



State of Mississippi

TATE REEVES

Governor

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

CHRIS WELLS, EXECUTIVE DIRECTOR

September 4, 2025

Shannon G. Lynn, P.E., C.M.

Principal Consultant

Trinity Consultants

1701 Centerview Drive Suite 109 Little Rock, AR 72211

Re: MZX Tech LLC - Modeling Protocol for Greenfield Simple Cycle Combustion Turbine Project

Dear Mr. Lynn,

Thank you for your organization's submission of the modeling protocol associated with the construction of three simple cycle combustion turbines in Southaven, Mississippi. The following are MDEQ's observations and review comments on the MZX Tech LLC Modeling Protocol dated August 2025, provided for your review and/or consideration. After careful review, we have identified areas that require further clarification or revision.

Treatment of Emissions for Startup/Shutdown

MDEQ has determined that the protocol remains deficient regarding the treatment of emissions during periods of startup and shutdown (SUSD). The current justification for excluding these operational periods from the air quality impact analysis is insufficient and inconsistent with Prevention of Significant Deterioration (PSD) modeling requirements.

The protocol must be revised to incorporate a complete analysis of SUSD emissions. The following comments detail the specific deficiencies and the information required for an acceptable modeling demonstration.

1. Inadequacy of "Worst-Case" Scenario and Mischaracterization of SUSD Frequency

MZX response states that SUSD events are "extremely infrequent" and thus will not be evaluated. The justification provided (a 10-minute cycle with six planned events per turbine annually) is misleading when considering the full scope of the proposed project.

New information indicates the facility will operate a total of 41 turbines. The cumulative annual SUSD operational time is as follows:

- Solar PGM130 (17 turbines): 102 hours
- Titan 350 (16 turbines): 64 hours
- ProEnergy 6000PE (8 turbines): 32 hours

The total SUSD operating time for the facility is approximately **198 hours per year**. This is a significant operational period that cannot be dismissed as infrequent. Furthermore, the modeling analysis must demonstrate compliance based on a facility's potential to emit, which includes all modes of operation.

2. Technical Deficiencies in Modeling SUSD Impacts

The selection of a "worst-case" operating scenario must account for all process conditions that could lead to maximum ground-level impacts. Periods of SUSD frequently result in higher ground-level pollutant concentrations than steady-state, full-load operations for two primary reasons:

- **Higher Emission Rates:** Combustion efficiency is typically lower during SUSD, which can lead to higher rates of products of incomplete combustion (e.g., CO, VOCs). Critically, emission control systems, such as Selective Catalytic Reduction (SCR) for NO_x control, are often not operating at optimal temperature and are therefore less effective or bypassed entirely during portions of the SUSD cycle.
- **Poor Dispersion Characteristics:** During SUSD, stack exhaust parameters (temperature and velocity) are significantly lower than the steady-state values presented in Table 2-1 of your protocol. This reduction in plume buoyancy and momentum results in substantially poorer dispersion and can lead to higher downwind concentrations, even if mass emission rates were lower.

Given that many of the pollutants triggering PSD review have short-term National Ambient Air Quality Standards (NAAQS), such as the 1-hour standards for NO₂ and SO₂, even brief periods of high emissions coupled with poor dispersion must be evaluated to ensure the protection of air quality.

3. SUSD Events (Planned vs. Unplanned)

The protocol's justification only considers a specific number of "planned" SUSD events. A comprehensive PSD analysis must account for all potential emissions, which necessarily includes "unplanned" events such as unit trips and malfunctions that require a shutdown and subsequent restart. The total number of SUSD events used in the analysis must be a realistic and enforceable representation of all SUSD activity at the facility.

Required Information and Protocol Revisions

In accordance with EPA guidance and standard modeling practice, the final permit application must include a robust justification for the SUSD conditions used in the model. MZX must revise the protocol and provide the following supporting specifications for each turbine type:

- **Emission Rate Data:** Provide detailed, time-resolved emission rate profiles (e.g., in lb/hr or g/s) for all triggered pollutants (PM₁₀, PM_{2.5}, NO_x, VOC, SO₂, CO) for the entire SUSD cycle, from initiation of startup to achievement of steady-state operation, and for the full shutdown sequence.
- **Stack Parameter Data:** Provide corresponding time-resolved profiles of stack exit temperature, velocity, and diameter for the complete SUSD cycle.
- **Control Equipment Status:** Detail the operational status and control efficiency of all air pollution control equipment during each phase of the SUSD cycle.
- **Duration and Frequency:** Provide the expected duration of each SUSD event and a technical justification for the total number of SUSD events (both planned and unplanned) that will be requested as an enforceable permit limitation.

The modeling protocol must be revised to include a methodology for evaluating these SUSD scenarios to demonstrate compliance with all applicable NAAQS and PSD increments. A simple statement that steady-state operation is "worst-case" is not acceptable without a comprehensive technical demonstration, supported by the data requested above, proving that the modeled steady-state scenarios result in higher ground-level impacts than any potential SUSD scenario for every applicable pollutant and averaging period.

Section 2.2.4 - Receptor Grid and Coordinate System

- This section of the modeling protocol describes the receptor network that will be used in the modeling. MDEQ recommends that the final modeling report includes additional justification and details regarding how ambient air was determined for the purpose of receptor placement along any unfenced areas of the ambient air boundary for the facility. Ambient air should be determined in a manner consistent with EPA's ambient air policy dated December 2, 2019.

2.3 Class II Significance and NAAQS Analysis

- In Table 2-6, for PSD Class II SILs for CO should read 2,000 $\mu\text{g}/\text{m}^3$ for 1-hour and 500 $\mu\text{g}/\text{m}^3$ for 8-hour averaging period.

2.4.2 Background

- MZX Tech has selected to use the LH Polk and Colonial Dr., Marion Site for NO_2 background values and selected to use 5 East South Str. Hernando Site for PM_{10} and $\text{PM}_{2.5}$ for background values. However, Table 1-1 Proposed Project Emissions shows that this project will trigger PSD for other pollutants. MDEQ is requesting that the facility provide background monitor for ozone as well since both NO_x and VOC as each will exceed 100 tpy.
 - Note that there is no de minimis air quality level is provided for ozone. However, any net emissions increase of 100 tpy or more of volatile organic compounds (VOCs) or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of ambient air quality data ([40 CFR 52.21\(i\)\(5\)\(i\)\(K\)](#)).
- MZX Tech states that both the Hernando site and Marion site were selected as being the closest geographically monitors to the facility/project site.
 - Proximity to the facility/project site is **not enough** justification when selecting a background monitor.
 - When selecting a background monitor and providing justification, refer to the EPA Guidance document: [Guidance on Developing Background Concentrations for Use in Modeling Demonstrations](#).

Additional Comments:

Modeling Results from Air Quality Analysis

MDEQ acknowledges receipt of the final modeling report and associated files on September 4, 2025. However, the review of modeling results is contingent upon the approval of the modeling protocol. Therefore, MDEQ will not commence its review of the submitted modeling results until all outstanding issues with the revised modeling protocol, submitted on August 21st, are resolved and the protocol is formally approved.

MZX Tech may respond to these comments with either a resubmittal of the dispersion modeling protocol addressing all deficiencies, or with a comment letter addressing all deficiencies.

These comments do not include any questions, comments, or concerns that the MDEQ or EPA Permitting sections may have. We appreciate MZX Tech's attention to these matters and look forward to receiving the requested clarifications. Should you have any questions or need further information, please do not hesitate to contact myself or PBradley@mdeq.ms.gov

Sincerely,



Rodney Cuevas, BCES
Air Quality Management Branch Manager
Mississippi Department of Environmental Quality (MDEQ)

Cc:

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Jaricus Whitlock

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Sent: Thursday, September 4, 2025 3:33 PM
To: Shannon Lynn
Cc: Jon Hill; mrao@trinityconsultants.com; brian.ketchum@trinityconsultants.com; slater.smith@trinityconsultants.com; Jeffrey Bland; Jaricus Whitlock; Preston Bradley; Katherine Mertes
Subject: MDEQ Comments on Revised Modeling Protocol - MZX Tech LLC Greenfield Project
Attachments: MZX Tech Revised Modeling Protocol Comment Letter.pdf

Mr. Lynn,

Please find attached the Mississippi Department of Environmental Quality's (MDEQ) comments regarding the revised modeling protocol for the proposed MZX Tech LLC Greenfield Simple Cycle Combustion Turbine Project, submitted on August 21, 2025.

After a thorough review, we have determined that the protocol remains deficient, most significantly in its treatment of emissions during periods of startup and shutdown (SUSD). The attached letter provides a detailed explanation of the technical deficiencies and outlines the specific data and revisions required for the protocol to be considered complete. Additional comments are also included regarding the receptor grid, PSD Significant Impact Levels (SILs), and the justification for selected background monitors.

We also acknowledge receipt of the final modeling report and associated files, which were sent today, September 4, 2025. As noted in the attached letter and in accordance with standard review procedures, MDEQ will not commence its review of the modeling results until all outstanding issues with the modeling protocol have been resolved and the protocol is formally approved.

Please review the attached letter in its entirety. We look forward to receiving your response, which may be either a resubmittal of the dispersion modeling protocol addressing all identified deficiencies or a comment letter responding to them.

Should you have any immediate questions, please feel free to contact me.

Sincerely,

Rodney Cuevas, BCES

Meteorologist

Air Quality Management Branch Manager

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