October 2025

AIR QUALITY ANALYSIS

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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APPENDICES

1.0 PROJECT IDENTIFICATION INFORMATION

This document presents the air quality impacts resulting from the proposed construction of an electrical generating plant. This Air Quality Analysis (AQA) is submitted in support of the *Preconstruction and Prevention of Significant Deterioration Air Permit Application, June 2025* with revisions/addenda. This AQA document corresponds to Items I through III and V through X of MDEQ Form 5 Appendix C – Air Quality Analysis Checklist. Modeling protocols corresponding to Item IV of MDEQ Form 5 Appendix C have been submitted and approved prior to the date of this AQA. A completed copy of this Checklist is included as Appendix A to this AQA. Discussion regarding the modeling methods that were included in the AQA is provided within this document.

POWER Engineers, Inc. (POWER) has prepared this AQA 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:	1720-00100
Nearest City:	Ridgeland
County in Which Plant is Located:	Madison County
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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.

This AQA was 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 was 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. Potential downwash structures are identified in the figure provided as Appendix C. 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 D.

» An area map illustrating the **terrain features** within the Area of Significant Impacts (AOI) is provided as Appendix E.

» A map showing the location of the local **meteorological station** is provided as Appendix F.

» A map showing the locations of the State/local **ambient air monitoring sites** is provided as Appendix G.

» 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 is provided as Appendix H.

5.0 MODELS PROPOSED AND GENERAL MODELING APPROACH

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD), Version 24142, was 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 12.13a) was used.

5.1 Model Options

The following model options were used in the application of the AERMOD modeling:

A. Regulatory default option was enabled for all pollutants.
B. Elevated terrain was used for modeling the area around MCAPS.
C. MCAPS sources were 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 was used for source, structure, and receptor location coordinates.
E. Modeling receptors were 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 was 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 was 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 were estimated using guidance from the USEPA's *Clarification on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program, April 30, 2024*. MERPs derived using the USEPA's photochemical modeling results for hypothetical sources located in Mississippi were 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 were 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 were used for the annual $PM_{2.5}$ analysis. The maximum daily project emissions were converted to tons per year (tpy) values for use in the short-term $PM_{2.5}$ and O_3 analyses. The turbine emission contributions were 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 were used for this analysis.

The conservative O_3 and secondary $PM_{2.5}$ impacts estimated using the MERP analysis were included in the preliminary impact determination and full-impact modeling analyses. The MERP analysis estimates are 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 was 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 were 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 were used to determine whether a full impact modeling analysis is required for this pollutant. The MERP results were used to determine whether the project-related impacts are greater than the SIL.

The AOI analysis results are 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 was conducted for PSD-significant emissions of NO_2, CO, and PM_{10} for comparison with the SMCs. A preliminary impact determination was not conducted for $PM_{2.5}$. Representative monitoring background $PM_{2.5}$ concentrations was collected to establish the existing air quality for the area.

The PSD pre-application analysis results are provided in Section 12.1.3.

5.2.4 Class I PSD Increment Near Field Analysis

The 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 was 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) were compared with the PSD increment Class I SILs. The $PM_{2.5}$ near field analysis included 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.

The Class I PSD increment near field analysis results are provided in Section 12.1.4.

5.3 Modeling Approach – Full Impact Analysis

Full impact modeling analyses was 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 was first 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 was then 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 included emissions from sitewide MCAPS sources and from sources affecting the project's impact area.

The full impact modeling analysis utilized receptor grids following the MDEQ guidelines. Only receptors with predicted concentrations equal to or greater than the SIL in the preliminary modeling analysis were used. Background concentrations were added to the full impact modeling results.

The NAAQS analysis results are 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 was first 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 was then performed for applicable NO_2, PM_{10}, and $PM_{2.5}$ emissions for comparison to the PSD increment consumption limits. This analysis included 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 on which construction commenced after October 20,2010 (major source for $PM_{2.5}$).

» 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 (μg/m^3) of the pollutant. In Mississippi, attainment status is listed by individual counties.

The full impact modeling analysis utilized receptor grids following the MDEQ guidelines. Only receptors with predicted concentrations equal to or greater than the SIL in the preliminary modeling analysis were used.

The PSD increment consumption analysis results are 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 was followed in the modeling of ozone emissions. The ozone impacts from NO_X and VOC emissions were assessed using a Tier 1 approach. These ozone impacts were 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 was 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, pre-processed meteorological data consisted of surface data from the Hawkins Field Airport meteorological surface station (KHKS), surface data from the Jackson International Airport meteorological station (KJAN) and upper air data from the Jackson International station Airport is available. Both surface data meteorological stations were considered for use in this 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) were 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 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 was 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 consisted 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 were designed to capture the maximum off-property ground-level concentrations for all pollutants, operating scenarios, and review types. EML ensured 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 were included in the full impact NAAQS and PSD increment consumption analyses. Full impact modeling receptor grids were 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 were 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 I. The proposed allowable emission rates for all MCAPS emission sources are summarized in the table provided as Appendix J. The modeled emission rates for the preliminary impact analyses are summarized in the tables provided as Appendix K. The modeled emission rates for the full impact analyses are summarized in the table provided as Appendix L.

8.2 Off-Property Sources

Based on the Preliminary Impact Determination results, full impact NAAQS modeling was not required for any pollutant. PSD increment consumption modeling was required for 24-hour $PM_{2.5}$.

The MDEQ website (MDEQ enSearch Online - PSD Baseline Date Tracker) 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. EML is not aware of any construction activities at a major source of $PM_{2.5}$ in Madison County that began after October 20, 2010 (the major source baseline date). Therefore, 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 was not required.

8.3 Stack Parameter Details

8.3.1 Good Engineering Practice Stack Height

Each source was 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 were 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 was modeled at varying load rates using those varying exhaust assumptions. Additional discussion is provided in Section 8.3.3.

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 M. To ensure that the most conservative off-property concentrations are determined, the GT was modeled using three short-term operating scenarios:

» The maximum proposed short-term emission rates for 100% load operations were 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 were 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 were 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 were 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 NO_X 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 was modeled assuming startup operations occur every hour of the year. Separate analyses were conducted for cold startup, warm startup and hot startup operations. The CO startup emissions expected for the 8-hour time period were 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 were 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 were 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 was 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 was 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 N.

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 was 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 *Clarification on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier*

1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program, April 30, 2024. MERPs derived using the USEPA's photochemical modeling results for hypothetical sources located in Mississippi were 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 *Clarification on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program, April 30, 2024*. MERPs derived using the USEPA's photochemical modeling results for hypothetical sources located in Mississippi were 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 were 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" was 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 was 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 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 was 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 O.

TABLE 11-1 PROPOSED BACKGROUND CONCENTRATION

CONTAMINANT	MONITORING STATION	COUNTY	AVERAGING PERIOD	CONCENTRATION (µg/m³)	FORM
$PM_{2.5}$	Hinds CC	Hinds, MS	24-Hour	23.00	3-Year Average of 98th Percentiles of the Daily Maximums 2022-2024
			Annual	9.000	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 design concentrations were obtained from the MDEQ's Air Quality Data Summary for Calendar Year 2024 (https://www.mdeq.ms.gov/air/ambient-air-quality/).

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 P.

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.

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) was followed in selecting the predicted concentrations used to determine compliance with the NAAQS. A table listing the results of each modeling run by pollutant and averaging period is included as Appendix Q to this report. Copies of all modeling input and output files are 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 was used to estimate the secondary $PM_{2.5}$ and O_3 impacts associated with the precursor emissions. The calculation is provided as Appendix R. 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 ($\mu g/m^3$)
$PM_{2.5}$	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 ($\mu g/m^3$)
$PM_{2.5}$	24-HOUR	0.04020
	ANNUAL	0.0008803

These estimated impacts were 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. Modeling runs numbered 1001 through 1041 in the table provided as Appendix Q represent the preliminary impact analysis modeling conducted for the proposed increases in NO_2, CO, PM_{10} and $PM_{2.5}$ allowable emissions. The ground-level concentrations and SILs are summarized in Table 12-3.

TABLE 12-3 AOI ANALYSIS RESULTS

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS AT EACH RECEPTOR (ug/m^3)		SIGNIFICANT IMPACT LEVEL (SIL) (µg/m^3)	DE MININIS?
NO_2	1-Hour	5-Year Average of 1st High	6.341	7.5	Yes
	Annual	1st High (of 5 Years)	0.2396	1	Yes
CO	1-Hour	1st High (of 5 Years)	771.9	2,000	Yes
	8-Hour	1st High (of 5 Years)	108.8	500	Yes
PM_{10}	24-Hour	1st High (of 5 Years)	1.368	5	Yes
PM_{10} (Increment)	Annual	1st High (of 5 Years)	0.09985	1	Yes
$PM_{2.5}$ (NAAQS)	24-Hour	5-Year Average of 1st High	1.025 (1)	1.2 (3)	Yes
	Annual	5-Year Average of 1st High	0.09442 (1)	0.13 (3)	Yes
$PM_{2.5}$ (Increment)	24-Hour	1st High (of 5 Years)	1.417 (1)	1.2 (4)	No (5)
	Annual	1st High (of 5 Years)	0.1011 (1)	0.13 (4)	Yes
O_3	8-Hour	Conservative Estimate	1.656 PPB (2)	1 PPB	No (5)

(1) Includes estimated secondary $PM_{2.5}$ impact from Section 12.1.1 MERP analysis
(2) Estimated O_3 impact from Section 12.1.1 MERP analysis
(3) NAAQS SIL
(4) PSD Increment Consumption SIL – Class II
(5) Full impact analysis required for this standard/limit, pollutant and averaging period.

Note that two distinct and unique sets of SILs are listed in Table 12-3 for $PM_{2.5}$. The $PM_{2.5}$ NAAQS SILs were established in EPA's *Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS, March 23, 2010*. There were no PSD increment consumption limits at that time. $PM_{2.5}$ PSD increment consumption SILs were introduced in EPAs' *Guidance on Significant Impact Levels for Ozone and Fine Particles in Prevention of Significant Deterioration Permitting Program, April 17, 2018*. The SILs were updated in EPA's *Supplement to the Guidance on Significant Impact Levels for Ozone and Fine Particles in Prevention of Significant Deterioration Permitting Program, April 30, 2024*. This later document summarizes all of the current $PM_{2.5}$ SILs.

The current $PM_{2.5}$ NAAQS SILs are summarized in Table 1 of the referenced 2024 guidance document. There are two NAAQS SILs (24-hour and annual). Due to the probabilistic form of the NAAQS, the EPA requires that the highest average of the modeled annuals across 5 years of meteorological data be compared to the annual SIL. Similarly, the highest average of the maximum 24-hour averages across 5 years of meteorological data is compared to the 24-hour SIL. No further NAAQS modeling is required to demonstrate compliance with the NAAQS if the predicted concentration is below the NAAQS SIL for that averaging period.

The current $PM_{2.5}$ PSD increment SILs are summarized in Table 2 of the 2024 guidance document. There are six PSD increment SILs (Class I 24-hour and annual; Class II 24-hour and annual; and Class III 24-hour and annual). The Class II SILs apply to the current analysis. Due to the exceedance-based form of the PSD increment consumption limits, the EPA requires that the maximum of the modeled annual across 5 years of meteorological data be compared to the annual SIL. Similarly, the maximum of the modeled 24-hour averages across 5 years of meteorological data is compared to the 24-hour SIL. This modeling is conducted separate from the NAAQS modeling analysis and it provides different modeling result values. No further PSD increment modeling is required to demonstrate compliance with the PSD increment limit if the predicted concentration is below the PSD increment SIL for that averaging period.

The predicted annual NO_2, 1-hour CO, 8-hour CO, 24-hour PM_{10}, annual PM_{10} and annual $PM_{2.5}$ concentrations 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 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 are 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. Modeling run numbers 1005 through 1009, and 1016 through 102 represent the preliminary modeling conducted for the proposed PSD-significant increases in NO_2, CO, and PM_{10}. The ground-level concentrations and SMC are summarized in Table 12-4.

TABLE 12-4 PSD PRE-CONSTRUCTION MONITORING REQUIREMENT ANALYSIS RESULTS

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS AT EACH RECEPTOR (ug/m^3)		SIGNIFICANT MONITORING CONCENTRATION (µg/m^3)
NO_2	Annual	1st High (of 5 Years)	0.2396	14
CO	8-Hour	1st High (of 5 Years)	108.8	575
PM_{10}	24-Hour	1st High (of 5 Years)	1.368	10

The predicted NO_2, CO, and PM_{10} concentrations are less than their respective SMCs. Pre-construction monitoring data is not 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 1030 through 1062 represent the preliminary modeling conducted for the proposed PSD-significant increases in NO_2, PM_{10}, and $PM_{2.5}$. The 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

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS AT EACH RECEPTOR (ug/m^3)		SIGNIFICANT IMPACT LEVEL (SIL) (μg/m^3)
NO_2	Annual	1st High (of 5 Years)	0.009110	0.1
PM_{10}	24-Hour	1st High (of 5 Years)	0.1465	0.3
	Annual	1st High (of 5 Years)	0.006990	0.2
$PM_{2.5}$	24-Hour	1st High (of 5 Years)	0.1867 *	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 less than their respective Class I PSD increment SILs. No additional modeling is required for these pollutants.

12.2 Full Impact Analysis

12.2.1 NAAQS Analysis Results

Based on the results of the 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 ground-level concentrations from the NAAQS modeling, the background concentrations for the project area, and the sum of the two values are 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/m^3)	BACKGROUND CONCENTRATION (μg/m^3)	NAAQS (μg/m^3)
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

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS (μg/m^3)	BACKGROUND CONCENTRATION (μg/m^3)	TOTAL (μg/m^3)	NAAQS (μg/m^3)
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 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 $PM_{2.5}$. Modeling runs numbered 1063 through 1067 represents the full impact PSD Increment modeling conducted for this pollutant. The ground-level concentrations and PSD increment consumption limits are summarized in Table 12-8.

TABLE 12-8 PSD INCREMENT CONSUMPTION ANALYSIS RESULTS

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS AT EACH RECEPTOR ($\mu g/m^3$)		PSD INCREMENT CONSUMPTION LIMIT ($\mu g/m^3$)
$PM_{2.5}$	24-Hour	2nd High (of 5 Years)	1.270 *	9

*** Includes estimated secondary $PM_{2.5}$ impact from Section 12.1.1 MERP analysis**

The predicted $PM_{2.5}$ concentration is 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 <u>any</u> 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 <u>any</u> 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 are 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	SUBMIT N/A	
☒	☐	**I. Applicant and Consultant Information**
☒	☐	**II. Description of Facility Operations**
☒	☐	**III. Project Description**
☒	☐	**IV. Modeling Protocol**
☒	☐	**V. Model Selection**

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: 6/5/2025 **Approval Date:** 9/16/25

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/.

Yes	N/A	
		V. Model Selection (continued)
☒	☐	**VI. Meteorological Data**
☒	☐	**VII. Receptor and Terrain Discussion**
☒	☐	**VIII. Emission Source Information**

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.

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:

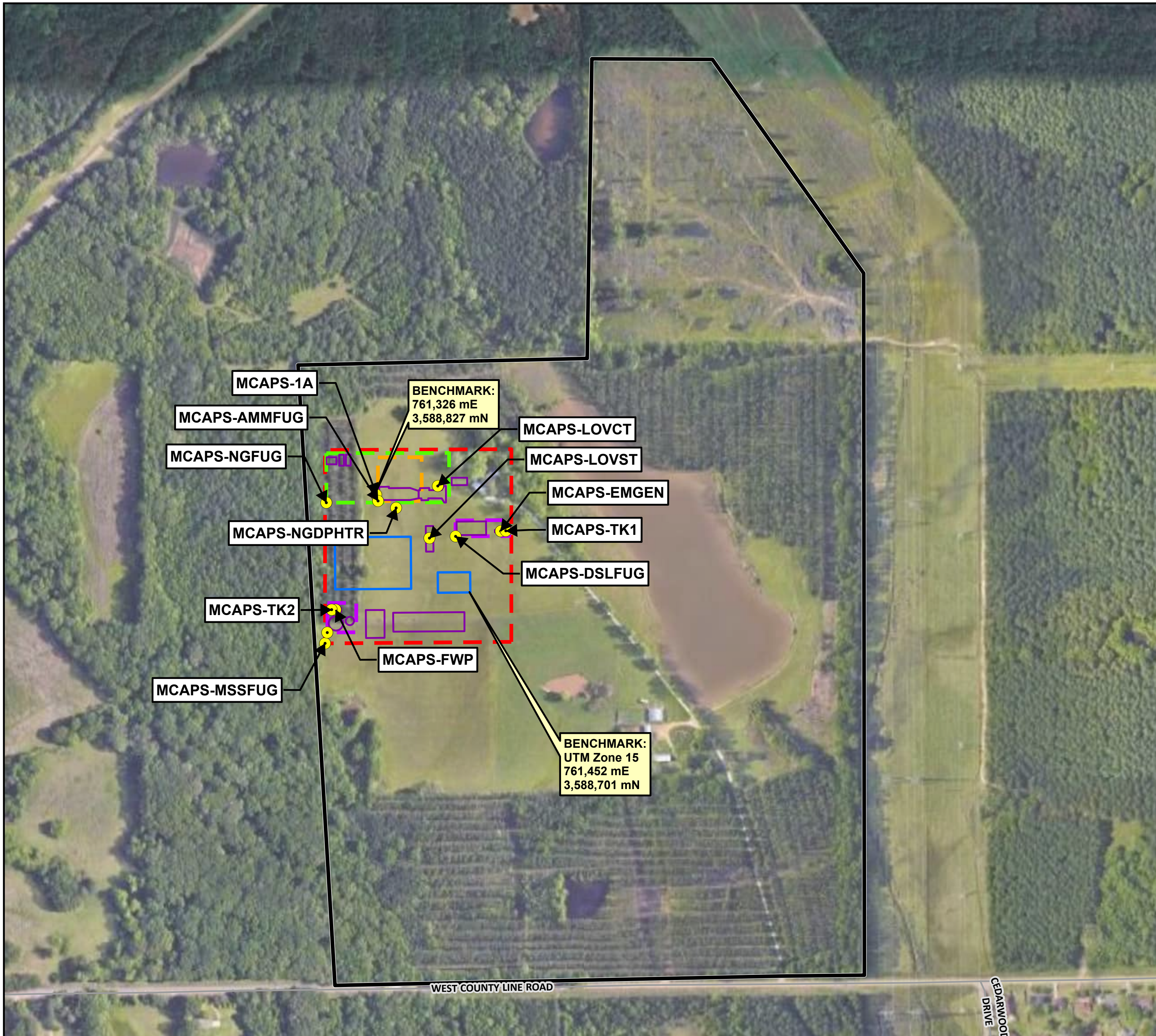
   i. "Readme" textfile that describes the submitted files, including any files that are provided in a compressed format.
   ii. Model Input/Output files
   iii. BPIP Input/Output files
   iv. Meteorological data files
   v. Post processing programs and files (including spreadsheets)

APPENDIX B PLOT MAP

ENTERGY MISSISSIPPI, LLC
MADISON COUNTY ADVANCED POWER STATION

PLOT PLAN

MADISON COUNTY, MISSISSIPPI



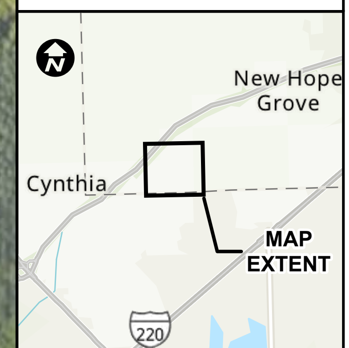
Legend

- 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



0 250 500
Feet

POWER ENGINEERS

Date: 8/29/2025

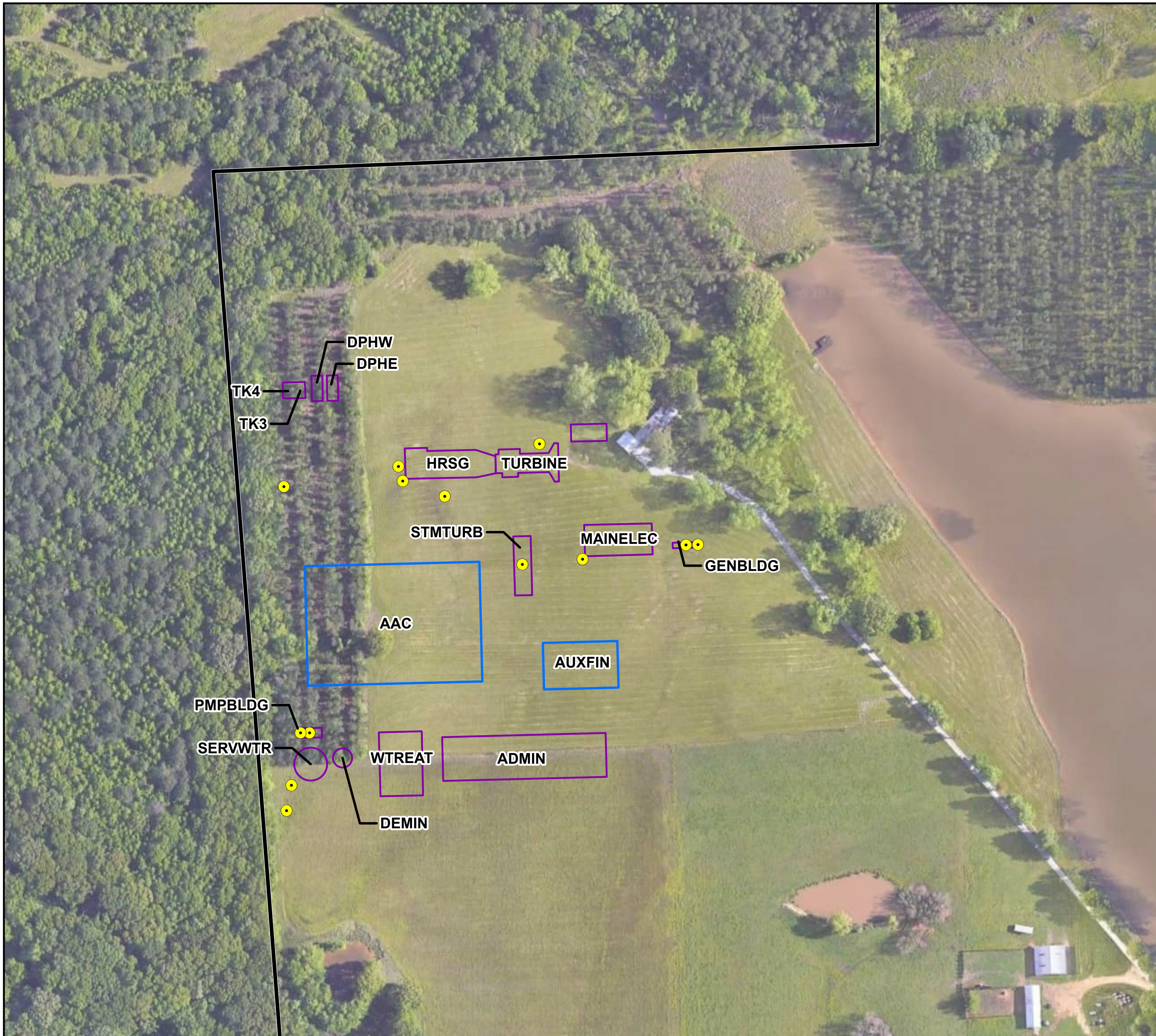
Path: G:\Projects\0_Entergy\0257075_Lakeover_MCAPS\Apps\PRO\257075_Lakeover_AIR.aprx

APPENDIX C POTENTIAL DOWNWASH STRUCTURES

ENTERGY MISSISSIPPI, LLC
MADISON COUNTY ADVANCED POWER STATION

DOWNWASH STRUCTURES

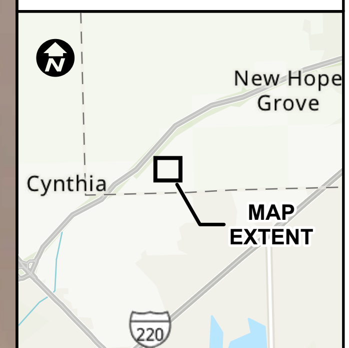
MADISON COUNTY, MISSISSIPPI



Legend

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

Aerial Source:
Google Earth Pro Basemap



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Feet

POWER ENGINEERS

Date: 10/22/2025

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APPENDIX D AREA MAP

Legend

Facility Boundary

3000' Radius

0 1,000 2,000
Feet

ENTERGY MISSISSIPPI, LLC
MADISON COUNTY
ADVANCED POWER STATION

AREA MAP

MADISON COUNTY, MISSISSIPPI

POWER ENGINEERS

Date: 7/29/2025

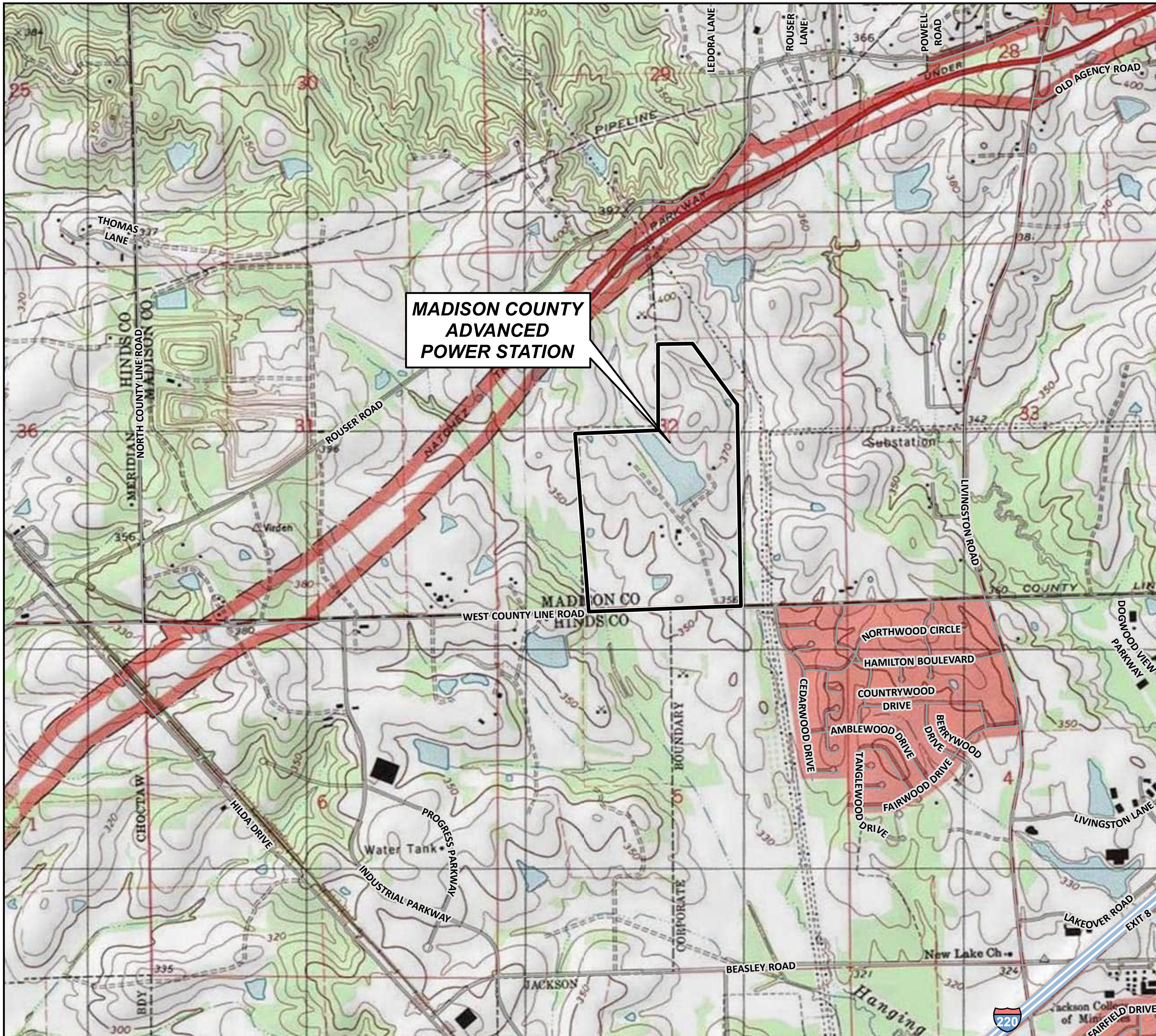
Path: G:\Projects\0_Entergy\0257075_Lakeover_MCAPS\Apps\PRO\257075_Lakeover_AIR.aprx

APPENDIX E MAP OF URBAN AND TOPOGRAPHICAL FEATURES

ENTERGY MISSISSIPPI, LLC
MADISON COUNTY ADVANCED POWER STATION

URBAN AND TOPOGRAPHICAL FEATURES

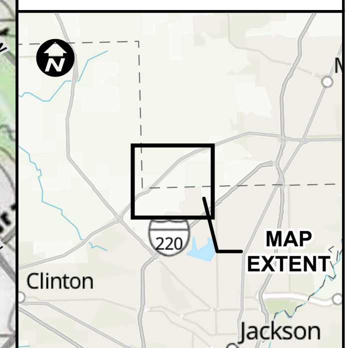
MADISON COUNTY, MISSISSIPPI



Legend

Facility Boundary

Aerial Source:
Google Earth Pro Basemap



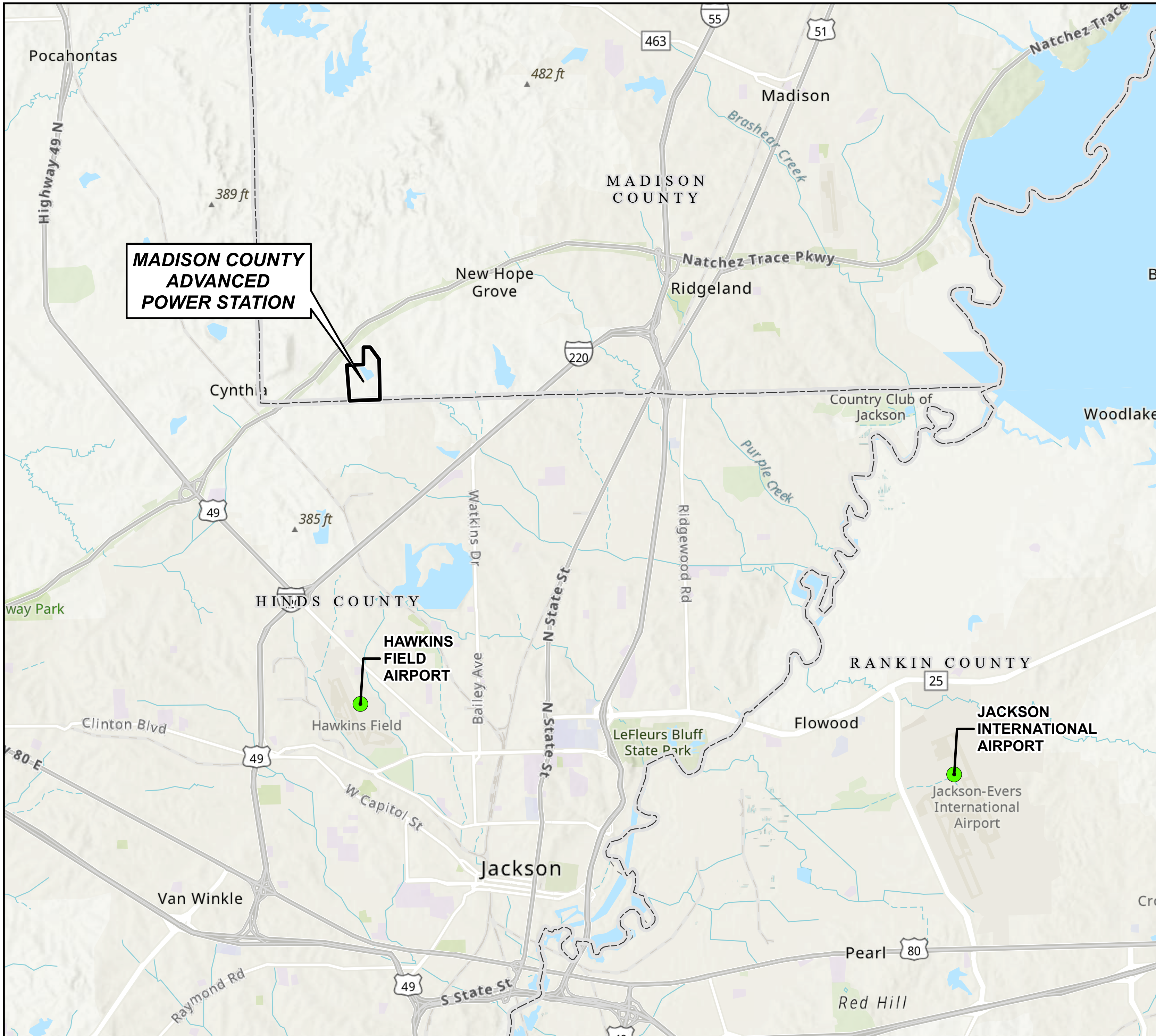
0 1,000 2,000
Feet

POWER ENGINEERS

Date: 10/27/2025

Path: G:\Projects\0_Entergy\0257075_Lakeover_MCAPS\Apps\PRO\257075_Lakeover_AIR.aprx

APPENDIX F MAP OF NEAREST METEOROLOGICAL STATIONS



ENTERGY MISSISSIPPI, LLC
MADISON COUNTY ADVANCED POWER STATION

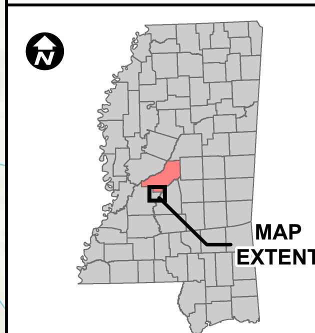
METEOROLOGICAL STATION LOCATION

MADISON COUNTY, MISSISSIPPI

Legend

- Meteorological Station Location
- Facility Boundary
- County Boundary

Aerial Source:
ESRI World Topographic Basemap



0 1 2
Miles

POWER ENGINEERS

Date: 10/27/2025

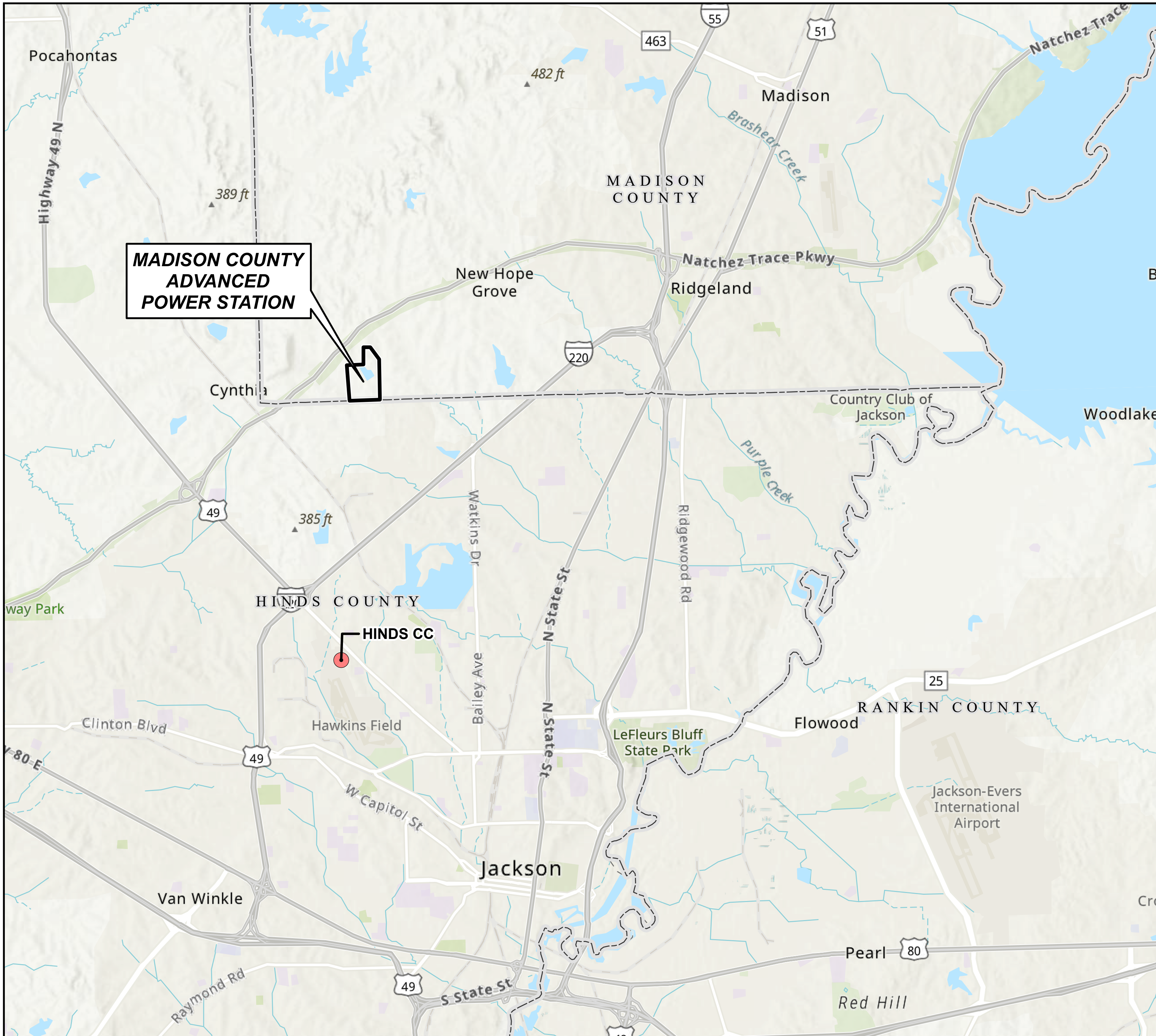
Path: G:\Projects\0_Entergy\0257075_Lakeover_MCAPS\Apps\PRO\257075_Lakeover_AIR.aprx

APPENDIX G MAP OF NEAREST MONITOR STATIONS

ENTERGY MISSISSIPPI, LLC
MADISON COUNTY ADVANCED POWER STATION

AIR MONITORING STATION LOCATION

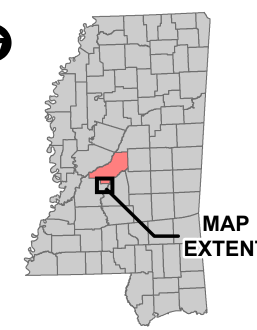
MADISON COUNTY, MISSISSIPPI



Legend

- Air Monitoring Station Location
- Facility Boundary
- County Boundary

Aerial Source:
ESRI World Topographic Basemap

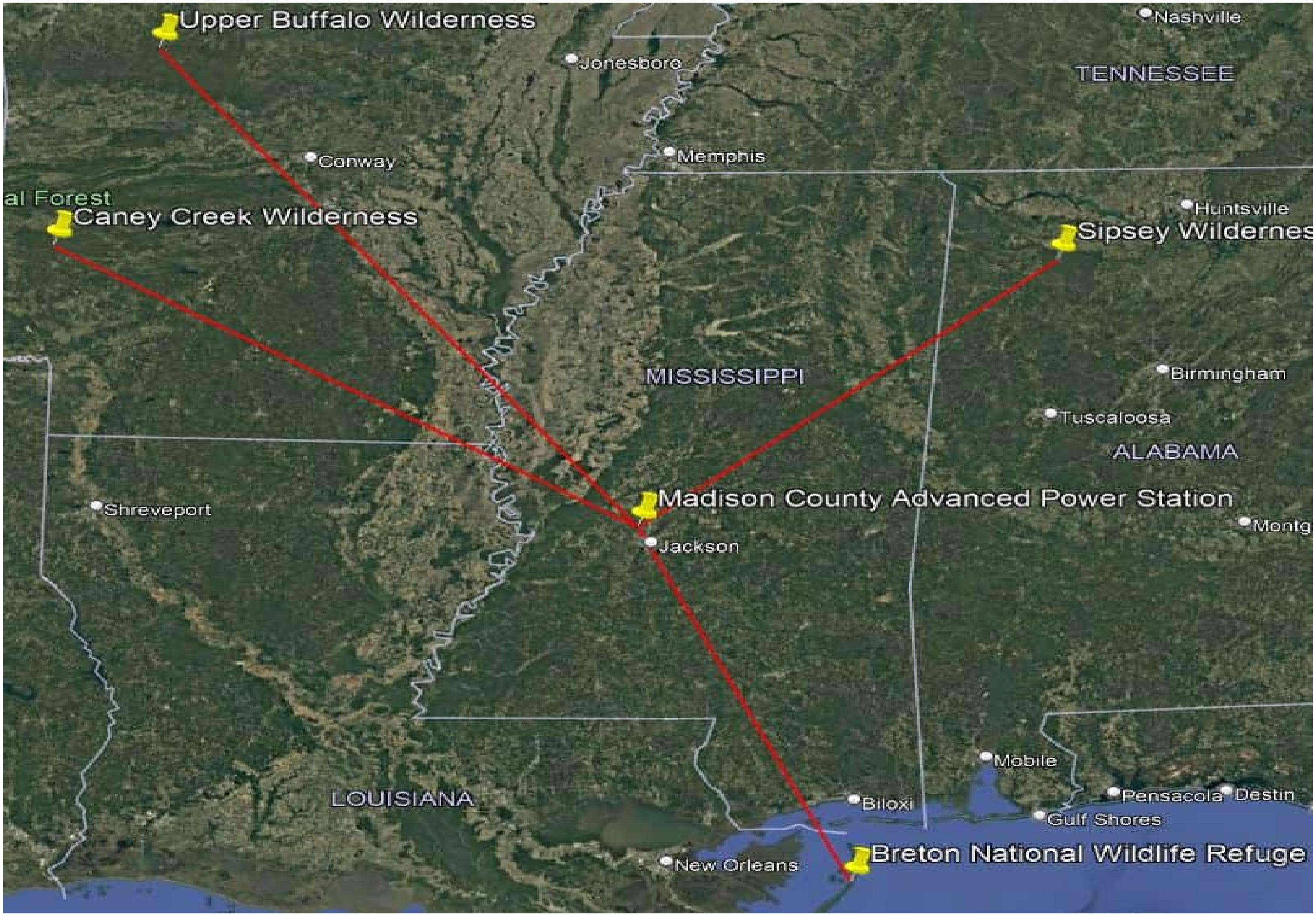


0 1 2
Miles

Date: 10/27/2025

Path: G:\Projects\0_Entergy\0257075_Lakeover_MCAPS\Apps\PRO\257075_Lakeover_AIR.aprx

APPENDIX H MAP OF NEAREST CLASS I AREAS



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.: 0257075	Date: 4/17/2025	Sheet: 1 of 1

APPENDIX I STACK PARAMETERS, PROJECT SOURCES

MODELING STACK PARAMETERS - POINT SOURCES
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

Modeling ID	Description	Location (m), NAD83		Elevation	Height	Temp	Velocity	Diameter
		Easting	Northing	(m)	(m)	(K)	(m/s)	(m)
1A_F	Combined Cycle Unit 1A - Full Load	761326.0	3588826.9	110.40	60.96	344.26	24.76	7.010
1A_M	Combined Cycle Unit 1A - Medium Load	761326.0	3588826.9	110.40	60.96	351.97	21.44	7.010
1A_L	Combined Cycle Unit 1A - Low Load	761326.0	3588826.9	110.40	60.96	351.52	20.60	7.010
1A_MSS	Combined Cycle Unit 1A - MSS Startup Actuals	761326.0	3588826.9	110.40	60.96	351.52	20.60	7.010
1A_MSSH	Combined Cycle Unit 1A - MSS Hot Startup	761326.0	3588826.9	110.40	60.96	351.52	20.60	7.010
1A_MSSW	Combined Cycle Unit 1A - MSS Warm Startup	761326.0	3588826.9	110.40	60.96	351.52	20.60	7.010
1A_MSSC	Combined Cycle Unit 1A - MSS Cold Startup	761326.0	3588826.9	110.40	60.96	351.52	20.60	7.010
NGDPHTR	Natural Gas Dewpoint Heater	761352.5	3588809.8	110.40	6.096	394.26	4.133	0.5080
EMGEN	Emergency Standby Generator	761490.4	3588782.0	110.40	4.826	799.26	91.28	0.3556
FWP	Emergency Diesel Fire Water Pump	761275.2	3588674.7	110.40	3.658	789.26	36.22	0.1524
LOV_TURB	Combustion Turbine Lube Oil Vent	761406.6	3588839.8	110.40	9.144	0	0.001	0.001
LOV_STM	Steam Turbine Lube Oil Vent	761396.9	3588770.9	110.40	9.144	0	0.001	0.001

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	761326.0	3588826.9	362.20	200	23	81.25	160
1A	1A_M	Combined Cycle Unit 1A - Medium Load	761326.0	3588826.9	362.20	200	23	70.34	174
1A	1A_L	Combined Cycle Unit 1A - Low Load	761326.0	3588826.9	362.20	200	23	67.60	173
1A	1A_MSS	Combined Cycle Unit 1A - MSS Startup Actuals	761326.0	3588826.9	362.20	200	23	67.60	173
1A	1A_MSSH	Combined Cycle Unit 1A - MSS Hot Startup	761326.0	3588826.9	362.20	200	23	67.60	173
1A	1A_MSSW	Combined Cycle Unit 1A - MSS Warm Startup	761326.0	3588826.9	362.20	200	23	67.60	173
1A	1A_MSSC	Combined Cycle Unit 1A - MSS Cold Startup	761326.0	3588826.9	362.20	200	23	67.60	173
NGDPHTR	NGDPHTR	Natural Gas Dewpoint Heater	761352.5	3588809.8	362.20	20.00	1.67	13.56	250
EMGEN	EMGEN	Emergency Standby Generator	761490.4	3588782.0	362.20	15.83	1.17	299.5	979
FWP	FWP	Emergency Diesel Fire Water Pump	761275.2	3588674.7	362.20	12.00	0.50	118.8	961
LOVCT	LOV_TURB	Combustion Turbine Lube Oil Vent	761406.6	3588839.8	362.20	30.0			
LOVST	LOV_STM	Steam Turbine Lube Oil Vent	761396.9	3588770.9	362.20	30.0			

APPENDIX J PROPOSED ALLOWABLE EMISSIONS

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 K MODELED EMISSIONS, PROPOSED PROJECT

PRELIMINARY IMPACT DETERMINATION
PROPOSED PROJECT-RELATED EMISSIONS (grams/sec)
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

Modeling ID	NOX		CO		PM10		PM2.5	
	01ST	ANN	01ST	08ST	24ST	ANN	24ST	ANN
1A_F	5.114	4.835	3.114	3.114	7.139	4.787	7.139	4.787
1A_M	3.559	0	2.167	2.167	3.970	0	3.970	0
1A_L	2.811	0	1.712	1.712	3.155	0	3.155	0
1A_MSS	12.21	0	0	0	0	0	0	0
1A_MSSH	0	0	808.2	134.8	0	0	0	0
1A_MSSW	0	0	898.5	169.2	0	0	0	0
1A_MSSC	0	1.521	937.6	227.2	0	0	0	0
NGDPHTR	0.006951	0.006951	0.02338	0.02338	0.003033	0.003033	0.003033	0.003033
EMGEN	2.212E-04	0.04424	1.0597	0.13247	0.002523	0.001383	0.002523	0.001383
FWP	1.490E-05	0.002981	0.11424	0.014280	2.720E-04	1.490E-04	2.720E-04	1.490E-04
LOV_TURB	0	0	0	0	3.812E-04	3.812E-04	3.812E-04	3.812E-04
LOV_STM	0	0	0	0	3.812E-04	3.812E-04	3.812E-04	3.812E-04

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	166.4	56.66	56.66	166.4
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	0.00302518	0.00302518	0.01325028	0.003025	0.003025	0.01325
LOV_STM	0	0	0	0	0	0	0.00302518	0.00302518	0.01325028	0.003025	0.003025	0.01325

APPENDIX L MODELED EMISSIONS, FULL IMPACTS

FULL IMPACT ANALYSIS, PSD INCREMENT
PROPOSED AND PERMITTED SITEWIDE EMISSIONS (grams/sec)
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

Modeling ID	PM2.5
	24HR (lb/hr)
1A_F	7.139
1A_M	3.970
1A_L	3.155
1A_MSS	0
1A_MSSH	0
1A_MSSW	0
1A_MSSC	0
NGDPHTR	0.003033
EMGEN	0.002523
FWP	2.720E-04
LOV_TURB	3.812E-04
LOV_STM	3.812E-04

APPENDIX M 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 N 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 O AMBIENT AIR MONITORING DATA

State of Mississippi
Air Quality Data Summary

for

Calendar Year 2024

Mississippi Department of Environmental Quality

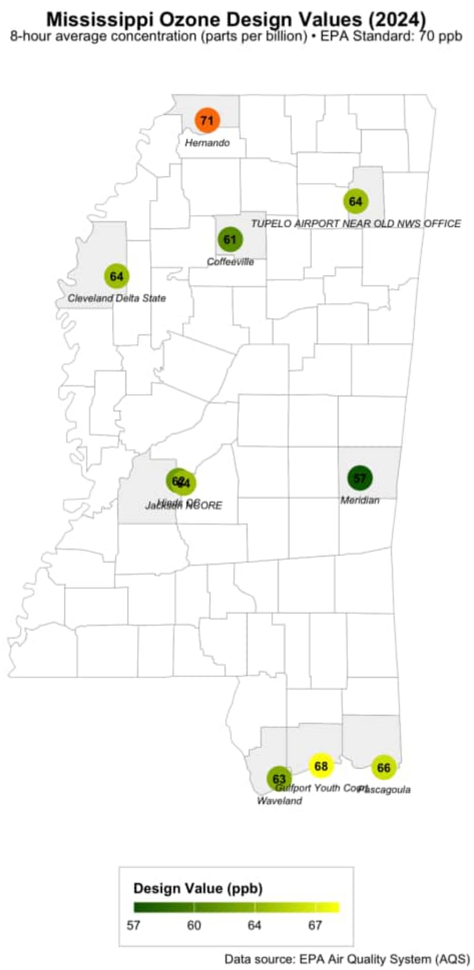
Ozone Standard

There is one primary and secondary ozone standard – the 8-hour average. MDEQ monitors ozone continuously from March 1st through October 31st each year at the monitoring sites listed below. Ozone is monitored year around at our N-CORE site located in Jackson.

Primary and Secondary 8-Hour Standard-
70 ppb

The 8-hour standard is met when the 3-year average of the annual fourth highest daily maximum 8-hour average concentration (also known as the design value) is less than or equal to 0.070 parts per million (ppm) or 70 parts per billion (ppb).

Mississippi Ozone Monitoring Network (2024)



Site	County	Design Value (ppb)
Cleveland Delta State	Bolivar	64
Hernando	DeSoto	71
Waveland	Hancock	63
Gulfport Youth Court	Harrison	68
Hinds CC	Hinds	62
Jackson NCORE	Hinds	64
Pascagoula	Jackson	66
Meridian	Lauderdale	57
TUPELO AIRPORT NEAR OLD NWS OFFICE	Lee	64
Coffeeville	Yalobusha	61

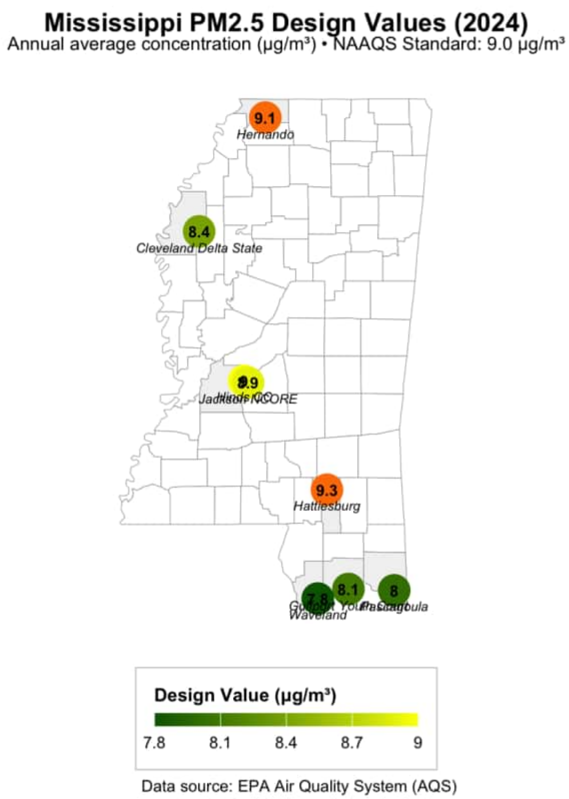
$PM_{2.5}$ Standards

There are two primary and secondary $PM_{2.5}$ standards – (1) the Annual Average and (2) the 24-Hour Average. MDEQ monitors $PM_{2.5}$ continuously at the monitoring sites listed below.

Primary and Secondary Annual Standard – 9.0 µg/m^3 and 15.0 µg/m^3, respectively

The annual average primary standard is met when the three-year average of the annual averages does not exceed 9.0 micrograms per cubic meter (µg/m^3). The annual average secondary standard is met when the three-year average of the annual averages does not exceed 15.0 micrograms per cubic meter (µg/m^3).

Mississippi PM2.5 Monitoring Network (2024)

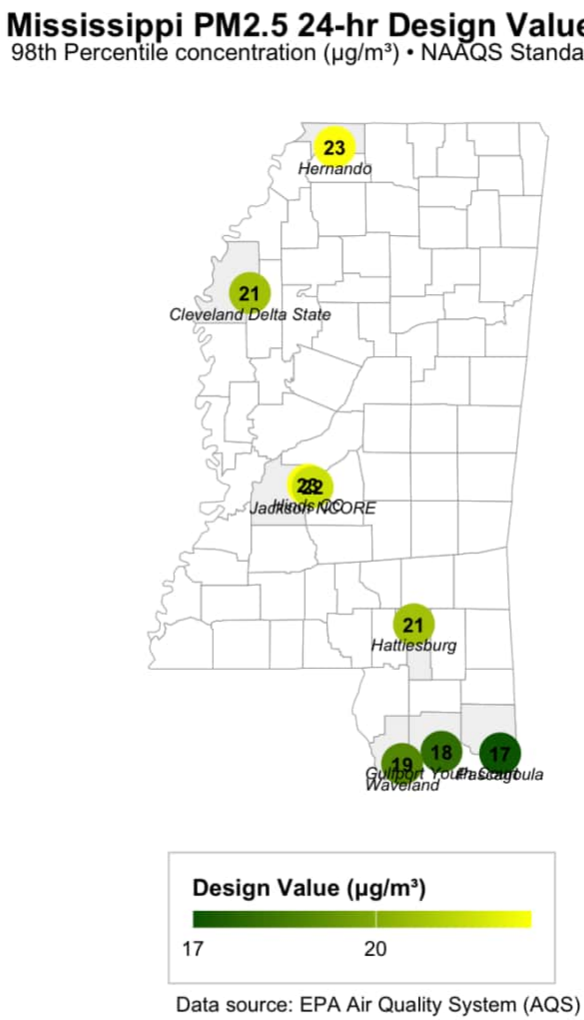


Site	County	Design Value (µg/m³)
Cleveland Delta State	Bolivar	8.4
Hernando	DeSoto	9.1
Hattiesburg	Forrest	9.3
Waveland	Hancock	7.8
Gulfport Youth Court	Harrison	8.1
Hinds CC	Hinds	9.0
Jackson NCORE	Hinds	8.9
Pascagoula	Jackson	8.0

Primary and Secondary 24-Hour Standard – 35 µg/m^3

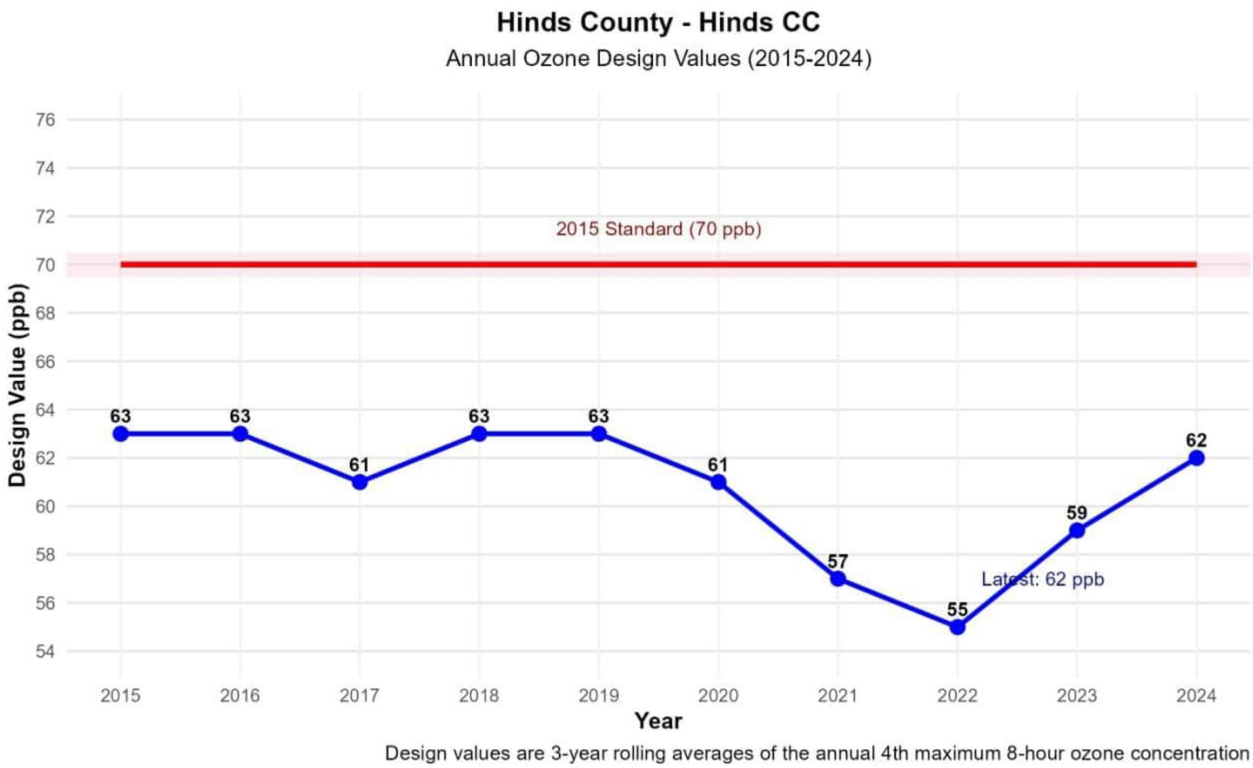
The 24-hour average standard is met when the three-year average of the annual 98th percentiles of the 24-hour averages does not exceed 35 micrograms per cubic meter (µg/m^3).

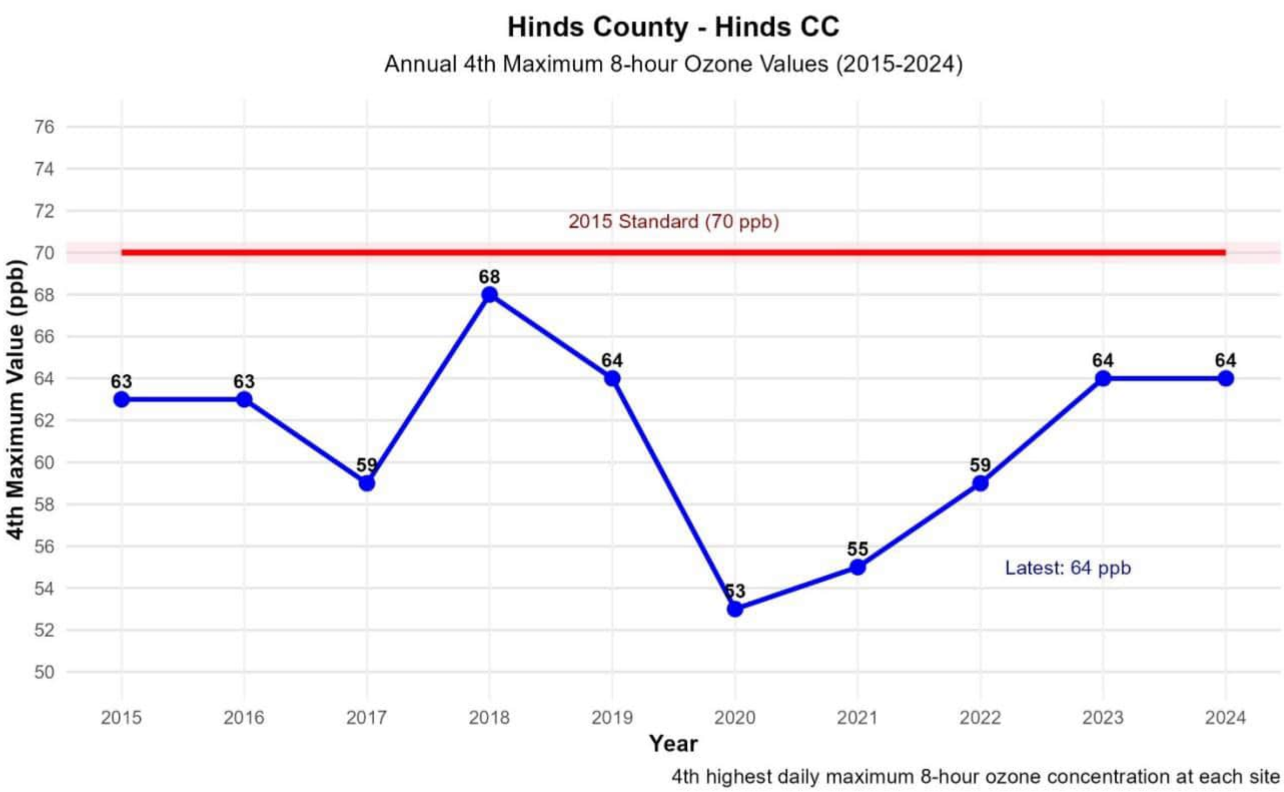
Mississippi PM2.5 24-hr Monitoring Network (2024)



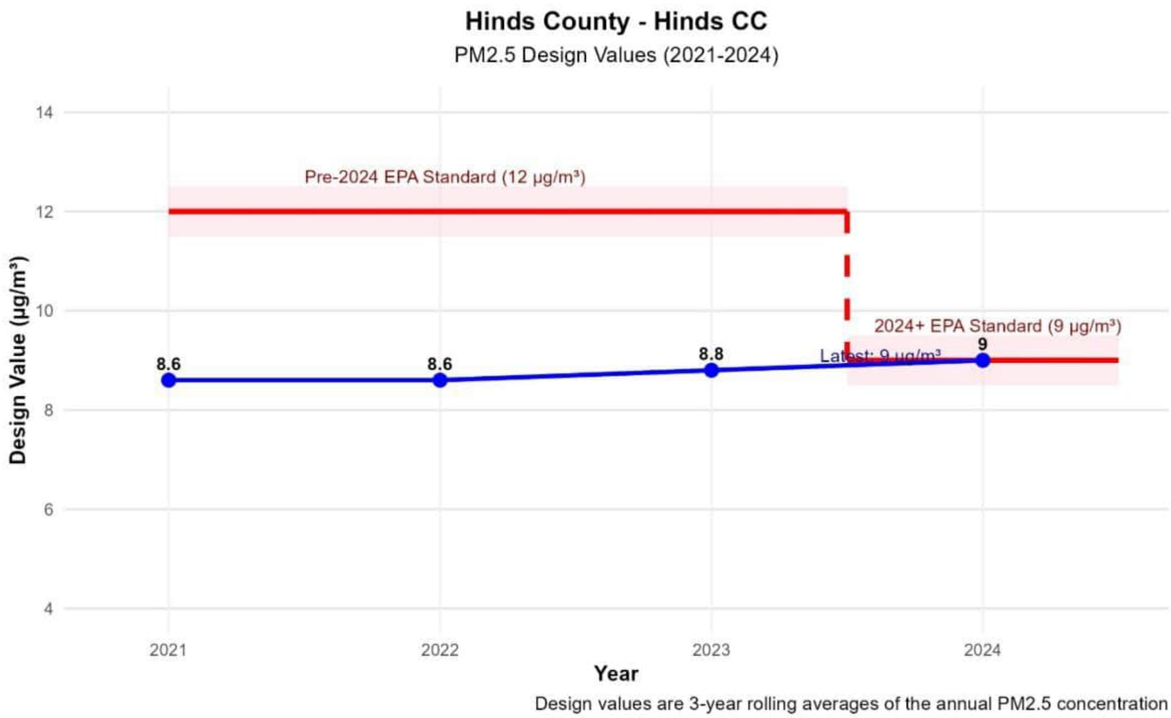
Site	County	Design Value (µg/m³)
Cleveland Delta State	Bolivar	21
Hernando	DeSoto	23
Hattiesburg	Forrest	21
Waveland	Hancock	19
Gulfport Youth Court	Harrison	18
Hinds CC	Hinds	23
Jackson NCORE	Hinds	22
Pascagoula	Jackson	17

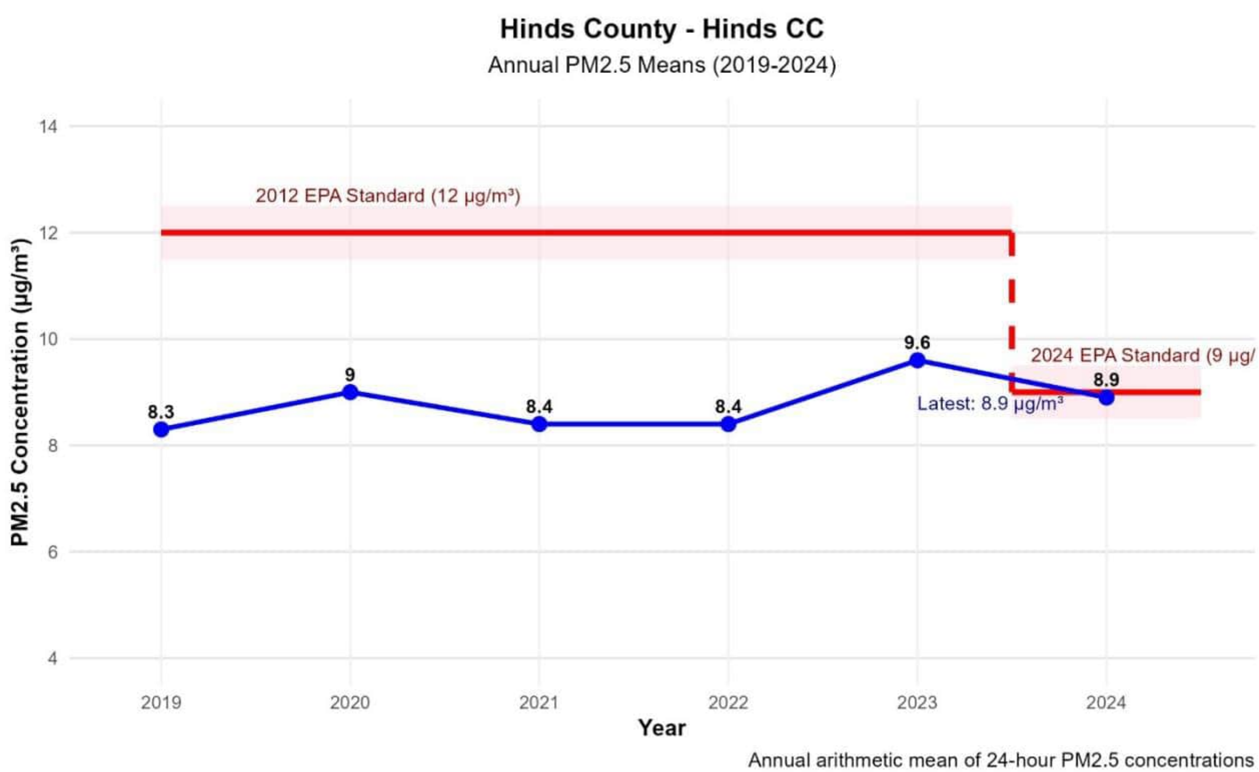
Hinds County (CC)
8-Hour Ozone



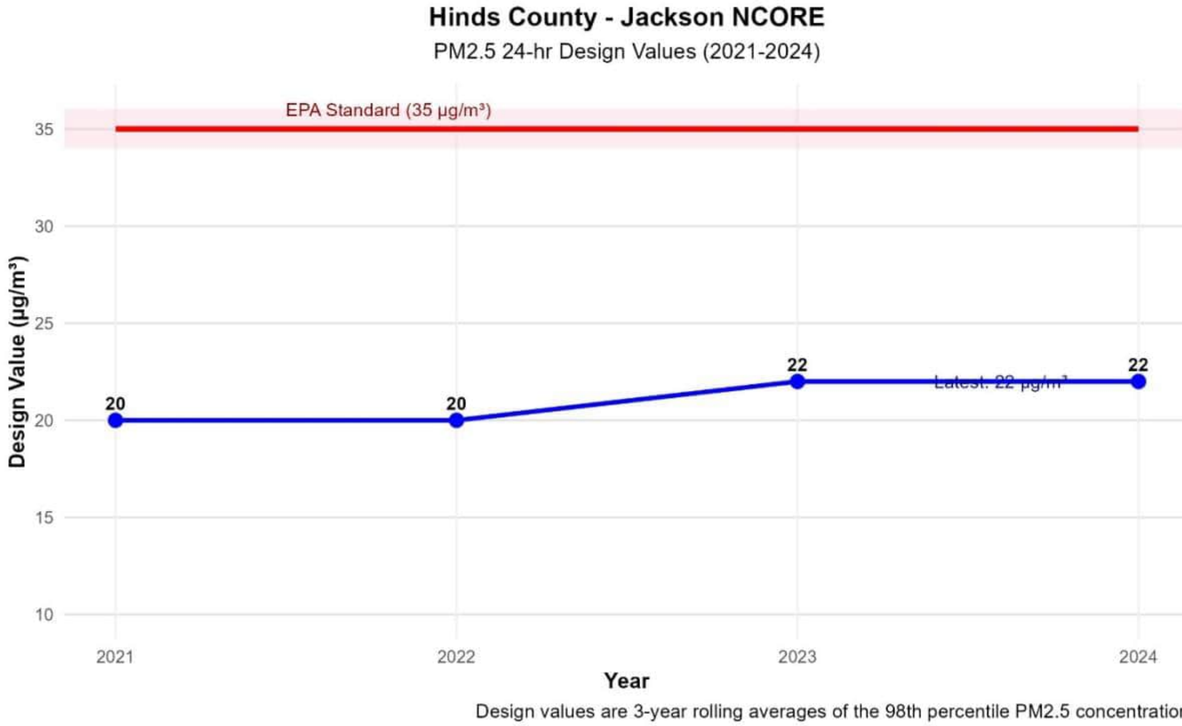


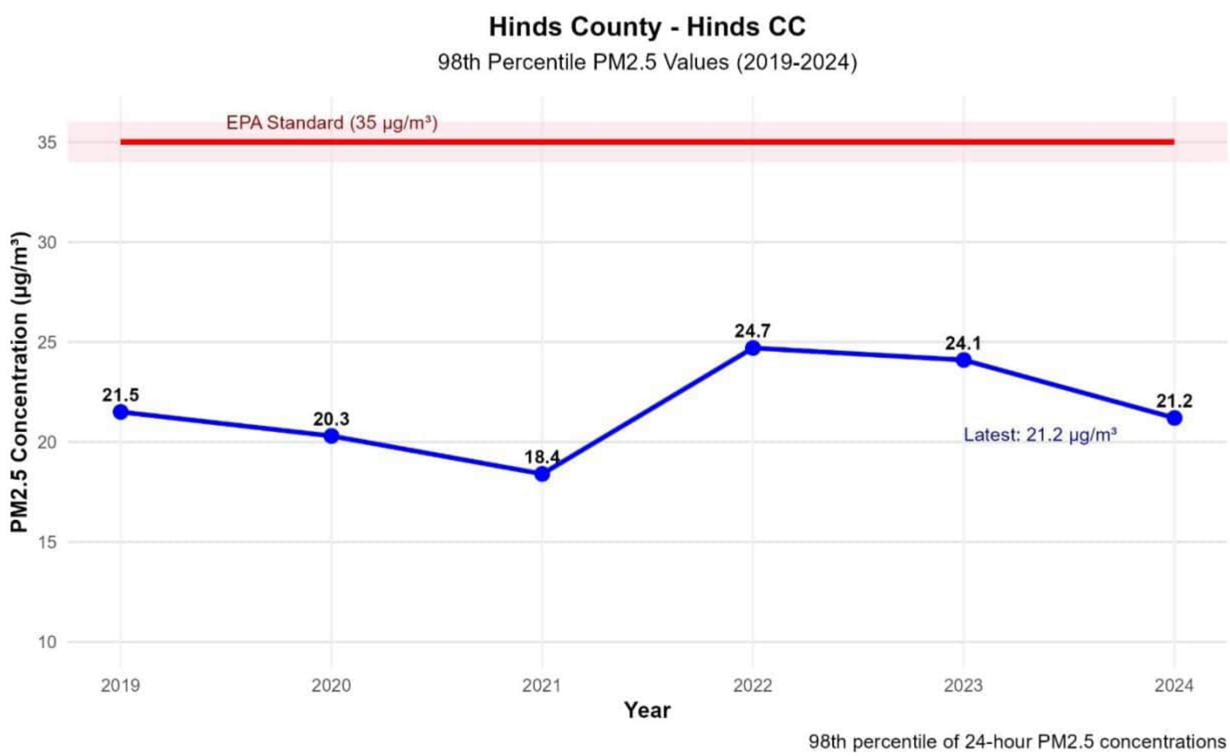
Hinds County (CC)
$PM_{2.5}$
Annual Mean





Hinds County (CC)
$PM_{2.5}$
24-Hour Average





APPENDIX P 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 Q MODELING RUN SUMMARY

MODELING RUN SUMMARY
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

TYPE OF RUN	POLLUTANT	RUN NUMBER	FILE NAME	MET YEAR	GROUP	MAXIMUM OFF-PROPERTY IMPACTS (µg/m3)							
						1-HR		8-HR	24-HR			ANNUAL	
						H1H	AVG H1H	H1H	H1H	AVG H1H	H2H	H1H	AVG
Preliminary AOI	NO2	1001	tstA02to30_2020-2024_01NOX_FULL		FULL		5.24376						
		1002	tstA02to30_2020-2024_01NOX_MID		MID		5.24185						
		1003	tstA02to30_2020-2024_01NOX_LOW		LOW		5.24086						
		1004	tstA02to30_2020-2024_01NOX_SUSDA		SUSDA		6.3408						
		1005	tstA02to30_2020_99NOX		ALL							0.22383	
		1006	tstA02to30_2021_99NOX		ALL							0.23964	
		1007	tstA02to30_2022_99NOX		ALL							0.21436	
		1008	tstA02to30_2023_99NOX		ALL							0.20817	
		1009	tstA02to30_2024_99NOX		ALL							0.21979	
	CO	1010	tstA02to30_2020-2024_01CO		FULL	114.4399							
		1011	tstA02to30_2020-2024_01CO		MID	114.4396							
		1012	tstA02to30_2020-2024_01CO		LOW	114.4394							
		1013	tstA02to30_2020-2024_01CO		SUSDH	665.3855							
		1014	tstA02to30_2020-2024_01CO		SUSDW	739.7128							
		1015	tstA02to30_2020-2024_01CO		SUSDC	771.8966							
		1016	tstA02to30_2020-2024_08CO		FULL			10.74803					
		1017	tstA02to30_2020-2024_08CO		MID			10.74652					
		1018	tstA02to30_2020-2024_08CO		LOW			10.74579					
		1019	tstA02to30_2020-2024_08CO		SUSDH			64.65934					
		1020	tstA02to30_2020-2024_08CO		SUSDW			81.10267					
		1021	tstA02to30_2020-2024_08CO		SUSDC			108.8269					
	PM10	1022	tstA02to30_2020-2024_24PM10		FULL				1.36778				
		1023	tstA02to30_2020-2024_24PM10		MID				0.92604				
		1024	tstA02to30_2020-2024_24PM10		LOW				0.92384				
		1025	tstA02to30_2020_99PM10		ALL							0.09437	
		1026	tstA02to30_2021_99PM10		ALL							0.09985	
		1027	tstA02to30_2022_99PM10		ALL							0.0946	
		1028	tstA02to30_2023_99PM10		ALL							0.09134	
		1029	tstA02to30_2024_99PM10		ALL							0.08654	

MODELING RUN SUMMARY
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

TYPE OF RUN	POLLUTANT	RUN NUMBER	FILE NAME	MET YEAR	GROUP	MAXIMUM OFF-PROPERTY IMPACTS (µg/m3)							
						1-HR		8-HR	24-HR			ANNUAL	
						H1H	AVG H1H	H1H	H1H	AVG H1H	H2H	H1H	AVG
Preliminary AOI	PM2.5	1030	tstA02to30_2020-2024_24PM25_max		FULL				1.36778				
		1031	tstA02to30_2020-2024_24PM25_max		MID				0.92604				
		1032	tstA02to30_2020-2024_24PM25_max		LOW				0.92384				
		1033	tstA02to30_2020_99PM25_max		ALL							0.09437	
		1034	tstA02to30_2021_99PM25_max		ALL							0.09985	
		1035	tstA02to30_2022_99PM25_max		ALL							0.0946	
		1036	tstA02to30_2023_99PM25_max		ALL							0.09134	
		1037	tstA02to30_2024_99PM25_max		ALL							0.08654	
		1038	tstA02to30_2020-2024_24PM25_avg		FULL					0.97556			
		1039	tstA02to30_2020-2024_24PM25_avg		MID					0.60263			
		1040	tstA02to30_2020-2024_24PM25_avg		LOW					0.59986			
		1041	tstA02to30_2020-2024_99PM25_avg		ALL								0.09313
Preliminary Near	NO2	1042	tstA02at50_2020_99NOX		ALL							0.00745	
		1043	tstA02at50_2021_99NOX		ALL							0.00911	
		1044	tstA02at50_2022_99NOX		ALL							0.00791	
		1045	tstA02at50_2023_99NOX		ALL							0.00686	
		1046	tstA02at50_2024_99NOX		ALL							0.00724	
	PM10	1047	tstA02at50_2020-2024_24PM10		FULL				0.14653				
		1048	tstA02at50_2020-2024_24PM10		MID				0.08188				
		1049	tstA02at50_2020-2024_24PM10		LOW				0.06603				
		1050	tstA02at50_2020_99PM10		ALL							0.00568	
		1051	tstA02at50_2021_99PM10		ALL							0.00699	
		1052	tstA02at50_2022_99PM10		ALL							0.00605	
		1053	tstA02at50_2023_99PM10		ALL							0.00527	
		1054	tstA02at50_2024_99PM10		ALL							0.00553	
	PM2.5	1055	tstA02at50_2020-2024_24PM25_max		FULL				0.14653				
		1056	tstA02at50_2020-2024_24PM25_max		MID				0.08188				
		1057	tstA02at50_2020-2024_24PM25_max		LOW				0.06603				
		1058	tstA02at50_2020_99PM25_max		ALL							0.00568	
		1059	tstA02at50_2021_99PM25_max		ALL							0.00699	
		1060	tstA02at50_2022_99PM25_max		ALL							0.00605	
		1061	tstA02at50_2023_99PM25_max		ALL							0.00527	
		1062	tstA02at50_2024_99PM25_max		ALL							0.00553	

MODELING RUN SUMMARY
MADISON COUNTY ADVANCED POWER STATION
RIDGELAND, MISSISSIPPI

TYPE OF RUN	POLLUTANT	RUN NUMBER	FILE NAME	MET YEAR	GROUP	MAXIMUM OFF-PROPERTY IMPACTS (µg/m3)							
						1-HR		8-HR	24-HR			ANNUAL	
						H1H	AVG H1H	H1H	H1H	AVG H1H	H2H	H1H	AVG
Full Impact, PSD Increment	PM2.5	1063	tstP02pm2524_2020_24PM25		FULL						1.14542		
		1064	tstP02pm2524_2021_24PM25		FULL						1.19769		
		1065	tstP02pm2524_2022_24PM25		FULL						1.2211		
		1066	tstP02pm2524_2023_24PM25		FULL						0.95597		
		1067	tstP02pm2524_2024_24PM25		FULL						1.03026		

APPENDIX R 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 S ELECTRONIC FILES

Outlook

[Draft] Re: Madison County Advanced Power Station (MCAPS) AQA Comment Letter

From jwhitlock@mdeq.ms.gov
To Preston Bradley <pbradley@mdeq.ms.gov>

From: Castro, David <david.castro@powereng.com>
Sent: Monday, December 8, 2025 10:40 AM
To: Preston Bradley <pbradley@mdeq.ms.gov>
Cc: Rodney Cuevas <RCuevas@mdeq.ms.gov>; Katherine Mertes <KMertes@mdeq.ms.gov>; Jeffrey Bland <JBland@mdeq.ms.gov>; Moon, Larry <larry.moon@powereng.com>; Allen, Raymond <raymond.allen@powereng.com>; White, Annisa <awhite5@entergy.com>; Halland, Jeremy <jhallan@entergy.com>
Subject: Re: Madison County Advanced Power Station (MCAPS) AQA Comment Letter

Mr. Bradley,
On behalf of Entergy Mississippi, LLC (EML), Power Engineers, Inc. submits the enclosed responses to MDEQ's comments regarding the October 27, 2025 air quality analysis (AQA) received in your December 2, 2025 email. Where appropriate, updates have been included within the attached revised AQA pages.

Please contact me if you have any additional questions regarding the modeling.

dave

From: Preston Bradley <pbradley@mdeq.ms.gov>
Sent: Tuesday, December 2, 2025 10:44 AM
To: 'david.castro@powereng.com' <david.castro@powereng.com>
Cc: Rodney Cuevas <RCuevas@mdeq.ms.gov>; Katherine Mertes <KMertes@mdeq.ms.gov>; Jaricus Whitlock <jwhitlock@mdeq.ms.gov>; Jeffrey Bland <JBland@mdeq.ms.gov>; Thomas Parker <tparker@mdeq.ms.gov>; Moon, Larry <larry.moon@powereng.com>; Allen, Raymond <raymond.allen@powereng.com>; White, Annisa <awhite5@entergy.com>
Subject: [EXTERNAL] Madison County Advanced Power Station (MCAPS) AQA Comment Letter

---

Good morning,

Attached to the email are MDEQ's comments associated with MCAPS Air Quality Analysis. Feel free to reach out if you have any questions, comments or concerns.

Preston Bradley

PBradley@mdeq.ms.gov

601-961-5385

Air Division

Environmental/Natural Resource Specialist II

-LAEmHhHzdJzBITWfa4Hgs7pbKI-GMAS

POWER ENGINEERS, INC.
1601 S MOPAC EXPRESSWAY, SUITE 325D, AUSTIN, TX 78746 USA | 512-329-5544

December 8, 2025

Mr. Preston Bradley
Environmental/Natural Resource Specialist II
Mississippi Department of Environmental Quality
Air Division
PO Box 226
Jackson, MS 39225-2261

Subject: Responses to MDEQ Comments Re: Entergy Mississippi LLC – Air Quality Analysis for the Madison County Advanced Power Station

Dear Mr. Bradley:

On behalf of Entergy Mississippi, LLC (EML), POWER Engineers, Inc. submits the enclosed responses to your comments regarding the October 27, 2025 Air Quality Analysis (AQA) in your letter dated December 2, 2025. Copies of the AQA pages affected by these comments are attached.

Your comments are included below, followed by our responses.

<u>8.2 – Off Property Sources</u>

- This section indicates that there have been no construction activities at a major source of $PM_{2.5}$ in Madison County that began October 20, 2010, so MCAPS is the only major source included in the cumulative increment consumption analysis. However, in the modeling files, the SIA for the 24-hour PM2.5 cumulative increment modeling includes receptors located in Hinds County.
    - It is recommended that MCAPS checks for increment consuming major sources within the SIA, and large sources outside the SIA, in Hinds County to be included in the cumulative inventory.
- This section also indicates this proposed project will establish the minor source baseline date for Madison County. As mentioned above, the project's SIA for 24-hour $PM_{2.5}$ cumulative increment modeling includes Hinds County.
    - It is also recommended for MCAPS to check for a minor source baseline date in Hinds County and include in the modelling increment consuming sources permitted after the minor source baseline date if it has been established.
- If additional sources are identified which should be included in the cumulative increment modeling, it is recommended that MCAPS include the secondary $PM_{2.5}$ impacts from these sources, which may be estimated using the MEPRs Teir 1 approach as discussed in Section 5.2.1 of the modelling report.

Response: AQA Section 8.2 has been updated to address this topic. As with Madison County, the online MDEQ Baseline Date Tracker indicates that there is no Minor Source Baseline date established for PM2.5 in Hinds County. Therefore, the proposed emissions associated with the MCAPS are the only emissions required to be included in the cumulative increment consumption analysis for receptors in Hinds County.

Appendix R – MERP Analysis

- The proposed annual SO_2 emissions for the maximum Class I and II results are listed as 28.94 TPY. However, in the attached excel file "MERP 081525.xlsx", the annual SO_2 emissions are listed as 30.37 TPY. Because of this discrepancy, the annual Class I and Class II $PM_{2.5}$ precursor impacts given in the Air Quality Analysis does not match the impacts provided in the attached MERP excel sheet.
    - It is recommended that MCAPS fix this discrepancy and clarify which SO_2 annual emission rate is correct.

Response: The electronic copy of the MERP analysis provided with the AQA (MERP 081525.xlsx) includes the correct annual SO_2 emission rate value. The table included as Appendix R contained draft annual SO_2 emissions from the modeling protocol document. The Appendix R table has been updated to include the final SO_2 annual emissions (30.37 TPY) which was used to estimate the annual secondary $PM_{2.5}$ impacts. The annual $PM_{2.5}$ impacts have been updated in AQA Tables 12-1, 12-2, 12-3 and 12-5 to include the updated secondary $PM_{2.5}$ contributions. The revised total annual $PM_{2.5}$ impact results continue to be less than the applicable SIL values.

If you have questions about the enclosed information, please let me know.

Sincerely,

David L. Castro
Senior Air Quality Specialist
POWER Engineers, Inc.

Enclosures

c:	Jeffrey Bland,	MDEQ
	Rodney Cuevas,	MDEQ
	Katherine Mertes,	MDEQ
	Jeremy Halland,	Entergy Services, LLC
	Annisa White,	Entergy Services, LLC
	Larry Moon, P.E.,	POWER Engineers, Inc.
	Raymond Allen,	POWER Engineers, Inc.

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 I. The proposed allowable emission rates for all MCAPS emission sources are summarized in the table provided as Appendix J. The modeled emission rates for the preliminary impact analyses are summarized in the tables provided as Appendix K. The modeled emission rates for the full impact analyses are summarized in the table provided as Appendix L.

8.2 Off-Property Sources

Based on the Preliminary Impact Determination results, full impact NAAQS modeling was not required for any pollutant. PSD increment consumption modeling was required for 24-hour $PM_{2.5}$.

The MDEQ website (MDEQ enSearch Online - PSD Baseline Date Tracker) 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 for Madison County. The 24-hour $PM_{2.5}$ Preliminary Impact Determination increment SIA results includes receptors located in Madison and Hinds Counties. The MDEQ website (MDEQ enSearch Online - PSD Baseline Date Tracker) also indicates that there is no Minor Source Baseline date established for $PM_{2.5}$ in Hinds County. EML is not aware of any construction activities at a major source of $PM_{2.5}$ in Madison or Hinds Counties that began after October 20, 2010 (the major source baseline date). Therefore, 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 was not required.

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) was followed in selecting the predicted concentrations used to determine compliance with the NAAQS. A table listing the results of each modeling run by pollutant and averaging period is included as Appendix Q to this report. Copies of all modeling input and output files are 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 was used to estimate the secondary $PM_{2.5}$ and O_3 impacts associated with the precursor emissions. The calculation is provided as Appendix R. 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 ($\mu g/m^3$)
$PM_{2.5}$	24-HOUR	0.04907
	ANNUAL	0.001316
O_3	8-HOUR	1.656 PPB

TABLE 12-2 MERP ANALYSIS RESULTS, AT 50+ KM

POLLUTANT	AVERAGING PERIOD	ESTIMATED MERP CONCENTRATION ($\mu g/m^3$)
$PM_{2.5}$	24-HOUR	0.04020
	ANNUAL	0.0008916

These estimated impacts were 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. Modeling runs numbered 1001 through 1041 in the table provided as Appendix Q represent the preliminary impact analysis modeling conducted for the proposed increases in NO_2, CO, PM_{10} and $PM_{2.5}$ allowable emissions. The ground-level concentrations and SILs are summarized in Table 12-3.

TABLE 12-3 AOI ANALYSIS RESULTS

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS AT EACH RECEPTOR (ug/m^3)		SIGNIFICANT IMPACT LEVEL (SIL) (µg/m^3)	DE MINIMIS?
NO_2	1-Hour	5-Year Average of 1st High	6.341	7.5	Yes
	Annual	1st High (of 5 Years)	0.2396	1	Yes
CO	1-Hour	1st High (of 5 Years)	771.9	2,000	Yes
	8-Hour	1st High (of 5 Years)	108.8	500	Yes
PM_{10}	24-Hour	1st High (of 5 Years)	1.368	5	Yes
PM_{10} (Increment)	Annual	1st High (of 5 Years)	0.09985	1	Yes
$PM_{2.5}$ (NAAQS)	24-Hour	5-Year Average of 1st High	1.025 (1)	1.2 (3)	Yes
	Annual	5-Year Average of 1st High	0.09445 (1)	0.13 (3)	Yes
$PM_{2.5}$ (Increment)	24-Hour	1st High (of 5 Years)	1.417 (1)	1.2 (4)	No (5)
	Annual	1st High (of 5 Years)	0.1012 (1)	0.13 (4)	Yes
O_3	8-Hour	Conservative Estimate	1.656 PPB (2)	1 PPB	No (5)

(1) Includes estimated secondary $PM_{2.5}$ impact from Section 12.1.1 MERP analysis
(2) Estimated O_3 impact from Section 12.1.1 MERP analysis
(3) NAAQS SIL
(4) PSD Increment Consumption SIL – Class II
(5) Full impact analysis required for this standard/limit, pollutant and averaging period.

Note that two distinct and unique sets of SILs are listed in Table 12-3 for $PM_{2.5}$. The $PM_{2.5}$ NAAQS SILs were established in EPA's *Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS, March 23, 2010*. There were no PSD increment consumption limits at that time. $PM_{2.5}$ PSD increment consumption SILs were introduced in EPAs' *Guidance on Significant Impact Levels for Ozone and Fine Particles in Prevention of Significant Deterioration Permitting Program, April 17, 2018*. The SILs were updated in EPA's *Supplement to the Guidance on Significant Impact Levels for Ozone and Fine Particles in Prevention of Significant Deterioration Permitting Program, April 30, 2024*. This later document summarizes all of the current $PM_{2.5}$ SILs.

The current $PM_{2.5}$ NAAQS SILs are summarized in Table 1 of the referenced 2024 guidance document. There are two NAAQS SILs (24-hour and annual). Due to the probabilistic form of the NAAQS, the EPA requires that the highest average of the modeled annuals across 5 years of meteorological data be compared to the annual SIL. Similarly, the highest average of the maximum 24-hour averages across 5 years of meteorological data is compared to the 24-hour SIL. No further NAAQS modeling is required to demonstrate compliance with the NAAQS if the predicted concentration is below the NAAQS SIL for that averaging period.

The current $PM_{2.5}$ PSD increment SILs are summarized in Table 2 of the 2024 guidance document. There are six PSD increment SILs (Class I 24-hour and annual; Class II 24-hour and annual; and Class III 24-hour and annual). The Class II SILs apply to the current analysis. Due to the exceedance-based form of the PSD increment consumption limits, the EPA requires that the maximum of the modeled annual across 5 years of meteorological data be compared to the annual SIL. Similarly, the maximum of the modeled 24-hour averages across 5 years of meteorological data is compared to the 24-hour SIL. This modeling is conducted separate from the NAAQS modeling analysis and it provides different modeling result values. No further PSD increment modeling is required to demonstrate compliance with the PSD increment limit if the predicted concentration is below the PSD increment SIL for that averaging period.

The predicted annual NO_2, 1-hour CO, 8-hour CO, 24-hour PM_{10}, annual PM_{10} and annual $PM_{2.5}$ concentrations 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 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 are 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. Modeling run numbers 1005 through 1009, and 1016 through 102 represent the preliminary modeling conducted for the proposed PSD-significant increases in NO_2, CO, and PM_{10}. The ground-level concentrations and SMC are summarized in Table 12-4.

TABLE 12-4 PSD PRE-CONSTRUCTION MONITORING REQUIREMENT ANALYSIS RESULTS

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS AT EACH RECEPTOR (ug/m^3)		SIGNIFICANT MONITORING CONCENTRATION (µg/m^3)
NO_2	Annual	1st High (of 5 Years)	0.2396	14
CO	8-Hour	1st High (of 5 Years)	108.8	575
PM_{10}	24-Hour	1st High (of 5 Years)	1.368	10

The predicted NO_2, CO, and PM_{10} concentrations are less than their respective SMCs. Pre-construction monitoring data is not 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 1030 through 1062 represent the preliminary modeling conducted for the proposed PSD-significant increases in NO_2, PM_{10}, and $PM_{2.5}$. The 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

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS AT EACH RECEPTOR (ug/m^3)		SIGNIFICANT IMPACT LEVEL (SIL) (µg/m^3)
NO_2	Annual	1st High (of 5 Years)	0.009110	0.1
PM_{10}	24-Hour	1st High (of 5 Years)	0.1465	0.3
	Annual	1st High (of 5 Years)	0.006990	0.2
$PM_{2.5}$	24-Hour	1st High (of 5 Years)	0.1867 *	0.27
	Annual	1st High (of 5 Years)	0.007882 *	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 less than their respective Class I PSD increment SILs. No additional modeling is required for these pollutants.

12.2 Full Impact Analysis

12.2.1 NAAQS Analysis Results

Based on the results of the 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 ground-level concentrations from the NAAQS modeling, the background concentrations for the project area, and the sum of the two values are 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/m^3)	BACKGROUND CONCENTRATION (µg/m^3)	NAAQS (µg/m^3)
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

POLLUTANT	AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATIONS (µg/m^3)	BACKGROUND CONCENTRATION (µg/m^3)	TOTAL (µg/m^3)	NAAQS (µg/m^3)
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 less than the NAAQS for all applicable averaging periods.

APPENDIX R 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 (TPY)	MERP (TPY)	Project Emissions / MERP	Precursor Impact, Individual		Precursor Impact, Total	
Basis*	Pollutant		(µg/m3)	(PPM)					(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	--	0.001316	--
					SO2	30.37	8,653	0.003510	0.0004563			

* 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	0.0008916
				SO2	30.37	3,797	0.00800	0.0002400	

* Modeling impacts from EPA MERPs View Qlink - https://www.epa.gov/scram/merps-view-qlik