emissions are summarized in Table 11-4. A detailed table identifying the facilities is provided as Appendix H.

TABLE 11-4 COMPARISON OF EMISSIONS FROM POWER PLANT SOURCES WITHIN 100 KM

LOCATION	COUNTY	COMBINED NAMEPLATE CAPACITY FOR NEARBY POWER PLANTS (MW)	AIR EMISSION ESTIMATES (TPY)	
			NO_X	SO_2
MCAPS	Madison, MS	1,716	833	573
Hinds CC Monitor	Hinds, MS	1,716	833	573

This USEPA database does not provide the $PM_{2.5}$ emissions associated with these power plants. However, the provided NO_X and SO_2 pollutants are precursors to secondary $PM_{2.5}$ emissions. This comparison shows that the emissions near the Hinds CC monitor are identical to those near the proposed MCAPS location. EML believes the Hinds CC monitor provides conservative and representative estimates for the background $PM_{2.5}$ concentrations at the project site.

11.2.5 Available Ozone Monitoring Data

As discussed in Sections 11.2.1 and 11.2.2, the chemical transformations that occur to precursor compounds within the atmosphere occur gradually over time. It would not be appropriate to base the selection of a representative O_3 monitor on emissions of nearby or county-wide sources. There are four O_3 monitors located within the MCAPS airshed. These monitors are identified in Table 11-5.

TABLE 11-5 COMPARISON OF NEARBY OZONE MONITORS

MONITOR	COUNTY	DISTANCE TO MCAPS (KM)	8-HOUR O3 DESIGN VALUE (PPB)
Hinds CC	Jackson, MS	6	62
NCORE	Jackson, MS	9	64
Monroe Airport	Ouachita, LA	172	62
Cleveland Delta State	Bolivar, MS	157	64

The topography at the locations of each of these monitor stations are similar to that at the MCAPS location. These nearby monitors provide similar concentration results that are all well below the 70 parts per billion NAAQS. EML proposes the use of the monitor closest to the MCAPS location – Hinds CC. It should be noted the use of one of the more conservative of these monitors would also provide comparable (i.e., acceptable) modeling results for this AQA.

11.3 PSD Ambient Monitoring Requirement

The New Source Review Workshop Manual-Prevention of Significant Deterioration and Nonattainment Area Permitting; USEPA, Draft October 1990 (page C.16) states that continuous ambient monitoring data may be required unless “either (1) the predicted ambient impact, i.e., the highest modeled concentration for the applicable averaging time, caused by the proposed significant emissions increase (or significant net emissions increase), or (2) the existing ambient pollutant concentrations, are less than the prescribed significant monitoring value” (i.e., SMC value).

The proposed project will emit PSD-significant amounts of NO_2, CO, PM_{10}, $PM_{2.5}$, and O_3 precursors. 40 C.F.R. 51.166(i)(5)(i) lists the PSD pollutants that are exempt from the preconstruction monitoring requirements of 40 C.F.R. 51.161(m). Draft Preliminary Impact Determination concentration results of NO_2, CO and PM_{10} meet the listed concentration requirements for each of these pollutants. Therefore, compilation of representative monitoring data is not required for NO_2, CO, or PM_{10}. O_3 is the only pollutant in this list that has emission-based requirements. There is no de minimis concentration value for O_3. Based on the proposed net emission increases of VOC and NO_X, compilation of representative monitoring data is required for O_3. As stated on this list, there is no preconstruction monitoring exemption for PSD $PM_{2.5}$ emissions. Therefore, compilation of representative data is required for $PM_{2.5}$.

EML believes the nearby Hinds CC monitoring station offers conservative estimates of the background $PM_{2.5}$ and O_3 concentrations for the area. Therefore, EML proposes to utilize the Hinds CC monitoring data in lieu of performing pre-construction monitoring for $PM_{2.5}$ and O_3.

The 24-hour background $PM_{2.5}$ concentrations at the Hinds CC monitoring station are less than the NAAQS. The annual background $PM_{2.5}$ concentrations at the Hinds CC monitoring station were less than the 12 µg/m^3 NAAQS prior to the lowering of the standard on May 6, 2024. The current annual background $PM_{2.5}$ concentration is greater than the new 9 µg/m^3 NAAQS. As noted in 79 FR No. 242 December 17, 2014 (page 75379), this project can be authorized via PSD permit during this transition period if the project will not cause or contribute to an exceedance of a NAAQS. The impacts analysis to be submitted with this project will demonstrate that the estimated project $PM_{2.5}$ impacts are below the annual $PM_{2.5}$ significant impact level of 0.13 µg/m^3 and will not cause or contribute to an exceedance of the PM2.5 annual NAAQS.

12.0 MODELING RESULTS

The results of the AQA are included in this section. Guidance from the USEPA's *Guidance on Air Quality Models* (40 C.F.R. 51, Appendix W) will be followed in selecting the predicted concentrations used to determine compliance with the NAAQS. Copies of all modeling input and output files will be included as part of the electronic files submitted to the MDEQ.

12.1 Preliminary Impact Determination

12.1.1 Modeled Emission Rates for Precursors Analysis Results

As described in Sections 5.2.1, a Tier 1 approach will be used to estimate the secondary $PM_{2.5}$ and O_3 impacts associated with the precursor emissions. The calculation is provided as Appendix I. The estimated secondary $PM_{2.5}$ and O_3 analysis results are summarized in Tables 12-1 and 12-2.

TABLE 12-1 MERP ANALYSIS RESULTS, MAXIMUM

POLLUTANT	AVERAGING PERIOD	ESTIMATED MERP CONCENTRATION (µg/m³)
$PM_{2.5}$	24-HOUR	0.04907
	ANNUAL	0.001294
O_3	8-HOUR	1.656 PPB

TABLE 12-2 MERP ANALYSIS RESULTS, AT 50+ KM

POLLUTANT	AVERAGING PERIOD	ESTIMATED MERP CONCENTRATION (µg/m³)
$PM_{2.5}$	24-HOUR	0.04020
	ANNUAL	0.0008803

These estimated impacts will be included in the Area of Significant Impact (AOI) analysis and in applicable full impact analyses.

12.1.2 Area of Significant Impact Analysis Results – Class II

As described in Section 5.2.2, this modeling will be conducted for proposed increases in emissions to determine whether full impact modeling is required and, if so, to determine the AOI. The draft ground-level concentrations and SILs are summarized in Table 12-3.

TABLE 12-3 AOI ANALYSIS RESULTS (DRAFT)

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS AT EACH RECEPTOR (ug/m³)		SIGNIFICANT IMPACT LEVEL (SIL) (µg/m³)
NO_2	1-Hour	5-Year Average of 1st High	6.473	7.5
	Annual	1st High (of 5 Years)	0.2348	1
CO	1-Hour	1st High (of 5 Years)	771.7	2,000
	8-Hour	1st High (of 5 Years)	107.5	500
PM_{10}	24-Hour	1st High (of 5 Years)	1.384	5
PM_{10} (Increment)	Annual	1st High (of 5 Years)	0.1184	1
$PM_{2.5}$ (Increment)	24-Hour	1st High (of 5 Years)	1.433 **	1.2
	Annual	1st High (of 5 Years)	0.1197 **	0.13
$PM_{2.5}$ (NAAQS)	24-Hour	5-Year Average of 1st High	1.040 **	1.2
	Annual	5-Year Average of 1st High	0.1106 **	0.13
O_3	8-Hour	Conservative Estimate	1.656 PPB **	**1 PPB**

** Includes estimated secondary $PM_{2.5}$ impact from Section 12.1.1 MERP analysis
*** Estimated O_3 impact from Section 12.1.1 MERP analysis

The predicted annual NO_2, 1-hour CO, 8-hour CO, 24-hour PM_{10}, annual PM_{10} and annual $PM_{2.5}$ concentrations are expected to be less than their respective SILs. Additionally, the 24-hour $PM_{2.5}$ NAAQS concentration is expected to be less than the SIL. No additional modeling will be required for these pollutants and averaging periods. The predicted 24-hour $PM_{2.5}$ PSD increment and 8-Hour O_3 NAAQS concentrations are expected to be greater than their respective SILs. Therefore, a full impact modeling analyses are required for these pollutants and averaging periods.

The results of the full impact modeling analyses will be included in Section 12.2.

12.1.3 PSD Pre-Application Analysis Results

As described in Section 5.2.3, this modeling will be conducted to determine whether the project is exempt from the pre-construction ambient monitoring data gathering requirements. The draft ground-level concentrations and SMC are summarized in Table 12-4.

TABLE 12-4 PSD PRE-CONSTRUCTION MONITORING REQUIREMENT ANALYSIS RESULTS (DRAFT)

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS AT EACH RECEPTOR (ug/m³)		SIGNIFICANT MONITORING CONCENTRATION (µg/m³)
NO_2	Annual	1st High (of 5 Years)	0.2348	14
CO	8-Hour	1st High (of 5 Years)	107.5	575
PM_{10}	24-Hour	1st High (of 5 Years)	1.384	10

The predicted NO_2, CO, and PM_{10} concentrations are expected to be less than their respective SMCs. Pre-construction monitoring data will not be required for these pollutants.

As discussed in Section 11.3, there is no SMC for $PM_{2.5}$. EML proposes the use of existing ambient air monitoring data from a representative monitor to meet the $PM_{2.5}$ pre-construction

monitoring data requirement. The proposed project will have net emission increases of NO_X and VOC greater than 100 tpy (each). These emissions are greater than the O_3 emission exemption threshold values of 40 C.F.R. 51.66(i)(5)(i). Therefore, EML proposes the use of existing ambient air monitoring data from a representative monitor to meet the O_3 pre-construction monitoring data requirement.

A summary of the existing $PM_{2.5}$ and O_3 ambient air monitoring data is provided in Table 11-1.

12.1.4 PSD Class I Increment Near Field Assessment Results

As described in Section 5.2.4, this modeling will be conducted for proposed increases in emissions to determine whether full impact modeling is required. Modeling run numbers 1027 through 1040 represent the preliminary modeling conducted for the proposed PSD-significant increases in NO_2, PM_{10}, and $PM_{2.5}$. The draft ground-level concentrations and Class I PSD increment SILs are summarized in Table 12-5.

TABLE 12-5 PSD CLASS I INCREMENT NEAR FIELD ASSESSMENT ANALYSIS RESULTS (DRAFT)

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS AT EACH RECEPTOR (ug/m³)		SIGNIFICANT IMPACT LEVEL (SIL) (µg/m³)
NO_2	Annual	1st High (of 5 Years)	0.009100	0.1
PM_{10}	24-Hour	1st High (of 5 Years)	0.1473	0.3
	Annual	1st High (of 5 Years)	0.006990	0.2
$PM_{2.5}$	24-Hour	1st High (of 5 Years)	0.1875 *	0.27
	Annual	1st High (of 5 Years)	0.007870 *	0.03

* Includes estimated secondary $PM_{2.5}$ impact from Section 12.1.1 MERP analysis

The predicted NO_2, PM_{10}, and $PM_{2.5,}$ concentrations are expected to be less than their respective Class I PSD increment SILs. No additional modeling will be required for these pollutants.

12.2 Full Impact Analysis

12.2.1 NAAQS Analysis Results

Based on the results of the draft preliminary impact determination, a full impact NAAQS modeling analysis is expected to be required for 8-hour O_3.

The form of the predicted ground-level concentrations from the NAAQS modeling, the form of the background concentrations, and the NAAQS for all applicable criteria pollutants are summarized in Table 12-6. The draft ground-level concentrations from the NAAQS modeling, the background concentrations for the project area, and the sum of the two values will be summarized in Table 12-7. The total impacts are compared to the NAAQS.

TABLE 12-6 NAAQS ANALYSIS – FORM OF MODELING RESULTS AND BACKGROUND CONCENTRATION

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS (µg/m³)	BACKGROUND CONCENTRATION (µg/m³)	NAAQS (µg/m³)
O_3	8-Hour	Conservative Maximum (from MERP analysis)	3-Year Average of the 4th Highest Daily 8-Hour Maximums	70 ppb

TABLE 12-7 NAAQS ANALYSIS RESULTS (DRAFT)

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS (µg/m³)	BACKGROUND CONCENTRATION (µg/m³)	TOTAL (µg/m³)	NAAQS (µg/m³)
O_3	8-Hour	1.656 ppb*	62 ppb	63.66 ppb	70 ppb

* Estimated secondary O_3 impact from Section 12.1.1 MERP analysis

The predicted O_3 concentration is expected to be less than the NAAQS for all applicable averaging periods.

12.2.2 PSD Class II Increment Consumption Analysis Results

Based on the results of the preliminary impact determination, a PSD increment consumption modeling analyses is required for 24-hour $PM_{2.5}$. The draft ground-level concentrations and PSD increment consumption limits are summarized in Table 12-8.

TABLE 12-8 PSD INCREMENT CONSUMPTION ANALYSIS RESULTS (DRAFT)

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS AT EACH RECEPTOR (µg/m³)		PSD INCREMENT CONSUMPTION LIMIT (µg/m³)
$PM_{2.5}$	24-Hour	2nd High (of 5 Years)	1.280 *	9

* Includes estimated secondary $PM_{2.5}$ impact from Section 12.1.1 MERP analysis

The predicted $PM_{2.5}$ concentration is expected to be less than the PSD increment consumption limits for all applicable averaging periods.

12.3 Additional Impact Analysis

12.3.1 Growth Analysis

The MDEQ's *AQMG* states that "An in-depth growth analysis is only required if the project would result in a significant shift in population and associated activity into the area (i.e., a population increase on the order of thousands of people)." Employment within this area (i.e., within the modeling domain) will not significantly increase as a result of the proposed project. Also, there will not be any significant impacts due to any changes in the population size or density, or

changes in the type of development in the area. Therefore, possible adverse impacts from this project are not expected.

12.3.2 Visibility Impairment Analysis

The increased emissions are not expected to degrade the existing visibility. As discussed in Section 5.0, there are no Class I areas within 100 km of the proposed project. A Class II visibility analysis is not required since the proposed project will comply with all regulatory requirements for opacity (11 MAC, Part 2, Chapter 1). Additionally, the areas of significant $PM_{2.5}$ and NO_2 impacts extend to distances of 1.2 km and 3.5 km from the turbine stack, respectively. There are no sensitive Class II areas within these areas of significant impacts.

EML has extensive experience operating natural gas-fired combustion turbine EGUs at numerous locations. Because low-sulfur pipeline-quality natural gas is such a clean burning fuel, to the best of our knowledge there has never been a circumstance where operation of such an EGU has resulted in visibility impairment at any on-site or off-site receptor or area. This statement is true for routine operations as well as maintenance, startup, and shutdown operations of EML's combustion turbine EGUs. The emissions of visibility impairing pollutants, including sulfates, NO_x, and PM/soot, are very low because (1) clean burning low-sulfur pipeline quality gas will be fired and (2) state-of-the art emission controls will be employed. Based on our extensive experience operating natural gas-fired combustion turbine EGUs, EML is confident in asserting that the MCAPS will not cause or contribute to visibility impairment at any off-site receptor or area, including all nearby airports, state forests, parks, scenic vistas, areas of special historic interest, or any other sensitive areas. Based on this information, it is EML's position that no further visibility analysis is required.

12.3.3 Soils and Vegetation Analysis

The emissions from the proposed modification will not significantly affect any soils or vegetation within the area (i.e., the modeling domain). There are no predicted exceedances of the Primary or Secondary NAAQS due to the proposed emissions. Primary NAAQS set limits to protect public health, with an adequate margin of safety. "Public health" is defined to include the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary NAAQS set limits to protect public welfare from any known or anticipated adverse effects associated with the presence of such a pollutant. "Public welfare" includes protection against decreased visibility, damage to animals, crops, vegetation, and buildings. Therefore, possible adverse impacts from this project are not expected.

13.0 MODELING INPUT AND OUTPUT FILES

Electronic copies of the following items will be provided in the AQA submitted to the MDEQ:

» All input and output modeling files

» All files produced by a software entry program

» All automatic downwash program input and output files

» All meteorological data files

» All boundary property files

» All spreadsheet files used for comparison of predicted concentrations with standards or guidelines

APPENDIX A AIR QUALITY ANALYSIS CHECKLIST (FORM 5 APPENDIX C)

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Air Quality Analysis Checklist — Appendix C

Note: Appendix C must be completed and included with the application for a Prevention of Significant Deterioration (PSD) Permit to Construct. All elements of the checklist should be addressed. See the Application Instructions for further information.

SUBMIT		
Yes	N/A	
☐	☐	**I. Applicant and Consultant Information**

a. Name, address, and location of facility
b. Facility Air Permit Number
c. Facility contact name and phone number
d. Modeling contact name, phone number, and e-mail address

☐ ☐ **II. Description of Facility Operations**

A brief description of each process to be carried out in the facility and the function of the equipment used in the process. The descriptions must be complete and particular attention must be given to explaining all stages in the process where the discharge of any materials might contribute in any way to air pollution. Control procedures must be described in sufficient detail to show the extent of control of air contaminants anticipated in the design, specifying the expected efficiencies of the capture systems and the control devices. All obtainable data must be supplied concerning the nature, volumes, particle size, weights, chemical composition and concentrations of all types of air contaminants.

☐ ☐ **III. Project Description**

A written description of the proposed project to include, but not limited to, a description of the project purpose and scope, general geographical location, types of emission sources and scenarios, pollutants evaluated, and the applicable averaging periods.

If applicable, a description of Alternate Operating Scenarios to be modeled.

☐ ☐ **IV. Modeling Protocol**

Prior to submitting the PSD application and modeling analysis, the applicant is required to submit a modeling protocol to MDEQ for review. Upon review, the applicant will receive notification of acceptance of the modeling approach as well as guidance on any outstanding issues. Please be advised, an approved modeling protocol does not necessarily limit the extent of the modeling that will be required to demonstrate compliance with the applicable standards.

Submittal Date: _____ **Approval Date:** _____

☐ ☐ **V. Model Selection**

The Preferred/Recommended dispersion models are listed in 40 CFR 51Appendix W and are required to be used. All air quality analyses should be performed using the most currently available versions of EPA guideline models. Access to all current models is possible through the EPA Web Page http://www.epa.gov/scram/.

Air Quality Analysis Checklist — Appendix C

Yes	N/A	

V. Model Selection (continued)

a. Discuss the general modeling approach (e.g., project impacts vs. cumulative impacts) and highlight any unique items.
b. Identify the dispersion model(s), including the version number that was used in the modeling analysis.
c. Discuss modeling options used and why they were considered appropriate for the proposed project.
d. List the time-averaged pollutants modeled.
e. Discuss any other modeling parameters or considerations used in the modeling analysis.

☐ ☐ **VI. Meteorological Data**

The most recent available five years of representative National Weather Service meteorological data is required.

A minimum of one year of data gathered on-site may be used, provided that the data meets quality-assurance requirements. In this case, the hourly meteorological data recorded on site must be submitted for approval. This submittal must also include documentation for quality-assurance procedures, substitution for missing data, determination of stability categories, and the basis of calm wind readings

☐ ☐ **VII. Receptor and Terrain Discussion**

Receptor grids may be polar, cartesian, or discrete with receptors be ginning at the facility fenceline and extending sufficiently outward to identify the maximum impacts from both the onsite and offsite emission sources for each pollutant and pollutant averaging period evaluate. Receptor resolution may vary, however, receptors near the facility fenceline and in the area of controlling concentrations must be no greater than 100-meters. Controlling concentrations are those receptors found to be within 75% of the maximum predicted impacts.

The most recent version of AERMAP should be used to import terrain and source elevations.

☐ ☐ **VIII. Emission Source Information**

Tables are required for identifying all baseline and increment sources used in the modeling, including all applicable stack parameters (UTM coordinate locations, emission rate, stack height, exit velocity, exit temperature and inner diameter), area source parameters (emission rate, southwest coordinates, height, width), and volume source parameters (emission rate, center coordinates, height, horizontal and vertical dimensions).

a. Identify all emission units included in the modeling analysis. Provide a listing of the identifiers assigned to these sources for modeling purposes.
b. Identify maximum potential short-term emission rates for all modeled pollutants in lb/hr and the associated g/sec emission rate. The maximum short-term emission rates for each source should be used to demonstrate compliance with all short-term averaging standards and guidelines.
c. Identify maximum potential long-term emission rates for all modeled pollutants in ton/yr and the associated g/sec emission rate.
d. Identify any operational limitation assumed for an emission unit.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Air Quality Analysis Checklist — Appendix C

Yes	N/A
☐	☐

IX. Modeling Analysis

a. Significant Impact Analysis

The preliminary analysis evaluates the potential increase in emissions from the project or the net increase in emissions associated with the modification. The results of the preliminary analysis determines whether or not a full impact analysis is required. If predicted concentrations from the project are below the applicable PSD Significant Impact Levels, a Full Impact Analysis is not required.

b. Preconstruction Monitoring Analysis

The initial screening modeling analysis must address pre-construction monitoring requirements for all proposed sources whose predicted ambient impact exceeds any of the PSD De Minimis Impact Levels (to support ambient monitoring exemption).

c. Full Impact Analysis

A full impact analysis consists of separate analysis for the National Ambient Air Quality Standards (NAAQS) and PSD Increments and will consider emissions from the proposed source or source modification, any existing on-onsite sources, off-site sources, and for the NAAQS analysis, background concentrations. The full impact analysis is conducted for Class II and Class I Areas. Each of these topics are discussed in detail in the EPA New Source Review Workshop Manual.

i. NAAQS Analysis
ii. PSD Increment Analysis
iii. Additional Impact Analysis

Discuss the impacts the proposed project will have on residential, commercial, and industrial growth in the area, and on soils, vegetation and visibility in the vicinity of the proposed project location.

1. Vegetation and Soils Impact
2. Associated Growth Impact
3. Class I Area Visibility Impact

When a Class I Area Impact Analysis is required, the National Parks Service (NPS) - Air Resources Division, FWS - Air Quality Branch and FS - Air Quality Program have produced a guidance document entitled Federal Land Managers' Air Quality Related Values Workgroup (Flag) Phase I Report (December 2000). The guidance set forth in this document is followed in PSD review for Class I area impacts. The FLAG Report is available at www.nature.nps.gov/air/permits/flag/flagDoc/index.cfm.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Air Quality Analysis Checklist — Appendix C

Yes	N/A
☐	☐

X. Figures, Maps, Electronic Data, etc.

Figures and maps should be inserted with the narrative, when possible. Large maps, data CD's, etc., should be referenced in the text and included in the appendices.

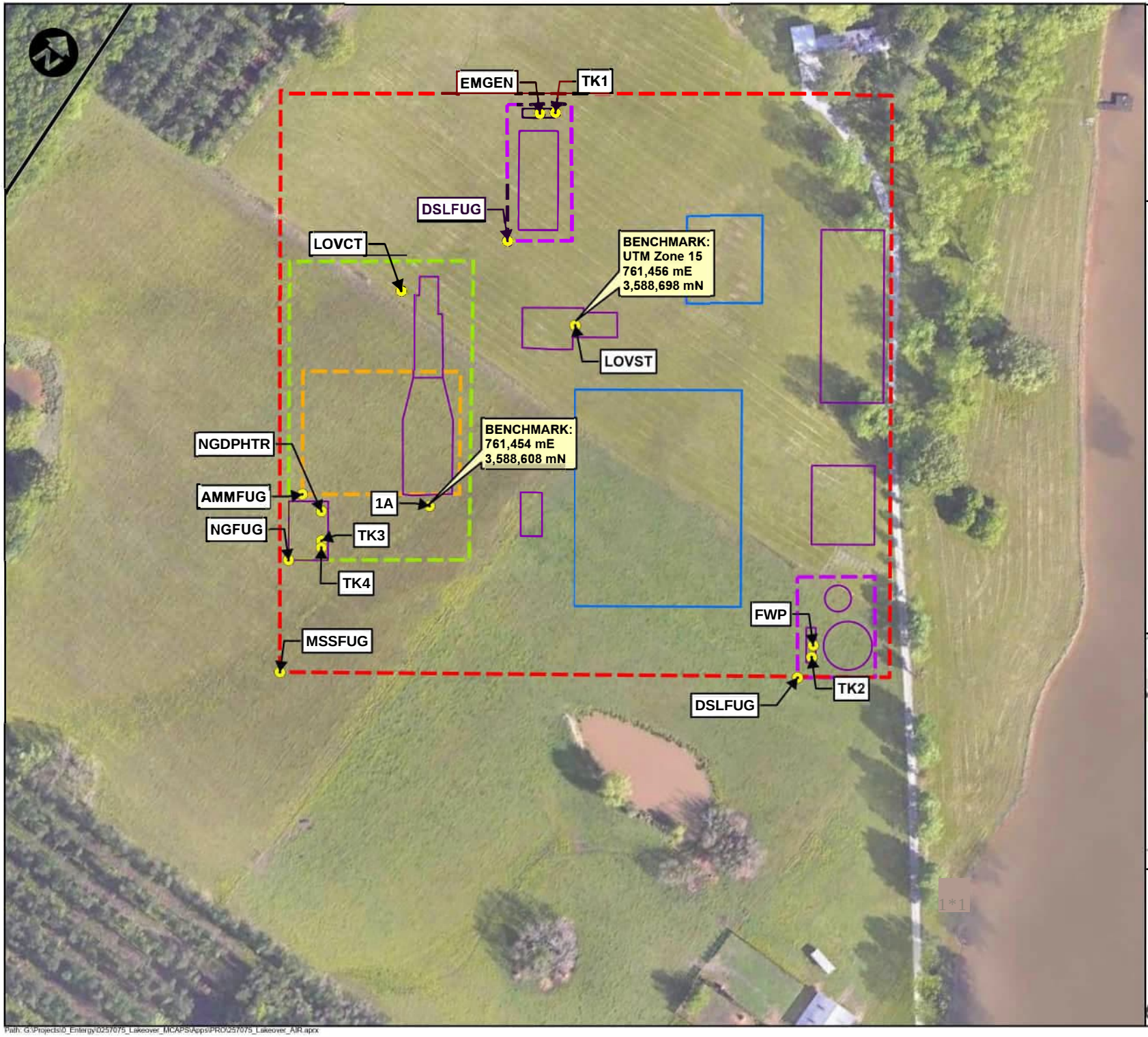
a. The Air Quality Analysis should include or reference a scaled site plan showing:
   - i. Emission release locations
   - ii. Nearby buildings
   - iii. Property lines
   - iv. Fence lines
   - v. Roads
   - vi. Coordinates (preferably UTM). If UTM coordinates are used, the datum should be specified (e.g., NAD27 or NAD83)
   - vii. True North arrow
   - viii. Other pertinent items (as applicable)

b. The Air Quality Analysis Should include a topographic map and/or aerial photograph showing:
   - i. Source location
   - ii. Facility boundaries
   - iii. Terrain features
   - iv. Nearby buildings, roads, and adjacent facilities (e.g., other major existing sources, other major sources subject to PSD requirements
   - v. NWS meteorological tower/observations (surface and upper air)
   - vi. On-site/local meteorological tower/observations (surface and upper air)
   - vii. State/local/on-site air quality monitoring stations
   - viii. Pre-construction monitoring site (if applicable)
   - ix. Nearby Class I Areas

c. Provide an electronic file of the facility plot plans (e.g., GIS or other mapping file)

d. Provide all electronic modeling files, including:
   - i. "Readme" textfile that describes the submitted files, including any files that are provided in a compressed format.
   - ii. Model Input/Output files
   - iii. BPIP Input/Output files
   - iv. Meteorological data files
   - v. Post processing programs and files (including spreadsheets)

APPENDIX B PLOT MAP



ENTERGY MISSISSIPPI, LLC
MADISON COUNTY ADVANCED POWER STATION

FIGURE 2.3: PLOT PLAN

MADISON COUNTY, MISSISSIPPI

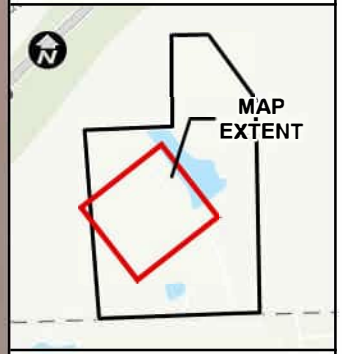
Legend

- EPN Location
- Elevated Fin Fan Coolers
- Proposed Structure
- Fenceline / Physical Barrier

Fugitive Area

- AMMFUG
- DSLFUG
- NGFUG
- MSSFUG

Aerial Source:
Google Earth Pro Basemap



0 100 200
Feet

POWER ENGINEERS

Date: 4/18/2025

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APPENDIX C AREA MAP

Legend

- Facility Boundary
- 3000' Radius

0 1,000 2,000
Feet

ENTERGY MISSISSIPPI, LLC
MADISON COUNTY ADVANCED POWER STATION

FIGURE 2.2: AREA MAP

MADISON COUNTY, MISSISSIPPI

POWER ENGINEERS

Date: 4/18/2025

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APPENDIX D STACK PARAMETERS AND EMISSIONS, PROJECT SOURCES

PHYSICAL EXHAUST PARAMETERS - POINT SOURCES
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

MCAPS EPN	Modeling ID	Description	Location (m), NAD83		Base Elevation	Height	Diameter	Velocity	Temp
			Easting	Northing	(ft)	(ft)	(ft)	(ft/sec)	(ºF)
1A	1A_F	Combined Cycle Unit 1A - Full Load	761453.0	3588658.8	355.31	200	23	81.25	160
1A	1A_M	Combined Cycle Unit 1A - Medium Load	761453.0	3588658.8	355.31	200	23	70.34	174
1A	1A_L	Combined Cycle Unit 1A - Low Load	761453.0	3588658.8	355.31	200	23	67.60	173
1A	1A_MSS	Combined Cycle Unit 1A - MSS Startup Actuals	761453.0	3588658.8	355.31	200	23	67.60	173
1A	1A_MSSH	Combined Cycle Unit 1A - MSS Hot Startup	761453.0	3588658.8	355.31	200	23	67.60	173
1A	1A_MSSW	Combined Cycle Unit 1A - MSS Warm Startup	761453.0	3588658.8	355.31	200	23	67.60	173
1A	1A_MSSC	Combined Cycle Unit 1A - MSS Cold Startup	761453.0	3588658.8	355.31	200	23	67.60	173
NGDPHTR	NGDPHTR	Natural Gas Dewpoint Heater	761411.1	3588703.5	355.31	20.00	1.67	13.56	250
EMGEN	EMGEN	Emergency Standby Generator	761617.4	3588613.9	355.31	15.83	1.17	299.5	979
FWP	FWP	Emergency Diesel Fire Water Pump	761402.3	3588506.6	355.31	12.00	0.50	118.8	961
LOVCT	LOV_TURB	Combustion Turbine Lube Oil Vent	761533.7	3588671.7	355.31	30.0			
LOVST	LOV_STM	Steam Turbine Lube Oil Vent	761523.9	3588602.8	355.31	30.0			

PROPOSED ALLOWABLE EMISSIONS
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

Modeling ID	NOX			CO			PM10			PM2.5		
	(lb/hr)	1HR (lb/hr)	(TPY)	(lb/hr)	1HR (lb/hr)	8HR (lb/hr)	(lb/hr)	24HR (lb/hr)	(TPY)	(lb/hr)	24HR (lb/hr)	(TPY)
1A_F	40.59	40.59	168.1	24.71	24.71	24.71	56.66	56.66	158.5	56.66	56.66	158.5
1A_M	28.24	28.24	0	17.20	17.20	17.20	31.51	31.51	0	31.51	31.51	0
1A_L	22.31	22.31	0	13.58	13.58	13.58	25.04	25.04	0	25.04	25.04	0
1A_MSS	294.0	96.90	0	7441	0	0	0	0	0	0	0	0
1A_MSSH	264.0	0	0	6414	6414	1070	0	0	0	0	0	0
1A_MSSW	288.0	0	0	7131	7131	1343	0	0	0	0	0	0
1A_MSSC	294.0	0	52.89	7441	7441	1803	0	0	0	0	0	0
NGDPHTR	0.05516	0.05516	0.2416	0.1856	0.1856	0.1856	0.02407	0.02407	0.10543	0.02407	0.02407	0.10543
EMGEN	30.76	0.001756	1.538	16.821	8.411	1.0513	0.9612	0.02003	0.04806	0.9612	0.02003	0.04806
FWP	2.072	1.183E-04	0.10362	1.8133	0.9067	0.11333	0.10362	0.002159	0.005181	0.10362	0.002159	0.005181
LOV_TURB	0	0	0	0	0	0	0.003025179	0.003025179	0.013250283	0.003025	0.003025	0.01325
LOV_STM	0	0	0	0	0	0	0.003025179	0.003025179	0.013250283	0.003025	0.003025	0.01325
AMMFUG	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX E TURBINE EXHAUST PARAMETERS

DETERMINATION OF MODELED EXHAUST PARAMETERS - COMBINED CYCLE
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

Operating Scenario	Emission Calculation	Duct Fired	Load	Evap	Ambient Temp (ºF)	Flow (acfm)	Exhaust Temp (ºF)	Velocity (ft/sec)	Emissions at Specified Scenario (lb/hr)						
									NOX	CO 01	SO2 01	SO2 99	PM 01	PM 99	H2SO4 01
Base Load	Case 1a	Fired	Base	Evap Off	10	2,025,412	160	81.24871	40.59	24.71	13.98	6.99	56.66	38.42	21.40
	Case 9a	Unfired	Base	Evap Off	10	2,063,204	178	82.76474	33.49	20.39	11.57	5.78	37.42	22.32	17.71
	Case 1b	Unfired	Base	Evap Off	10	2,037,754	170	81.74381	33.49	20.39	11.57	5.78	37.42	22.32	17.71
	Case 4a	Fired	Base	Evap Off	59	2,020,300	160	81.04367	40.28	24.52	13.86	6.93	56.08	37.99	21.22
	Case 12a	Unfired	Base	Evap Off	59	2,055,629	177	82.46086	33.28	20.26	11.48	5.74	37.11	22.13	17.57
	Case 3b	Unfired	Base	Evap Off	59	2,038,181	171	81.76093	33.28	20.26	11.48	5.74	37.11	22.13	17.57
	Case 5b	Unfired	Base	Evap Off	95	1,940,426	189	77.83953	30.40	18.51	10.50	5.25	33.91	20.21	16.07
	Case 7a	Fired	Base	Evap On	97	1,993,554	174	79.97074	38.99	23.74	13.42	6.71	54.67	37.16	20.55
	Case 17a	Unfired	Base	Evap On	97	2,025,358	190	81.24655	31.89	19.42	11.01	5.50	35.42	21.06	16.85
Medium Load	Case 21a	Unfired	75% Load	Evap Off	10	1,753,362	174	70.33552	28.24	17.20	9.74	4.87	31.51	18.90	14.91
	Case 23a	Unfired	75% Load	Evap Off	59	1,601,926	170	64.26073	25.66	15.62	8.86	4.43	28.65	17.20	13.57
	Case 26a	Unfired	75% Load	Evap Off	97	1,561,439	179	62.6366	24.28	14.78	8.40	4.20	27.03	16.26	12.86
Low Load	Case 35a	Unfired	MECL	Evap Off	10	1,685,204	173	67.60138	22.31	13.58	7.74	3.87	25.04	16.15	11.85
	Case 37a	Unfired	MECL	Evap Off	59	1,474,772	167	59.16	19.10	11.63	6.62	3.31	21.41	13.96	10.14
	Case 40a	Unfired	MECL	Evap Off	97	1,560,179	179	62.58607	19.79	12.05	6.87	3.44	22.12	14.35	10.52

APPENDIX F MODELING SOURCE GROUPS

MODELING SOURCE GROUPS
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

Description	Group ID	Project-Related Sources										
		Normal Turbine Opeations			Turbine SUSD				Emergency Engines		Dew Point Heater	All Other Sources
		1A_F	1A_M	1A_L	1A_MSS	1A_MSSH	1A_MSSW	1A_MSSC	EMGEN	FWP	NGDPHTR	
Normal Operatons	FULL	X							X	X	X	X
	MED		X						X	X	X	X
	LOW			X					X	X	X	X
Startup/Shutdown Operations	SUSDA				X						X	X
	SUSDH					X					X	X
	SUSDW						X				X	X
	SUSDC							X			X	X
Annual Operations	ALL	X						X	X	X	X	X

APPENDIX G AMBIENT AIR MONITORING DATA

Monitored PM2.5 Concentrations
EPA Daily Data Summary for Arkansas
Hinds CC - EPA Site: 28-049-0021

Year	Highest 24-Hour Values		98th Percentile Analysis		Annual		
	Maximum (µg/m3)	3-Year H1H (µg/m3)	Percentile of Daily Max (µg/m3)	3-Year Average (µg/m3)	Yearly Averge (µg/m3)	3-Year H1H (µg/m3)	3-Year Average (µg/m3)
2022	35.6	37.60	26	24.00	9.5	10.70	9.700
2023	37.6		25		10.7		
2024	30.5		21		8.9		

Monitored O_3 Concentrations
Calculated Using EPA Report Values
Hinds CC - EPA Site: 28-049-0021

Year	Highest 8-Hour Values					Design 8-Hour Value		
	Maximum	Most Recent H1H		3-Year H1H		4th High Daily 8-Hr Maximum	3 Year Average, of 4th High 8-Hrs	
	(ppb)	(ppb)	(µg/m3)	(ppb)	(µg/m3)	(ppb)	(ppb)	(µg/m3)
2022	66	---	---	68	133	59	62	122
2023	66	---	---			64		
2024	68	68.0	133			64		

APPENDIX H POWER PLANTS NEAR PROJECT AND SELECT $PM_{2.5}$ MONITORS

Summary of Nearby Power Generating Facilities

Location	Distance to Location (km)	State	Plant Name	Plant Nameplate Capacity (MW)	Plant Annual Emissions (tons)	
					NOX	SO2
MCAPS Project	3	MS	Hinds Energy Facility	600	126	7
	11	MS	Mississippi Baptist Medical Center	4	0	0
	54	MS	International Paper Vicksburg Mill	51	75	231
	57	MS	CF Industries Yazoo City Complex	25	125	1
	65	MS	Ergon Refining Vicksburg	5	32	0
	85	MS	Attala Generating Plant	551	101	5
	87	MS	Georgia-Pacific Monticello Paper	82	157	326
	89	MS	Sylvarena Generating Plant	141	114	1
	93	MS	Silver Creek Generating Plant	251	13	0
	95	MS	Georgia-Pacific Taylorsville Plywood	7	90	1
	TOTAL			**1,716**	**833**	**573**
Hinds CC Monitor	4	MS	Hinds Energy Facility	600	126	7
	6	MS	Mississippi Baptist Medical Center	4	0	0
	55	MS	International Paper Vicksburg Mill	51	75	231
	63	MS	CF Industries Yazoo City Complex	25	125	1
	64	MS	Ergon Refining Vicksburg	5	32	0
	81	MS	Georgia-Pacific Monticello Paper	82	157	326
	87	MS	Sylvarena Generating Plant	141	114	1
	87	MS	Silver Creek Generating Plant	251	13	0
	90	MS	Attala Generating Plant	551	101	5
	92	MS	Georgia-Pacific Taylorsville Plywood	7	90	1
	TOTAL			**1,716**	**833**	**573**

APPENDIX I MERP ANALYSIS

MAXIMUM DAILY EMISSION RATE ESTIMATES
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

EPN	Description	Maximum Hourly			Operations	Maximum Daily			Daily Annualized		
		NOX (lb/hr)	SO2 (lb/hr)	VOC (lb/hr)	(hr/day)	NOX (lb/day)	SO2 (lb/day)	VOC (lb/day)	NOX (TPY)	SO2 (TPY)	VOC (TPY)
MCAPS-1A	Combined Cycle Unit 1A - Full Load	40.59	13.98	10.62	21.0	853.7	294.1	223.3	155.8	53.67	40.75
MCAPS-1A	Combined Cycle Unit 1A - MSS	294.0		2,527	2.97	800.0	0	4,600	146.00	0	839.5
MCAPS-NGDPHTR	Natrual Gas Dewpoint Heater	0.05516	0.005015	0.04012	24	1.324	0.1204	0.9629	0.2416	0.02197	0.1757
MCAPS-EMGEN	Emergency Standby Generator	30.76	0.03407	2.691	1	30.76	0.03407	2.691	5.614	0.006217	0.4912
MCAPS-FWP	Emergency Diesel Fire Water Pump	2.072	0.002915	0.05699	1	2.072	0.002915	0.05699	0.3782	0.0005320	0.01040
MCAPS-LOVCT	Combustion Turbine Lube Oil Vent			0.003025	24			0.07260			0.01325
MCAPS-LOVST	Steam Turbine Lube Oil Vent			0.003025	24			0.07260			0.01325
TOTAL									308.0	53.70	881.0

MODELED EMISSION RATES FOR PRECURSORS - PROPOSED MAXIMUM DAILY EMISSIONS
MAXIMUM (CLASS II) RESULTS
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

Analysis		Averaging Period	SIL		Precursor	Project Emissions	MERP	Project Emissions / MERP	Precursor Impact, Individual		Precursor Impact, Total	
Basis*	Pollutant		(µg/m3)	(PPM)		(TPY)	(TPY)		(µg/m3)	(PPM)	(µg/m3)	(PPM)
Hypothetical Source: CUS 9, Smith	Ozone	8-Hour	--	0.001	NOX	308.0	193	1.599	--	0.001599	--	0.001656
					VOC	881.0	15,524	0.05675		0.00005675		
	PM2.5	24-Hour	1.2	--	NOX	308.0	13,008	0.02368	0.02842	--	0.04907	--
					SO2	53.7	3,120	0.01721	0.02065			

* Modeling impacts from EPA MERPs View Qlink - https://www.epa.gov/scram/merps-view-qlik

MODELED EMISSION RATES FOR PRECURSORS - PROPOSED ANNUAL EMISSIONS
MAXIMUM (CLASS II) RESULTS
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

Analysis		Averaging Period	SIL		Precursor	Project Emissions	MERP	Project Emissions / MERP	Precursor Impact, Individual		Precursor Impact, Total	
Basis*	Pollutant		(µg/m3)	(PPM)		(TPY)	(TPY)		(µg/m3)	(PPM)	(µg/m3)	(PPM)
Hypothetical Source: CUS 9, Smith	PM2.5	Annual	0.13	--	NOX	222.8	33,703	0.006612	0.000860	--	0.001294	--
					SO2	28.94	8,653	0.003345	0.0004348			

* Modeling impacts from EPA MERPs View Qlink - https://www.epa.gov/scram/merps-view-qlik

MODELED EMISSION RATES FOR PRECURSORS - PROPOSED MAXIMUM DAILY EMISSIONS
RESULTS AT AND PAST 50 KM
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

Analysis		Averaging Period	Class I SIL	Precursor	Project Emissions	MERP	Project Emissions / MERP	Precursor Impact, Individual	Precursor Impact, Total
Basis*	Pollutant		(µg/m3)		(TPY)	(TPY)		(µg/m3)	(µg/m3)
Hypothetical Source: CUS 9, Smith	PM2.5	24-Hour	0.27	NOX	308.0	2,977	0.1035	0.02794	0.04020
				SO2	53.70	1,182	0.04542	0.01226	

* Modeling impacts from EPA MERPs View Qlink - https://www.epa.gov/scram/merps-view-qlik

MODELED EMISSION RATES FOR PRECURSORS - PROPOSED ANNUAL EMISSIONS
RESULTS AT AND PAST 50 KM
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

Analysis		Averaging Period	Class I SIL	Precursor	Project Emissions	MERP	Project Emissions / MERP	Precursor Impact, Individual	Precursor Impact, Total
Basis*	Pollutant		(µg/m3)		(TPY)	(TPY)		(µg/m3)	(µg/m3)
Hypothetical Source: CUS 9, Smith	PM2.5	Annual	0.03	NOX	222.8	10,259	0.02172	0.0006517	0.0008803
				SO2	28.94	3,797	0.00762	0.0002287	

* Modeling impacts from EPA MERPs View Qlink - https://www.epa.gov/scram/merps-view-qlik

APPENDIX F PSD AIR QUALITY IMPACTS ANALYSIS REPORT

The AQIA report will be submitted to MDEQ under separate cover as described in Section 8.0. This report will be prepared and submitted following MDEQ's review and approval of the proposed PSD Air Dispersion Modeling Protocol presented in Appendix E. This Appendix F is a placeholder for the final AQIA report once it is completed.

APPENDIX G ENVIRONMENTAL JUSTICE SCREENING TOOL REPORT

April 21, 2025

ENTERGY MISSISSIPPI, LLC

Madison County Advanced Power Station, Ridgeland, Mississippi

Environmental Justice Screening Report

PROJECT NUMBER:
0257075.02.01

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POWER ENGINEERS

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Environmental Justice Screening Report

PREPARED FOR: ENTERGY MISSISSIPPI, LLC

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ACRONYMS AND ABBREVIATIONS

ACS	American Community Survey
CEJST	Climate and Economic Justice Screening Tool
CEQ	White House Council on Environmental Quality
EJ	Environmental Justice
Entergy	Entergy Mississippi, LLC
EO	Executive Order
FR	Federal Register
MCAPS	Madison County Advanced Power Station
MDEQ	Mississippi Department of Environmental Quality
USCB	United States Census Bureau
USEPA	United States Environmental Protection Agency

1.0 ENVIRONMENTAL JUSTICE IN MISSISSIPPI

The state of Mississippi defines environmental justice (EJ) as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." This definition is provided by the Mississippi Department of Environmental Quality (MDEQ) and reflects the state's commitment to equity in environmental decision-making.

According to MDEQ, "fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies."

The agency further explains that "meaningful involvement" includes the following key principles:

- People have an opportunity to offer input on decisions about activities that may affect their environment and/or health;
- The public's contribution can influence the regulatory agency's decision;
- Their concerns will be considered in the decision making process; and
- The decision makers seek out and facilitate the involvement of those potentially affected.

2.0 PROJECT LOCATION AND OVERVIEW

Entergy Mississippi, LLC (Entergy) is proposing to build a new natural gas-fired 1x1 combined cycle power plant in Ridgeland, Madison County, Mississippi. The Madison County Advanced Power Station (MCAPS) is located within Census Tract 302.06, Block Group 1, which has a population of 1,205 people living in 495 households. The block group covers 6.44 square miles, while the MCAPS fence line spans 0.27 square miles. Directly adjacent to this site, on the south side of W County Line Road, lies Hinds County.

The environmental impacts from the proposed MCAPS facility are expected to be minimal. This is due to the relatively low levels of air pollution that will be emitted from this modern highly controlled facility. The air quality and other environmental impacts associated with the MCAPS project are presented in detail the air permit application for the proposed facility. A major objective of the EJ public outreach campaign for this project should be to educate the public on the fact that the air emissions from the facility will have a de minimis impact on surrounding communities.

3.0 METHODOLOGY AND STUDY AREA FOR DESKTOP REVIEW

A high-level desktop analysis was conducted to identify potential EJ populations using available data from the United States Census Bureau (USCB), and the United States Environmental Protection Agency (USEPA). Although federal EJ mandates and tools such as the official EJScreen have recently been rescinded or decommissioned, this analysis drew upon indicators from an unofficial version of EJScreen (accessible through the Public Environmental Data Partners), and supplemented by USCB data. The methodology followed best practices

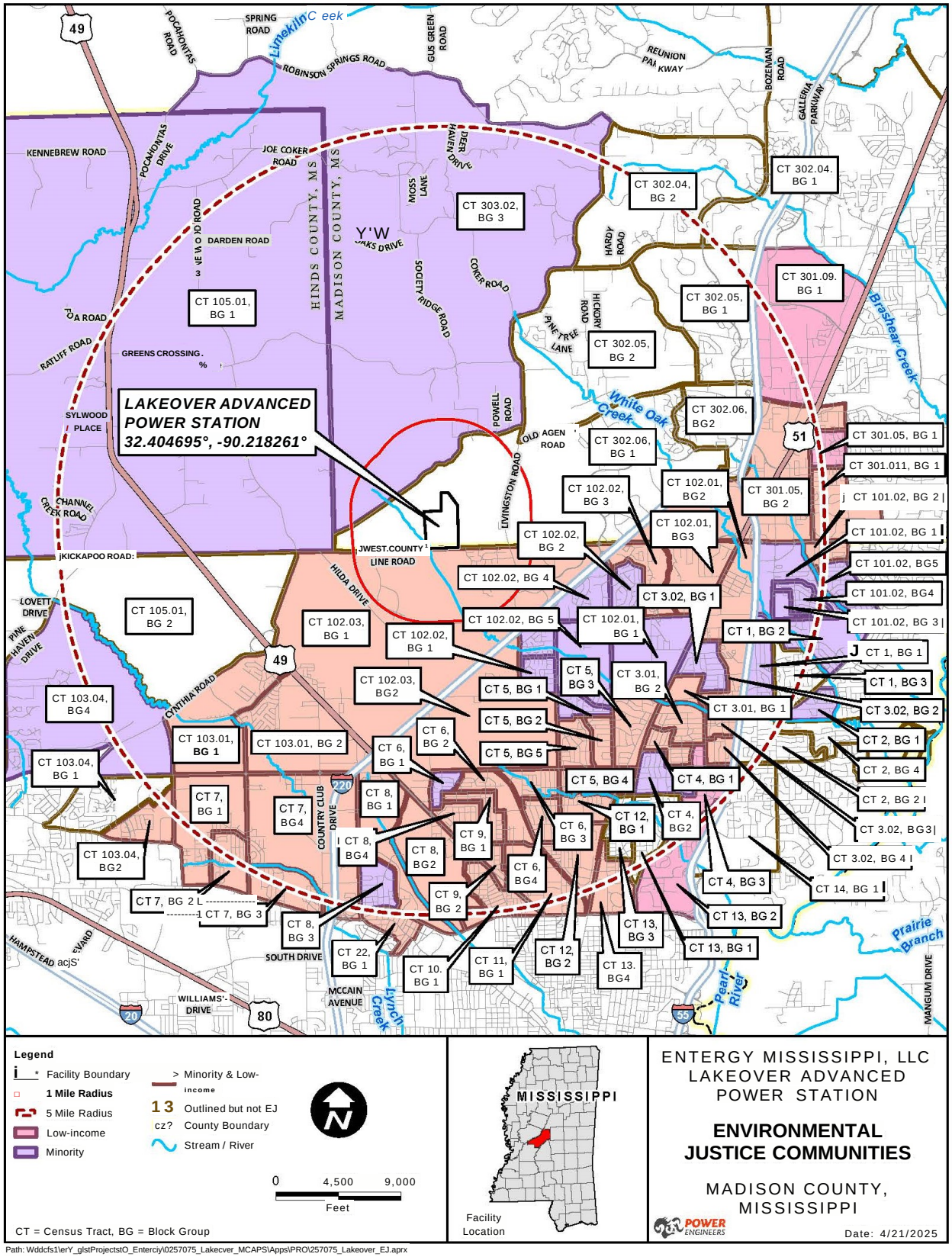
previously outlined in *Promising Practices for EJ Methodologies in NEPA Reviews* (2016), which remains widely used in the absence of updated federal guidance.

To identify potential areas of EJ concern, the analysis focused on the communities surrounding the Project. Census block groups were used because they offer a more accurate reflection of local demographic and socioeconomic conditions than larger geographic areas. This approach helps to avoid artificially inflating or diluting the affected minority population, which can happen when relying only on state or county data. For context and comparison, demographic data from Mississippi, Hinds County, and Madison County were used as reference populations. This approach supports a more meaningful assessment of potential disparities or impacts within the MCAPS Study Area.

There are two methods for identifying minority populations. The 50% approach calls for increased focus if the percentage of minorities in the affected area exceeds 50%. The Meaningfully Greater analysis, on the other hand, uses a reasonable, subjective threshold, comparing the percentage of minorities in the area to that in a reference community. For this analysis, the more stringent of the two methods was applied in each case—whichever threshold was lower—ensuring a more inclusive identification of vulnerable communities.

Low-income populations are considered present when the percentage of low-income individuals in a given block group is equal to or greater than that of the state or county, indicating the presence of an EJ community.

This screening process allows for a meaningful assessment of any disparities or impacts within the MCAPS Study Area concerning EJ criteria. The study area for MCAPS includes the project fence line and extends to a one- and five-mile buffer, as illustrated in Figure 1.



Path: Wddcfs1\erY_glstProjectstO_Entercly\0257075_Lakecver_MCAPS\Apps\PRO\257075_Lakeover_EJ.aprx

FIGURE 1 ENVIRONMENTAL JUSTICE COMMUNITIES BY INDIVIDUAL CENSUS BLOCK GROUPS

4.0 SCREENING FOR POTENTIAL ENVIRONMENTAL JUSTICE CONCERNS

This analysis evaluated demographic characteristics within the MCAPS Study Area and compared them to relevant reference populations to identify potentially vulnerable communities that may experience disproportionate environmental burdens. Conducted at the census block group level, this desktop assessment used indicators such as income, race/ethnicity, and language proficiency to screen for environmental justice (EJ) concerns.

4.1 Demographic and Socioeconomic Profile

Table 1 summarizes the findings for both the one-mile and five-mile MCAPS Study Areas, presenting key demographic indicators as well as additional socioeconomic characteristics to support the identification of potentially vulnerable populations.

4.1.1 One-mile MCAPS Study Area (Full Census Block Groups)

The analysis of full census block groups within a one-mile radius of the MCAPS Study Area encompassed approximately 31.2 square miles and includes three complete census block groups, with a combined population of 3,658 residents. One of these block groups, Census Tract 302.06, Block Group 1 is located within the Project area, while the remaining two fall within the one-mile buffer.

Of the three block groups, two meet the criteria for vulnerable communities based on elevated levels of minority and low-income populations. The host block group, however, is not identified as an EJ community.

- Minority Population: Census Tract 303.02, Block Group 3 (Madison County) has a minority population of 52%, also exceeding the 50% threshold.
- Low-Income and Minority Populations: Census Tract 102.03, Block Group 1 (Hinds County) has a low-income population of 43%, slightly above the statewide average of 41%, and a minority population of 99%, well above the 50% threshold.
- Tribal or Indigenous Land: There is no tribal or indigenous land within the one-mile MCAPS Study Area.

The presence of vulnerable populations in two of the three block groups highlights the potential for disproportionate impacts, particularly on minority communities in proximity to the proposed facility. Detailed demographic and socioeconomic data for all block groups are provided in Table 1.

4.1.2 Five-mile MCAPS Study Area (Full Census Block Groups)

The broader five-mile MCAPS Study Area encompassed approximately 142.9 square miles and included 77 complete census block groups, representing a combined population of 156,448 residents. Of the 77 full block groups, 67 are in Hinds County and 12 are in Madison County. Based on the screening criteria, 63 block groups qualify as vulnerable communities due to elevated minority and/or low-income populations.

- Minority Populations: 20 of the 63 census block groups have minority populations that exceed 50%, or meet the “meaningfully greater” threshold of 10% above Mississippi’s state average of 44%. These block groups also compared to the minority population averages of their respective counties, which are 76% in Hinds County and 45% in Madison County, to provide additional context for identifying disproportionately impacted communities.
- Low-Income Populations: Four census block groups meet the low-income threshold, where the percentage of low-income population exceeds either the state average of 41% or the respective counties averages of 45% in Hinds County and 23% in Madison County.
- Low-Income and Minority Populations: An additional 39 census block groups meet both the thresholds for both minority and low-income populations, indicating compounded vulnerability and an increased potential for disproportionate impacts.

In addition, six census block groups within the five-mile radius have more than 3% of households with limited English proficiency—defined as all members aged 14 or older reporting difficulty speaking English. Three of these block groups are also identified as environmental justice areas. These findings underscore the need for culturally and linguistically appropriate public outreach efforts, including the translation of project materials and resources. Language distribution details are provided in Table 2.

TABLE 1 DEMOGRAPHIC AND SOCIOECONOMIC CHARACTERISTICS IN THE ONE-MILE AND FIVE-MILE MCAPS STUDY AREA

LOCATION	COUNTY	EJ CRITERIA MET	AREA (SQ. MI.)[1]	TOTAL POP.[1,2]	TOTAL HH.[1,3]	MINORITY POP.[1]	LOW INCOME POP.[2]	UNEMP-LOYMENT[3]	LIMITED ENGLISH SPEAKING HH.[4]	POP. < HIGH SCHOOL EDUC.[5]	POP. < AGE 5[6]	POP. > AGE 64[6]
Mississippi				**2,958,846**	**1,121,269**	**44%**	**41%**	**6%**	**1%**	**14%**	**6%**	**16%**
Hinds County				**226,541**	**89,585**	**76%**	**45%**	**8%**	**1%**	**11%**	**6%**	**15%**
Madison County				**109,257**	**42,182**	**45%**	**23%**	**4%**	**1%**	**7%**	**6%**	**14%**
Census Tract 302.06, Block Group 1[H,*]	Madison		6.44	1,205	495	44%	8%	1%	6%	7%	4%	34%
Census Tract 102.03, Block Group 1*	Hinds	M & LI	7.42	1,212	468	99%	43%	9%	0%	21%	0%	25%
Census Tract 303.02, Block Group 3*	Madison	M	17.32	1,241	486	52%	10%	0%	0%	0%	5%	29%
Census Tract 1, Block Group 1	Hinds	M	0.44	903	368	62%	24%	0%	0%	0%	1%	24%
Census Tract 1, Block Group 2	Hinds	M	0.66	1,228	532	83%	15%	0%	0%	5%	9%	10%
Census Tract 1, Block Group 3	Hinds		0.45	1,384	475	38%	2%	1%	0%	3%	8%	15%
Census Tract 2, Block Group 1	Hinds	M	0.26	1,536	635	86%	13%	2%	0%	0%	3%	4%
Census Tract 2, Block Group 2	Hinds		0.61	1,367	562	29%	31%	3%	0%	1%	10%	7%
Census Tract 2, Block Group 4	Hinds		0.82	558	233	0%	6%	0%	0%	0%	15%	22%
Census Tract 3.01, Block Group 1	Hinds	M & LI	0.18	1,326	665	92%	67%	10%	0%	10%	8%	5%
Census Tract 3.01, Block Group 2	Hinds	M & LI	0.32	668	317	97%	55%	8%	2%	17%	3%	10%
Census Tract 3.02, Block Group 1	Hinds	M	0.33	1,292	638	99%	33%	5%	3%	13%	3%	18%
Census Tract 3.02, Block Group 2	Hinds	M & LI	0.39	803	341	100%	56%	14%	0%	9%	0%	2%
Census Tract 3.02, Block Group 3	Hinds	M & LI	0.16	1,211	664	97%	43%	16%	0%	5%	7%	8%
Census Tract 3.02, Block Group 4	Hinds	M & LI	0.16	1,075	469	100%	58%	8%	4%	0%	16%	6%
Census Tract 4, Block Group 1	Hinds	M & LI	0.20	710	268	89%	47%	24%	0%	21%	0%	3%
Census Tract 4, Block Group 2	Hinds	M	0.37	925	372	66%	34%	12%	3%	6%	0%	23%
Census Tract 4, Block Group 3	Hinds	LI	0.41	1,329	474	46%	47%	2%	2%	8%	13%	23%
Census Tract 5, Block Group 1	Hinds	M	0.18	352	232	95%	33%	6%	0%	45%	0%	61%
Census Tract 5, Block Group 2	Hinds	M & LI	0.22	526	239	100%	79%	5%	0%	7%	4%	34%
Census Tract 5, Block Group 3	Hinds	M & LI	0.50	1,474	504	100%	79%	17%	0%	9%	3%	11%
Census Tract 5, Block Group 4	Hinds	M & LI	0.37	1,241	579	99%	72%	0%	0%	5%	0%	17%
Census Tract 5, Block Group 5	Hinds	M & LI	0.30	1,728	554	100%	72%	5%	0%	9%	2%	5%
Census Tract 6, Block Group 1	Hinds	M	0.14	602	233	99%	20%	13%	0%	1%	0%	12%
Census Tract 6, Block Group 2	Hinds	M & LI	0.42	803	233	98%	50%	10%	9%	23%	2%	15%
Census Tract 6, Block Group 3	Hinds	M & LI	0.28	714	325	100%	49%	0%	0%	8%	10%	24%

LOCATION	COUNTY	EJ CRITERIA MET	AREA (SQ. MI.)[1]	TOTAL POP.[1,2]	TOTAL HH.[1,3]	MINORITY POP.[1]	LOW INCOME POP.[2]	UNEMP-LOYMENT [3]	LIMITED ENGLISH SPEAKING HH.[4]	POP. < HIGH SCHOOL EDUC.[5]	POP. < AGE 5[6]	POP. > AGE 64[6]
Census Tract 6, Block Group 4	Hinds	M & LI	0.27	1,218	447	100%	79%	9%	0%	43%	10%	29%
Census Tract 7, Block Group 1	Hinds	M & LI	1.11	1,110	453	97%	47%	12%	0%	13%	3%	14%
Census Tract 7, Block Group 2	Hinds	M & LI	0.39	1,335	538	98%	62%	21%	0%	10%	3%	28%
Census Tract 7, Block Group 3	Hinds	M & LI	0.49	789	315	95%	66%	10%	0%	18%	6%	12%
Census Tract 7, Block Group 4	Hinds	M & LI	2.35	1,959	585	93%	71%	20%	0%	10%	18%	17%
Census Tract 8, Block Group 1	Hinds	M & LI	1.01	537	229	98%	54%	0%	0%	8%	0%	26%
Census Tract 8, Block Group 2	Hinds	M & LI	1.17	783	273	100%	91%	18%	0%	6%	7%	5%
Census Tract 8, Block Group 3	Hinds	M	0.31	565	224	89%	27%	0%	0%	3%	20%	12%
Census Tract 8, Block Group 4	Hinds	M & LI	0.29	1,995	752	99%	79%	6%	0%	25%	6%	22%
Census Tract 9, Block Group 1	Hinds	M & LI	0.27	1,200	519	100%	77%	10%	1%	23%	6%	20%
Census Tract 9, Block Group 2	Hinds	M & LI	0.18	463	320	100%	87%	0%	0%	8%	6%	17%
Census Tract 10, Block Group 1	Hinds	M & LI	0.48	1,341	537	99%	55%	21%	1%	30%	4%	15%
Census Tract 11, Block Group 1	Hinds	M & LI	0.71	988	566	92%	63%	6%	0%	34%	4%	31%
Census Tract 12, Block Group 1	Hinds	M & LI	0.28	493	249	100%	67%	20%	0%	22%	4%	19%
Census Tract 12, Block Group 2	Hinds	M & LI	0.53	725	355	100%	64%	16%	0%	31%	0%	15%
Census Tract 13, Block Group 1	Hinds		0.52	1,340	471	14%	9%	0%	0%	0%	13%	12%
Census Tract 13, Block Group 2	Hinds	LI	0.90	1,177	652	12%	48%	0%	0%	4%	0%	29%
Census Tract 13, Block Group 3	Hinds		0.30	726	361	30%	36%	0%	0%	0%	3%	3%
Census Tract 13, Block Group 4	Hinds	M & LI	0.44	557	245	93%	100%	50%	0%	0%	6%	10%
Census Tract 14, Block Group 1	Hinds		1.30	1,976	952	10%	9%	13%	4%	3%	6%	36%
Census Tract 22, Block Group 1	Hinds	M & LI	0.28	922	296	100%	96%	21%	0%	11%	6%	9%
Census Tract 101.02, Block Group 1	Hinds	M	0.59	642	423	78%	22%	0%	0%	6%	0%	13%
Census Tract 101.02, Block Group 2	Hinds	M & LI	0.19	1,222	544	77%	57%	3%	0%	7%	11%	15%
Census Tract 101.02, Block Group 3	Hinds	M	0.12	642	383	89%	28%	18%	0%	0%	0%	2%
Census Tract 101.02, Block Group 4	Hinds	M	0.21	1,166	406	76%	38%	2%	0%	0%	1%	8%
Census Tract 101.02, Block Group 5	Hinds	M	0.40	932	373	72%	19%	0%	0%	12%	6%	26%
Census Tract 102.01, Block Group 1	Hinds	M	1.06	745	230	98%	40%	9%	0%	11%	6%	20%
Census Tract 102.01, Block Group 2	Hinds	M & LI	0.74	1,054	574	85%	72%	5%	1%	1%	0%	23%
Census Tract 102.01, Block Group 3	Hinds	M & LI	0.73	976	520	98%	64%	22%	0%	18%	11%	13%
Census Tract 102.02, Block Group 1	Hinds	M	0.25	544	262	96%	22%	29%	0%	11%	0%	23%
Census Tract 102.02, Block Group 2	Hinds	M	0.33	956	380	100%	9%	0%	0%	4%	10%	30%
Census Tract 102.02, Block Group 3	Hinds	M & LI	0.48	1,254	568	81%	45%	0%	2%	14%	5%	21%
Census Tract 102.02, Block Group 4	Hinds	M	0.73	1,152	491	94%	12%	8%	0%	3%	0%	33%
Census Tract 102.02, Block Group 5	Hinds	M	0.82	1,069	562	100%	28%	20%	0%	4%	2%	42%

LOCATION	COUNTY	EJ CRITERIA MET	AREA (SQ. MI.)[1]	TOTAL POP.[1,2]	TOTAL HH.[1,3]	MINORITY POP.[1]	LOW INCOME POP.[2]	UNEMP-LOYMENT[3]	LIMITED ENGLISH SPEAKING HH.[4]	POP. < HIGH SCHOOL EDUC.[5]	POP. < AGE 5[6]	POP. > AGE 64[6]
Census Tract 102.03, Block Group 2	Hinds	M & LI	2.78	1,828	652	100%	84%	37%	0%	18%	18%	4%
Census Tract 103.01, Block Group 1	Hinds	M & LI	1.54	965	322	100%	44%	3%	0%	8%	7%	27%
Census Tract 103.01, Block Group 2	Hinds	M & LI	1.61	1,993	829	98%	55%	8%	0%	17%	12%	18%
Census Tract 103.04, Block Group 1	Hinds		0.83	1,745	972	29%	21%	10%	0%	4%	4%	41%
Census Tract 103.04, Block Group 2	Hinds	M & LI	0.43	1,086	353	91%	66%	24%	0%	7%	0%	9%
Census Tract 103.04, Block Group 4	Hinds	M	3.81	1,894	556	52%	0%	6%	0%	8%	11%	17%
Census Tract 105.01, Block Group 1	Hinds	M	40.63	1,916	663	73%	10%	6%	0%	10%	7%	23%
Census Tract 105.01, Block Group 2	Hinds		8.31	1,711	475	37%	21%	2%	0%	6%	7%	16%
Census Tract 301.05, Block Group 1	Madison	LI	0.25	676	282	48%	39%	8%	0%	3%	4%	7%
Census Tract 301.05, Block Group 2	Madison	M & LI	2.75	2,829	855	70%	36%	7%	2%	8%	8%	9%
Census Tract 301.09, Block Group 1	Madison	LI	2.54	1,326	364	7%	54%	1%	0%	5%	3%	55%
Census Tract 301.011, Block Group 1	Madison	M & LI	0.79	2,385	931	73%	31%	2%	2%	7%	7%	9%
Census Tract 302.04, Block Group 1	Madison		6.44	2,191	801	19%	20%	7%	3%	3%	2%	12%
Census Tract 302.04, Block Group 2	Madison		3.27	1,922	689	36%	9%	1%	5%	5%	10%	13%
Census Tract 302.05, Block Group 1	Madison		2.28	1,704	516	19%	2%	5%	0%	1%	1%	15%
Census Tract 302.05, Block Group 2	Madison		3.98	1,558	579	27%	14%	0%	0%	0%	7%	15%
Census Tract 302.06, Block Group 2	Madison		1.07	574	229	20%	10%	4%	0%	1%	0%	32%

H = Host; * = one-mile MCAPS Study Area; POP. = Population; SQ. MI. = Square miles; Sources: Public Environmental Data Partners 2025, USEPA EJScreen (Version 2.3) and ACS (2018-2022), data downloaded on 2/5/2025; 1 USCB 2025a. "Hispanic or Latino Origin by Race." American Community Survey, ACS 5-Year Estimates; 2 USCB 2025b. "Ratio of Income to Poverty Level in the Past 12 Months." American Community Survey, ACS 5-Year Estimates; 3 USCB 2025c. "Employment Status for the Population 16 Years and Over." American Community Survey, ACS 5-Year Estimates; 4 USCB 2025d. "Household Language by Household Limited English Speaking Status." American Community Survey, ACS 5-Year Estimates; 5 USCB 2025e. "Sex by Educational Attainment for the Population 25 Years and Over." American Community Survey, ACS 5-Year Estimates; 6 USCB 2025f. "Sex by Age." American Community Survey, ACS 5-Year Estimates

TABLE 2 LIMITED ENGLISH PROFICIENCY HOUSEHOLDS IN THE ONE-MILE AND FIVE-MILE MCAPS STUDY AREA

LOCATION	COUNTY	EJ CRITERIA MET	SPANISH	OTHER INDO-EUROPEAN LANG.	ASIAN-PACIFIC ISLAND LANG.	OTHER LANG.
Census Tract 302.06, Block Group 1[H,*]	Madison		6%	0%	0%	0%
Census Tract 3.02, Block Group 4	Hinds	M & LI	4%	0%	0%	0%
Census Tract 4, Block Group 2	Hinds	M	3%	0%	0%	0%
Census Tract 6, Block Group 2	Hinds	M & LI	9%	0%	0%	0%
Census Tract 14, Block Group 1	Hinds		0%	4%	0%	0%
Census Tract 302.04, Block Group 2	Madison		0%	1%	4%	0%

H = Host; * = one-mile MCAPS Study Area; LANG.=Languages; LI=Low-income; M=Minority; Source: USCB 2025d. "Household Language by Household Limited English Speaking Status, ACS (2018-2022)

4.2 Baseline Conditions

Environmental degradation frequently impacts sensitive/vulnerable communities, including low-income populations, minority groups, and indigenous communities, disproportionately. The USEPA combines demographic data on low-income and people of color populations (demographic index) with environmental indicators to identify areas where these communities may experience disproportionate environmental impacts from pollution. There are 13 EJ Indexes, each corresponding to one of the 13 environmental indicators.

The 80th percentile is commonly used as a baseline, meaning that when income and minority populations are considered alongside a specific environmental pollutant, 20% of census block groups in the state face a greater level of impact than the Study Area.

Table 3 presents the EJ Index values and associated environmental burden indicators for census block groups within both the one-mile and five-mile MCAPS Study Areas.

4.2.1 One-mile MCAPS Study Area (Full Census Block Groups)

Within the one-mile MCAPS Study Area, one vulnerable community—Census Tract 102.03, Block Group 1 in Hinds County—shows notably elevated levels of pollution burden. This block group exhibits six EJ Index scores above the 80th percentile for the state, indicating a disproportionate exposure to environmental hazards. These impacts are particularly concerning given the area's high concentrations of both minority and low-income populations.

This block group's proximity to multiple USEPA-regulated facilities likely contributes to the elevated environmental burden. Detailed EJ Index values and baseline pollution levels for this area are provided in Table 3.

4.2.2 Five-mile MCAPS Study Area (Full Census Block Groups)

A broader review of the five-mile MCAPS Study Area—which encompasses 142.9 square miles—identifies 60 census block groups with elevated pollution burdens. These areas, home to low-income and/or minority populations, are located near known hazardous facilities or environmental stressors and may already be experiencing health and quality-of-life impacts from existing conditions.

The construction and operation of the proposed MCAPS facility could introduce new environmental risks or compound existing burdens, particularly for communities with limited capacity to mitigate or respond to such impacts. That said, the facility itself occupies only a small footprint within the larger study area.

Baseline pollution levels and EJ Index scores for all relevant block groups within the five-mile study area are presented in Table 3.

TABLE 3 BASELINE ENVIRONMENTAL INDICATORS IN THE ONE-MILE AND FIVE-MILE MCAPS STUDY AREA FOR CENSUS BLOCK GROUPS IDENTIFIED AS POTENTIAL ENVIRONMENTAL JUSTICE COMMUNITIES

LOCATION	ENVIRONMENTAL BURDEN INDICATOR VALUE AND ASSOCIATED EJ INDEX ABOVE 80TH PERCENTILE IN THE STATE
Census Tract 102.03, Block Group 1*	PM 9.5 µg/m³ (95); TP 992,777 (82); RMP 1.4/km (94); HWP 1.3/km (80); UST 3.9/km² (91); DWNC 64 points (98)
Census Tract 303.02, Block Group 3*	NA
Census Tract 1, Block Group 1	PM 10 µg/m³ (83); RMP 1.3/km (81); UST 24.5/km² (85); DWNC 64 points (92)
Census Tract 1, Block Group 2	PM 10 µg/m³ (85); RMP 1.2/km (83); UST 15.8.9/km² (86); DWNC 64 points (93)
Census Tract 2, Block Group 1	PM 10 µg/m³ (85); RMP 1.2/km (83); DWNC 64 points (93)
Census Tract 3.01, Block Group 1	PM 10 µg/m³ (98); DPM 0.2 µg/m³ (87); TP 1,395,764 (90); SF 0.1/km (92); RMP 1.2/km (97); HWP 1.6/km (87); UST 10/km² (98); WWD 28.5/m (84); NO_2 7.6 ppbv (84); DWNC 64 points (99)
Census Tract 3.01, Block Group 2	PM 10 µg/m³ (97); DPM 0.2 µg/m³ (85); TP 1,595,182 (90); LP 0.7% (96); SF 0.1/km (92); RMP 1.2/km (95); HWP 1.6/km (85); UST 4.9/km² (94); WWD 31.3/m (82); NO_2 7.7 ppbv (82); DWNC 64 points (99)
Census Tract 3.02, Block Group 1	PM 10 µg/m³ (93); DPM 0.2 µg/m³ (80); TP 1,493,885 (84); LP 0.5% (88); SF 0.1/km (92); RMP 1.2/km (91); UST 11.8/km² (93); NO_2 8.6 ppbv (82); DWNC 64 points (97)
Census Tract 3.02, Block Group 2	PM 10 µg/m³ (97); DPM 0.2 µg/m³ (86); TP 1,721,674 (92); SF 0.1/km (91); RMP 1.3/km (96); HWP 1.6/km (86); UST 13.7/km² (98); WWD 28.4/m (83); NO_2 8.4 ppbv (87); DWNC 64 points (99)
Census Tract 3.02, Block Group 3	PM 10 µg/m³ (95); DPM 0.2 µg/m³ (82); TP 1,981,021 (90); SF 0.1/km (89); RMP 1.1/km (93); HWP 1.5/km (81); UST 6.4/km² (93); WWD 33.2/m (80); NO_2 7.8 ppbv (80); DWNC 64 points (98)
Census Tract 3.02, Block Group 4	PM 10 µg/m³ (98); DPM 0.2 µg/m³ (86); TP 2,271,444 (94); SF 0.1/km (92); RMP 1.1/km (96); HWP 1.5/km (85); UST 12.5/km² (98); WWD 42.0/m (85); NO_2 8.3 ppbv (87); DWNC 64 points (99)
Census Tract 4, Block Group 1	PM 10 µg/m³ (95); DPM 0.2 µg/m³ (82); TP 1,647,683 (87); LP 0.7% (95); SF 0.1/km (88); RMP 1.1/km (92); HWP 1.7/km (82); UST 8.6/km² (94); WWD 39.2/m (80); DWNC 64 points (98)
Census Tract 4, Block Group 2	PM 10 µg/m³ (88); TP 1,828,362 (80); LP 0.8% (90); SF 0.1/km (82); RMP 1.1/km (85); UST 10.7/km² (88); DWNC 64 points (94)
Census Tract 4, Block Group 3	PM 10 µg/m³ (87); TP 2,265,705 (81); LP 0.4% (81); SF 0.2/km (82); RMP 1.2/km (85); UST 6.9/km² (86); DWNC 64 points (94)
Census Tract 5, Block Group 1	PM 10 µg/m³ (93); TP 1,286,278 (81); LP 0.4% (85); SF 0.1/km (85); RMP 1.1/km (91); UST 11.8/km² (93); DWNC 64 points (97)
Census Tract 5, Block Group 2	PM 10 µg/m³ (99); DPM 0.2 µg/m³ (91); TP 1,478,954 (94); LP 0.4% (97); SF 0.1/km (95); RMP 1.2/km (98); HWP 1.6/km (90); UST 7.5/km² (98); WWD 36.1/m (88); DWNC 64 points (99)
Census Tract 5, Block Group 3	PM 10 µg/m³ (99); DPM 0.2 µg/m³ (91); TP 1,545,257 (95); LP 0.4% (96); SF 0.1/km (95); RMP 1.2/km (98); HWP 1.5/km (90); UST 14.4/km² (99); WWD 36.9/m (88); NO_2 7.6 ppbv (87); DWNC 64 points (99)
Census Tract 5, Block Group 4	PM 10 µg/m³ (99); DPM 0.2 µg/m³ (88); TP 1,668,008 (94); LP 0.5% (97); SF 0.1/km (94); RMP 1.2/km (98); HWP 1.8/km (90); UST 17.4/km² (99); WWD 39.5/m (87); NO_2 7.7 ppbv (86); DWNC 64 points (99)
Census Tract 5, Block Group 5	PM 10 µg/m³ (99); DPM 0.1µg/m³ (83); TP 1,434,553 (93); LP 0.9% (99); SF 0.1/km (93); RMP 1.1/km (97); HWP 1.6/km (89); UST 8.5/km² (98); WWD 35.4/m (87); DWNC 64 points (99)
Census Tract 6, Block Group 1	PM 10 µg/m³ (90); SF 0.1/km (82); RMP 1.6/km (90); HWP 1.4/km (89); DWNC 64 points (95)
Census Tract 6, Block Group 2	PM 10 µg/m³ (96); TP 1,316,338 (87); SF 0.1/km (89); RMP 1.5/km (84); HWP 1.6/km (84); UST 7.3/km² (95); WWD 35.0/m (81); NO_2 8.8 ppbv (87); DWNC 64 points (98)

LOCATION	ENVIRONMENTAL BURDEN INDICATOR VALUE AND ASSOCIATED EJ INDEX ABOVE 80TH PERCENTILE IN THE STATE
Census Tract 6, Block Group 3	PM 10 µg/m³ (96); TP 1,448,486 (88); LP % (94); SF 0.1/km (90); RMP 1.4/km (84); HWP 1.7/km (84); UST 13.2/km² (97); WWD 36.8/m (82); NO_2 7.9 ppbv (82); DWNC 64 points (98)
Census Tract 6, Block Group 4	PM 10 µg/m³ (99); DPM 0.1 µg/m³ (94); TP 1,482,519 (90); LP 0.7% (99); SF 0.1/km (95); RMP 1.3/km (84); HWP 1.9/km (92); UST 13.8/km² (99); WWD 40.0/m (89); NO_2 8.1 ppbv (90); DWNC 64 points (99)
Census Tract 7, Block Group 1	PM 9.9 µg/m³ (96); RMP 1.7/km (95); UST 1.7/km² (86); DWNC 44 points (98)
Census Tract 7, Block Group 2	PM 9.9 µg/m³ (98); DPM 0.1 µg/m³ (82); TP 806,952 (83); LP 0.2% (85); RMP 1.6/km (97); HWP 1.0/km (81); UST 1.4/km² (88); NO_2 7.3 ppbv (82); DWNC 64 points (99)
Census Tract 7, Block Group 3	PM 9.9 µg/m³ (98); DPM 0.1 µg/m³ (82); TP 1,155,670 (89); LP 0.2% (85); RMP 1.9/km (98); HWP 1.0/km (81); UST 6.9/km² (97); NO_2 9.4 ppbv (92); DWNC 64 points (99)
Census Tract 7, Block Group 4	PM 9.9 µg/m³ (98); DPM 0.1 µg/m³ (82); TP 1,125,244 (89); LP 0.1% (80); SF 0.1/km (91); RMP 2.2/km (99); HWP 1.5/km (87); UST 4.1/km² (95); WWD 35.0/m (84); NO_2 8.8 ppbv (91); DWNC 64 points (99)
Census Tract 8, Block Group 1	PM 9.9 µg/m³ (97); TP 1,449,811 (89); SF 0.1/km (88); RMP 2.4/km (97); HWP 1.6/km (85); UST 4.3/km² (94); WWD /m (82); NO_2 9.8 ppbv (92); DWNC 64 points (99)
Census Tract 8, Block Group 2	PM 9.9 µg/m³ (99); DPM 0.2 µg/m³ (90); TP 1,353,732 (95); SF 0.1/km (96); RMP 1.9/km (99); HWP1.6 /km (92); UST 10.3/km² (99); WWD /m (90); NO_2 9.7 ppbv (97); DWNC 64 points (99)
Census Tract 8, Block Group 3	PM 9.9 µg/m³ (90); LP 0.6% (89); SF 0.1/km (82); RMP 2.9/km (91); UST 8.1/km² (89); NO_2 32.5 ppbv (84); DWNC 64 points (95)
Census Tract 8, Block Group 4	PM 9.9 µg/m³ (99); DPM 0.2 µg/m³ (87); TP 1,339,302 (93); LP 0.4% (96); SF 0.1/km (94); RMP 1.5/km (99); HWP 1.5/km (90); UST 8.7/km² (99); WWD 34.4/m (88); NO_2 8.8 ppbv (93); DWNC 64 points (99)
Census Tract 9, Block Group 1	PM 10 µg/m³ (99); DPM 0.1 µg/m³ (86); TP 1,295,683 (93); LP 0.6% (98); SF 0.1/km (94); RMP 1.4/km (99); HWP 1.6/km (90); UST 9.4/km² (99); WWD 35.7/m (88); NO_2 9.0 ppbv (94); DWNC 64 points (99)
Census Tract 9, Block Group 2	PM 10 µg/m³ (99); DPM 0.2 µg/m³ (90); TP 1,424,477 (95); LP 0.8% (99); SF 0.1/km (96); RMP 1.4/km (99); HWP 1.8/km (93); UST 20.6/km² (99); WWD 38.9/m (90); NO_2 9.5 ppbv (96); DWNC 64 points (99)
Census Tract 10, Block Group 1	PM 10 µg/m³ (97); DPM 0.2 µg/m³ (84); TP 1,493,297 (90); LP 0.7% (97); SF 0.1/km (91); RMP 1.5/km (96); HWP 1.8/km (87); UST 16.6/km² (98); WWD 41.7/m (84); NO_2 10.3 ppbv (93); DWNC 64 points (99)
Census Tract 11, Block Group 1	PM 10 µg/m³ (97); DPM 0.2 µg/m³ (90); TP 1,547,411 (91); LP 0.4% (93); SF 0.1/km (92); RMP 1.4/km (96); HWP 2.4/km (90); UST 15.2/km² (98); WWD 43.9/m (85); NO_2 9.9 ppbv (93); DWNC 64 points (99)
Census Tract 12, Block Group 1	PM 10 µg/m³ (98); DPM 0.2 µg/m³ (87); TP 1,597,358 (93); LP 0.5% (96); SF 0.1/km (94); RMP 1.2/km (97); HWP 2.0/km (90); UST 15.0/km² (98); WWD 41.5/m (87); NO_2 7.8 ppbv (86); DWNC 64 points (99)
Census Tract 12, Block Group 2	PM 10 µg/m³ (98); DPM 0.2 µg/m³ (92); TP 1,632,338 (92); LP 0.7% (98); SF 0.1/km (93); RMP 1.5/km (98); HWP 2.9/km (93); UST 12.0/km² (98); WWD 44.8/m (87); NO_2 9.7 ppbv (93); DWNC 64 points (99)
Census Tract 13, Block Group 2	DWNC 64 points (99)
Census Tract 13, Block Group 4	PM 10 µg/m³ (99); DPM 0.2 µg/m³ (98); TP 1,921 684 (98); LP 0.3% (96); SF 0.2/km (98); RMP 1.2/km (99); HWP 3.9/km (98); UST 9.1/km² (99); WWD 53.6/m (92); NO_2 10.3 ppbv (98); DWNC 64 points (99)
Census Tract 22, Block Group 1	PM 9.9 µg/m³ (99); DPM 0.2 µg/m³ (90); TP 1,409,686 (96); LP 0.8% (99); SF 0.1/km (96); RMP 1.8/km (99); HWP 1.2/km (90); UST 9.7/km² (99); WWD 35.3/m (91); NO_2 9.8 ppbv (98); DWNC 64 points (99)
Census Tract 101.02, Block Group 1	PM 10 µg/m³ (86); RMP 1.4/km (85); UST 14.7/km² (87); DWNC 64 points (94)
Census Tract 101.02, Block Group 2	PM 10 µg/m³ (95); TP 1,417,071 (86); RMP 1.5/km (94); HWP 1.4/km (80); UST 2.3/km² (88); NO_2 7.8 ppbv (80); DWNC 64 points (98)

LOCATION	ENVIRONMENTAL BURDEN INDICATOR VALUE AND ASSOCIATED EJ INDEX ABOVE 80TH PERCENTILE IN THE STATE
Census Tract 101.02, Block Group 3	PM 10 µg/m^3 (90); TP 1,742,663 (82); RMP 1.2/km (88); UST 14.1/km^2 (91); DWNC 64 points (95)
Census Tract 101.02, Block Group 4	PM 10 µg/m^3 (91); TP 1,434,794 (80); RMP 1.3/km (89); UST 10.1/km^2 (91); DWNC 64 points (96)
Census Tract 101.02, Block Group 5	PM 10 µg/m^3 (83); RMP 1.4/km (83); UST 6.7/km^2 (82); DWNC 64 points (92)
Census Tract 102.01, Block Group 1	PM 10 µg/m^3 (85); DPM 0.2 µg/m^3 (90); TP 1,349,853 (90); SF 0.1/km (92); RMP 1.2/km (84); HWP 1.6/km (87); UST 11.3/km^2 (96); DWNC 64 points (92)
Census Tract 102.01, Block Group 2	PM 10 µg/m^3 (85); DPM 0.2 µg/m^3 (90); TP 1,796,666 (90); LP 0.1% (95); SF 0.1/km (92); RMP 1.3/km (84); HWP 2.0/km (87); UST 19.0/km^2 (96); WWD 22.3/m (91); NO_2 9.7 ppbv (92); DWNC 64 points (92)
Census Tract 102.01, Block Group 3	PM 10 µg/m^3 (85); DPM 0.2 µg/m^3 (90); TP 1,344,491 (90); LP 0.2% (95); RMP 1.3/km (84); HWP 2.0/km (87); UST 0.4/km^2 (96); WWD 17.6/m (91); NO_2 8.3 ppbv (92); DWNC 64 points (92)
Census Tract 102.02, Block Group 1	PM 10 µg/m^3 (90); SF 0.1/km (82); RMP 1.3/km (88); UST 4.6/km^2 (86); DWNC 64 points (95)
Census Tract 102.02, Block Group 2	PM 10 µg/m^3 (87); RMP 1.3/km (85); UST 10.4/km^2 (87); DWNC 64 points (94)
Census Tract 102.02, Block Group 3	PM 10 µg/m^3 (94); TP 1,344,599 (83); RMP 1.3/km (92); HWP 2.2/km (83); UST 7.0/km^2 (92); DWNC 64 points (97)
Census Tract 102.02, Block Group 4	PM 10 µg/m^3 (86); RMP 1.4/km (85); UST 3.3/km^2 (80); DWNC 64 points (94)
Census Tract 102.02, Block Group 5	PM 10 µg/m^3 (92); TP 1,215,367(80); SF 0.1/km (84); RMP 1.3/km (90); UST 7.9/km^2 (91); DWNC 64 points (96)
Census Tract 102.03, Block Group 2	PM 10 µg/m^3 (99); DPM 0.1 µg/m^3 (83); TP 1,379,635 (94); SF 0.1/km (93); RMP 1.5/km (99); HWP 1.4/km (90); UST 5.8/km^2 (98); WWD 26.9/m (87); NO_2 7.6 ppbv (88); DWNC 64 points (99)
Census Tract 103.01, Block Group 1	PM 9.9 µg/m^3 (85); RMP 1.4/km (84); UST 1.4/km^2 (96); DWNC 60 points (92)
Census Tract 103.01, Block Group 2	PM 9.9 µg/m^3 (85); TP 849,597 (90); RMP 1.6/km (84); HWP 1.4/km (87); UST 11.5/km^2 (96); NO_2 7.5 ppbv (92); DWNC 64 points (92)
Census Tract 103.04, Block Group 2	PM 9.8 µg/m^3 (85); RMP 2.4/km (84); UST 0.7/km^2 (96); DWNC 32 points (92)
Census Tract 103.04, Block Group 4	DWNC 1 point (81)
Census Tract 105.01, Block Group 1	NA
Census Tract 301.05, Block Group 1	PM 10 µg/m^3 (85); RMP 1.8/km (85); UST 9.2/km^2 (85)
Census Tract 301.05, Block Group 2	PM 10 µg/m^3 (89); RMP 1.9/km (89); UST 5.6/km^2 (86)
Census Tract 301.09, Block Group 1	NA
Census Tract 301.011, Block Group 1	PM 10 µg/m^3 (88); RMP 1.8/km (88); UST 3.3/km^2 (82)

Source: Public Environmental Data Partners 2025; Value in parentheses indicates the EJ Index percentile in state
* = one-mile MCAPS Study Area; Environmental Indicators: Particulate Matter 2.5 (PM); Diesel Particulate Matter (DPM); Traffic Proximity (TP); Lead Paint (LP); Superfund Proximity (SF); Risk Management Plan Facility Proximity (RMP); Hazardous Waste Proximity (HWP); Underground Storage Tanks (UST); Wastewater Discharge (WWD); Nitrogen Dioxide (NO_2); Drinking Water Non-Compliance (DWNC)

4.3 Sensitive Receptors

Sensitive receptors are locations where populations may be more susceptible to environmental impacts due to the presence of schools, hospitals, recreational spaces, and places of worship. These sites often serve vulnerable community members such as children, the elderly, or those with pre-existing health conditions. The following section outlines sensitive receptors identified within both the one-mile and five-mile MCAPS Study Areas.

4.3.1 One-mile MCAPS Study Area (Full Census Block Groups)

Within the approximately 31.2-square-mile one-mile MCAPS Study Area, the primary sensitive receptor identified is the Natchez Trace Parkway, located to the north of the proposed facility.

4.3.2 Five-mile MCAPS Study Area (Full Census Block Groups)

The broader five-mile MCAPS Study Area covers roughly 142.9 square miles and includes a range of sensitive receptors that may be affected by construction or operational impacts from the proposed facility. These include:

» Schools (22 total)

- City of Ridgeland, Madison County: Highland Elementary, Madison Co Pre School, Old Town Middle
- City of Jackson, Hinds County: Boyd Elementary School, Brinkley Middle School, Callaway High School, Capital City Alternative School, Career Academic Placement Program, Chastain Middle School, Dawson Elementary School, Green Elementary School, Joel E Smilow Collegiate, Johnson Elementary School, Kirksey Middle School, Mcwillie Elementary School, Morrison Academic Advancement Ctr, North Jackson Elementary School, Northwest Middle School, Powell Middle School, Smith Elementary School, Walton Elementary School, Watkins Elementary School

» Hospitals (2 total)

- Select Specialty Hospital in Hinds County, east of MCAPS
- Jackson Medical Mall in Hinds County, south of MCAPS

» Parks and Public Lands (20 total)

- Natchez Trace Parkway (spanning both counties)
- Four Mississippi 16th Section Public School Trust Lands parcels (managed by the Mississippi Forestry Commission)
- City of Ridgeland, Madison County: Freedon Ridge Park
- City of Jackson, Hinds County: Aaron Henry Park, Broadmoor, Grove, Kurts Gymnasium, Manhattan, Medgar and Myrlie Evers Home National Monument, Medgar Evers Gym, Northgate, Parham Bridges, Presidential Hills, St. Paul's, Tougaloo Park, Vine, Willie Henry Park

» Places of Worship (79 total)

- 9 located in the City of Ridgeland, Madison County
- 70 located in the City of Jackson, Hinds County

These sensitive receptors may be exposed to direct or indirect environmental effects associated with the proposed MCAPS project and should be carefully considered in public engagement and environmental mitigation planning.

5.0 DISADVANTAGED COMMUNITIES – THE WHITE HOUSE COUNCIL ON ENVIRONMENTAL QUALITY'S CLIMATE AND ECONOMIC JUSTICE SCREENING TOOL

The Climate and Economic Justice Screening Tool (CEJST), originally developed by the White House Council on Environmental Quality (CEQ), was used to identify disadvantaged communities at the census tract level. CEJST employs a threshold-based methodology that

evaluates communities across multiple categories of environmental, climate, and socioeconomic indicators.

While CEJST was previously mandated for use by federal agencies as of January 27, 2023 (per Memorandum M-23-09), recent changes in federal guidance have shifted its status—CEQ is no longer functioning as an official executive office, and federal agencies are no longer required to apply CEJST standards. Nonetheless, the tool remains a widely recognized resource for screening disadvantaged communities. According to CEQ's original guidance (2022), a census tract was considered disadvantaged if it met any of the following criteria:

- If it is in a census tract that is (1) at or above the threshold for one or more environmental, climate, or other burdens, and (2) at or above the threshold for an associated socioeconomic burden.
- If a census tract is completely surrounded by disadvantaged communities and is at or above the fiftieth percentile for low income.
- If they are on land within the boundaries of Federally Recognized Tribes.

Thirty-seven indicators fall into eight categories of burdens including climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development.

Three census tracts are within the one-mile MCAPS Study Area, while an additional 27 are within the five-mile MCAPS Study Area.

5.1.1 One-mile MCAPS Study Area (Full Census Tracts)

The one-mile MCAPS Study Area crosses Census Tract 102.03, which is considered a disadvantaged area based on multiple environmental and socio-economic factors. This tract meets the thresholds for climate change vulnerability, health, workforce development, and low income.

The two other census tracts within the one-mile MCAPS Study Area, including the host community, are not identified as disadvantaged.

5.1.2 Five-mile MCAPS Study Area (Full Census Tracts)

In addition to the one disadvantaged census tracts within the one-mile MCAPS Study Area, Table 4 provides details on other disadvantaged census tracts within the expanded five-mile MCAPS Study Area. These tracts are also subject to elevated climate, pollution, and socio-economic risks, further highlighting the cumulative environmental and social vulnerabilities in the region.

TABLE 4 DISADVANTAGED COMMUNITIES WITHIN THE ONE-MILE AND FIVE-MILE MCAPS STUDY AREAS

GEOGRAPHY	BURDEN THRESHOLD(S) MET
Census Tract 102.03*	Climate Change: Expected building loss rate (90), Expected population loss (95) and low income (90) Health: Asthma (94), Diabetes (96), Heart disease (95), and low income Workforce Development: Low median income (93), Poverty (95), Unemployment (98), and High school education (17%)
Census Tract 3.01	Climate Change: Expected building loss rate (91), Expected population loss (98) and low income (93) Health: Asthma (95), and low income Housing: Housing cost (92), Lack of indoor plumbing (94), and low income
Census Tract 3.02	Climate Change: Expected building loss rate (90), Expected population loss (97) and low income (72) Housing: Housing cost (95), and low income Water and wastewater: Underground storage tanks and releases (91) and low income
Census Tract 5.00	Climate Change: Expected population loss (95) and low income (86) Energy: Energy cost (92) and low income Health: Diabetes (96), and low income Housing: Housing cost (90) and low income Water and wastewater: Underground storage tanks and releases (92) and low income Workforce Development: Unemployment (93), and High school education (11%)
Census Tract 6.00	Climate Change: Expected population loss (94) and low income (86) Health: Diabetes (98), and low income Water and wastewater: Underground storage tanks and releases (91) and low income Workforce Development: Unemployment (95), and High school education (11%)
Census Tract 7.00	Health: Asthma (94), Diabetes (94), Low life expectancy (95), and low income (90) Housing: Housing cost (91) and low income Legacy Pollution: Proximity to risk management plan facilities (90) and low income Workforce Development: Poverty (91), and High school education (12%)
Census Tract 8.00	Climate Change: Expected population loss (90) and low income (95) Energy: Energy cost (96) and low income Health: Asthma (96), Diabetes (98), Low life expectancy (94), and low income Legacy Pollution: Formerly used defense sites and low income Workforce Development: Low median income (94), Poverty (93), Unemployment (91) and High school education (24%)
Census Tract 9.00	Energy: Energy cost (94) and low income (96) Health: Asthma (92), Diabetes (99), Heart disease (97), Low life expectancy (94), and low income Water and wastewater: Underground storage tanks and releases (91) and low income Workforce Development: Low median income (92), Poverty (90), and High school education (14%)
Census Tract 10.00	Climate Change: Expected population loss (96) and low income (91) Energy: Energy cost (98) and low income Health: Asthma (92), Diabetes (99), Heart disease (94), and low income Housing: Historic underinvestment, and low income Water and wastewater: Underground storage tanks and releases (96) and low income Workforce Development: Low median income (94), Unemployment (95) and High school education (24%)
Census Tract 11.00	Climate Change: Expected population loss (97) and low income (98) Energy: Energy cost (95) and low income Health: Asthma (97), Diabetes (99), Heart disease (99), low life expectancy (99), and low income Housing: Historic underinvestment, and low income Water and wastewater: Underground storage tanks and releases (94) and low income Workforce Development: Low median income (99), Poverty (98) and High school education (40%)

GEOGRAPHY	BURDEN THRESHOLD(S) MET
Census Tract 12.00	Climate Change: Expected population loss (91) and low income (95) Energy: Energy cost (97) and low income Health: Asthma (94), Diabetes (98), Heart disease (90), and low income Housing: Historic underinvestment, and low income Water and wastewater: Underground storage tanks and releases (91) and low income Workforce Development: Low median income (92), Poverty (94), Unemployment (98) and High school education (38%)
Census Tract 22.00	Climate Change: Expected building loss rate (91), Expected population loss (98), and low income (98) Energy: Energy cost (98) and low income Health: Asthma (97), Diabetes (99), Heart disease (98), Low life expectancy (95), and low income Housing: Housing cost (98), Lead paint (94), and low income Workforce Development: Low median income (98), Poverty (98), Unemployment (96) and High school education (23%)
Census Tract 102.01	Health: Asthma (95), Diabetes (93), and low income (92) Workforce Development: Poverty (90), and High school education (15%)
Census Tract 103.01	Climate Change: Expected population loss (96), Expected flood risk (90), and low income (85) Health: Asthma (91), Diabetes (98), Low life expectancy (93), and low income

Source: Public Environmental Data Partners 2025b, CEJST (Version 1.0) (CEQ 2022)
* one-mile MCAPS Study Area; Note: Percentiles in parenthesis are based on a national ranking

6.0 CONCLUSION

The desktop EJ analysis screening for the proposed MCAPS identified a significant number of vulnerable communities within both the one-mile and five-mile study areas. The analysis revealed that two of the three block groups in the immediate one-mile vicinity, and 63 of the 77 block groups within the five-mile radius, meet thresholds for elevated minority and/or low-income populations. Many of these areas are also characterized by multiple layers of vulnerability, including limited English proficiency and proximity to existing environmental hazards.

Baseline environmental conditions further underscore these concerns. One block group within the one-mile area—Census Tract 102.03, Block Group 1—exhibits six EJ Index scores above the 80th percentile for the state, signaling elevated pollution burdens in a community already facing social and economic challenges. Within the broader five-mile study area, 60 vulnerable communities were identified as having elevated exposure to environmental stressors, particularly in locations near hazardous facilities or infrastructure.

The study area also contains numerous sensitive receptors, including 22 schools, 2 hospitals, 20 parks, and 79 places of worship—many of which serve low-income or minority communities. These receptors may be particularly susceptible to potential impacts from project construction and operation.

That said, the environmental impacts from the proposed MCAPS facility are expected to be minimal. Advanced emissions controls and modern technology will result in low levels of air pollution, with emission assessments indicating a *de minimis* effect on surrounding communities. Communicating this through the EJ public outreach campaign will be essential to fostering trust and supporting informed public participation.

Although recent changes to federal guidance have rescinded prior mandates for EJ screening and the use of tools such as EJScreen and CEJST, the methodologies employed in this report reflect longstanding best practices and rely on publicly available demographic and environmental data. These methods ensure a comprehensive, data-driven understanding of potential environmental justice impacts in the project vicinity.

Given these findings, early and meaningful community engagement will be important. While Mississippi does not have state-specific EJ permitting requirements, and recent changes have rescinded federal mandates related to environmental justice guidance, the 2022 USEPA Principles for Addressing Environmental Justice Concerns in Air Permitting continue to serve as a valuable reference for promoting meaningful engagement and transparent decision-making. Entergy Mississippi remains committed to these principles and will incorporate them, along with the requirements of the federal Prevention of Significant Deterioration program and other applicable regulations, to ensure fair treatment and meaningful participation of affected communities throughout the permitting process.

7.0 REFERENCES

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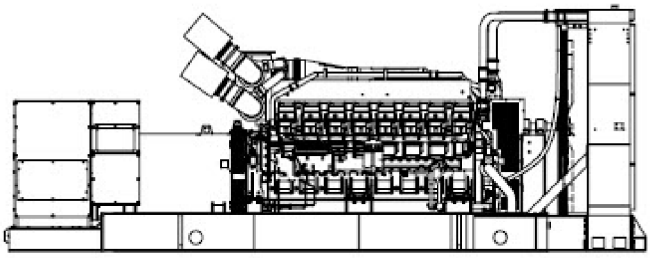
APPENDIX H VENDOR PERFORMANCE INFORMATION AND USEPA CERTIFICATIONS FOR DIESEL-FIRED IC ENGINES

KOHLER.

Spec Sheets

KOHLER®

2000REOZMD
Diesel



Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a UL 2200 listing.
- The generator set accepts rated load in one step.
- The 60 Hz generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A standard one-year limited warranty covers all systems and components. Two-, five-, and ten-year extended warranties are also available.
- Tier 2 EPA-certified for Stationary Emergency Applications
- Alternator Protection
- Alternator Strip Heater (standard on 3300 volt and above)
- Customer Connection (standard with Decision-Maker 6000 controller only)
- Local Emergency Stop Switch
- Oil Drain Extension

Alternator Features

- Operation and Installation Literature
- Radiator Core Guard
- The pilot-excited, permanent magnet (PM) alternator provides superior short-circuit capability.
- Additional alternator voltages are available including 12.47 kV, 13.2 kV, and 13.8 kV medium voltages. Contact your local distributor for more detailed information.

Other Features

- Kohler designed controllers for guaranteed system integration and remote communication.
- The low coolant level shutdown prevents overheating (standard on radiator models only).
- An electronic, isochronous governor delivers precise frequency regulation.
- Multiple circuit breaker configurations.

Generator Set Rating

Standby 130C Rise Ratings

Alternator	Voltage	Ph	Hz	Peak kVA	kW/kVA	Amps
7M4054	277/480	3	60	7000	2000/2500	3007

RATINGS: All three-phase units are rated at 0.8 power factor.
Standby Ratings: The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating.
Prime Power Ratings: At varying load, the number of generator set operating hours is unlimited.
A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. For limited running time and continuous ratings, consult the factory.
Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates.
The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

Model: 2000REOZMD, continued

Alternator Specifications

Specifications	Alternator
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Permanent-Magnet Pilot Exciter
Voltage regulator	Solid State, Volts/Hz
Insulation	NEMA MG1
Insulation: Material	Class H, Synthetic, Nonhydroscopic
Insulation: Temperature Rise	130°C, 150°C Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Rotor balancing (60Hz)	125%
Voltage regulation, no-load to full-load RMS	Controller Dependent
One-Step Load Acceptance	100% of rating
Unbalanced load capability	100% of Rated Standby Current

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling down stream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Digital solid-state, volts-per-hertz voltage regulator with +/-0.25% no-load to full-load regulation.
- Brushless alternator with brushless pilot exciter for excellent load response.

Engine

Engine Specification

Engine Manufacturer	Mitsubishi
Engine Model	S16R-Y2PTAW2-1
Engine: type	4-Cycle, Turbocharged
Cylinder arrangement	16 V
Displacement, L (cu. in.)	65.4 (3989)
Bore and stroke, mm (in.)	170 x 180 (6.69x7.09)
Compression ratio	14.0:1
Piston speed, m/min. (ft./min.)	648 (2126)
Main bearings: quantity, type	9, Precision Half-Shell
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	2180 (2923)
Cylinder head material	Cast Iron
Crankshaft material	Forged Steel
Governor: type, make/model	Electronic
Frequency regulation, no-load to-full load	Isochronous
Frequency regulation, steady state	±0.25%
Frequency	Fixed
Air cleaner type, all models	Dry

Model: 2000REOZMD, continued

Exhaust

Exhaust System

Exhaust Manifold Type	Dry
Exhaust flow at rated kW, m3/min. (cfm)	544 (19209)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	526 (979)
Maximum allowable back pressure, kPa (in. Hg)	5.1 (1.5)
Exh. outlet size at eng. hookup, mm (in.)	See ADV Drawing

Engine Electrical

Engine Electrical System

Battery charging alternator: Ground (negative/positive)	Negative
Battery charging alternator: Volts (DC)	24
Battery charging alternator: Ampere rating	30
Starter motor rated voltage (DC)	Dual, 24
Battery, recommended cold cranking amps (CCA): Qty., CCA rating each	Four, 1150
Battery voltage (DC)	12

Fuel

Fuel System

Fuel type	Diesel
Fuel supply line, min. ID, mm (in.)	19 (0.75)
Fuel return line, min. ID, mm (in.)	19 (0.75)
Max. lift, engine-driven fuel pump, m (ft.)	1.0 (3.0)
Max. fuel flow, Lph (gph)	660 (174)
Max. fuel pump restriction, kPa (in. Hg)	10 (3.0)
Max. return line restriction, kPa (in. Hg)	20 (5.9)
Fuel filter: quantity, type	4, Secondary
Recommended fuel	*#2* Diesel

Lubrication

Lubrication System

Type	Full Pressure
Oil pan capacity, L (qt.)	200 (211)
Oil pan capacity with filter, L (qt.)	230 (243)
Oil filter: quantity, type	4, Cartridge
Oil cooler	Water-Cooled

Model: 2000REOZMD, continued

Cooling

Radiator System

Ambient temperature, °C (°F)	40 (104)
Engine jacket water capacity, L (gal.)	170 (44.9)
Radiator system capacity, including engine, L (gal.)	367 (96.9)
Engine jacket water flow, Lpm (gpm)	1850 (489)
Charge cooler water flow, Lpm (gpm)	920 (243)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	780 (44374)
Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.)	780 (44374)
Water pump type	Centrifugal
Fan diameter, including blades, mm (in.)	2057 (81)
Fan, kWm (HP)	81 (109)
Max. restriction of cooling air, intake and discharge side of radiator, kPA (in. H20)	0.125 (0.5)

High Ambient Radiator System

Ambient temperature, °C (°F)	50(122)
Engine jacket water capacity, L (gal.)	170 (44.9)
Radiator system capacity, including engine, L (gal.)	386 (102)
Engine jacket water flow, Lpm (gpm)	1850 (489)
Charge cooler water flow, Lpm (gpm)	920 (243)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	780 (44374)
Heat rejected to charge cooling water at rated kW, dry exhaust, kW (Btu/min.)	780 (44374)
Water pump type	Centrifugal
Fan diameter, including blades, mm (in.)	2362 (93)
Fan, kWm (HP)	63 (84)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H2O)	0.125 (0.5)

Operation Requirements

Air Requirements

Radiator-cooled cooling air, m3/min. (scfm) *	2209 (78000)
High ambient radiator-cooled cooling air, m3/min. (scfm)	2718 (96000)
Cooling air required for generator set when equipped with city water cooling or remote radiator, based on 14°C (25°F) rise, m3/min. rise and ambient temp, of 29°C (85°F) m3/min. (cfm)	991 (35100)
Combustion air, m3/min. (cfm)	206 (7274)
Heat rejected to ambient air: Engine, kW (Btu/min.)	180 (10240)
Heat rejected to ambient air: Alternator, kW (Btu/min.)	97 (5516)

*Air density = 1.20 kg/m3 (0.075 lbm/ft3)

Fuel Consumption

Diesel, Lph (gph), at % load	Rating
Standby Fuel Consumption at 100% load	606 Lph (160.1 gph)
Standby Fuel Consumption at 75% load	442 Lph (116.8 gph)
Standby Fuel Consumption at 50% load	299 Lph (79.0 gph)
Standby Fuel Consumption at 25% load	164 Lph (43.2 gph)
Prime Fuel Consumption at 100% load	536 Lph (141.6 gph)
Prime Fuel Consumption at 75% load	403 Lph (106.6 gph)
Prime Fuel Consumption at 50% load	271 Lph (71.6 gph)
Prime Fuel Consumption at 25% load	154 Lph (40.6 gph)

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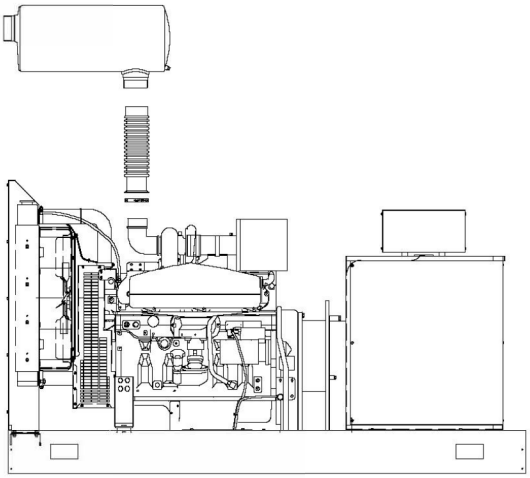
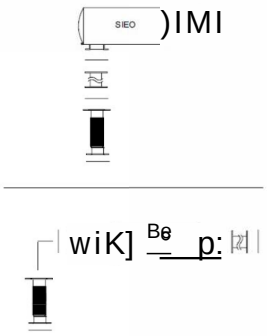
09001

KOHLER POWER SYSTEMS
NATIONALLY REGISTERED





Use the illustrations on the following pages to select the available silencer type and exhaust system configuration best suited for your application. Refer to your authorized distributor/dealer for silencer and component kit numbers and for silencer dimensions.

Backpressure Considerations

Consult the generator set spec sheet to determine the maximum allowable exhaust backpressure. Add the backpressure produced by the silencer and exhaust piping together to determine the total exhaust system backpressure. Contact an authorized distributor/dealer to calculate backpressure in exhaust piping. Do not exceed the maximum allowable backpressure.

Legend

Use the information below for identifying the exhaust system components shown in the illustrations on the following pages.

Side Inlet End Outlet (SIEO)

End Inlet End Outlet (EIEO)

Flex Exhaust

Flex Exhaust (wye)

Exhaust System Kits	Qty. in Kit	Size, In/Out	Note
Flex Exhaust 14"	1	-	Kit includes (1) flex tube, (1) gasket, and the mounting hardware.

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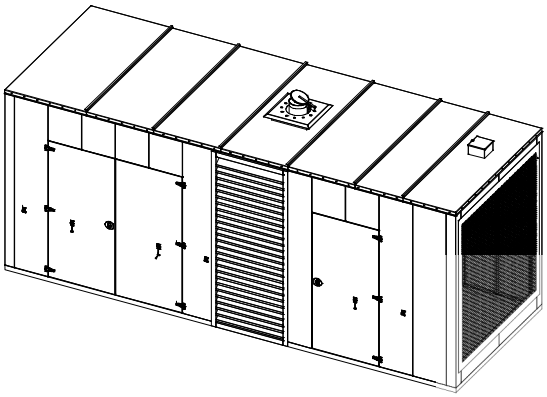
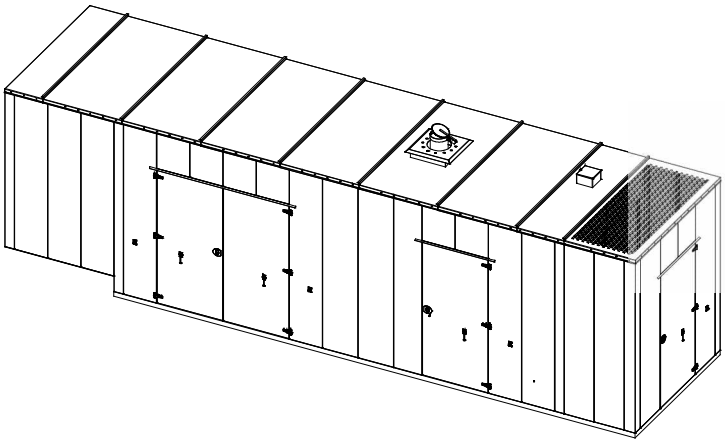
Sound Data

Aluminum Enclosure and Subbase Fuel Tank Package



Weather Enclosure with Internal Silencer shown



Sound Enclosure Level 1 and Level 2 with Internal Silencer shown

Applicable to the following:

1250-2000REOZMD

Weather Enclosure Standard Features

- Internal or external silencer, flexible exhaust connector, exhaust elbow, and rain cap.
- Mounts to lift base or subbase fuel tank. Aluminum construction with six hinged and removable doors.
- Fade-, scratch-, and corrosion-resistant polyurethane enamel that is wet-sprayed and has an automotive quality finish.
- Lockable, flush-mounted door latches.
- Air inlet louvers reduce rain and snow entry.
- Enclosure is certified to 120 mph (193 kph) wind load rating.

Sound Enclosure Standard Features

- Includes all of the weather enclosure features (except air inlet louvers) with the addition of acoustic insulation material. Sound enclosure has seven doors.
- External vertical intake hood and internal vertical discharge scoop direct air up to reduce noise.
- Acoustic insulation that meets UL94 HF1 flammability classification.
- Sound enclosure level 1 that offers sound reduction of 15 dB(A) at 7 m (23 ft.) using acoustic insulation and acoustic-lined air inlet hoods.
- Sound enclosure level 2 that offers sound reduction of 25 dB(A) at 7 m (23 ft.) using acoustic insulation, air inlet hoods, and air discharge hood.

Subbase Fuel Tank Features

- The above-ground rectangular secondary containment tank mounts directly to the generator set, below the generator set skid (subbase).
- Both the inner and outer tanks have emergency relief vents.
- Flexible fuel lines are provided with subbase fuel tank selection.
- The secondary containment tank's construction protects against fuel leaks or ruptures. The inner (primary) tank is sealed inside the outer (secondary) tank. The outer tank contains the fuel if the inner tank leaks or ruptures.

Available Approvals and Listings

- □ UL 2200 Listing
- □ CSA Certified
- □ IBC Seismic Certification
- □ California OSHPD Approval
- □ cULus Listing (fuel tanks only)

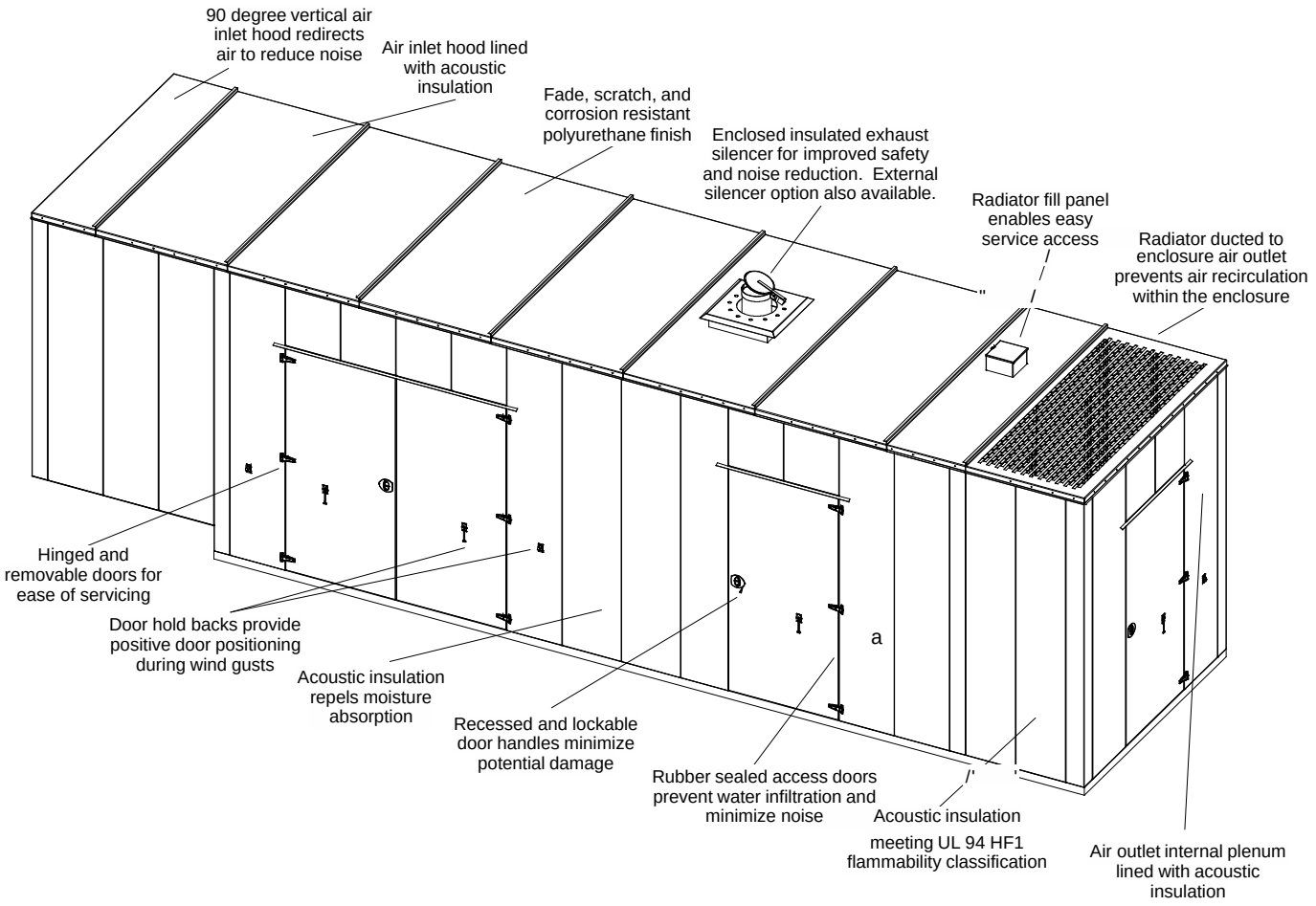
NOTE: Some models may have limited third-party approvals; see your local distributor for details.

Enclosure and Subbase Fuel Tank Combinations

There are six enclosure configurations available with the subbase fuel tanks.

Weather Enclosure with External Silencer
Sound Enclosure Level 1 with External Silencer
Sound Enclosure Level 2 with External Silencer
Weather Enclosure with Internal Silencer
Sound Enclosure Level 1 with Internal Silencer
Sound Enclosure Level 2 with Internal Silencer

Level 1 and Level 2 Aluminum Sound Enclosure



Enclosure ships assembled on subbase fuel tank or lifting base.

Note: Sample model shown, other models are similar.

Level 1 and Level 2 Sound Enclosure Features

- Heavy-duty formed panels, solid construction. Preassembled package offering corrosion resistant, dent resilient structure mounting directly to lift base or fuel tank.
- Polyurethane enamel paint. Superior finish, durability, and appearance.
- Internal exhaust silencer offering maximum component life and operator safety. Models with external silencer are also available.

  NOTE: Installing an additional length of exhaust tail pipe may increase backpressure levels. Please refer to the generator set spec sheet for the maximum backpressure value.
- Service access. Multi-personnel doors for easy access to generator set control and servicing of the fuel fill, fuel gauge, oil fill, and battery.
- Interchangeable modular panel construction. Allows complete serviceability or replacement without compromising enclosure design.
- Bolted panels facilitate service, future modification upgrades, or field replacement.
- Cooling/combustion air intake. Attenuated models offering 90° vertical air hood redirects air to reduce noise.
- Cooling air discharge. Attenuated models offering an internal vertical discharge scoop that redirects cooling air up and above the enclosure to reduce noise.

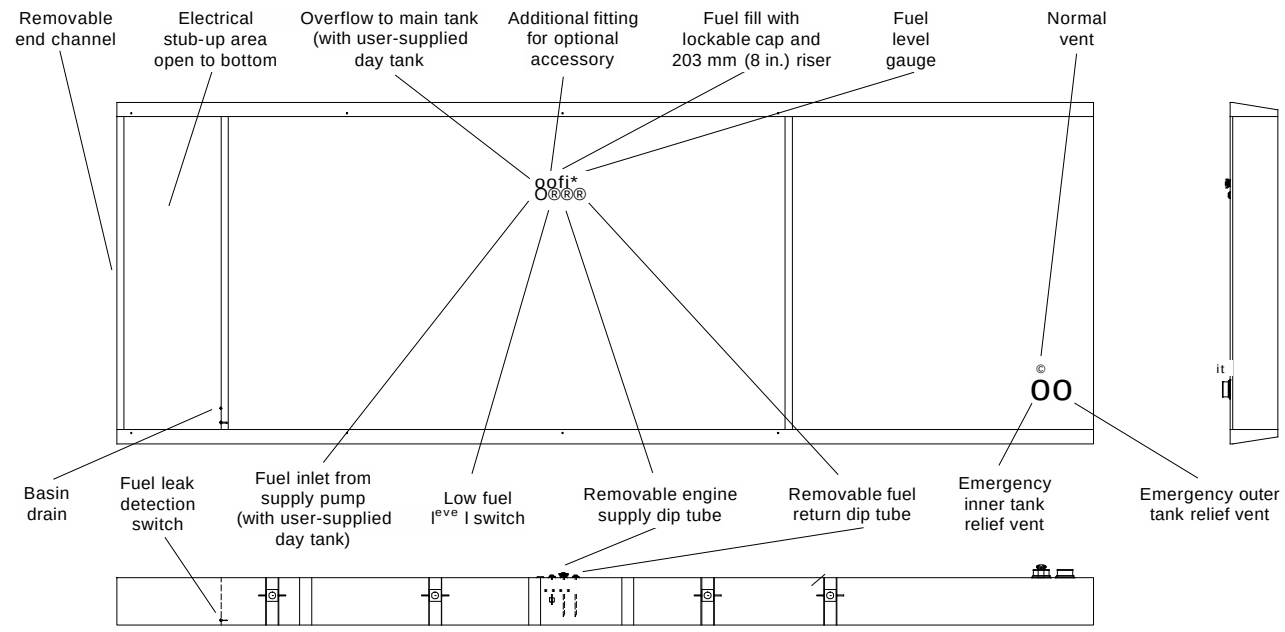
Level 1 Sound Enclosure Features

- Attenuated design using a critical silencer. Acoustic insulation UL94 HF1 listed for flame resistance; design offering 15 dB(A) attenuation using acoustic insulation.

Level 2 Sound Enclosure Features

- Attenuated design using a hospital silencer. Acoustic insulation UL94 HF1 listed for flame resistance; design offering 25 dB(A) attenuation using acoustic insulation.

Subbase Fuel Tank



Note: Sample model shown, other models are similar.

ADV-7822-

Standard Subbase Fuel Tank Features

- Extended operation. Optional tank capacities for multiple hour requirements.
- UL listed. Secondary containment generator set base tank meeting UL 142 requirements.
- NFPA compliant. Designed to comply with the installation standards of NFPA 30 and NFPA 37.
- Integral external lift lugs. Enables crane with spreader-bar lifting of the complete package (empty tank, mounted generator set, and enclosure) to ensure safety.
- Emergency pressure relief vents. Vents ensure adequate venting of inner and outer tank under extreme pressure and/or emergency conditions.
- Normal vent with cap. Vent is raised above lockable fuel fill.
- Low fuel level switch. Annunciates a 50% low fuel level condition at generator set control.
- Leak detection switch. Annunciates a contained primary tank fuel leak condition at generator set control.
- Electrical stub-up.

Subbase Fuel Tank Option

□ ULC-S601 tank listing

State Code Subbase Fuel Tank Options

Bottom Clearance/Coating

□ I-beams, provides 106 mm (4.2 in.) of ground clearance

□ Epoxy mastic coating

Fuel in Basin Options

□ Fuel in basin switch, Florida Dept, of Environmental Protection (FDEP) File No. EQ-682 approved

Fuel Fill Options

□ Fill pipe extension to within 152 mm (6 in.) of bottom of fuel tank

□ 18.9 L (5 gallon) spill containment, Florida Dept, of Environmental Protection (FDEP) File No. EQ-345 approved

□ 18.9 L (5 gallon) spill containment with 95% shutoff, Florida Dept, of Environmental Protection (FDEP) File No. EQ-345/EQ-257 approved

□ 18.9 L (5 gallon) spill containment fill to within 152 mm (6 in.) of bottom of fuel tank

Fuel Supply Options

□ Fire safety valve (installed on fuel supply line)

□ Ball valve (installed on fuel supply line)

High Fuel Level Switch

□ High fuel level switch

□ High fuel level switch, Florida Dept, of Environmental Protection (FDEP) File No. EQ-682 approved

Normal Vent Options

□ 3.7 m (12 ft.) above grade (without spill containment)

□ 3.7 m (12 ft.) above grade (with spill containment)

Tank Marking Options

□ Decal, Combustible Liquids - Keep Fire Away (qty. 2)

□ Decal, NFPA 704 identification (qty. 2)

□ Decal, tank number and safe fuel fill height (qty. 2)

□ Decal, tank number and safe fuel fill height, NFPA 704 identification

Fuel Tank Capacity, L (gal.)	Est. Fuel Supply Hours at 60 Hz with Full Load	1750/2000REOZMD with 40°C Radiator				Fuel Tank Height, mm (in.)	Sound Pressure Reduction at 7 m (23 ft.)
		Max. Dimensions, mm (in.)			Max. Weight, t kg (lb.)		
		Length	Width	Height			
Weather Enclosure with Internal Silencer and Subbase Fuel Tank*							
Lifting Base	0	8128 (320)	2896 (114)	4089 (161)	18824 (41500)	203 (8)	—
5110(1350)	10/8	8687 (342)		4216 (166)	20303 (44760)	330 (13)	
6057(1600)	11/10			4267 (168)	20452 (45090)	381 (15)	
7949 (2100)	15/13			4369 (172)	20724 (45690)	483 (19)	
9842 (2600)	18/16	9652 (380)		4394 (173)	21264 (46880)	508 (20)	
11848 (3130)	22/20	11278 (444)			21926 (48340)		
15709 (4150)	29/26	9906 (390)		4851 (191)	21754 (47960)	762 (30)	
19495 (5150)	36/32			5029 (198)	22307 (49180)	940 (37)	
23318 (6160)	44/38	10312 (406)		5156 (203)	22956 (50610)	1067 (42)	
29905 (7900)	54/48	12802 (504)			24380 (53750)		
Sound Enclosure (Level 2 Data Shown) with Internal Silencer and Subbase Fuel Tank*							
Lifting Base	0	12319 (485)	2896 (114)	4191 (165)	19922 (43920)	203 (8)	Level 1 -15dB(A) or Level 2 -25dB(A)
5110 (1350)	10/8			4293 (169)	21398 (47175)	305 (12)	
6057(1600)	11/10			4318 (170)	21580 (47575)	330 (13)	
7949 (2100)	15/13			4420 (174)	21893 (48265)	432 (17)	
9842 (2600)	18/16				22623 (49875)		
11848 (3130)	22/20	13767 (542)			23397 (51580)		
15709 (4150)	29/26	12319 (485)		4953 (195)	22941 (50575)	762 (30)	
19495 (5150)	36/32			5131 (202)	23492 (51790)	940 (37)	
23318 (6160)	44/38			5207 (205)	24261 (53485)	1016 (40)	
29905 (7900)	54/48	12395 (488)		5258 (207)	25399 (55995)	1067 (42)	

Note: Refer to TIB-114 for generator set sound data.
* Data in table is for reference only. Refer to your authorized Kohler distributor for enclosure and subbase fuel tank specification details,
t Max. weight includes the generator set (wet), enclosure, silencer, and tank (no fuel).

Fuel Tank Capacity, L (gal.)	Est. Fuel Supply Hours at 60 Hz with Full Load	1750/2000REOZMD with 50°C Radiator				Fuel Tank Height, mm (in.)	Sound Pressure Reduction at 7 m (23 ft.)
		Max. Dimensions, mm (in.)			Max. Weight, t kg (lb.)		
		Length	Width	Height			
Weather Enclosure with Internal Silencer and Subbase Fuel Tank *							
Lifting Base	0	8128 (320)	3200 (126)	4089 (161)	19904 (43880)	203 (8)	—
5510 (1350)	10/8	8687 (342)		4191 (165)	21437 (47260)	305 (12)	
6057(1600)	11/10			4242 (167)	21582 (47580)	356 (14)	
7949 (2100)	15/13			4318 (170)	21886 (48250)	432 (17)	
9842 (2600)	18/16	8738 (344)		4394 (173)	22188 (48915)	508 (20)	
11848 (3130)	22/20	10211 (402)			22852 (50380)		
15709 (4150)	29/26	13157 (518)			24186 (53320)		
19495 (5150)	36/32	9144 (360)		5004 (197)	23215 (51180)	914 (36)	
23318 (6160)	44/38	9703 (382)		5105 (201)	23868 (52620)	1016 (40)	
29905 (7900)	54/48	11532 (454)		5156 (203)	25125 (55390)	1067 (42)	
Sound Enclosure (Level 2 Data Shown) with Internal Silencer and Subbase Fuel Tank*							
Lifting Base	0	12979 (511)	3150 (124)	4191 (165)	20965 (46220)	203 (8)	Level 1 -15dB(A) or Level 2 - 25 dB(A)
5510 (1350)	10/8			4242 (167)	22659 (49955)	254 (10)	
6057 (1600)	11/10			4293 (169)	22761 (50180)	305 (12)	
7949 (2100)	15/13			4369 (172)	23025 (50760)	381 (15)	
9842 (2600)	18/16			4445 (175)	23288 (51340)	457 (18)	
11848 (3130)	22/20			4521 (178)	23605 (52040)	533 (21)	
15709 (4150)	29/26				24807 (54690)		
19495 (5150)	36/32			5029 (198)	24220 (53395)	838 (33)	
23318 (6160)	44/38			5182 (204)	24739 (54540)	991 (39)	
29905 (7900)	54/48			5258 (207)	25987 (57290)	1067 (42)	

Note: Refer to TIB-114 for generator set sound data.
* Data in table is for reference only. Refer to your authorized Kohler distributor for enclosure and subbase fuel tank specification details,
t Max. weight includes the generator set (wet), enclosure, silencer, and tank (no fuel).

TECHNICAL INFORMATION BULLETIN

Generator Set Sound Data Sheet

Generator Set Model	Hz	Load	Sound Pressure Data in dB(A) Raw Exhaust	Open Unit, Isolated Exhaust	Weather Enclosure	Level 1 Sound Enclosure	Level 2 Sound Enclosure
2000REQZMD	60	100% Load	126.3	100.8	98.9	87.5	81.1
		No Load	113.6	95.1	93.2	84.7	79.3

Note: Sound pressure data is the logarithmic average of eight perimeter measurement points at a distance of 7 m (23 ft.), except RaW Exhaust data which is a single measurement point at 1 m (3.3 ft.) from the mouth of a straight pipe exhaust.

2000REOZMD **60 Hz**

Load	Distance, m(ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A) Octave Band Center Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Overall Level
100% Load	7(23)	Level 2 Sound	3:00	**59.6**	68.7	70.3	75.4	77.4	76.5	66.5	61.2	82.0
			1:30	60.2	68.7	71.9	68.7	72.3	69.1	61.2	55.7	77.6
			12:00-Engine	59.8	63.8	67.1	64.3	61.0	61.5	53.8	44.4	71.5
			10:30	57.3	68.7	72.8	67.2	71.3	69.1	60.6	50.9	77.4
			9:00	55.4	66.7	76.6	69.3	71.4	70.8	65.0	57.1	79.5
			7:30	58.1	73.2	78.5	73.0	72.2	72.2	65.7	57.2	81.8
			6:00-Alternator	61.7	63.3	81.6	66.5	68.5	64.1	55.1	43.0	82.1
			4:30	**61.9**	77.5	79.4	80.7	75.2	75.3	64.5	56.9	85.2
			8-pos. log avg.	59.7	71.3	77.0	74.0	72.9	72.0	63.3	56.3	81.1

Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A) Octave Band Center Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Overall Level
100% Load	7(23)	Level 1 Sound	3:00	63.5	74.4	76.7	81.5	84.3	83.7	74.9	70.2	88.9
			1:30	63.3	72.2	76.5	75.3	79.2	77.0	69.9	65.7	83.9
			12:00-Engine	63.5	69.9	73.6	71.7	69.6	69.8	63.2	54.1	78.5
			10:30	61.2	75.0	78.3	74.5	79.2	77.8	70.0	61.7	84.5
			9:00	60.3	73.7	82.9	76.6	79.3	79.2	73.7	66.9	86.7
			7:30	62.2	78.7	84.4	79.7	80.1	80.7	74.4	66.4	88.4
			6:00-Alternator	65.0	69.8	87.0	74.4	77.2	73.5	65.1	54.0	87.9
			4:30	64.7	82.7	84.7	86.4	82.5	82.9	73.5	66.7	91.2
			8-pos. log avg.	66.3	85.8	91.7	91.2	95.0	95.9	90.7	86.7	87.5

Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A) 3:00	1:30	12:00 Eng.	10:30	9:00	7:30	6:00 Alt.	4:30	8-pos. log avg.
100% Load	7(23)	Weather	Overall Levels	100.1	95.7	91.4	98.1	99.6	100.6	98.5	101.0	98.9

Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A) Octave Band Center Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Overall Level
100% Load	7(23)	Open Unit, Isolated Exhaust	3:00	67.3	83.7	88.0	91.8	97.1	97.5	92.3	89.1	102.0
			1:30	64.5	74.8	82.3	87.2	91.9	92.7	88.1	87.7	97.6
			12:00-Engine	66.7	80.4	85.0	85.8	87.5	86.8	83.5	75.3	93.3
			10:30	64.8	86.0	86.8	88.5	94.9	95.8	90.2	86.2	100.0
			9:00	67.2	86.9	94.0	90.6	95.1	96.5	92.0	88.4	101.5
			7:30	66.6	87.2	94.2	91.9	96.0	98.2	92.7	86.1	102.5
			6:00-Alternator	66.8	81.4	95.3	90.0	95.4	93.9	87.2	79.0	100.4
			4:30	65.2	90.4	92.5	95.6	96.3	97.6	92.7	88.3	102.9
			8-pos. log avg.	66.3	85.8	91.7	91.2	95.0	95.9	90.7	86.7	100.8

Load	Distance, m (ft)	Exhaust	Sound Pressure Levels, dB(A) Octave Band Center Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Overall Level
100% Load	1 (3.3)	Raw Exhaust (No Silencer)	92.0	115.9	115.6	118.3	118.2	120.8	118.4	113.7	126.3

2000REOZMD **60 Hz**

Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A) Octave Band Center Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Overall Level
No Load	7(23)	Level 2 Sound	3:00	60.0	72.0	71.3	75.3	72.8	72.0	62.8	59.4	80.1
			1:30	60.6	71.0	71.0	72.4	71.9	66.3	59.0	53.2	78.1
			12:00-Engine	59.2	65.9	69.9	67.8	64.5	63.5	55.9	47.7	74.2
			10:30	56.9	73.0	72.0	70.2	71.2	65.0	57.4	49.3	78.0
			9:00	58.8	71.1	66.4	69.0	69.1	66.4	61.6	56.7	76.1
			7:30	60.7	77.4	73.1	71.7	68.3	66.2	63.5	59.8	80.2
			6:00-Alternator	64.3	65.8	72.7	67.5	63.9	59.6	52.6	46.9	75.4
			4:30	61.2	80.7	77.8	73.4	73.2	71.2	64.2	61.3	83.8
			8-pos. log avg.	60.7	74.8	72.9	71.7	70.5	67.8	61.0	57.0	79.3

Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A) Octave Band Center Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Overall Level
No Load	7(23)	Level 1 Sound	3:00	63.0	77.1	76.7	81.0	79.3	78.6	70.3	66.3	86.0
			1:30	62.9	73.8	74.9	77.6	78.3	73.5	66.7	60.7	83.2
			12:00-Engine	62.7	71.4	75.4	74.7	72.5	71.1	64.4	55.9	80.6
			10:30	60.4	78.3	76.6	76.4	78.3	73.2	66.1	57.9	84.0
			9:00	63.2	77.0	72.5	75.3	76.3	74.3	69.5	64.4	82.7
			7:30	63.9	81.6	77.8	77.5	75.7	74.0	70.8	67.0	85.4
			6:00-Alternator	67.0	70.7	77.~/	74.2	71.7	68.0	61.1	55.4	81.0
			4:30	64.1	85.0	81.7	79.3	79.6	78.0	71.7	68.3	88.6
			8-pos. log avg.	63.8	79.3	77.4	77.6	77.3	74.9	68.7	64.3	84.7

Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A) 3:00	1:30	12:00 Eng.	10:30	9:00	7:30	6:00 Alt.	4:30	8-pos. log avg.
No Load	7(23)	Weather	Overall Levels	94.4	91.2	91.5	94.0	93.5	93.4	90.5	95.1	93.2

Load	Distance, m (ft)	Measurement Clock Position	Sound Pressure Levels, dB(A) Octave Band Center Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Overall Level
No Load	7(23)	3:00	64.0	84.3	84.8	90.0	90.9	90.4	85.0	79.1	96.3
		1:30	61.7	74.4	78.6	85.3	89.5	87.0	82.0	75.4	93.1
		12:00-Engine	65.2	80.0	84.1	87.4	88.5	85.8	81.9	72.7	93.4
		10:30	63.1	86.3	82.3	87.2	91.6	89.9	84.4	75.7	95.9
		9:00	68.4	86.6	82.9	86.2	90.0	89.9	85.1	79.6	95.4
		7:30	65.5	86.4	83.9	87.0	89.8	89.3	84.9	80.7	95.3
		6:00-Alternator	67.3	77.6	84.8	86.5	87.1	85.2	78.8	72.9	92.4
		4:30	64.9	89.9	85.5	88.9	90.9	90.4	86.4	81.5	97.0
		8-pos. log avg.	65.5	85.4	83.8	87.6	90.0	88.9	84.1	78.3	95.1

Open Unit, Isolated Exhaust

Load	Distance, m(ft)	Exhaust	Sound Pressure Levels, dB(A) Octave Band Center Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Overall Level
No Load	1 (3.3)	Raw Exhaust (No Silencer)	83.3	100.6	101.7	108.0	108.1	107.6	101.8	95.7	113.6

KOHLER.

Emissions Data

KOHLER.

2000REOZMD

60 HZ. DIESEL INDUSTRIAL GENERATOR SET
EMISSION DATA SHEET

ENGINE INFORMATION			
Model:	Mitsubishi, S16R-Y2PTAW2-1	Bore:	170mm (6.69 in.)
Nameplate BHP @ 1800 RPM:	2923	Stroke:	180mm (7.09 in.)
Type:	4-Cycle, 16-V Cylinder	Displacement:	65.4 L (3989 cu. in.)
Aspiration:	Turbocharged	EPA Family:	NMVXL65.4BBA
Compression Ratio	14.0:1	EPA Certificate	NMVXL65.4BBA-004
Emission Control Device	Turbocharged and after cooled		

Table 1

PERFORMANCE DATA:	1/4 Standby	1/2 Standby	3/4 Standby	Full Standby
Engine bkW @ Stated Load	545.00	1090.00	1635.00	2180.00
Fuel Consumption (g/kWh)	254.00	232.00	229.00	235.00
Exhaust Gas Flow (m^3/s)				9.07
Exhaust Temperature (°C)				526.00

Table 2

EXHAUST EMISSION DATA:	EPA CERTIFICATE DATA
HC (Total Unburned Hydrocarbons)	0.56
NOx (Oxides of Nitrogen as NO2)	5.36
CO (Carbon Monoxide)	0.60
PM (Particulate Matter)	0.17

Values are in g/kWh unless otherwise noted.

TEST METHODS AND CONDITIONS

Data was recorded during steady-state rated engine speed (± 25 RPM) with full load (± 2%). Pressures, temperatures, and emission rates were stabilized

Fuel Spec	Type 2-D and ASTM D975 No.2D
Fuel Temperature	37 ± 10 °C
Intake Temperature	25 ^{0} C
Baro'metic Pressure	100 kPa (29.6 In Hg)
Relative Humidity	30 %
Standard	ISO 8178

The emission data here were taken from a single engine under the test condition shown above.
These data are subjected to instrumentation and engine to engine variabilty.

Data and specifications subject to change without notice.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2022 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Mitsubishi Heavy Industries Engine & Turbocharger, Ltd.**
(U.S. Manufacturer or Importer)

Certificate Number: NMVXL65.4BBA-004

Effective Date: 03/15/2021

Expiration Date: 12/31/2022

Byron J /Bunker, Division Director
Compliance Division

Issue Date: 03/15/2021

Revision Date: N/A

Model Year: 2022
Manufacturer Type: Original Engine Manufacturer
Engine Family: NMVXL65.4BBA

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 560<kW<=2237
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Engine Design Modification

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

KOHLER.

Dimensional Drawings

GENSET MEDEL	GENSET EBBTPRINT
1750-2000 REOZMB 500 AND REOZMD	6445[253.8] X 2776[109]

REV	DATE	REVISION	BY
D	9-30-15	TANK SHIPPED ADDED TO CHART [CT125485]	SAM
E	2-15-19	TANK WEIGHT VALUES UPDATED; OVERALL PACKAGE WEIGHT NOTE	
		ADDED; HOUSING WITH SILENCER WEIGHT UPDATED; AIR INTAKE	
		GRATES ADDED IN VIEWS; SEE SHEET 2 [CT187253]	PAR

FOR ESTIMATING TOTAL PACKAGE WEIGHT ADD THE FOLLOWING ITEMS

HOUSING WITH SILENCER WEIGHT =5602 kg [12350 lbs]*

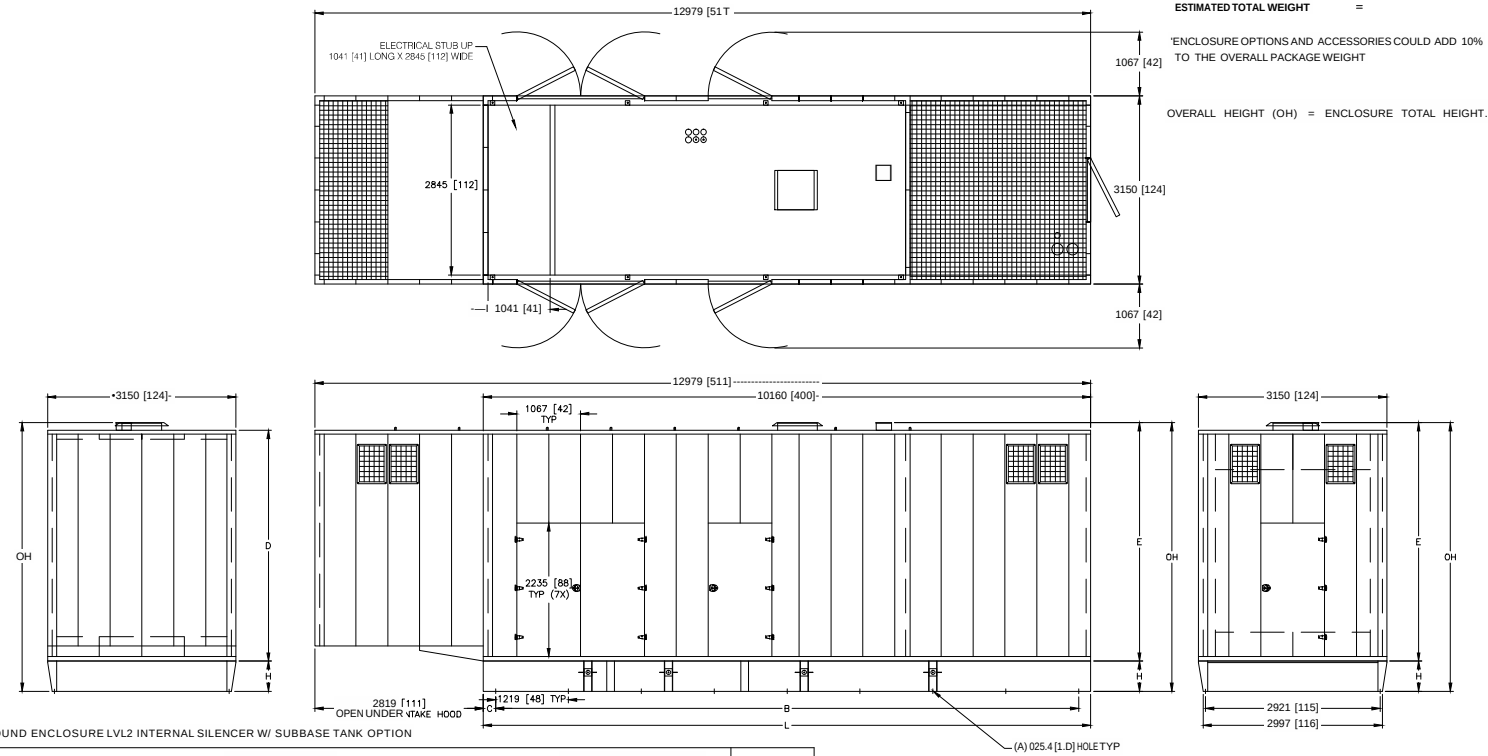
GENSET WEIGHT =16329.3 kg [36000 lbs]

TANK WEIGHT(SEE CHART) =_____

ESTIMATED TOTAL WEIGHT =

'ENCLOSURE OPTIONS AND ACCESSORIES COULD ADD 10% TO THE OVERALL PACKAGE WEIGHT

OVERALL HEIGHT (OH) = ENCLOSURE TOTAL HEIGHT._____



SOUND ENCLOSURE LVL2 INTERNAL SILENCER W/ SUBBASE TANK OPTION

	TANK INFORMATION						ENCLOSURE INFORMATION			TANK SHIPPED SEPERATE
	TANK DIMENSIONS		MOUNTING HOLES							
GALLONS	H	L	A (QTY)	B	C	TANK WEIGHT	D	E	OH	
LIFTBASE	203 [8]	10160 [400]	18	9754 [384]	203 [8]	2175kg [479515s]	3861 [152]	3988 [157]	4191 [165]	NO
1350	254 [10]	10160 [400]	18	9754 [384]	203 [8]	3874kg [8540lteT	3861 [152]	3988 [157]	4242 [167]	NO
1600	305 [12]	10160 [400]	18	9754 [384]	203 [8]	4046kg [892015s]	3861 [152]	3988 [157]	4293 [169]	NO
2100	381[15]	10160 [400]	18	9754 [384]	203 [8]	4307kg [949515s]	3861 [152]	3988 [157]	4369 [172]	NO
2600	457 [18]	10160 [400]	18	9754 [384]	203 [8]	4568kg [10070lbs]	3861 [152]	3988 [157]	4445 [175]	NO
3130	533 [21]	10160 [400]	18	9754 [384]	203 [8]	4828kg [10645lbs]	3861 [152]	3988 [157]	4521 [178]	NO
4150	533 [21]	12852 [506]	22	12192 [480]	330 [13]	6026kg [1328515s]	3861 [152]	3988 [157]	4521 [178]	NO
5150	838 [33]	10160 [400]	18	9754 [384]	203 [8]	5448kg [12010lbs]	4064 [160]	4191 [165]	5029 [198]	YES
61bJ	991 [39]	10160 [400]	18	9754 [384]	203 [L	5969kg [l3160lbs]	4064 [160]	4191 [165]	5182 [204]	YES
7905	1067 [42]	11786 [464]	20	10973 [432]	406 [16]	7210kg [15S95lbs]	4064 [160]	4191 [165]	5258 [207]	YES

TANK EXTENDS PAST ENCLOSURE ON DISCHARGE END WHEN APPLICABLE

METRIC CAD FILE

DIMENSIONS IN [ ] ARE INCH EQUIVALENT

UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX± X.XX
X.X ± X.X
X ± X
ANGLES+ ANG
SURFACE FINISH
SURF/ MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	SAM/GPC	3–24–10
CHECKED	SAM	3–29–10
APPROVED	AJD	3–29–10

KOHLER CO

POWER SYSTEMS, ROLLER, WI 53044 U.S.A.

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TITLE: DIMENSION PRINT

SCALE | CAD NO. | SHEET 1–2

DWG. NO. ADV-7820 | A

CLARKS®

FIRE PUMP ENGINES

MODELS

JU6H-UFADMG	JU6H-UFADP0	JU6H-UFADR0	JU6H-UFADT0
JU6H-UFAD58	JU6H-UFADP8	JU6H-UFADR8	[JU6H-UFADW8]
JU6H-UFADNG	JU6H-UFADQ0	JU6H-UFADS8	JU6H-UFADX8
JU6H-UFADN0	JU6H-UFAD88	JU6H-UFADS0	JU6H-UFAD98

FM-UL-cUL APPROVED RATINGS BHP/KW

JU6H MODEL ♦	RATED SPEED 1760		2100		2350		2400		US-EPA (NSPS) Available Until ●
UFADMG			175	131	175	131			No Expiration
UFAD58	183	137							No Expiration
UFADNG	190	142	181	135	183	137	183	137	No Expiration
UFADNO	197	147	197	147	200	149	200	149	No Expiration
UFADPO			209	156	211	157	211	157	No Expiration
UFADP8	220	164							No Expiration
UFADQO			224	167	226	169	226	169	No Expiration
UFAD88	237	177							No Expiration
UFADRO			238	177.5	240	179	240	179	No Expiration
UFADR8	250	187							No Expiration
UFADS8	260	194							No Expiration
UFADSO			260	194	268	200	268	200	No Expiration
UFADTO			274	204	275	205	275	205	No Expiration
UFADW8	282	211							No Expiration
UFADX8	305	227.5							No Expiration
UFAD98	315	235							No Expiration

Picture represents JU6H-TRWA Power Tech Plus Engine Series

- USA EPA (NSPS) Tier 3 Emissions Certified Off-Road (40 CFR Part 89) and NSPS Stationary (40 CFR Part 60 Sub Part IIII). Meet EU Stage IIIA emission levels.

♦ All Models available for Export

SPECIFICATIONS

ITEM	JU6H MODELS MG	58	NG	NO	P8	88	P0	QO	R0	SO	TO	R8	S8	W8	X8	98
Number of Cylinders	6															
Aspiration	TRWA															
Rotation*	CW															
Overall Dimensions - in. (mm)	59.8 (1519) H x 56.7 (1414) L x 36.7 (933) W						60.9 (1547) H x 58.6 (1488) L x 40.0 (1015) W									
Crankshaft Centerline Height - in. (mm)	14 (356)															
Weight - lb (kg)	1747 (791)															
Compression Ratio	19.0:1						17.0:1									
Displacement - cu. in. (L)	415(6.8)															
Engine Type	4 Stroke Cycle - Inline Construction															
Bore & Stroke - in. (mm)	4.19x5.00 (106x127)															
Installation Drawing	D628															
Wiring Diagram AC	C07651															
Wiring Diagram DC	C071367, C072146, C071361						C071368, C072146, C071761									
Engine Series	John Deere 6068 Series Power Tech E						John Deere 6068 Series Power Tech Plus									
Speed Interpolation	N/A															

Abbreviations: CW- Clockwise TRWA- Turbocharged with Raw Water Aftercooling N/A - Not Available L - Length W- Width H - Height

'Rotation viewed from Heat Exchanger / Front of engine

CERTIFIED POWER RATING

- Each engine is factory tested to verify power and performance.
- FM-UL power ratings are shown at specific speeds, Clarke engines can be applied at a single rated RPM setting ± 50 RPM.

c UL US

Meet* NFPA 20 Requirement*

< FM > APPROVED

ENGINE RATINGS BASELINES

- Engines are to be used for stationary emergency standby fire pump service only. Engines are to be tested in accordance with NFPA 25.
- Engines are rated at standard SAE conditions of 29.61 in. (752.1 mm) Hg barometer and 77°F (25°C) inlet air temperature [approximates 300 ft. (91.4 m) above sea level] by the testing laboratory (see SAE Standard J 1349).
- A deduction of 3 percent from engine horsepower rating at standard SAE conditions shall be made for diesel engines for each 1000 ft. (305 m) altitude above 300 ft. (91.4 m)
- A deduction of 1 percent from engine horsepower rating as corrected to standard SAE conditions shall be made for diesel engines for every 10°F (5.6°C) above 77°F (25°C) ambient temperature.

FIRE PUMP ENGINES

MODELS

JU6H-UFADMG JU6H-UFADP0 JU6H-UFADR0 JU6H-UFADT0
JU6H-UFAD58 JU6H-UFADP8 JU6H-UFADR8 JU6H-UFADW8
JU6H-UFADNG JU6H-UFADQ0 JU6H-UFADS8 JU6H-UFADX8
JU6H-UFADN0 JU6H-UFAD88 JU6H-UFADS0 JU6H-UFAD98

ENGINE EQUIPMENT

EQUIPMENT	STANDARD	OPTIONAL
Air Cleaner	Direct Mounted, Washable, Indoor Service with Drip Shield	Disposable, Drip Proof, Indoor Service Outdoor Type, Single or Two Stage (Cyclonic)
Alarms	Overspeed Alarm & Shutdown, Low Oil Pressure, Low & High Coolant Temperature, Low Raw Water Flow, High Raw Water Temperature, Alternate ECM Warning, Fuel Injection Malfunction, ECM Warning and Failure with Automatic Switching	Low Coolant Level, Low Oil Level, Oil Filter Differential Pressure, Fuel Filter Differential Pressure, Air Filter Restriction
Alternator	12V-DC, 42 Amps with Poly-Vee Belt and Guard	24V-DC, 40 Amps with Poly-Vee Belt and Guard
Coupling	Bare Flywheel	UL Listed Driveshaft and Guard, JU6H-UFAD58/NG/ADMG/ADM8/KO/NO/QO/RO-CDS30-S1; JU6H-UFADP8/P0/T0/88/R8/S8/S0/W8/X8/98- CDS50-SC at 1760/2100 RPM only
Electronic Control Module	12V-DC, Energized to Stop, Primary ECM always Powered on	24V-DC, Energized to Stop, Primary ECM always Powered on
Engine Heater	115V-AC, 1360 Watt	230V-AC, 1360 Watt
Exhaust Flex Connection	SS Flex, 150# ANSI Flanged Connection, 5” for JU6H-UFAD58/MG/NG/N0/P8/88; SS Flex, 150# ANSI Flanged Connection, 6” for JU6H-UFADP0/Q0/R0/S0/T0/R8/S8/W8/X8/98 (w/ orifice plate)	SS Flex, 150# ANSI Flanged Connection, 6” for JU6H-UFAD58/MG/NG/N0/P8/88; SS Flex, 150# ANSI Flanged Connection, 8” for JU6H-UFADP0/Q0/R0/S0/T0/R8/S8/W8/X8/98 (w/ orifice plate)
Exhaust Protection	Metal Guards on Manifolds and Turbocharger	
Flywheel Housing	SAE #3	
Flywheel Power Take Off	11.5” SAE Industrial Flywheel Connection	
Fuel Connections	Fire Resistant, Flexible, USA Coast Guard Approved, Supply and Return Lines	SS, Braided, cUL Listed, Supply and Return Lines
Fuel Filter	Primary Filter with Priming Pump	
Fuel Injection System	High Pressure Common Rail	
Governor, Speed	Dual Electronic Control Modules	
Heat Exchanger	Tube and Shell Type, 60 PSI (4 BAR), NPT(F) Connections - Sea Water Compatible	
Instrument Panel	Multimeter to Display English and Metric, Tachometer, Hourmeter, Water Temperature, Oil Pressure and One (1) Voltmeter with Toggle Switch, Front Opening	
Junction Box	Integral with Instrument Panel; For DC Wiring Interconnection to Engine Controller	
Lube Oil Cooler	Engine Water Cooled, Plate Type	
Lube Oil Filter	Full Flow with By-Pass Valve	
Lube Oil Pump	Gear Driven, Gear Type	
Manual Start Control	On Instrument Panel with Control Position Warning Light	
Overspeed Control	Electronic, Factory Set, Not Field Adjustable	
Raw Water Cooling Loop w/Alarms	Galvanized	Seawater, All 316SS, High Pressure
Raw Water Cooling Loop Solenoid Operation	Automatic from Fire Pump Controller and from Engine Instrument Panel (for Horizontal Fire Pump Applications)	Not Supplied (for Vertical Turbine Fire Pump Applications)
Run - Stop Control	On Instrument Panel with Control Position Warning Light	
Starters	Two (2) 12V-DC	Two (2) 24V-DC
Throttle Control	Adjustable Speed Control by Increase/Decrease Button, Tamper Proof in Instrument Panel	
Water Pump	Centrifugal Type, Poly-Vee Belt Drive with Guard	

Abbreviations: DC - Direct Current, AC - Alternating Current, SAE - Society of Automotive Engineers, NPT(F) - National Pipe Tapered Thread (Female), ANSI - American National Standards Institute, SS - Stainless Steel

MODEL NOMENCLATURE: (10 Digit Models)

JU6H - UFADRO

John Deere Base Engine J
350 Series
6 Cylinders ----- U
Heat Exchanger Cooled -------
Power Curve Number
U ------ EPA Tier 3 Certified
H-------- BuiltinUSA
---------- FM Approved
---------- UL Listed

CLARKE' Fire Protection Products, Inc.
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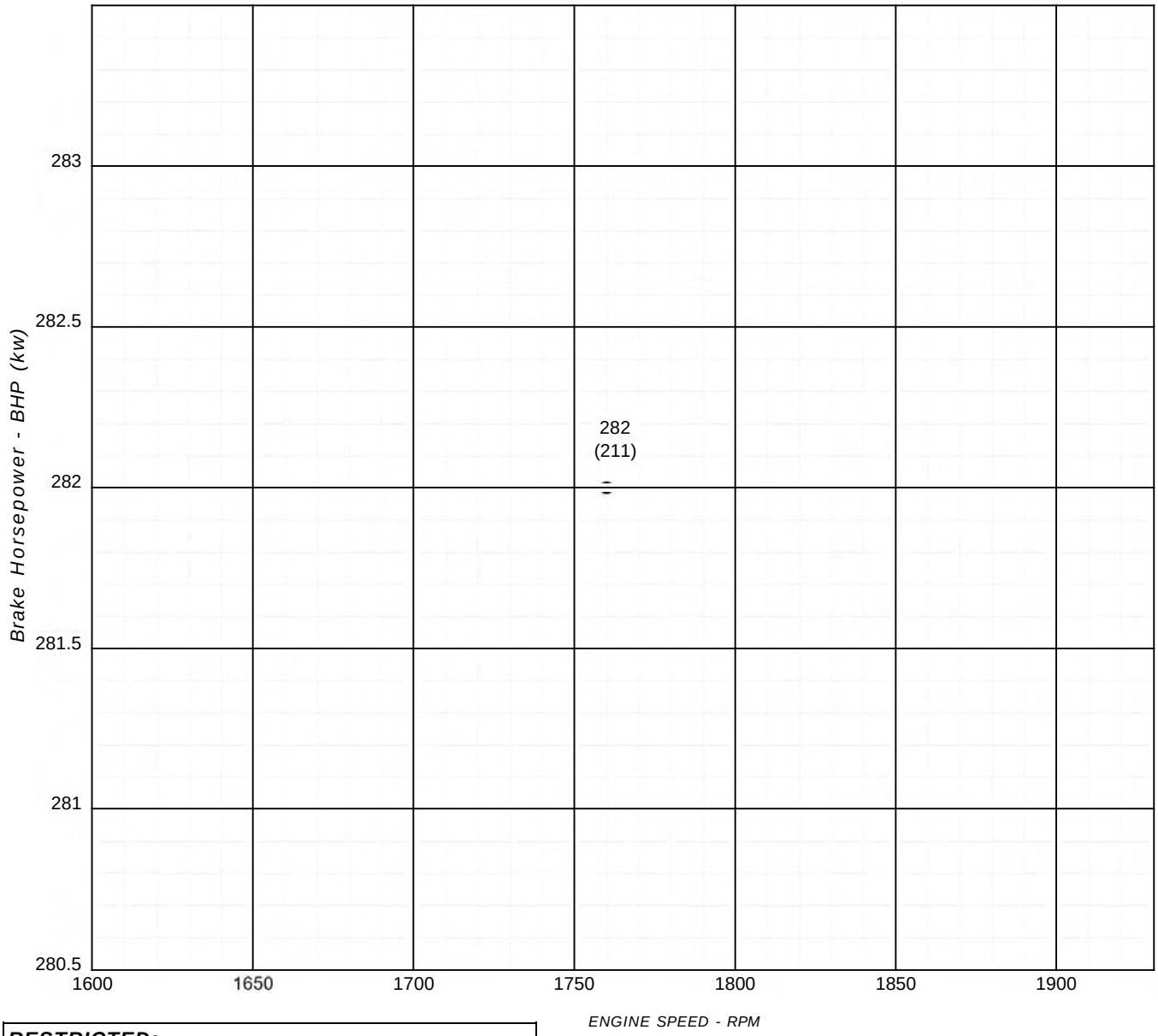
www.clarkefire.com

C133421 revR
19JUN15

Specifications and information contained in this brochure subject to change without notice.

CLARKE®

FIRE PUMP MODEL: JU6H-UFADW8
Heat Exchanger Cooled
Raw Water Charge Cooling
Tier 3 Emissions Certified



RESTRICTED:
Use only for Stand-By Fire Pump Applications

ENGINE PERFORMANCE:
STANDARD CONDITIONS: (SAE J1349, ISO 3046)
77°F (25°C) AIR INLET TEMPERATURE
29.61 IN. (752.1MM) HG BAROMETRIC PRESSURE
#2 DIESEL FUEL (SEE C13940)

Kevin Kunkier 06FEB09

NAMEPLATE BHP (MAXIMUM PUMP LOAD)

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CREATED	DATE CREATED
KTK	02/06/09

ENGINE MODEL JU6H-UFADW8

DRAWING NO.	REV
C132968	A

Basic Engine Description

Engine Manufacturer	John Deere Co.
Ignition Type	Compression (Diesel)
Number of Cylinders	6
Bore and Stroke - in (mm)	4.19 (106) X 5 (127)
Displacement - in^3 (L)	415 (6.8)
Compression Ratio	17.0:1
Valves per cylinder	
Intake	2
Exhaust	2
Combustion System	Direct Injection
Engine Type	In-Line, 4 Stroke Cycle
Fuel Management Control	Electronic, High Pressure Common Rail
Firing Order (CW Rotation)	1-5-3-6-2-4
Aspiration	Turbocharged
Charge Air Cooling Type	Raw Water
Rotation, viewed from front of engine, Clockwise (CW)	Standard
Engine Crankcase Vent System	Open
Installation Drawing	D628
Weight - lb (kg)	1747 (792)

Power Rating	**1760**
Nameplate Power - HP (kW) [1]	282 (211)

Cooling System	**1760**
Engine Coolant Heat - Btu/sec (kW)	133 (140)
Engine Radiated Heat - Btu/sec (kW)	19.1 (20.2)
Heat Exchanger (Brazed Non-Removeable Bundle) Minimum Flow - [C051386]	
60°F (15°C) Raw H_2O - gal/min (L/min)	28 (106)
100°F (37°C) Raw H_2O - gal/min (L/min)	38 (144)
Heat Exchanger (Brazed Non-Removeable Bundle) Maximum Cooling Raw Water - [C051386]	
Inlet Pressure - psi (bar)	60 (4.1)
Flow - gal/min (L/min)	40 (151)
Typical Engine H_2O Operating Temp - °F (°C)	180 (82.2) - 195 (90.6)
Thermostat	
Start to Open - °F (°C)	180 (82.2)
Fully Opened - °F (°C)	203 (95)
Engine Coolant Capacity - qt (L)	21.6 (20.4)
Coolant Pressure Cap - lb/in^2 (kPa)	15 (103)
Maximum Engine Coolant Temperature - °F (°C)	230 (110)
Minimum Engine Coolant Temperature - °F (°C)	160 (71.1)
High Coolant Temp Alarm Switch - °F (°C)	235 (113) - 241 (116)

Electric System - DC	**Standard**		**Optional**	
System Voltage (Nominal)	12		24	
Battery Capacity for Ambients Above 32°F (0°C)				
Voltage (Nominal)	12	{C07633}	12	{C07633}
Qty. Per Battery Bank	1		2	
SAE size per J537	8D		8D	
CCA @ 0°F (-18°C) per J537	1200		1200	
Reserve Capacity - Minutes per J537	430		430	
Battery Cable Circuit, Max Resistance - ohm	0.0012		0.0012	
Battery Cable Minimum Size				
0-120 in. Circuit Length [2]	00		00	
121-160 in. Circuit Length [2]	000		000	
161-200 in. Circuit Length [2]	0000		0000	
Charging Alternator Maximum Output - Amp,	40	{C071363}	55	{C071365}
Starter Cranking Amps, Rolling - @60°F (15°C)	440	{RE69704/RE70404}	250	{C07819/C07820}

Exhaust System (Single Exhaust Outlet)	1760
Exhaust Flow - ft.^{3}/min (m^3/min)	1400 (39.6)
Exhaust Temperature - °F (°C) (corrected to 77°F)	961 (516)
Maximum Allowable Back Pressure - in H_2O (kPa)	30 (7.5)
Minimum Allowable Back Pressure - in H_2O (kPa)	16 (4)
Minimum Exhaust Pipe Dia. - in (mm) [3]	6 (152)

Fuel System	1760
Fuel Consumption - gal/hr (L/hr)	13.7 (51.9)
Fuel Return - gal/hr (L/hr)	21.3 (80.6)
Fuel Supply - gal/hr (L/hr)	35.0 (132)
Fuel Pressure - lb/in^2 (kPa)	3 (20.7) - 6 (41.4)
Minimum Line Size - Supply - in.	.50 Schedule 40 Steel Pipe
Pipe Outer Diameter - in (mm)	0.848 (21.5)
Minimum Line Size - Return - in.	.375 Schedule 40 Steel Pipe
Pipe Outer Diameter - in (mm)	0.675 (17.1)
Maximum Allowable Fuel Pump Suction Lift with clean Filter - in H_2O (mH$_2$0)	80 (2)
Maximum Allowable Fuel Head above Fuel pump, Supply or Return - ft (m)	6.6 (2)
Fuel Filter Micron Size	2 (Secondary)

Heater System	Standard	Optional
Engine Coolant Heater		
Wattage (Nominal)	1360	1360
Voltage - AC, 1 Phase	115 (+5% -10%)	230 (+5%, -10%)
Part Number	{C123640}	{C 123644}

Air System	1760	
Combustion Air Flow - ft.^{3}/min (m^3/min)	474 (13.4)	
Air Cleaner	Standard	Optional
Part Number	{C03244}	{C03327}
Type	Indoor Service Only, with Shield	Canister, Single-Stage
Cleaning method	Washable	Disposable
Air Intake Restriction Maximum Limit		
Dirty Air Cleaner - in H_2O (kPa)	14 (3.5)	14 (3.5)
Clean Air Cleaner - in H_2O (kPa)	7 (1.7)	5 (1.2)
Maximum Allowable Temperature (Air To Engine Inlet) - °F (°C)	130 (54.4)	

Lubrication System	
Oil Pressure - normal - lb/in^2 (kPa)	40 (276) - 60 (414)
Low Oil Pressure Alarm Switch - lb/in^2 (kPa) to	30 (207) - 35 (241)
In Pan Oil Temperature - °F (°C)	220 (104) - 245 (118)
Total Oil Capacity with Filter - qt (L)	31.7 (30)

Lube Oil Heater	Optional	Optional
Wattage (Nominal)	150	150
Voltage	120V (+5%, -10%)	240V (+5%, -10%)
Part Number	{C04430}	{C04431}

Performance	1760
BMEP - lb/in^2 (kPa)	306 (2110)
Piston Speed - ft/min (m/min)	1467 (447)
Mechanical Noise - dB(A) @ Im	C133379 - Reference Noise data on Engine Page at www.clarkefire.com
Power Curve	C132968 - Reference Power Curve on Engine Page at www.clarkefire.com

NOTE: This engine is intended for indoor installation or in a weatherproof enclosure. [1] Derate 3% per every 1000 ft. 304.8m above 300 ft. 91.4m and derate 1% for every 10°F 5.55 °C above 77°F 25°C. [2] Positive and Negative Cables Combined Length. [3] Minimum Exhaust Pipe Diameter is based on: 15 feet of pipe, one 90° elbow, and one Industrial silencer. A Back-pressure flow analysis must be performed on the actual field installed exhaust system to assure engine maximum allowable back pressure is not exceeded. See Exhaust Sizing Calculator on www.clarkefire.com. { } indicates component reference part number.

CLARKE ®

JU4H, JU4R& JU6H, JU6R ENGINE MODELS
ENGINE MATERIALS AND CONSTRUCTION

Air Cleaner
Type……..…….. .. Indoor Usage Only
Oiled Fabric Pleats
Material……..…..…….. Surgical Cotton
Aluminum Mesh

Air Cleaner - Optional
Type……Canister
Material…… Pleated Paper
Housing……..…… Enclosed

Camshaft
Material……..……..Cast Iron
Chill Hardened
Location……...…….. In Block
Drive……..……... Gear, Spur
Type of Cam……..…... Ground

Charge Air Cooler (JU6H-60,62,68,74,84, 94, T8, TO, T2, ADKO, AD58, ADNG, ADNO, ADQO, ADRO, AAQ8, AARG, ADP8, ADPO, ADTO, AD88, ADR8, AD98, ADSO, ADW8, ADX8, AD98 only)
Type……. ..……Raw Water Cooled
Materials (in contact with raw water)
Tubes…… ……90/10 CU/NI
Headers ……36500 Muntz
Covers ……83600 Red Brass
Plumbing ……316 Stainless Steel/ Brass
90/10 Silicone

Charge Air Cooler (JU6R-AA67, 59, 61, PF, Q7, RF, S9, 83 only)
Type…...……Air to Air Cooled
Materials
Core……Aluminum

Coolant Pump
Type……. ……Centrifugal
Drive……. …… Poly Vee Belt

Coolant Thermostat
Type……Non Blocking
Qty..... 1

Cooling Loop (Galvanized)
Tees, Elbows, Pipe…… Galvanized Steel
Ball Valves…… Brass ASTM B 124,
Solenoid Valve..... Brass
Pressure Regulator …… Bronze
Strainer …… Cast Iron (1/2" - 1" loops) or
Bronze (1.25" - 2" loops)

Cooling Loop (Sea Water)
Tees, Elbows, Pipe…… 316 Stainless Steel
Ball Valves…… 316 Stainless Steel
Solenoid Valve…… 316 Stainless Steel
Pressure Regulator/Strainei Cast Brass ASTM B176
C87800

Cooling Loop (316SS)
Tees, Elbows, Pipe…… 316 Stainless Steel
Ball Valves…… 316 Stainless Steel
Solenoid Valve…… 316 Stainless Steel
Pressure Regulator/Strainei 316 Stainless Steel

Connecting Rod
Type……I-Beam Taper
Material…… Forged Steel Alloy

Crank Pin Bearings
Type……Precision Half Shell
Number …… 1 Pair Per Cylinder
Material…… Wear-Guard

Crankshaft
Material…… Forged Steel
Type of Balance…… Dynamic

Cylinder Block
Type……One Piece with
Non-Siamese Cylinders
Material…… Annealed Gray Iron

Cylinder Head
Type ……. …… Slab 2 Valve
Material……..Annealed Gray Iron

Cylinder Liners
Type ……. …… Centrifugal Cast, Wet Liner
Material……..…… Alloy Iron Plateau, Honed

Fuel Pump
Type ……. …… Diaphragm
Drive ……Cam Lobe

Heat Exchanger (USA) - JU4H & JU6H Only
Type …… Tube & Shell
Materials
Tube & Headers……Copper
Shell…… …… Copper
Electrode..... Zinc

Heat Exchanger (UK) - JU4H & JU6H Only
Type …… Tube & Bundle

Materials
Tube & Headers……Copper
Shell……..…….. Aluminum

Injection Pump
Type …….. Rotary
Drive..... Gear

Lubrication Cooler
Type..... Plate

Lubrication Pump
Type..... Gear
Drive..... Gear

Main Bearings
Type …… Precision Half Shells
Material……Steel Backed-Aluminum
Lined

Piston
Type and Material..... .. Aluminum Alloy with
Reinforced Top Ring Groove
Cooling..... …Oil Jet Spray

Piston Pin
Type..... … Full Floating - Offset

Piston Rings
Number/Piston..... … 3
Top..... Keystone Barrel Faced -
Plasma Coated
Second..... … Tapered Cast Iron
Third.....…Double Rail Type
w/Expander Spring

Radiator - JU4R & JU6R Only
Type..... . Plate Fin
Materials
Core..... . Copper & Brass
Tank & Structure..... . Steel

Optional
Marine Coating..... … Baked Phenolic

Valves
Type..... Poppet
Arrangement..... …Overhead Valve
Number/Cylinder.....1 intake
1 exhaust
Operating Mechanism……Mechanical Rocker Arm
Type of Lifter..... Large Head
Valve Seat Insert.....…Replaceable

CLARKE®

Rating Specific Emissions Data

Nameplate Rating Information

Clarke Model	**JU6H-UFADW8**
Power Rating (BHP/kW)	**282/211**
Certified Speed (RPM)	**1760**

Refer to **Rating Data** section on page 2 for emissions output values

Rating Specific Emissions Data - John Deere Power Systems

JOHN DEERE

Rating Data

Rating	6068HFC48A	
Certified Power(kW)	235	
Rated Speed	1760	
Vehicle Model Number	OEM (Clarke Fire Pump-Emergency)	
Units	**g/kW-hr**	**g/hp-hr**
NOx	3.61	2.69
HC	0.08	0.06
NOx + HC	N/A	N/A
Pm	0.07	0.06
CO	0.6	0.4

Certificate Data

Engine Model Year	2023
EPA Family Name	PJDXE13.5103
EPA JD Name	650HAA
EPA Certificate Number	PJDXL13.5103-012
CARB Executive Order	
Parent of Family	6135HF485A
Units	**g/kW-hr**
NOx	3.31
HC	0.11
NOx + HC	N/A
Pm	0.10
CO	0.6

* The emission data listed is measured from a laboratory test engine according to the test procedures of 40 CFR 89 or 40 CFR 1039, as applicable. The test engine is intended to represent nominal production hardware, and we do not guarantee that every production engine will have identical test results. The family parent data represents multiple ratings and this data may have been collected at a different engine speed and load. Emission results may vary due to engine manufacturing tolerances, engine operating conditions, fuels used, or other conditions beyond our control.

This information is property of Deere & Company. It is provided solely for the purpose of obtaining certification or permits of Deere powered equipment. Unauthorized distribution of this information is prohibited.

Emissions Results by Rating run on Feb-14-2023

DO NOT SCALE

DATUMS:

-A- - MOUNTING FACE OF FLYWHEEL

-B- -ENGINE CRANKSHAFT HORIZONTAL CENTERLINE

-C- - ENGINE CRANKSHAFT VERTICAL CENTERLINE

- CENTER OF GRAVITY OF ENGINE

X - CLOCKWISE ROTATION WHEN VIEWED FROM FRONT OF ENGINE

NOTE:
THE LOOP SHOWN IS BASED ON STANDARD LOOP CONSTRUCTION AND FM SIZING CONDITIONS

FOR ALTERNATE LOOP CONSTRUCTION (STAINLESS STEEL, SEA WATER, AND HIGH PRESSURE) SIZES MAY VARY

DRAWING SUBJECT TO CHANGE WITHOUT NOTICE

CAUTION:

ALL PLUMBING MUST BE SUPPORTED AND/OR ISOLATED SO THAT NO WEIGHT OR STRESS IS APPLIED TO ANY ENGINE COMPONENT

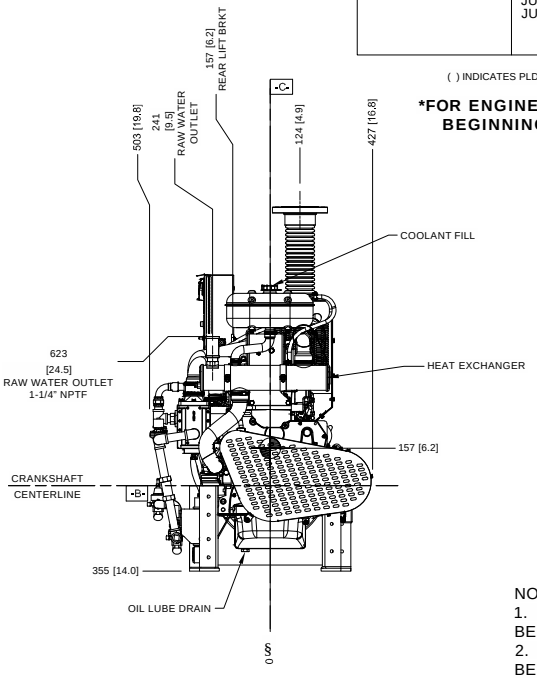
ATTENTION

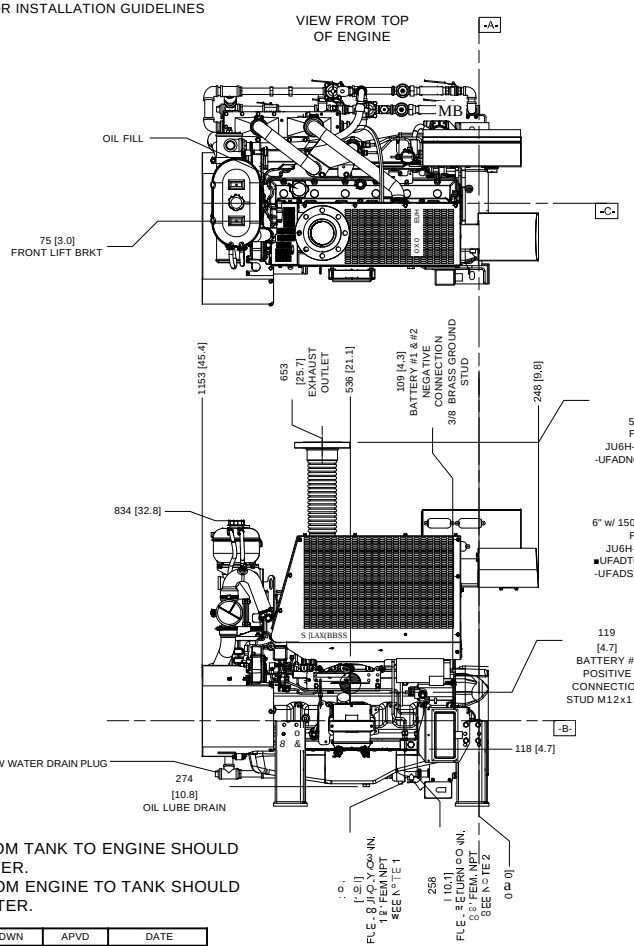
REFER TO THE SPECIFIC MODEL "INSTALLATION AND OPERATION DATA" FOR INSTALLATION GUIDELINES

"TRWA" (TURBOCHARGED w/ RAW WATER AFTERCOOLING) MODELS	JU6H-UFAD88, -UFADKO* JU6H-UFADMG, -UFADNO JU6H-UFADNG, -UFADP8 (MODELS SHOWN)
	JU6H-UFAD98 -UFADPO JU6H -UFADQO, -UFADRO JU6H-UFADR8, -UFADS8 JU6H-UFADT0, -UFADW8 JU6H-UFADX8 SEE PG. 3 FOR RAW WATER INLET DIMENSIONS

( ) INDICATES PLD ENINGE MODEL ONLY

***FOR ENGINES BUILT IN USA BEGINNING APRIL 2015**





NOTES:
1. FUEL SUPPLY PIPING FROM TANK TO ENGINE SHOULD BE 1/2"MINIMUM PIPE DIAMETER.
2. FUEL RETURN PIPING FROM ENGINE TO TANK SHOULD BE 3/8" MINIMUM PIPE DIAMETER.

REV	DESCRIPTION	ECN#	DWN	APVD	DATE
M	ADDED FLYWHEEL INFORMATION	4071	JGV		04AUG15
N	REVISED ENGINE FOOT MOUNTING HOLE LOCATIONS PAGE 2	4275	CMM		01OCT15
P	ADDED GROUND STUD LOCATION	4359	DKP		11OCT15
Q	ADDED RAW WATER INLET DIMENSION TO PAGE 2. UPDATED COOLING LOOP GEOMETRY ON PAGE 3	4741	MJM	JCA	03FEB16
R	PAGE 3 DATUM A & B WERE INCORRECTLY POSITIONED	4788	RDR		11NOV16
S	ADDED DIMS TO ENGINE LIFTING BRACKETS	5061	MDM		21JUN17
T	ADDED GLAND PLATE DETAIL	5236	ECK		29NOV17
U	REMOVED OBSOLETE MODELS JU6H-UFAD58, UFADSO, UFADM8 UPDATED TOLERANCE, LOGO, & DIMENSION PRECISION	5393	NMM		24APR18
-	ADDED CNTRLD DWG NOTE, CNTRLD DWG BOX WAS MARKED NO	6309	EJT	fpp	13AUG21

CONTROLLED DRAWING

THIS IS A REGISTERED PART WITH A THIRD PARTY AGENCY FOR USE ON A PRODUCT. NO SUBSTITUTIONS ARE ALLOWED. CONSULT ENGINEERING PRIOR TO AND REGARDING ANY CHANGE.

GENERAL TOLERANCES
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CONTROLLED DRAWING

CLARKE®

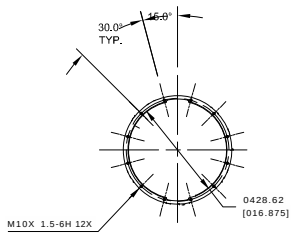
DRWN	MWLEMING
DATE	2/25/2009
ENGR	KJKUNKLER
MATERIAL	
ASSEMBLY	

NAME: INSTALLATION DRAWING, FIRE PUMP ENGINE JU6H TIER 3 MODELS

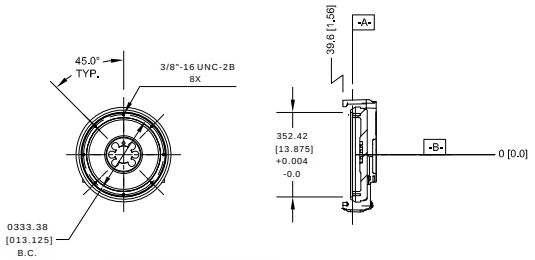
PART NO. D628 REV U

SCALE NTS | UNITS MM [INCH] | SHT 1 | PAGE OF 3

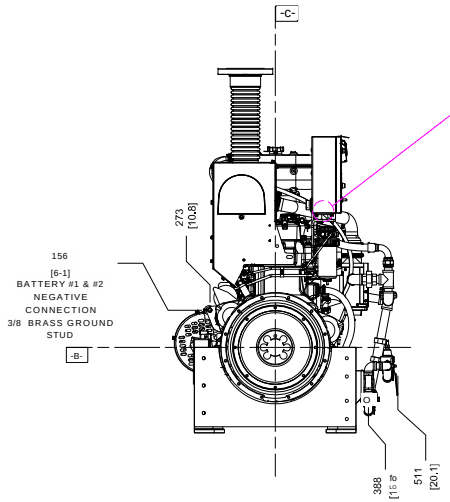
DETAIL DATUM -A-

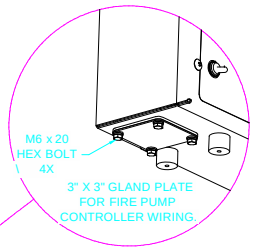


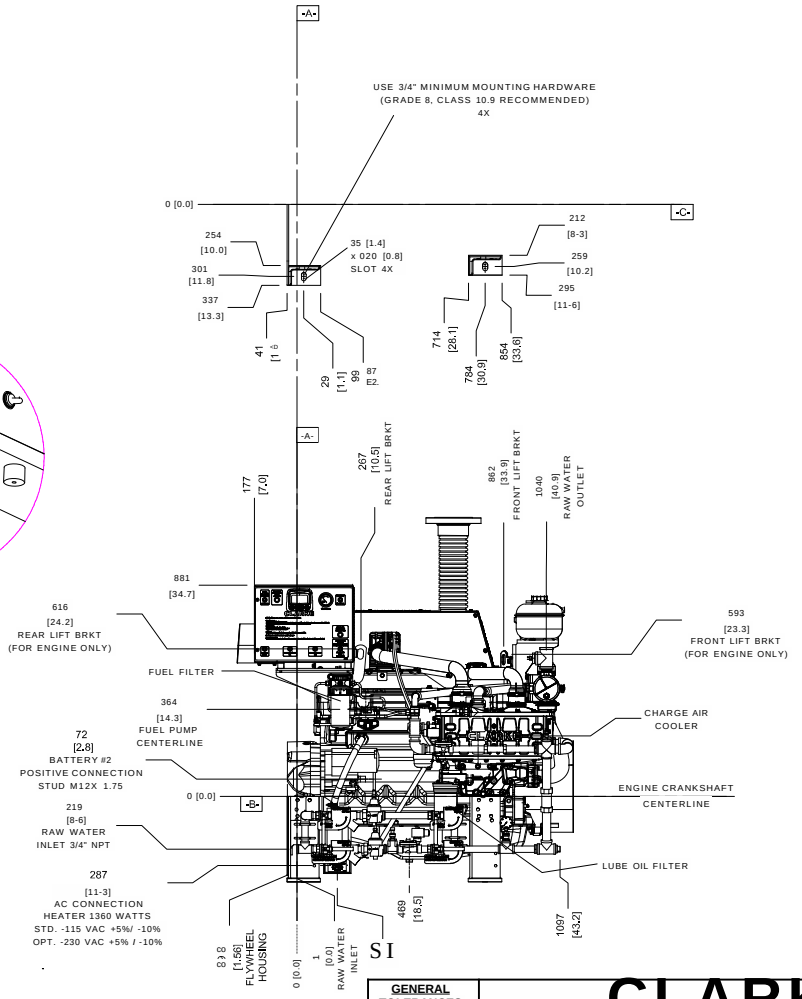
SAE #3
FLYWHEEL HOUSING



SAE 11.5 FLYWHEEL WITH
129 TEETH AND 8/10 PITCH RING GEAR







DRAWING SUBJECT TO CHANGE WITHOUT NOTICE

***FOR ENGINES BUILT IN USA BEGINNING APRIL 2015**

FOR ENGINE SPECIFIC OPTIONS
SEE www.CLARKEFIRE.com

GENERAL TOLERANCES
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CLARKG

JLEL
DRAWING

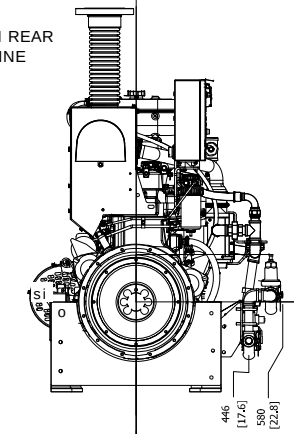
DRWN	MWLEMING
DATE	2/25/2009
ENGR	KJKUNKLER
MATERIAL	
ASSEMBLY	

NAME: INSTALLATION DRAWING, FIRE PUMP ENGINE JU6H TIER 3 MODELS

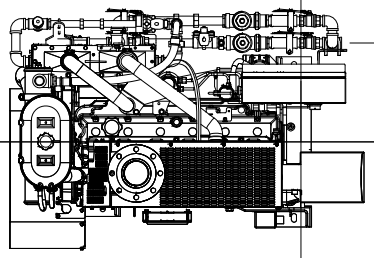
PART NO. D628 REV U

SCALE NTS UNITS MM [INCH] SHEET 1 PAGE 2 OF 3

VIEW FROM REAR OF ENGINE



VIEW FROM TOP OF ENGINE



DO NOT SCALE

TRWA 1" LOOPw/1 j" REGULATORS MODELS	JU6H-UFAD98 -UFADPO JU6H -UFADQO, -UFADRO JU6H-UFADR8, -UFADS8 JU6H-UFADT0, -UFADW8 JU6H-UFADX8

FOR ALL OTHER MODELS SEE PAGE 2

DATUMS

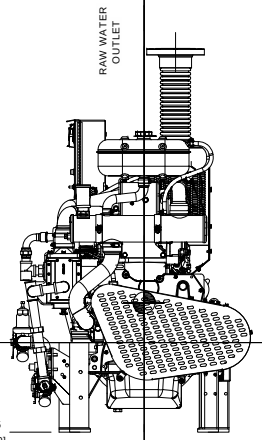
-A- - MOUNTING FACE OF FLYWHEEL

-B- - ENGINE CRANKSHAFT HORIZONTAL CENTERLINE

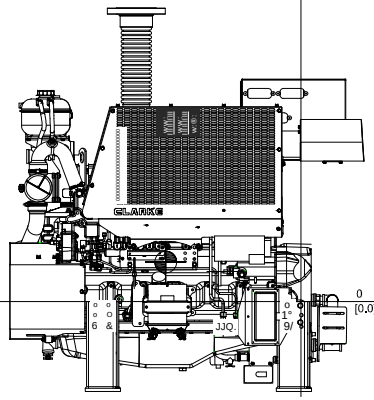
-C- - ENGINE CRANKSHAFT VERTICAL CENTERLINE

- CENTER OF GRAVITY OF ENGINE

- CLOCKWISE ROTATION WHEN VIEWED FROM FRONT OF ENGINE

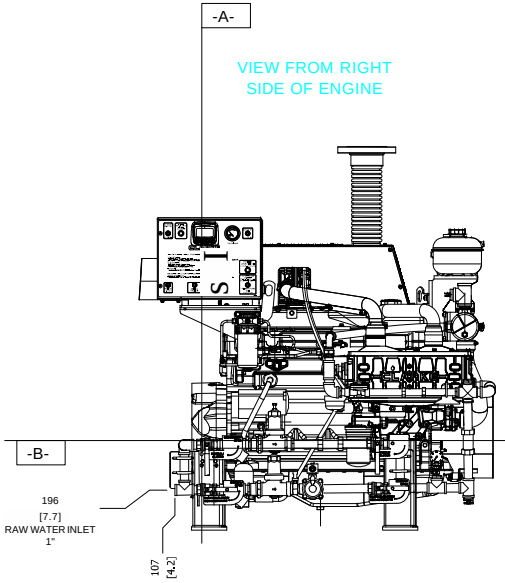


VIEW FROM FRONT OF ENGINE



VIEW FROM LEFT SIDE OF ENGINE

VIEW FROM RIGHT SIDE OF ENGINE



GENERAL TOLERANCES

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DRWN	MWLEMING
DATE	2/25/2009
ENGR	KJKUNKLER
MATERIAL	
ASSEMBLY	

CLARKS

INSTALLATION DRAWING, FIRE PUMP ENGINE JU6H TIER 3 MODELS

PART no.	D628	REV	u
SCALE	NTS	UKTS MM [INCH]	PAGE 3 OF 3

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2023 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Deere & Company**
(U.S. Manufacturer or Importer)

Certificate Number: PJDXL13.5103-012

Effective Date:
06/16/2022

Expiration Date:
12/31/2023

Byron J/tiunker. Division Director
/Compliance Division

Issue Date:
06/16/2022

Revision Date:
N/A

Model Year: 2023
Manufacturer Type: Original Engine Manufacturer
Engine Family: PJDXL13.5103

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 225<=kW<450
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control, Smoke Puff Limiter, Non-standard Non-After Treatment Device Installed, Electronic/Electric EGR - Cooled, Engine Design Modification

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

The actual engine power may lie outside the limits of the Emissions Power Category shown above. See the certificate application for details.

APPENDIX I MISSISSIPPI CERTIFICATE OF GOOD STANDING FOR ENTERGY MISSISSIPPI, LLC

Michael Watson
SECRETARY OF STATE

This is not an official certificate of good standing.

Name History

Name	Name Type
ENTERGY MISSISSIPPI, LLC	Legal
ENTERGY MISSISSIPPI POWER AND LIGHT, LLC	Previous Legal

Business Information

Business Type:	Limited Liability Company
Business ID:	1157800
Status:	Good Standing
Effective Date:	09/24/2018
State of Incorporation:	TX
Principal Office Address:	308 EAST PEARL ST. JACKSON, MS 39201

Registered Agent

Name

STEVEN T. GRAY
308 EAST PEARL ST.
JACKSON, MS 39201

Officers & Directors

Name	Title
HALEY R. FISACKERLY 308 EAST PEARL ST. JACKSON, MS 39201	Manager, Other, President
ANDREW S. MARSH 639 LOYOLA AVE. NEW ORLEANS, LA 70113	Manager, Other, Vice President
PAUL D. HINNENKAMP 639 LOYOLA AVE.	Manager

NEW ORLEANS, LA 70113	
RODERICK K. WEST 639 LOYOLA AVE. NEW ORLEANS, LA 70113	Manager, President
DANIEL T. FALSTAD 639 LOYOLA AVE. NEW ORLEANS, LA 70113	Secretary
MARCUS V. BROWN 639 LOYOLA AVE. NEW ORLEANS, LA 70113	Other, Vice President
JOSEPH T. HENDERSON 2001 TIMBERLOCH PL. THE WOODLANDS, TX 77380	Other, Vice President
JOHN H. ARLEDGE 308 EAST PEARL ST. JACKSON, MS 39201	Vice President
KIMBERLY A. FONTAN 639 LOYOLA AVENUE NEW ORLEANS, LA 70113	Other, Vice President
JAMES R. JETER 308 EAST PEARL ST. JACKSON, MS 39201	Vice President
STEVEN C. MCNEAL 639 LOYOLA AVE. NEW ORLEANS, LA 70113	Treasurer, Vice President
LEA TURNIPSEED 308 EAST PEARL ST. JACKSON, MS 39201	Vice President
JEREMY VANDERLOO 308 EAST PEARL ST. JACKSON, MS 39201	Vice President

DAWN A. BALASH 639 LOYOLA AVE. NEW ORLEANS, LA 70113	Other
STEVEN T. GRAY 308 EAST PEARL ST. JACKSON, MS 39201	Other
MARY ANN VALLADARES 639 LOYOLA AVE. NEW ORLEANS, LA 70113	Other
CORY P. GRUNTZ 639 LOYOLA AVE. NEW ORLEANS, LA 70113	Other
MARK A. KEPPLER 639 LOYOLA AVE. NEW ORLEANS, LA 70113	Other
RORY L. ROBERTS 639 LOYOLA AVE. NEW ORLEANS, LA 70113	Other
KIMBERLY COOK-NELSON 1340 ECHELON PKWY. JACKSON, MS 39213	Vice President
KEVIN J. MARINO 639 LOYOLA AVE. NEW ORLEANS, LA 70113	Other

Entergy Services, LLC.
Power Generation
2107 Research Forest Dr. FL 6
The Woodlands, TX 77380
Tel 972-743-9649

Jeremy Halland
Manager – Environmental
Project Services

September 11, 2025

Mr. Jeffery Bland, P.E.
Air 1 Branch Chief
Mississippi Department of Environmental Quality
Environmental Permits Division
PO Box 226
Jackson, MS 39225-2261

Subject: Addendum to Preconstruction and PSD Air Permit Application
Entergy Mississippi, LLC – Madison County Advanced Power Station
Ridgeland, Madison County, Mississippi

Mr. Bland:

On behalf of Entergy Mississippi, LLC (EML), Entergy Services, LLC (Entergy) hereby submits the enclosed hard copy with original signatures of the air permit application addendum for the Preconstruction and PSD Air Permit Application that was submitted to the Mississippi Department of Environmental Quality (MDEQ) on June 10, 2025. In accordance with MDEQ procedures, an electronic version of this application addendum has already been submitted via MDEQ's web portal. The PSD air dispersion modeling demonstration will be submitted under separate cover to MDEQ's air dispersion modeling team.

EML appreciates your efforts to expeditiously process this application addendum. If you have any questions or concerns, please don't hesitate to reach out to me at 972-743-9649 or jhallan@entergy.com.

Sincerely,

Jeremy Halland
Manager – Environmental Project Services
Entergy Services, LLC

Enclosure

September 2025

ADDENDUM TO PRECONSTRUCTION AND PREVENTION OF SIGNIFICANT DETERIORATION AIR PERMIT APPLICATION

Entergy Mississippi, LLC
Madison County Advanced Power Station
Ridgeland, Madison County, Mississippi

Submitted To:
Mississippi Department of Environmental Quality
Environmental Permits Division
PO Box 2261
Jackson, MS 39225-2261

PROJECT NUMBER:
0257075

POWER ENGINEERS
MEMBER OF WSP

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2.0 REQUESTED REVISIONS 2

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3.0 PSD AIR DISPERSION MODELING DEMONSTRATION 3

TABLES

TABLE 2.1 CORRECTION TO ANNUAL EMISSION LIMITS FOR CCCT SOURCE MCAPS-1A 2

APPENDICES

APPENDIX A REVISED AIR EMISSION CALCULATIONS FOR AFFECTED SOURCES
APPENDIX B REVISED MDEQ AIR PERMIT APPLICATION FORMS FOR AFFECTED SOURCES

1.0 BACKGROUND

Entergy Mississippi, LLC (EML) submitted a preconstruction and Prevention of Significant Deterioration (PSD) air permit application for the proposed Madison County Advanced Power Station (MCAPS) on June 10, 2025. This addendum to the original MCAPS air permit application is being provided to identify and propose emission calculation corrections. Revised emission calculations are included in Appendix A and applicable revised MDEQ application forms are included in Appendix B.

2.0 REQUESTED REVISIONS

2.1 Revision 1: Combustion Turbine Startup and Shutdown Calculations and Annual Emissions

In the original application, the Combined Cycle Combustion Turbine (CCCT) (MCAPS-1A) emissions of SO_2, PM, PM_{10}, $PM_{2.5}$, H_2SO_4, NH_3, and $(NH_4)_2SO_4$ during expected startup/shutdown hours (414 hr/yr) were inadvertently left off of the annual emission calculation. Since the emission rates for SO_2, PM, PM_{10}, $PM_{2.5}$, H_2SO_4, NH_3, and $(NH_4)_2SO_4$ during startup/shutdown are not expected to differ from routine operations, the annual emissions submitted with this addendum for those pollutants are based upon 8,760 hr/yr of normal operation.

The routine and startup/shutdown emission calculations for SO_2, PM, PM_{10}, $PM_{2.5}$, H_2SO_4, NH_3, and $(NH_4)_2SO_4$ for the CCCT have been revised to the correct annual operating hours. No revisions were made to NO_x, CO, or VOC emission rates. Table 2.1 shows the original and corrected total annual emission rates for the affected pollutants. The revised emission calculations are presented in Table A-7 in Appendix A.

TABLE 2.1 CORRECTION TO ANNUAL EMISSION LIMITS FOR CCCT SOURCE MCAPS-1A

POLLUTANT	CCCT ORIGINAL COMBINED ROUTINE/SS ANNUAL EMISSIONS (TONS/YEAR)	CCCT REVISED COMBINED ROUTINE/SS ANNUAL EMISSIONS (TONS/YEAR)	CCCT RESULTING INCREASE IN ANNUAL EMISSIONS (TONS/YEAR)
Filterable PM	118.38	124.26	5.88
PM_{10}	158.53	166.40	7.87
$PM_{2.5}$	158.53	166.40	7.87
SO_2	28.92	30.35	1.43
H_2SO_4	44.27	46.46	2.19
NH_3	311.09	326.52	15.43
$(NH_4)_2SO_4$	59.64	62.60	2.96

EML respectfully requests that MDEQ incorporates the revised CCCT emission limits identified in Table 2.1 into the draft MCAPS air permit. These proposed emission limit changes do not impact the CCCT Best Available Control Technology (BACT) demonstrations presented in Section 7 of the original MCAPS permit application as BACT does not apply during periods of CCCT startup/shutdown operations.

3.0 PSD AIR DISPERSION MODELING DEMONSTRATION

The proposed revisions to the original calculations submitted on June 10, 2025, do not impact EML's PSD air quality demonstration for the MCAPS project. Updated modeling runs were conducted utilizing the original dispersion modeling protocol at the revised emission rates. The results of the revised modeling show compliance with all National Ambient Air Quality Standards (NAAQS) and PSD increments.

At the time of submittal of this application addendum, EML is working with MDEQ's dispersion modeling team to obtain approval for a revised dispersion modeling protocol so that a final modeling demonstration report can be provided to MDEQ. It is expected that all issues associated with the MCAPS dispersion modeling demonstration will be successfully resolved very soon. The PSD air quality demonstration report for the MCAPS project will then be provided under separate cover to MDEQ's dispersion modeling team.

APPENDIX A REVISED AIR EMISSION CALCULATIONS FOR AFFECTED SOURCES

Table A-7
Gas Turbine Annual Emission Summary
Madison County Advanced Power Station
Entergy Mississippi, LLC

Emission Point ID: MCAPS-1A

Total Annual Operating Hours:	8,760	hr/yr
Total Annual Routine Operating Hours	8,346	hr/yr
Annual SS Operating Hours[1]:	414	hr/yr

Annual Emissions for M501JAC Combined Cycle

Pollutant	Annual Emissions Based on Normal Operations with Duct Firing (tpy)	Estimated Annual Emissions from SS Operations[2] (tpy)	Combined Routine/SS Annual Emissions Post-Control (tpy)
NO_X	168.07	52.89	220.96
CO	102.33	1,094.25	1,196.58
VOC	43.96	359.13	403.08
SO_2	30.35	--	30.35
Filterable PM[3]	124.26	--	124.26
$PM_{10}/PM_{2.5}$[4]	166.40	--	166.40
H_2SO_4	46.46	--	46.46
NH_3	326.52	--	326.52
$(NH_4)_2SO_4$	62.60	--	62.60

[1] The annual hours used in these calculations are estimates for purposes of calculating annual emissions. They are not represented as being the maximum operating hours for the operating mode.

[2] Only emissions of NOx, CO, and VOC are shown in the startup/shutdown columns as emissions of other pollutants are expected to be less than during normal operation.

[3] Particulates do not include condensables

[4] Particulates include condensables and non-condensables

APPENDIX B REVISED MDEQ AIR PERMIT APPLICATION FORMS FOR AFFECTED SOURCES

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

1. Name, Address, and Location of Facility

A. Owner/Company Name: Entergy Mississippi, LLC

B. Facility Name *(if different than A. above)*: Madison County Advanced Power Station

C. Facility Air Permit No. *(if known)*: TBD

D. Agency Interest No. *(if known)*: TBD

E. Physical Address
1. Street Address: 2098 W County Line Road
2. City: Ridgeland
3. State: MS
4. County: Madison
5. Zip Code: 39157
6. Telephone No.: TBD
7. Fax No.:

F. Mailing Address *(if different from physical address)*
1. Street Address or P.O. Box: 2107 Research Forest Drive, T-LFN-6
2. City: The Woodlands
3. State: TX
4. Zip Code: 77380

G. Latitude/Longitude Data
1. Collection Point *(check one)*:
☒ Plant Entrance ☐ Other:
2. Method of Collection *(check one)*:
☐ GPS Specify coordinate system (NAD 83, etc.)
☒ Map Interpolation (Google Earth, etc.) ☐ Other:
3. Latitude *(degrees/minutes/seconds)*: 32° 24' 11.43"
4. Longitude *(degrees/minutes/seconds)*: 90° 13' 01.73"
5. Elevation: 365 feet

H. SIC/NAICS Codes *(primary code listed first)*
SIC: 4911
NAICS: 22111
(NAICS Code should correspond with the SIC Code directly above.)

2. Name and Address of Facility Contact

A. Name: Jeremy Halland Title: Manager, Environmental Project Services

B. Mailing Address
1. Street Address or P.O. Box: 2107 Research Forest Drive, T-LFN-6
2. City: The Woodlands
3. State: TX
4. Zip Code: 77380
5. Email: jhallan@entergy.com
6. Telephone No.: (972) 743-9649
7. Fax No.:

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

3. Name and Address of Air Contact *(if different from Facility Contact)*

A. Name: Annisa White Title: Supervisor, Environmental Mgmt.

B. Mailing Address

1. Street Address or P.O. Box: 2107 Research Forest Drive, T-LFN-6
2. City: The Woodlands 3. State: TX
4. Zip Code: 77380 5. Email: awhite5@entergy.com
6. Telephone No.: (407) 929-2071 7. Fax No.:

4. Name and Address of the Responsible Official for the Facility

The Responsible Official is defined as one of the following:

a. For a corporation: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and the facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated in accordance with corporate procedures.

b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively.

c. For a municipality, state, federal, or other public agency: either a principal executive officer or ranking elected official. For purposes of these regulations, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of EPA). A principal executive officer of a military facility includes the facility commander, chief executive officer, or any other similar person who performs similar policy or decision-making functions for the institution.

A. Name: Lee Alexander Title: Vice President, Power Plant Operations Mississippi

B. Mailing Address

1. Street Address or P.O. Box: 2107 Research Forest Drive, T-LFN-6
2. City: The Woodlands 3. State: TX
4. Zip Code: 77380 5. Email: salexa2@entergy.com
6. Telephone No.: (281) 297-1937 7. Fax No.:

C. Is the person above a duly authorized representative and not a corporate officer? ☐ Yes ☒ No

If yes, has written notification of such authorization been submitted to MDEQ?

☐ Yes ☐ No ☐ Request for authorization is attached

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

5. Type of Permit Application *(Check all that apply)*

State Permit to Construct (i.e., non-PSD or PSD avoidance)

☐ Initial Application ☐ Modification

New Source Review (NSR) Permit to Construct (includes both Prevention of Significant Deterioration (PSD) and Nonattainment)

☒ Initial Application ☐ Modification

Title V Operating Permit

☐ Initial Application

☐ Re-issuance: *Are any modifications to the permit/facility being requested?* ☐ Yes ☐ No
(If yes, provide a separate sheet identifying the modification(s) and resulting change to emissions.)

☐ Modification (*Specify type):* ☐ Significant ☐ Minor ☐ Administrative

Synthetic Minor Operating Permit *(Appendix B must be completed and attached.)*

☐ Initial Application

☐ Re-issuance: *Are any modifications to the permit/facility being requested? If yes, address such on a separate sheet.* ☐ Yes ☐ No

☐ Modification

State Permit to Operate a Significant Minor Source *(defined in 11 Miss. Admin. Code Pt. 2, R.2.1.C(25).)*

☐ Initial Application

☐ Re-issuance: *Are any modifications to the permit/facility being requested? If yes, address such on a separate sheet.* ☐ Yes ☐ No

☐ Modification

True Minor Determination

☐ Uncontrolled potential to emit air pollutants is below the Title V thresholds

6. Process/Product Details

A. List Significant Raw Materials *(if applicable)*:
Natural Gas

B. List All Products *(if applicable)*:
Electrical Power

C. Brief Description of Principal Process(es):
Combined cycle power plant with full emission controls

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

6. Process/Product Details (continued)

D. Maximum Throughput for Raw Material(s) *(if applicable)*:

Raw Material	Throughput	Units
Natural Gas Fuel	4,904,000	SCFH

E. Maximum Throughput for Principal Product(s) *(if applicable)*:

Product	Throughput	Units

7. Facility Operating Information

A. Number of employees at the facility: 21

		Average Actual	Maximum Potential
B.	Hours per day the facility will operate:	24	24
C.	Days per week the facility will operate:	7	7
D.	Weeks per year the facility will operate:	52	52
E.	Months the facility will operate:	12	12

8. Maps

A. Attach a topographical map of the area extending to at least ½ mile beyond the property boundaries. The map must show the outline of the property boundaries. **Figure 2-2**

B. Attach a site map/diagram showing the outline of the property, an outline of all buildings and roadways on the site, and the location of each significant air emission source. **Figures 2-2 and 2-3**

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

9. Zoning

A. Is the facility (either existing or proposed) located in accordance with any applicable city and/or county zoning ordinances? If no, please explain.
Yes

B. Is the facility (either existing or proposed) required to obtain any zoning variance to locate/expand the facility at this site? If yes, please explain.
No

10. Risk Management Plan

A. Is the facility required to develop and register a risk management plan pursuant to Section 112(r), regulated under 40 CFR Part 68? ☒ Yes ☐ No

B. If yes, to whom was the plan submitted? To be submitted after construction
Date submitted: _____

11. *Is confidential information being submitted with this application?* ☐ Yes ☒ No

If so, please follow the procedures outlined in the Mississippi Code Ann. Sections 49-17-39 and 17-17-27(6), as outlined in MCEQ-2 – "Regulation regarding the review and reproduction of public records".

12. MS Secretary of State Registration / Certificate of Good Standing

No permit will be issued to a company that is not authorized to conduct business in Mississippi. If the company applying for the permit is a corporation, limited liability company, a partnership or a business trust, the application package should include proof of registration with the Mississippi Secretary of State and/or a copy of the company's Certificate of Good Standing. The name listed on the permit will include the company name as it is registered with the Mississippi Secretary of State. **See Appendix I**

It should be noted that for an application submitted in accordance with 11 Miss. Admin. Code Pt. 2, R. 2.8.B. to renew a State Permit to Operate or in accordance with 11 Miss. Admin. Code Pt. 2, R. 6.2.A(1)(c). to renew a Title V Permit to be considered timely and complete, the applicant shall be registered and in good standing with the Mississippi Secretary of State to conduct business in Mississippi.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

13. Certification

Note: If approved by MDEQ, a duly authorized representative (DAR) may sign the air permit application. The DAR must be listed in Section 4 of this application.

I certify that to the best of my knowledge and belief formed after reasonable inquiry, the statements and information in this application are true, complete, and accurate, and that as a responsible official, my signature shall constitute an agreement that the applicant assumes the responsibility for any alteration, additions, or changes in operation that may be necessary to achieve and maintain compliance with all applicable Rules and Regulations. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature of Responsible Official/DAR	Date
9/11/25	
Lee Alexander	Vice President, Power Plant Operations Mississippi
Printed Name	**Title**

Section B.0: Emission Point Descriptions & Status

This form should list all the of the Emission Points and descriptions as proposed or as otherwise identified in an existing permit. This worksheet should be updated to reflect changes to the Status of the emission points over time. Emission Point ID's should match those assigned in the current MDEQ permit. Facility ID is optional. For proposed emission points, the facility should leave the Emission Point ID blank but may complete the Facility ID (if any). Under "Status," for Emission Points that are proposed or under construction but not yet operating, indicate their status as "Proposed." For emissions points already operating or for which construction has been certified complete, indicate their status as "Operating." Include all control devices for each emission point and the pollutant(s) the device controls. Control devices may be specified in general terms (e.g., baghouse, catalytic oxidizer, fabric filter, wet ESP, etc.). When an Emission Point is removed, indicate so by changing the "Status" to "Removed." Remove the emissions on the subsequent worksheets or indicate they are removed with a "-" for all pollutants.

Emission Point ID	Facility ID	Description	Status	Control Device	Controlled Pollutant(s)	Control Device	Controlled Pollutant(s)	Control Device	Controlled Pollutant(s)
MCAPS-1A	MCAPS ID TBD	Combined Cycle Unit 1A	Proposed	SCR	NOx	Oxidation Catalyst	CO, VOC		
MCAPS-EMGEN	MCAPS ID TBD	Emergency Standby Generator	Proposed						
MCAPS-FWP	MCAPS ID TBD	Emergency Diesel Fire Water Pump	Proposed						
MCAPS-NGDPHTR	MCAPS ID TBD	Natrual Gas Dewpoint Heater	Proposed	ULNB	NOx				
MCAPS-NGFUG	MCAPS ID TBD	Natural Gas Fugitive Emissions	Proposed	AVO Monitoring	CH4, VOC				
MCAPS-AMMFUG	MCAPS ID TBD	Ammonia Fugitive Emissions	Proposed	AVO Monitoring	NH3				
MCAPS-DSLFUG	MCAPS ID TBD	Diesel Fugitive Emissions	Proposed	AVO Monitoring	VOC				
MCAPS-LOVCT	MCAPS ID TBD	Combustion Turbine Lube Oil Vent	Proposed	Mist Eliminator	VOC, PM				
MCAPS-LOVST	MCAPS ID TBD	Steam Turbine Lube Oil Vent	Proposed	Mist Eliminator	VOC, PM				
MCAPS-TK1	MCAPS ID TBD	Emergency Generator Diesel Tank	Proposed						
MCAPS-TK2	MCAPS ID TBD	Emergency Fire Water Pump Diesel Tank	Proposed						
MCAPS-TK3	MCAPS ID TBD	Natural Gas Condensate Tank	Proposed						
MCAPS-TK4	MCAPS ID TBD	Natural Gas Condensate Tank	Proposed						

Section B.1: Maximum Uncontrolled Emissions (under normal operating conditions)

Maximum Uncontrolled Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless operating capacity and/or hours of operation are specifically limited in an enforceable permit. (Existing limits on operating conditions, not emissions or use of a control device, may be used when determining uncontrolled emissions.) Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Emissions≥ 0.01 ton/yr from a specific emission unit must be included. Please do not change the column widths on this table.

Emission Point ID	TSP[1] (PM)		PM-10[1]		PM-2.5[1]		SO_2		NOx		CO		VOC		TRS[2]		Ammonia		Total HAPs	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
MCAPS-1A	43.04	188.51	56.66	248.17	56.66	248.17	13.98	61.24	507.37	2,222.30	185.35	811.83	28.31	123.99	-	-	75.13	329.07	2.79	12.10
MCAPS-EMGEN	1.37	0.07	0.96	0.05	0.96	0.05	0.03	<0.01	30.76	1.54	16.82	0.84	2.69	0.13	-	-	-	-	0.03	<0.01
MCAPS-FWP	0.10	<0.01	0.10	<0.01	0.10	<0.01	<0.01	<0.01	2.07	0.10	1.81	0.09	0.06	<0.01	-	-	-	-	0.01	<0.01
MCAPS-NGDPHTR	0.01	0.04	0.02	0.11	0.02	0.11	<0.01	0.02	0.06	0.24	0.19	0.81	0.04	0.18	-	-	-	-	0.01	0.04
MCAPS-NGFUG	-	-	-	-	-	-	-	-	-	-	-	-	0.09	0.37	-	-	-	-	-	-
MCAPS-AMMFUG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	0.37	-	-
MCAPS-DSLFUG	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.03	-	-	-	-	-	-
MCAPS-LOVCT	<0.01	0.01	<0.01	0.01	<0.01	0.01	-	-	-	-	-	-	<0.01	0.01	-	-	-	-	-	-
MCAPS-LOVST	<0.01	0.01	<0.01	0.01	<0.01	0.01	-	-	-	-	-	-	<0.01	0.01	-	-	-	-	-	-
MCAPS-TK1	-	-	-	-	-	-	-	-	-	-	-	-	0.23	<0.01	-	-	-	-	-	-
MCAPS-TK2	-	-	-	-	-	-	-	-	-	-	-	-	0.03	<0.01	-	-	-	-	-	-
MCAPS-TK3	-	-	-	-	-	-	-	-	-	-	-	-	3.44	0.03	-	-	-	-	-	-
MCAPS-TK4	-	-	-	-	-	-	-	-	-	-	-	-	3.44	0.03	-	-	-	-	-	-
Totals	**44.53**	**188.65**	**57.75**	**248.36**	**57.75**	**248.36**	**14.02**	**61.26**	**540.26**	**2,224.18**	**204.17**	**813.57**	**38.34**	**124.78**	**-**	**-**	**75.21**	**329.44**	**2.84**	**12.14**

[1] **Condensables:** Include condensable particulate matter emissions in particulate matter calculations for PM-10 and PM-2.5, but not for TSP (PM).

[2] **TRS:** Total reduced sulfur (TRS) is the sum of the sulfur compounds hydrogen sulfide (H_2S), methyl mercaptan (CH_4S), dimethyl sulfide (C_2H_6S), and dimethyl disulfide ($C_2H_6S_2$).

Section B.2: Proposed Allowable Emissions

Proposed Allowable Emissions (Potential to Emit) are those emissions the facility is currently permitted to emit as limited by a specific permit requirement or federal/state standard (e.g., a MACT standard); or the emission rate at which the facility proposes to emit considering emissions control devices, restrictions to operating rates/hours, or other requested permit limits that reduce the maximum emission rates. Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Emissions ≥ 0.01 ton/yr from a specific emission unit must be included. Additional columns may be added if there are regulated pollutants (other than HAPs and GHGs) emitted at the facility. List HAPs in Section B.3 and GHGs in Section B.4 (if applicable).

Emission Point ID	TSP[1]		PM10[1]		PM2.5[1]		SO_2		NOx		CO		VOC		TRS[2]		Ammonia	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
MCAPS-1A - Routine	43.04	124.26	56.66	166.40	56.66	166.40	13.98	30.35	40.59	168.07	24.71	102.33	10.62	43.96	-	-	75.13	326.52
MCAPS-1A - SUSD	-	-	-	-	-	-	-	-	294.00	52.89	7,441.00	1,094.25	2,527.00	359.13	-	-	-	-
MCAPS-EMGEN	1.37	0.07	0.96	0.05	0.96	0.05	0.03	<0.01	30.76	1.54	16.82	0.84	2.69	0.13	-	-	-	-
MCAPS-FWP	0.10	<0.01	0.10	<0.01	0.10	<0.01	<0.01	<0.01	2.07	0.10	1.81	0.09	0.06	<0.01	-	-	-	-
MCAPS-NGDPHTR	0.01	0.04	0.02	0.11	0.02	0.11	<0.01	0.02	0.06	0.24	0.19	0.81	0.04	0.18	-	-	-	-
MCAPS-NGFUG	-	-	-	-	-	-	-	-	-	-	-	-	0.09	0.37	-	-	-	-
MCAPS-AMMFUG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	0.37
MCAPS-DSLFUG	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.03	-	-	-	-
MCAPS-LOVCT	<0.01	0.01	<0.01	0.01	<0.01	0.01	-	-	-	-	-	-	<0.01	0.01	-	-	-	-
MCAPS-LOVST	<0.01	0.01	<0.01	0.01	<0.01	0.01	-	-	-	-	-	-	<0.01	0.01	-	-	-	-
MCAPS-TK1	-	-	-	-	-	-	-	-	-	-	-	-	0.23	<0.01	-	-	-	-
MCAPS-TK2	-	-	-	-	-	-	-	-	-	-	-	-	0.03	<0.01	-	-	-	-
MCAPS-TK3	-	-	-	-	-	-	-	-	-	-	-	-	3.44	0.03	-	-	-	-
MCAPS-TK4	-	-	-	-	-	-	-	-	-	-	-	-	3.44	0.03	-	-	-	-
Totals	**44.53**	**124.40**	**57.75**	**166.59**	**57.75**	**166.59**	**14.02**	**30.37**	**326.89**	**222.84**	**7,459.82**	**1,198.32**	**2,537.03**	**403.88**	**-**	**-**	**75.21**	**326.89**

Note: Aside from the addition of startup and shutdown emissions to the proposed allowable emissions, the maximum uncontrolled emissions and the proposed allowable emissions for sources in which control devices and/or methods are used are the same. Emission factors for these sources are vendor provided emission factors. All of this data factors in the control device and/or method used to control the associated pollutants for the equipment.

[1] **Condensables:** Include condensable particulate matter emissions in particulate matter calculations for PM-10 and PM-2.5, but not for TSP (PM).

[2] **TRS:** Total reduced sulfur (TRS) is the sum of the sulfur compounds hydrogen sulfide (H_2S), methyl mercaptan (CH_4S), dimethyl sulfide (C_2H_6S), and dimethyl disulfide ($C_2H_6S_2$).

Section B.3: Proposed Allowable Hazardous Air Pollutants (HAPs)

Proposed Allowable HAPs (Potential to Emit) are those emissions the facility is currently permitted to emit as limited by a specific permit requirement or federal/state standard (e.g., a MACT standard); or the emission rate at which the facility proposes to emit considering emissions control devices, restrictions to operating rates/hours, or other requested permit limits that reduce the maximum emission rates. Select an inidividual HAP from the dropdown list provided. **Emissions ≥ 0.01 ton/yr of an indiviudal HAP from a specific emission unit must be provided.** Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected or are below the reporting threshold. Select the appropriate HAP from the drop down menu in the header cell of the given column in the table below. Additional columns may be added as necessary to address each HAP.

Emission Point ID	Total HAPs		1,3-Butadiene		Acetaldehyde		Acrolein		Benzene (including benzene from gasoline)		Ethyl benzene		Formaldehyde		Naphthalene		Propylene oxide		Toluene		Xylenes (isomers and mixture)		Hexane	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
MCAPS-1A	2.79	12.10	<0.01	0.01	0.20	0.87	0.03	0.14	0.06	0.26	0.16	0.69	1.21	5.24	0.01	0.03	0.14	0.63	0.65	2.81	0.32	1.38	-	-
MCAPS-EMGEN	0.03	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCAPS-FWP	0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCAPS-NGDPHTR	0.01	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	0.04
Totals:	**2.84**	**12.14**	**<0.01**	**0.01**	**0.20**	**0.87**	**0.03**	**0.14**	**0.06**	**0.26**	**0.16**	**0.69**	**1.21**	**5.24**	**0.01**	**0.03**	**0.14**	**0.63**	**0.65**	**2.81**	**0.32**	**1.38**	**0.01**	**0.04**

Section B.4: Greenhouse Gas (GHG) Emissions

This form is required for facilities that have or will require a Title V Operating Permit and for all industries in the energy and oil and gas sectors (i.e., SIC codes beginning with 13, 29, 46, and 49). Proposed Allowable GHGs (Potential to Emit) are those emissions the facility is currently permitted to emit as limited by a specific permit requirement or federal/state standard; or the emission rate at which the facility proposes to emit considering emissions control devices, restrictions to operating rates/hours, or other requested permit limits that reduce the maximum emission rates. Applicants must report potential emission rates in SHORT TONS per year, as opposed to metric tons required by Part 98. Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. Only those emission points with emissions of greenhouse gases are required to be provided on this form.

		CO_2 (non-biogenic) ton/yr	CO_2 (biogenic)[2] ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC[3] ton/yr	Total GHG Mass Basis ton/yr[5]	Total CO_2e ton/yr[6]
Emission Point ID	**GWPs [1]**	**1**	**1**	**265**	**28**	**22,800**	**footnote 4**		
MCAPS-1A	**mass GHG**	2,527,454.89	-	4.69	46.88	-	-	2,527,506	-
	CO2e	2,527,454.89	-	1,242.32	1,312.64	-	-	-	2,530,010
MCAPS-EMGEN	**mass GHG**	180.12	-	0.001	0.01	-	-	180	-
	CO2e	180.12	-	0.39	0.20	-	-	-	181
MCAPS-FWP	**mass GHG**	15.41	-	0.0001	0.001	-	-	15	-
	CO2e	15.41	-	0.03	0.02	-	-	-	15
MCAPS-NGDPHTR	**mass GHG**	2,569.40	-	0.005	0.05	-	-	2,569	-
	CO2e	2,569.40	-	1.28	1.36	-	-	-	2,572
MCAPS-NGFUG	**mass GHG**	0.36	-	-	11.98	-	-	12	-
	CO2e	0.36	-	-	335.41	-	-	-	336
FACILITY TOTAL	**mass GHG**	2,530,220.18	0.00	4.70	58.92	0.00	0.00	2,530,284	-
	CO2e	2,530,220.18	0.00	1,244.02	1,649.63	0.00	0.00	-	2,533,114

[1] **GWP** (Global Warming Potential): Applicants must use the most current GWPs codified in Table A-1 of 40 CFR part 98. GWPs are subject to change, therefore, applicants need to check 40 CFR 98 to confirm GWP values.

[2] Biogenic CO2 is defined as carbon dioxide emissions resulting from the combustion or decomposition of non-fossilized and biodegradable organic material originating from plants, animals, or micro-organisms.

[3] For **HFCs** or **PFCs** describe the specific HFC or PFC compound and use a separate column for each individual compound.

[4] For each new compound, enter the appropriate GWP for each HFC or PFC compound from Table A-1 in 40 CFR 98.

[5] Greenhouse gas emissions on a **mass basis** is the ton per year greenhouse gas emission before adjustment with its GWP. Include both biogenic and non-biogenic

[6] **CO_2e** means Carbon Dioxide Equivalent and is calculated by multiplying the ton/yr mass emissions of the greenhouse gas by its GWP. Include both biogenic and non-biogenic CO_2e in this total.

Section B.5: Stack Parameters and Exit Conditions

Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit.

Emission Point ID	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Base Elevation (ft)	Exit Temp. (^{0}F)	Inside Diameter or Dimensions (ft)	Velocity (ft/sec)	Moisture by Volume (%)	Geographic Position (degrees/minutes/seconds)	
									Latitude	Longitude
MCAPS-1A	V	No	200	365	160	23	81.04	12	32° 24' 14.09" N	090° 13' 12.67" W
MCAPS-EMGEN	V	No	16	365	979	1.2	299.48	NA	32° 24' 18.89" N	090° 13' 14.83" W
MCAPS-FWP	V	No	12	365	961	0.5	118.84	NA	32° 24' 15.55" N	090° 13' 6.88" W
MCAPS-NGDPHTR	V	No	20	365	250	2	13.56	NA	32° 24' 13.23" N	090° 13' 13.91" W
MCAPS-LOVCT	V	No	30	365	Ambient	0.003	0.003	NA	32° 24' 16.06" N	090° 13' 14.92" W
MCAPS-LOVST	V	No	30	365	Ambient	0.003	0.003	NA	32° 24' 17.01" N	090° 13' 12.53" W

[1] A WAAS-capable GPS receiver should be used and in the WGS84 or NAD83 coordinate system.

Outlook

RE: Madison County Advanced Power Station - Revised Form 5 Section N (NSPS KKKKa)

From Halland, Jeremy <jhallan@entergy.com>
Date Fri 3/6/2026 1:37 PM
To Thomas Parker <tparker@mdeq.ms.gov>
Cc White, Annisa <awhite5@entergy.com>; Moon, Larry <larry.moon@wsp.com>; Allen, Raymond <raymond.allen@wsp.com>; McDonald, Samantha <smcdon4@entergy.com>; Clinton Gentry <cgentry@mdeq.ms.gov>; Jeffrey Bland <JBland@mdeq.ms.gov>

2 attachments (101 KB)
NSPS KKKKa Interpretation from EPA - 02-02-2026.pdf; TAPS Worst-Case NOx Concentration in SUSD Operations - 03-06-26.pdf;

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Thomas,

Good talking with you earlier today. Attached are the following:

1. EPA email correspondence regarding NSPS KKKKa applicability of 96ppm @15% O2 NOX during loads below 70% for gas turbines.
2. Emission calculation showing the concentration of the hourly emission rates during loads <70% would meet this requirement in the NSPS KKKKa.

Please let me know if you need any additional documentation.
Thanks,

Jeremy Halland | Entergy
Manager | Environmental Project Services | Enterprise Environmental
Cell: 972-743-9649 | Lake Front North II | The Woodlands, TX

From: Allen, Raymond <raymond.allen@wsp.com>
Sent: Friday, March 6, 2026 11:23 AM
To: Thomas Parker <tparker@mdeq.ms.gov>; Halland, Jeremy <jhallan@entergy.com>
Cc: White, Annisa <awhite5@entergy.com>; Moon, Larry <larry.moon@wsp.com>; McDonald, Samantha <smcdon4@entergy.com>; Clinton Gentry <cgentry@mdeq.ms.gov>; Jeffrey Bland <JBland@mdeq.ms.gov>
Subject: RE: Madison County Advanced Power Station - Revised Form 5 Section N (NSPS KKKKa)

🚫 **HIGH RISK: UNTRUSTED EXTERNAL SENDER. DO NOT click links, or open attachments, if sender is unknown, or the message seems suspicious in any way. DO NOT provide your User ID or Password.**

Thomas:

We will provide this shortly along with a calculation showing that the CTDB units can meet the 96 ppmvd @ 15% O2 standard during the worst-case condition (cold startup). I will be sending a draft of this for review to Jeremey and team for review within the next few minutes..

Raymond Allen
Technical Director, Air Quality
P.E. (Louisiana)

T +1 225-900-8015
M +1 225-590-0491

WSP
1601 S Mopac Expressway, Suite 325D
Austin, Texas 78746

[wsp.com]

From: Thomas Parker <tparker@mdeq.ms.gov>
Sent: Friday, March 6, 2026 11:19 AM
To: Halland, Jeremy <jhallan@entergy.com>
Cc: White, Annisa <awhite5@entergy.com>; Allen, Raymond <raymond.allen@wsp.com>; Moon, Larry <larry.moon@wsp.com>; McDonald, Samantha <smcdon4@entergy.com>; Clinton Gentry <cgentry@mdeq.ms.gov>; Jeffrey Bland <JBland@mdeq.ms.gov>
Subject: Re: Madison County Advanced Power Station - Revised Form 5 Section N (NSPS KKKKa)

Good morning,

Due to the vague wording of the NSPS KKKKa language concerning the part-load NOx standard of 96 ppmvd @ 15% O2 (when a combustion turbine operates at < 70% of base load), can you provide the concurrence received from the EPA on this issue?

Thanks,

Thomas Parker
Mississippi Department of Environmental Quality
Office of Pollution Control
Air Division – Air Permitting Branch
Office: (601) 961-5148

From: Halland, Jeremy <jhallan@entergy.com>
Sent: Monday, February 2, 2026 2:49 PM
To: Thomas Parker <tparker@mdeq.ms.gov>
Cc: Jeffrey Bland <JBland@mdeq.ms.gov>; White, Annisa <awhite5@entergy.com>;

raymond.allen@wsp.com <raymond.allen@wsp.com>; Moon, Larry <larry.moon@wsp.com>; McDonald, Samantha <smcdon4@entergy.com>
Subject: RE: Madison County Advanced Power Station - Revised Form 5 Section N (NSPS KKKKa)

Thomas,

I brought your question about the 96ppm concentration for part load operating scenarios back to WSP and we got concurrence from the EPA on the following:

The NSPS KKKKa Table 1 part-load NOx standard of 96 ppmvd @ 15% O2 (when a combustion turbine operates at < 70% of base load) applies to combustion turbines that are fired exclusively with natural gas.

Please let me know if you need anything else.

Jeremy Halland | Entergy

Manager | Environmental Project Services | Enterprise Environmental

Cell: 972-743-9649 | Lake Front North II | The Woodlands, TX

From: Halland, Jeremy
Sent: Tuesday, January 27, 2026 4:08 PM
To: tparker@mdeq.ms.gov
Cc: Jeffrey Bland <jbland@mdeq.ms.gov>; White, Annisa <awhite5@entergy.com>; raymond.allen@wsp.com; Moon, Larry <larry.moon@wsp.com>; McDonald, Samantha <smcdon4@entergy.com>
Subject: Madison County Advanced Power Station - Revised Form 5 Section N (NSPS KKKKa)

Thomas:

EPA promulgated a final New Source Performance Standard (NSPS) for Combustion Turbines (CTs) in the January 15, 2026 Federal Register. This regulation is codified at 40 CFR 60 Subpart KKKKa (NSPS KKKKa). As requested by Mr. Jeffery Bland of MDEQ, attached to this e-mail is an updated Form 5 Section N for the pending Entergy Mississippi, LLC (EML) air permit application for the proposed Madison County Advanced Power Station (aka Traceview Advanced Power Station (TAPS)). This revised form incorporates the new NSPS KKKKa requirements.

Note that the applicability of NSPS KKKKa is based on the natural gas fired to the CT (and not the natural gas fired to the duct burners). The Mitsubishi Model M501JAC CTs EML is proposing to install at the TAPS facility are categorized in the final NSPS KKKKa rule as follows:

- The Model M501JAC CTs planned for the TAPS facility are "large" combustion turbines fired exclusively with natural gas. Each CT will have a Higher Heating Value (HHV) based firing rate > 850 MMBtu/hr.
- The Model M501JAC CTs planned for the TAPS facility are both base load or "high utilization" units with an annual capacity factor > 45%.
- The Model M501JAC CTs planned for the TAPS facility will comply with NSPS KKKKa using the input-based option to establish emission limits for NOx and SO2.

Under the final NSPS KKKKa, based on the CT design information and categorizations identified above, the final NSPS KKKKa input-based NOx limits are as follows for EML's new CTs planned for the TAPS facility:

- For operations at ≥ 70% of base load, the CTs will be subject to a NOx limit of 5 ppmvd @ 15% O2 on a 4-operating hour rolling basis, as specified at 40 CFR 60.4320a and Table 1 of NSPS KKKKa. Note that this NOx limit is higher than the proposed NOx BACT limit of 2 ppmvd @ 15% O2.
- For operations at < 70% of base load at any point during an operating hour, the CTs will be subject to a "part-load" NOx limit of 96 ppmvd @ 15% O2 on a 4-operating hour rolling basis for the entire operating hour, as specified at 40 CFR 60.4320a(b)(3) and Table 1 of NSPS KKKKa. Note that this "part-load" exclusion allows the CTs to comply with NSPS KKKKa NOx limits during startup and shutdown operations.

The performance test requirement for NOx is satisfied by conducting a Relative Accuracy Test Audit (RATA) of the NOx and O2 CEMS as specified at 40 CFR 60.4405a(b). Such RATA testing will be conducted on an annual basis to comply with the federal Acid Rain Program CEMS requirements specified in 40 CFR 75.

With respect to the final NSPS KKKKa SO2 limit, the CTs will comply with the input-based SO2 limit of 0.060 lb SO2/MMBtu as specified at 40 CFR 60.4330a(a)(2). An initial SO2 performance test using standard stack testing methods is required. Thereafter, the periodic performance test requirement for SO2 is accomplished using a fuel sulfur and heating value analysis as specified at 40 CFR 60.4415a(a). Such fuel sulfur and heating value testing will be conducted at least annually to comply with the federal Acid Rain Program requirements pursuant to 40 CFR 75 Appendix D.

We hope the information in this e-mail satisfies all of your outstanding data needs. Please let me know if you have any additional questions or concerns.

Jeremy Halland | Entergy

Manager | Environmental Project Services | Enterprise Environmental

Cell: 972-743-9649 | Lake Front North II | The Woodlands, TX

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-LAEmHhHzdJzBlTWfa4Hgs7pbKl

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Applicable Requirements and Status — Section N

1. Summary of Applicable Requirements

Provide a list of all applicable federal standards for which your facility is or will be subject to, as well as a list of all Construction Permits establishing limits or restrictions issued to your facility. The specific emission standards and limitations applicable to each emission point shall be provided on the following pages (Parts 2 and 3).

Federal Regulations:

40 CFR Part	60	Subpart	A
	60		KKKKa
	60		TTTTa
	60		IIII
	63		A
	63		ZZZZ
	68		All applicable
	72		All applicable
	73		All applicable
	75		All applicable
	97		GGGGG
	82		All applicable
	52.21		NA - PSD

State Construction Permits[1]:

	MM/DD/YY[2]	PSD	PSD Avoidance[3]	Other
Permit to Construct issued:	NA - New	☒	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐

[1] Any Construction Permits containing requirements that are currently applicable to the facility should be addressed in this section.
[2] If the permit has been modified, give the most recent modification date.
[3] Because permits are issued on a pollutant-by-pollutant basis, a PSD permit may be significant for one pollutant while also containing PSD avoidance limits for another pollutant. Therefore, you may check multiple boxes for each permit.

Applicable Requirements and Status — Section N

2. Current Applicable Requirements

List all applicable state and federal requirements to the level of detail needed to identify each applicable emission standard and/or work practice standard and the applicable test methods or monitoring used to demonstrate compliance with each applicable requirement. Applicable provisions from any relevant Permit to Construct shall also be listed. Provide the compliance status as of the day the application is signed.

EMISSION POINT NO.	APPLICABLE REQUIREMENT (Regulatory citation)	POLLUTANT	LIMITS/ REQUIREMENTS	TEST METHOD/ COMPLIANCE MONITORING	COMPLIANCE STATUS (In/Out)[1,2]
MCAPS-1A	52.21(j) – PSD BACT	NOx	2.0 ppmvd @ 15% O2d	CEMS	NA - new
MCAPS-1A	40 CFR 60.4320a and Table 1 of NSPS KKKKa	NOx	5 ppmvd @ 15% O2d for all Loads ≥ 70% of base load	CEMS	NA - new
MCAPS-1A	40 CFR 60.4320a(b)(3) and Table 1 of NSPS KKKKa	NOx	96 ppmvd @ 15% O2d for all Loads < 70% of base load	CEMS	NA - new
MCAPS-1A	52.21(j) – PSD BACT	CO	2.0 ppmvd @ 15% O2d	CEMS	NA - new
MCAPS-1A	52.21(j) – PSD BACT	VOC	1.5 ppmvd @ 15% O2d	Initial Performance Test	NA - new
MCAPS-1A	52.21(j) – PSD BACT	PM-10/PM-2.5	0.0095 lb PM/MMBtu	Use good combustion practices	NA - new
MCAPS-1A	52.21(j) – PSD BACT	SO2/H2SO4	Fuel S < 1.0 grains/scf	Annual Natural Gas S Analysis	NA - new
MCAPS-1A	40 CFR 60.4330a(a)(2) – NSPS KKKKa	SO2	0.060 lb SO2/MMBtu	Fuel Monitoring	NA - new
MCAPS-1A	52.21(j) – PSD BACT	GHG – CO2e	800 lb CO_2/MWh gross output	Fuel Monitoring	NA - new
MCAPS-1A	NSPS Subpart TTTTa – Table 1	GHG – CO2	800 lb CO_2/MWh gross output	Fuel Monitoring	NA - new
MCAPS-EMERG	52.21(j) – PSD BACT – NSPS IIII	NOx	6.4 g NOx/kWh	Use EPA Certified Tier 2 Engine	NA - new
MCAPS-EMERG	52.21(j) – PSD BACT – NSPS IIII	CO	3.5 g CO/kWh	Use EPA Certified Tier 2 Engine	NA - new
MCAPS-EMERG	52.21(j) – PSD BACT – NSPS IIII	PM-10/PM-2.5	0.20 g PM/kWh	Use EPA Certified Tier 2 Engine	NA - new
MCAPS-EMERG	52.21(j) – PSD BACT	VOC	0.56 g VOC/kWh	Manufacturer's Guarantee	NA - new
MCAPS-EMERG	52.21(j) – PSD BACT	SO2	ULSD Fuel < 15 ppmw S	Use only ULSD Fuel	NA - new
MCAPS-EMERG	52.21(j) – PSD BACT	GHG	Efficient combustion	Use EPA Certified Tier 2 Engine	NA - new
MCAPS-FWP	52.21(j) – PSD BACT – NSPS IIII	NOx	4.0 g NOx/kWh	Use EPA Certified Tier 3 Engine	NA - new
MCAPS-FWP	52.21(j) – PSD BACT – NSPS IIII	CO	3.5 g CO/kWh	Use EPA Certified Tier 3 Engine	NA - new
MCAPS-FWP	52.21(j) – PSD BACT – NSPS IIII	PM-10/PM-2.5	0.20 g PM/kWh	Use EPA Certified Tier 3 Engine	NA - new
MCAPS-FWP	52.21(j) – PSD BACT	VOC	0.11 g VOC/kWh	Manufacturer's Guarantee	NA - new
MCAPS-FWP	52.21(j) – PSD BACT	SO2	ULSD Fuel < 15 ppmw S	Use only ULSD Fuel	NA - new
MCAPS-FWP	52.21(j) – PSD BACT	GHG	Efficient combustion	Use EPA Certified Tier 3 Engine	NA - new
MCAPS-NGDPHTR	52.21(j) – PSD BACT	NOx	0.011 lb NOx/MMBtu via ULNB	Manufacturer's Guarantee	NA - new

[1] Per 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(b)(1) for Title V sources, by specifying that the source is in compliance with the applicable requirement(s), I (the applicant) am certifying that I will continue to operate and maintain this source to assure compliance for the duration of the permit term.

[2] Per 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(b)(3) for Title V sources, by specifying that the source is out of compliance with the applicable requirement(s), I (the applicant) am submitting a schedule, attached herein, which includes a description of the problems and proposed solutions in accordance with 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(c).

Applicable Requirements and Status — Section N

2. Current Applicable Requirements

List all applicable state and federal requirements to the level of detail needed to identify each applicable emission standard and/or work practice standard and the applicable test methods or monitoring used to demonstrate compliance with each applicable requirement. Applicable provisions from any relevant Permit to Construct shall also be listed. Provide the compliance status as of the day the application is signed.

EMISSION POINT NO.	APPLICABLE REQUIREMENT (Regulatory citation)	POLLUTANT	LIMITS/ REQUIREMENTS	TEST METHOD/ COMPLIANCE MONITORING	COMPLIANCE STATUS (In/Out)[1,2]
MCAPS-NGDPHTR	52.21(j) – PSD BACT	CO	0.037 lb CO/MMBtu via ULNB	Manufacturer's Guarantee	NA - new
MCAPS-NGDPHTR	52.21(j) – PSD BACT	VOC	0.008 lb VOC/MMBtu via ULNB	Manufacturer's Guarantee	NA - new
MCAPS-NGDPHTR	52.21(j) – PSD BACT	PM-10/PM-2.5	0.0048 lb PM/MMBtu via ULNB	Manufacturer's Guarantee	NA - new
MCAPS-NGDPHTR	52.21(j) – PSD BACT	SO2	Fuel S < 1.0 grains/scf	Annual Natural Gas S Analysis	NA - new
MCAPS-NGDPHTR	52.21(j) – PSD BACT	GHG	Efficient combustion	Use good combustion practices	NA - new

[1] Per 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(b)(1) for Title V sources, by specifying that the source is in compliance with the applicable requirement(s), I (the applicant) am certifying that I will continue to operate and maintain this source to assure compliance for the duration of the permit term.

[2] Per 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(b)(3) for Title V sources, by specifying that the source is out of compliance with the applicable requirement(s), I (the applicant) am submitting a schedule, attached herein, which includes a description of the problems and proposed solutions in accordance with 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(c).

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Applicable Requirements and Status — Section N

3. Future Applicable Requirements

List all future applicable state and federal requirements, including emission limits, operating restrictions, etc., and the applicable test methods or monitoring to be used to demonstrate compliance with each applicable requirement. Applicable provisions from any Permit to Construct for which certification of construction has not yet been submitted shall also be listed.

EMISSION POINT NO.	FUTURE APPLICABLE REQUIREMENT (Regulation citation)	POLLUTANT	LIMITS/ REQUIREMENTS	TEST METHOD/ COMPLIANCE MONITORING	COMPLIANCE DATE[1]

[1] Per 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(b)(2). for Title V sources, I (the applicant) am certifying that I will meet future applicable requirements which will become effective during the permit term on a timely basis.

Outlook

Entergy's Traceview Advanced Power Station Air Permit: Revised Section A

From McDonald, Samantha <smcdon4@entergy.com>
Date Wed 3/25/2026 3:23 PM
To Thomas Parker <tparker@mdeq.ms.gov>
Cc Halland, Jeremy <jhallan@entergy.com>; White, Annisa <awhite5@entergy.com>

1 attachment (4 MB)
Xerox Scan_03252026143657.pdf;

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Good Afternoon Mr Parker:

Please find the revised Section A reflecting an address change for Traceview Advanced Power Station attached.

Thank you,

Samantha McDonald
Senior Environmental Analyst
Enterprise Environmental
Office: 281-362-4013
Cell: 903-987-5676
smcdon4@entergy.com
entergy

From: Rivera, Carmen <criver4@entergy.com>
Sent: Wednesday, March 25, 2026 2:45 PM
To: McDonald, Samantha <smcdon4@entergy.com>; Hernandez, Katrina <kherna4@entergy.com>
Cc: White, Annisa <awhite5@entergy.com>; Halland, Jeremy <jhallan@entergy.com>
Subject: RE: Check-in on Status of Entergy's Traceview Advanced Power Station Air Permitting Action

Please see attached.

entergy
Carmen Rivera | Executive Assistant
Power Generation
2107 Research Forest, T-LFN-6,
The Woodlands, TX 77380

O: 281-297-3306 | C: 504-699-4697

From: McDonald, Samantha <smcdon4@entergy.com>
Sent: Wednesday, March 25, 2026 12:31 PM
To: ALEXANDER, LEE <SALEXA2@entergy.com>; Rivera, Carmen <criver4@entergy.com>; Hernandez, Katrina <kherna4@entergy.com>
Cc: White, Annisa <awhite5@entergy.com>; Halland, Jeremy <jhallan@entergy.com>
Subject: FW: Check-in on Status of Entergy's Traceview Advanced Power Station Air Permitting Action

Good Afternoon Lee,

Just checking in on the status of this one.

Thanks
Sam

From: McDonald, Samantha
Sent: Thursday, March 19, 2026 2:18 PM
To: ALEXANDER, LEE <SALEXA2@entergy.com>; Rivera, Carmen <criver4@entergy.com>
Subject: FW: Check-in on Status of Entergy's Traceview Advanced Power Station Air Permitting Action

Lee,

Can you please sign, scan and send back to Environmental so we can forward to MDEQ. This is an address revision for Traceview.

Thanks

Samantha McDonald
Senior Environmental Analyst
Enterprise Environmental
Office: 281-362-4013
Cell: 903-987-5676
smcdon4@entergy.com
entergy

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FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

1. Name, Address, and Location of Facility

A. Owner/Company Name: Entergy Mississippi, LLC

B. Facility Name *(if different than A. above)*: Traceview Advanced Power Station

C. Facility Air Permit No. *(if known)*: 1720-00100

D. Agency Interest No. *(if known)*: TBD

E. Physical Address
1. Street Address: 1972 W County Line Road
2. City: Ridgeland
3. State: MS
4. County: Madison
5. Zip Code: 39157
6. Telephone No.: TBD
7. Fax No.:

F. Mailing Address *(if different from physical address)*
1. Street Address or P.O. Box: 2107 Research Forest Drive, T-LFN-6
2. City: The Woodlands
3. State: TX
4. Zip Code: 77380

G. Latitude/Longitude Data
1. Collection Point *(check one)*:
☐ Plant Entrance ☒ Other: Google Earth data for specified address
2. Method of Collection *(check one)*:
☐ GPS Specify coordinate system (NAD 83, etc.)
☒ Map Interpolation (Google Earth, etc.) ☐ Other:
3. Latitude *(degrees/minutes/seconds)*: 32° 24' 01.92"
4. Longitude *(degrees/minutes/seconds)*: 90° 12' 37.62"
5. Elevation: 362 feet

H. SIC/NAICS Codes *(primary code listed first)*
SIC: 4911
NAICS: 22111
(NAICS Code should correspond with the SIC Code directly above.)

2. Name and Address of Facility Contact

A. Name: Jeremy Halland Title: Manager, Environmental Project Services

B. Mailing Address
1. Street Address or P.O. Box: 2107 Research Forest Drive, T-LFN-6
2. City: The Woodlands
3. State: TX
4. Zip Code: 77380
5. Email: jhallan@entergy.com
6. Telephone No.: (972) 743-9649
7. Fax No.:

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

3. Name and Address of Air Contact *(if different from Facility Contact)*

A. Name: Annisa White Title: Supervisor, Environmental Mgmt.

B. Mailing Address

1. Street Address or P.O. Box: 2107 Research Forest Drive, T-LFN-6
2. City: The Woodlands 3. State: TX
4. Zip Code: 77380 5. Email: awhite5@entergy.com
6. Telephone No.: (407) 929-2071 7. Fax No.:

4. Name and Address of the Responsible Official for the Facility

The Responsible Official is defined as one of the following:

a. *For a corporation: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and the facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated in accordance with corporate procedures.*

b. *For a partnership or sole proprietorship: a general partner or the proprietor, respectively.*

c. *For a municipality, state, federal, or other public agency: either a principal executive officer or ranking elected official. For purposes of these regulations, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of EPA). A principal executive officer of a military facility includes the facility commander, chief executive officer, or any other similar person who performs similar policy or decision-making functions for the institution.*

A. Name: Lee Alexander Title: Vice President, Power Plant Operations Mississippi

B. Mailing Address

1. Street Address or P.O. Box: 2107 Research Forest Drive, T-LFN-6
2. City: The Woodlands 3. State: TX
4. Zip Code: 77380 5. Email: salexa2@entergy.com
6. Telephone No.: (281) 297-1937 7. Fax No.:

C. Is the person above a duly authorized representative and not a corporate officer? ☐ Yes ☒ No

If yes, has written notification of such authorization been submitted to MDEQ?

☐ Yes ☐ No ☐ Request for authorization is attached

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

5. Type of Permit Application *(Check all that apply)*

State Permit to Construct (i.e., non-PSD or PSD avoidance)

☐ Initial Application ☐ Modification

New Source Review (NSR) Permit to Construct (includes both Prevention of Significant Deterioration (PSD) and Nonattainment)

☒ Initial Application ☐ Modification

Title V Operating Permit

☐ Initial Application

☐ Re-issuance: *Are any modifications to the permit/facility being requested?* ☐ Yes ☐ No

(If yes, provide a separate sheet identifying the modification(s) and resulting change to emissions.)

☐ Modification (*Specify type):* ☐ Significant ☐ Minor ☐ Administrative

Synthetic Minor Operating Permit *(Appendix B must be completed and attached.)*

☐ Initial Application

☐ Re-issuance: *Are any modifications to the permit/facility being requested? If yes, address such on a separate sheet.* ☐ Yes ☐ No

☐ Modification

State Permit to Operate a Significant Minor Source *(defined in 11 Miss. Admin. Code Pt. 2, R.2.1.C(25).)*

☐ Initial Application

☐ Re-issuance: *Are any modifications to the permit/facility being requested? If yes, address such on a separate sheet.* ☐ Yes ☐ No

☐ Modification

True Minor Determination

☐ Uncontrolled potential to emit air pollutants is below the Title V thresholds

6. Process/Product Details

A. List Significant Raw Materials *(if applicable)*:
Natural Gas

B. List All Products *(if applicable)*:
Electrical Power

C. Brief Description of Principal Process(es):
Combined cycle power plant with full emission controls

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

6. Process/Product Details (continued)

D. Maximum Throughput for Raw Material(s) *(if applicable)*:

Raw Material	Throughput	Units
Natural Gas Fuel	4,904,000	SCFH

E. Maximum Throughput for Principal Product(s) *(if applicable)*:

Product	Throughput	Units

7. Facility Operating Information

A. Number of employees at the facility: 21

		Average Actual	Maximum Potential
B.	Hours per day the facility will operate:	24	24
C.	Days per week the facility will operate:	7	7
D.	Weeks per year the facility will operate:	52	52
E.	Months the facility will operate:	12	12

8. Maps

A. Attach a topographical map of the area extending to at least ½ mile beyond the property boundaries. The map must show the outline of the property boundaries. **Figure 2-2**

B. Attach a site map/diagram showing the outline of the property, an outline of all buildings and roadways on the site, and the location of each significant air emission source. **Figures 2-2 and 2-3**

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

9. Zoning

A. Is the facility (either existing or proposed) located in accordance with any applicable city and/or county zoning ordinances? If no, please explain.
Yes

B. Is the facility (either existing or proposed) required to obtain any zoning variance to locate/expand the facility at this site? If yes, please explain.
No

10. Risk Management Plan

A. Is the facility required to develop and register a risk management plan pursuant to Section 112(r), regulated under 40 CFR Part 68? ☒ Yes ☐ No

B. If yes, to whom was the plan submitted? To be submitted after construction
Date submitted: _____

11. *Is confidential information being submitted with this application?* ☐ Yes ☒ No

If so, please follow the procedures outlined in the Mississippi Code Ann. Sections 49-17-39 and 17-17-27(6), as outlined in MCEQ-2 – "Regulation regarding the review and reproduction of public records".

12. MS Secretary of State Registration / Certificate of Good Standing

No permit will be issued to a company that is not authorized to conduct business in Mississippi. If the company applying for the permit is a corporation, limited liability company, a partnership or a business trust, the application package should include proof of registration with the Mississippi Secretary of State and/or a copy of the company's Certificate of Good Standing. The name listed on the permit will include the company name as it is registered with the Mississippi Secretary of State. **See Appendix I**

It should be noted that for an application submitted in accordance with 11 Miss. Admin. Code Pt. 2, R. 2.8.B. to renew a State Permit to Operate or in accordance with 11 Miss. Admin. Code Pt. 2, R. 6.2.A(1)(c). to renew a Title V Permit to be considered timely and complete, the applicant shall be registered and in good standing with the Mississippi Secretary of State to conduct business in Mississippi.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

13. Certification

Note: If approved by MDEQ, a duly authorized representative (DAR) may sign the air permit application. The DAR must be listed in Section 4 of this application.

I certify that to the best of my knowledge and belief formed after reasonable inquiry, the statements and information in this application are true, complete, and accurate, and that as a responsible official, my signature shall constitute an agreement that the applicant assumes the responsibility for any alteration, additions, or changes in operation that may be necessary to achieve and maintain compliance with all applicable Rules and Regulations. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature of Responsible Official/DAR	Date
3/25/26	
Lee Alexander	Vice President, Power Plant Operations Mississippi
Printed Name	**Title**