June 18, 2025

Subject: Second NRG Jewett Energy Center LLC Air Quality Analysis Protocol

Permit Application Number: 180096
New Source Review (NSR) Project Number: 392980
Air Dispersion Modeling Team (ADMT) Project Number: 9819
County: Freestone

On May 19, 2025, the Air Dispersion Modeling Team (ADMT) sent comments regarding the Prevention of Significant Deterioration (PSD) Air Quality Analysis (AQA) Protocol for NRG Jewett Energy Center LLC located in Jewett, Freestone County, Texas, dated May 2025. The applicant submitted responses to comments and updated sections **5.0** through **5.3, 6.4.3**, and **12.1.3** of the protocol, dated June 2025. The comments below represent complete comments on the first protocol, the responses, and the updated sections.

1.0 Project Identification Information – For the project identification, include Permit No. 180096 and Project No. 392980 in the final AQA. In addition, per TCEQ records, the Regulated Entity No. is 112209382.

3.0 Plot Plan – The plot plan should include labeling of all emission sources and buildings by model ID as represented in the AQA. See Appendix P of the Air Quality Modeling Guidelines (APDG 6232) for a complete list of all plot plan requirements.

4.0 Area Map – If the site fence line and property line used in the PSD and minor NSR analyses are different, an updated area map depicting both the fence line and property line should be provided with the final submittal. See Appendix P of APDG 6232 for a complete list of all area map requirements.

5.0 Air Quality Monitoring Data – The protocol states that based on draft Preliminary Impact Determination results, background ambient air concentration data will be required for NO_2, $PM_{2.5}$ and O_3. If the preliminary results change and the model predictions of other pollutants/averaging times are greater than or equal to an applicable de minimis level, then a revised protocol will need to be submitted to the TCEQ and EPA Region 6 that includes a discussion on how off-property sources will be evaluated, as well as the monitor selected for the background concentrations.

5.1 Available Background Concentrations – Table 5-1 of the protocol indicates the most-recent complete NO_2 monitoring data is 2020-2022. Note that the most recent complete NO_2 monitoring data is 2022-2024.

5.2 Representativeness of the Selected Monitoring Stations – PSD Pollutants – In the absence of a monitor in the project county, the location of the proposed monitor site relative to the project site still needs to be considered in determining representative monitors to account for the regional aspect. It is important that the applicant consider the regional aspect when selecting a representative monitor if there are representative monitors in the area of the project. Based on the table provided in Appendix O "PROJECT AND MONITOR AREA CHARACTERISTICS", the Corsicana Airport monitor is suitable to be used in $PM_{2.5}$ and NO_2 full NAAQS analyses, given that the applicant will include all applicable $PM_{2.5}$ and NO_X emissions within the vicinity of the project site in the full impact NAAQS modeling analyses. Using the Corsicana Airport monitor will account for the regional aspect of the background concentrations since the monitor site is located in the general area of the project site. The second quarter of 2023 NO_2 monitoring data does not meet the completeness criteria with more than 50% of the monitoring data are missing for the quarters, however, since the background concentrations for the incomplete quarters are comparable to the 2022 and 2024 background concentrations for the same quarter, it is appropriate to use monitoring data from this monitor site. As for the $PM_{2.5}$ pre-application analysis, it is reasonable to use the Calaveras Lake monitor to meet the pre-application requirements.

5.2.4 Nearby Source Emissions – The protocol states that due to the proximity to the JEC site, all applicable $PM_{2.5}$ and NO_X emissions from the NRG Power Texas LLC and NUCOR Corporation facilities will be included in the full impact NAAQS modeling analysis. Note that RN100832104 and RN103937173 are within the NRG Power Single Property Line Designation and any emissions from these RNs should be included in the full impact NAAQS modeling analysis, as applicable.

5.2.5 Site and Monitoring Station Area Characteristics – As noted above, based on the table provided in Appendix O "PROJECT AND MONITOR AREA CHARACTERISTICS", the Corsicana Airport monitor is suitable to be used in $PM_{2.5}$ and NO_2 full NAAQS analyses, given that the applicant will include all applicable $PM_{2.5}$ and NO_X emissions within the vicinity of the project site in the full impact NAAQS modeling analyses.

5.3 PSD Ambient Monitoring Requirement – The protocol notes that based on the draft Preliminary Impact Determination results, compilation of representative monitoring data is not required for NO_2, SO_2, CO, or PM_{10}. Be aware that if the modeled concentrations are greater than the SMC for these pollutants, a revised protocol that discusses the preconstruction monitoring analysis will need to be submitted prior to submitting the AQA.

As noted above, for $PM_{2.5}$ pre-application analyses, it is reasonable to use the Calaveras Lake monitor to meet the pre-application requirements. Also, it is reasonable to use Corsicana Airport monitor to meet the pre-application requirements for ozone.

6.2 Off Property Sources - The approach to develop the off-property inventory by utilizing the TCEQ's Air Permits Allowable Database (APAD) is reasonable. APAD may be incomplete or not up to date. Therefore, ADMT recommends that the applicant review the retrievals for completeness and accuracy prior to conducting any modeling. In addition, clearly identify and justify any changes to the retrieval sources. If the applicant is aware of data not contained in the retrieval, such as recently issued permitted facilities, the data should be included as applicable.

Any changes to data or exclusion of sources must be clearly documented and justified. Provide any retrieval files that were obtained from APAD and all supporting materials with the AQA.

6.2.2 PSD Increment Consumption Analysis Sources – The protocol states that based on the draft Preliminary Impact Determination results, full impact PSD increment consumption modeling may be required for PM_{10} and $PM_{2.5}$. If the preliminary results change and the model predictions of other pollutants/averaging times are greater than or equal to an applicable de minimis level, then a revised protocol will need to be submitted to the TCEQ and EPA Region 6 that includes a discussion on how off-property sources will be evaluated.

6.4 Stack Parameter Justification – Include justification for the volume source parameters (release heights and initial lateral and vertical dimensions) in the AQA. Additionally, the modeled footprints for the volume sources have aspect ratios greater than 2:1. For the volume sources with a greater than 2:1 aspect ratio, multiple volume sources should be relied on. Please address this with the final modeling submittal.

6.4.3 Operating Load Levels – The approach for determination of the worst-case operating scenarios is reasonable. Provide the full documentation in the final submittal.

6.4.10 NO_2 to NO_x Conversion – Please be aware if Ambient Ratio Method - 2 (ARM2) is used, there are model limitations when using the ARM2 option and source groups. If source groups are to be used, model each source group in a separate run. If a Tier III method is used, a revised protocol must be submitted that includes the methodology proposed along with full documentation and technical justification for the associated model input parameters.

7.2.1 Modeled Emission Rates for Precursors (MERPs) Analysis – The project emissions in this section were not consistent with the project emissions used in the calculations in Appendix M of the protocol. Address this inconsistency in the final submittal.

For the annual $PM_{2.5}$ secondary analysis, the calculations in Appendix M of the protocol used another hypothetical source instead of the Henderson source. Address this inconsistency in the final submittal.

7.2.2 Area of Significant Impact (AOI) Analysis – The protocol states that preliminary impact determination modeling will also be conducted for SO_2 emissions for the State NAAQS analysis. Based on section 2.1 of the protocol, Type of Permit Review, PSD review is triggered for SO_2. In the final AQA, the documentation regarding SO_2 should be consistent across all sections.

Note that for $PM_{2.5}$ analyses, the estimated secondary $PM_{2.5}$ impacts should be considered in the determination of the area of impact (AOI) receptors for the $PM_{2.5}$ full impacts analyses. When determining significant receptors to include in the cumulative analysis, add the contributions associated with the secondary $PM_{2.5}$ impacts to the modeling results associated with the direct $PM_{2.5}$ emissions on a receptor-by-receptor basis. Then identify receptors with total predictions greater than or equal to the SIL and use these receptors in the cumulative modeling analyses. Note that this demonstration will need to be conducted for both the NAAQS and Increment analyses.

7.2.3 PSD Pre-Application Analysis – The protocol states that preliminary impact determination modeling will be conducted for PSD-significant emissions of NO_2, CO, and PM_{10} for comparison with the SMCs. Based on section 2.1 of the protocol, Type of Permit Review, PSD review is triggered for SO_2. In the final AQA, the documentation regarding SO_2 should be consistent across all sections.

7.3.2 PSD Increment Consumption Analysis – The protocol states that as discussed in Section 2.1, PSD applies to the proposed emissions of NO_2, PM_{10}, and $PM_{2.5}$. Based on section 2.1 of the protocol, Type of Permit Review, PSD review is triggered for SO_2. In the final AQA, the documentation regarding SO_2 should be consistent across all sections.

10.2 Full Impact Modeling Receptor Grids – As noted above, for $PM_{2.5}$ analyses, the estimated secondary $PM_{2.5}$ impacts should be considered in the determination of the AOI receptors for the $PM_{2.5}$ full impacts analyses. When determining significant receptors to include in the cumulative analysis, add the contributions associated with the secondary $PM_{2.5}$ impacts to the modeling results associated with the direct $PM_{2.5}$ emissions on a receptor-by-receptor basis. Then identify receptors with total predictions greater than or equal to the SIL and use these receptors in the cumulative modeling analyses. Note that this demonstration will need to be conducted for both the NAAQS and Increment analyses.

11.0 Meteorological Data – The proposed emission sources are located in Freestone and Leon Counties. Provide sufficient justification on why the TCEQ pre-processed meteorological data set associated with Freestone County was used over TCEQ pre-processed meteorological data set associated Leon County.

12.1.1 Modeled Emission Rates for Precursors (MERPs) Analysis Results – The results for the 8-hr O_3 modeled emission rates for precursors (MERPs) in Table 12-3 (2.766 ppb) is not consistent with the calculations in Appendix M of the protocol (2.563 ppb). Additionally, Appendix M reports results in ppm instead of ppb. Address this discrepancy with the final submittal.

12.1.2 Area of Significant Impact (AOI) Analysis Results – On January 27, 2025, the secondary SO_2 NAAQS revisions went into effect. With the revisions, the 3-hr SO_2 NAAQS has been replaced with an annual standard and does not need to be documented. Be aware that EPA has provided guidance (https://www.epa.gov/system/files/documents/2024-12/secondary-so2-naaqs-psd-memo-12-10-24.pdf) on an alternative demonstration approach to satisfy the new annual standard as long as a 1-hr demonstration is provided.

Note that the 3-hr, 24-hr, and annual SO_2 increment need to be addressed. In the final submittal, address the 3-hr, 24-hr, and annual SO_2 increment analyses.

Be aware of model limitations when using a concatenated meteorological data set with multiple averaging times in the same model run. For example, when modeling NO_2 with a concatenated five-year meteorological data set in AERMOD and both the 1-hr and annual averaging times are selected, AERMOD will compute five-year average concentrations for both averaging times. This is not appropriate for the NO_2 annual averaging time.

Note that since PSD review is triggered for SO_2, five-years of meteorological data should be used for SO_2, and the form of the 1-hr SO_2 GLCmax is the five-year average of the 1st high.

The result for 8-hr O_3 in Table 12-3 is not consistent with the calculations in Appendix M of the protocol. Address this discrepancy with the final submittal.

12.1.3 PSD Pre-Application Analysis Results – The protocol state that based on draft modeling results, the predicted NO_2, CO, SO_2 and PM_{10} concentrations are expected to be less than their respective SMCs. Pre-construction monitoring data will not be required for these pollutants. Be aware that if the modeled concentrations are greater than the SMC for these pollutants, a revised protocol that discusses the preconstruction monitoring analysis will need to be submitted prior to submitting the AQA.

12.2.1 NAAQS Analysis Results – Note that the most recent monitoring data (2022-2024) should be used for background concentrations.

As noted above, on January 27, 2025, the secondary SO_2 NAAQS revisions went into effect. With the revisions, the 3-hr SO_2 NAAQS has been replaced with an annual standard and does not need to be documented. EPA has provided guidance (https://www.epa.gov/system/files/documents/2024-12/secondary-so2-naaqs-psd-memo-12-10-24.pdf) on an alternative demonstration approach to satisfy the new annual standard as long as a 1-hr demonstration is provided.

Note that the current primary NAAQS for the annual $PM_{2.5}$ averaging period is 9 $\mu g/m^3$, not 12 $\mu g/m^3$. Additionally, for any pollutant and averaging period that are below the SIL threshold, information for the full NAAQS analysis do not need to be reported. Update the information in Table 12-6 and 12-7 with the final submittal.

The results for the 8-hr O_3 in Table 12-7 is not consistent with the calculations in Appendix M of the protocol. Address this discrepancy with the final submittal.

12.2.4 State Health Effects Analysis Results – The pollutants and the conclusions documented in the protocol are not consistent with the submitted EMEW and MERA analyses. Address the discrepancies with the final submittal.

12.3 Additional Impacts Analysis - TCEQ follows 40 Code of Federal Regulations § 52.21(p) which requires the TCEQ to provide written notice of any permit application for a proposed major stationary source which may affect a Class I area to the Federal Land Manager and the Federal official charged with direct responsibility for management of any lands within any such area. EPA, through applicable guidance, has interpreted the meaning of the term “may affect” to include all major source or major modifications which propose to locate within 100 km of a Class I area. The applicant may contact the applicable Federal Land Manager to discuss any potential Class I analyses for air quality related values.

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