## I. Summary

On August 4, 2015, the United States Environmental Protection Agency (EPA) published in the *Federal Register* (80 FR 46271) a Notice of Data Availability (NODA) of the updated ozone transport modeling data for the 2008 Ozone National Ambient Air Quality Standard (NAAQS). The Texas Commission on Environmental Quality (TCEQ) provides the following comments on this notice and the modeling.

## II. Comments

### A. General Comments.

#### A.1 The TCEQ will provide comment on the appropriate threshold level for determining significant contributions when the EPA solicits comment on the proposed federal implementation plan to address interstate ozone transport for the 2008 ozone NAAQS, anticipated in December 2015.

Under the Cross-State Air Pollution Rule (CSAPR), the EPA used a contribution screening threshold of 1% of the NAAQS to identify upwind states in the eastern United States that may significantly contribute to downwind nonattainment and/or interfere with maintenance in another state. Although the EPA is not proposing or taking comment in this NODA on whether the 1% threshold is appropriate to apply for purposes of 2008 ozone NAAQS, the NODA states that the EPA will take comment on the appropriate threshold in the upcoming rulemaking proposal to address interstate ozone transport for the 2008 ozone NAAQS. The TCEQ looks forward to the opportunity to comment on the appropriate threshold for significant contribution when the rulemaking is proposed.

#### A.2 Using the attainment deadline for moderate nonattainment areas as the projected analysis year is not appropriate, and the EPA should instead select a projected analysis year for each downwind site based on the actual attainment date that applies to that site.

The EPA selected 2017 as the projected analysis year for identifying sites with nonattainment and maintenance problems and determining interstate transport contributions to those sites. The EPA indicates in the NODA that 2017 was selected to coincide with the attainment date for moderate nonattainment areas under the 2008 ozone NAAQS.

In evaluating interstate transport for the 2008 ozone NAAQS, as well as future NAAQS, the EPA should select the projected analysis year for each site based on the attainment date that actually applies to that site rather than selecting a blanket analysis year for all areas. Selecting a projected analysis year that is not specific to the nonattainment designation for each downwind site could result in over-control of upwind states. For example, if a state is identified as contributing to a serious nonattainment area and is required to make emission reductions based on a moderate area attainment deadline, the upwind state would be required to reduce emissions years earlier than the downwind state would be required to implement controls to meet its own attainment deadline. The EPA should select the projected analysis year based on the actual attainment deadlines for each area and consider the time given to downwind areas to implement controls.

### B. Emissions Inventory.

#### B.1 The TCEQ has updated 2011 area source oil and gas emissions estimates for several source categories based on research studies completed after the 2011 national emissions inventory (NEI) submission deadline and will provide this data to the EPA. The EPA should revise its 2011 base-year inventory to incorporate these updates.

Specifically, the TCEQ area source inventory categories with the largest changes in emissions from the inventory originally submitted to the EPA are hydraulic pump engines, compressor engines, and heaters. The updates to the 2011 TCEQ area source emissions inventory result in a 12.1% increase in nitrogen oxides (NOX) emissions estimates and a 1.6% decrease in volatile organic compound (VOC) emissions estimates.

Hydraulic pump engine emissions estimates were updated based on the 2014 report *Specified Oil and Gas Well Activities Emissions Inventory Update*. In this report, developed by Eastern Research Group (ERG) for the TCEQ, updated region-specific emissions factors and equipment profiles for hydraulic pump engines were developed for eight geographic areas of Texas based on survey data gathered during 2014.

Compressor engine emissions estimates for the Dallas-Fort Worth (DFW) area were updated based on area-specific data obtained from the Barnett Shale Special Inventory. The TCEQ conducted the Barnett Shale Special Inventory in 2011, obtaining data from over 8,000 sites that operated in the Barnett Shale in 2009, including information from over 1,850 compressor engines. This compressor engine data was combined with emissions control requirements from the 30 Texas Administrative Code Chapter 117 NOX rules to develop updated compressor engine profiles and emissions factors for the DFW 2008 eight-hour ozone standard nonattainment counties. This data was also used to develop updated compressor engine profiles and emission factors for the Barnett Shale attainment counties as well as the East Texas area, which were previously incorporated in the compressor engine emissions estimates submitted for the 2011 NEI.

Heater emissions estimates were updated based on the 2013 report *Upstream Oil and Gas Heaters and Boilers*. In this report, developed by ERG for the TCEQ, updated region-specific equipment profiles for heaters were developed for eight geographic areas of Texas based on survey data gathered during 2013. In addition, an updated heater NOX emissions factor was selected based on a literature review. The TCEQ will supply this data by October 23, 2015, using the EPA’s external file transfer protocol (FTP) site for inclusion in the ozone transport modeling platform.

#### B.2 The method used by the EPA to develop the 2017 area source oil and gas emissions inventory may underestimate emissions for counties in basins that have experienced significant increases in production in the last few years, while counties in basins that have had relatively flat production may be overestimated. The TCEQ encourages the EPA to revise its approach to forecasting oil and gas emissions using more recent data.

The EPA appears to have developed 2017 area source oil and gas emissions inventory estimates using a method based upon the United States Department of Energy’s 2013 or 2014 Annual Energy Outlook (AEO) report while also applying additional VOC controls to account for New Source Performance Standards (NSPS) reductions. The AEO classifies the nation’s oil and gas production areas into six large geographic regions and develops its forecast for each of these regions. Texas itself is classified under three different regions that encompass multiple oil and gas basins with differing production levels. Forecasting 2017 emissions based upon large geographic areas overlooks basin-level production trends and distorts county-level projections. The AEO regional approach to forecasting emissions does not provide the necessary resolution for several of Texas’ largest basins and their corresponding shale plays. For example, the AEO Gulf Coast region includes the Eagle Ford Shale area, the Western Gulf Basin, and the East Texas Basin, three areas of Texas that have seen vastly different amounts of changes in drilling and production over the last five years. The Eagle Ford Shale has seen a large amount of drilling and a significant increase in production since 2011, while the East Texas Basin initially saw an increase in drilling and production that peaked around 2012-2013 but has since decreased to around 2011 levels. The rest of the Western Gulf Basin production has remained relatively flat. The AEO approach, which uses a single set of projection factors for these basins, likely results in an underestimation of 2017 emissions for the Eagle Ford Shale counties but an overestimation of 2017 emissions for the Western Gulf Basin.

Similarly, the AEO Southwest region includes the Permian Basin, which has experienced a large amount of drilling and a significant increase in production since 2011, and the Barnett Shale, which initially saw an increase in drilling and production that peaked around 2012, but has now decreased below 2011 levels. Again the AEO approach, which uses a single set of projection factors for these basins, likely results in an underestimation of 2017 emissions for the Permian Basin counties and an overestimation of 2017 emissions for the Barnett Shale counties. The TCEQ encourages the EPA to revise its approach to forecasting oil and gas emissions using more recent data, as detailed in TCEQ Comment B.3.

#### B.3 The EPA should account for the impact of current oil and gas prices on the projected 2017 oil and gas production and other upstream emissions estimates for both point and area sources. Gas well drilling has decreased statewide in Texas beginning in 2012 due to continuing low natural gas prices. A significant decrease in oil well drilling has occurred over the past year due in part to declining oil prices. These decreases in drilling will result in declining future production. Therefore, the 2017 oil and gas growth factors should be adjusted to account for this decrease.

According to the Baker Hughes website that tracks drilling rigs, as of July 31, 2015, there are approximately 375 active drilling rigs in Texas, a 58% decreasefrom the previous year, when there were approximately 900 active drilling rigs in Texas. This significant decline in drilling will lead to statewide production decreasing through 2017. This decline in drilling directly corresponds to volatile crude oil prices that, as of August 14, 2015, reached their lowest front-month price since March 2009. To more accurately account for this drop in drilling, the EPA should at a minimum freeze production at 2014 levels for the 2017 projections. This approach should provide a reasonable estimate of 2017 production that accounts for decreasing drilling activity.

#### B.4 The TCEQ has updated 2011 non-road mobile source railroad emissions estimates for several source categories based upon reductions from Texas-specific control strategies completed after the 2011 NEI submission deadline and will provide this data to the EPA. The EPA should revise its 2011 base-year inventory to incorporate these updates.

After submitting the 2011 non-road mobile source emissions inventory to the EPA, the TCEQ discovered that the submitted values did not account for the Texas low emissions diesel (TxLED) regulations, which apply to all diesel fuel sold or supplied as fuel for motor vehicles and non-road equipment operating in 110 central and eastern Texas counties. The use of TxLED reduces NOX emissions, which not only impacts the 2011 base-year inventory but 2017 projected emissions as well. The TCEQ will supply this data by October 23, 2015, using the EPA’s external FTP site for inclusion in the ozone transport modeling platform..

#### B.5 Discrepancies exist between the EPA’s 2011 on-road mobile source activity and extended idle (hoteling) emissions data set and the TCEQ 2011 mobile source inventory that was originally submitted to the EPA. The EPA should revise its 2011 base-year inventory to incorporate the originally submitted TCEQ activity data and provide more time to states to review EPA updates to base-year and future-year hoteling emissions.

Emissions and activity in the EPA 2011 on-road mobile source emissions inventory are not consistent with the TCEQ-developed 2011 on-road mobile source emissions inventory submitted to the EPA. The discrepancies between EPA’s and TCEQ’s 2011 emissions inventory appear to be due to extended idle (hoteling emissions), which were not included in MOVES2010a and therefore not included in the 2011 TCEQ emissions inventory. The EPA should provide more time to states to review EPA updates to hoteling emissions.

The EPA’s on-road mobile source activity data associated with the 2011 base-year inventory differs significantly from the TCEQ 2011 activity data submitted to the EPA. Specifically, vehicle miles traveled (VMT) and population numbers differ by 32% and 24% respectively between the two inventories. The VMT and population data used by TCEQ and developed by the Texas Transportation Institute is a more geographically specific dataset when compared to the data EPA has gathered. Therefore, the EPA should revise its 2011 base-year inventory to incorporate the originally submitted TCEQ activity data.

#### B.6 The EPA’s 2017 forecasted on-road mobile source emissions inventory provided in the NODA will not be the same inventory used to develop the final rule to address interstate transport for the 2008 ozone standard. The EPA should provide a separate notice and comment opportunity for a complete 2017 on-road mobile source emissions inventory.

The EPA did not provide a complete 2017 on-road mobile source emissions inventory that will be used in its air quality modeling for interstate ozone transport. Instead, the EPA calculated (back-casted) 2017 on-road mobile source emissions from 2018 emissions and stated in the *Federal Register* (80 FR 46278)notice that the EPA “will directly generate” the 2017 emissions. This results in missing data that states are not able to review, such as the 2017 county database files. This lack of notice and lack of opportunity to review the 2017 on-road emissions is a serious oversight. This is especially critical for a source category such as on-road, which is typically the single largest source of NOX emission ozone precursors for many metropolitan areas of the United States. The TCEQ is currently developing 2017 on-road emissions inventories for all Texas counties with MOVES2014 and will have all files associated with them available by no later than October 23, 2015, within the following FTP directories:

* <ftp://amdaftp.tceq.texas.gov/pub/Mobile_EI/Statewide/mvs/2017/>
* <ftp://amdaftp.tceq.texas.gov/pub/Mobile_EI/Statewide/eps3/2017/>
* <ftp://amdaftp.tceq.texas.gov/pub/Mobile_EI/Statewide/mvs/reports/>
* <ftp://amdaftp.tceq.texas.gov/pub/Mobile_EI/DFW/mvs/2017/>
* <ftp://amdaftp.tceq.texas.gov/pub/Mobile_EI/DFW/eps3/2017/>

#### B.7 When projecting on-road mobile source emissions from 2011 to 2018, it appears the EPA used an outdated 2012 dataset and relied on the AEO’s transportation projections to forecast VMT. Instead, the EPA should use more recent data as well as state-specific information to forecast mobile source emissions.

When reviewing the technical support document for emissions projections, it appears that the EPA used a 2012 default database as part of its inputs to forecast 2018 emissions. The 2012 database is not the most recent version of the emissions database for emissions and should not be used for forecasting purposes; instead, the 2014 database, which is the most recent version of this database, should be used.

Also, the EPA appears to use the AEO’s transportation projections to forecast VMT. Instead, the EPA should use state-specific information when available to more accurately estimate future VMT. The TCEQ’s VMT forecasts are developed using local travel demand models and the Texas Department of Transportation Highway Performance Monitoring System factors which are more appropriate data sets for developing future VMT information than the AEO. The TCEQ anticipates having these data developed and in final format by the end of September. The TCEQ anticipates supplying this data to the EPA by October 23, 2015 on the EPA’s external FTP site.

#### B.8 In general for Texas electric generating units (EGU), the EPA should not use worst-case NOX and sulfur dioxide (SO2) emissions rates resulting from 40 Code of Federal Regulations Part 75 data substitution. Instead, the EPA should replace any data substitution values with TCEQ-reported emissions rates, which are more representative of actual emissions.

Reviewing the 2011 point source EGU data set, the EPA appears to have replaced TCEQ-reported SO2 emissions inventory data for a specific EGU with Part 75 data-substituted values. Specifically, the 2011 SO2 emissions rate for J.K. Spruce Unit 1 has been replaced by worst-case 2011 emissions data due to a calibration issue with the continuous emissions monitoring system (CEMS). While the TCEQ agrees this approach is appropriate in the context of Title IV regulations and compliance, it is not necessarily the best approach when modeling actual emissions data, due to the risk of over-predicting criteria pollutant formation from unrealistically high emissions data. Instead, the TCEQ-reported point source emissions inventory values should be used as these values are more representative of actual emissions that occurred during the CEMS malfunction.

#### B.9 The TCEQ’s review of the Integrated Planning Model (IPM) data files used for the ozone transport modeling indicates errors have been made in the EPA’s assumptions. The EPA should make a more concerted effort to confirm the assumptions inputted into and generated by IPM.

The TCEQ has identified errors and other concerns with the IPM results used by the EPA for projecting future power plant emissions in the ozone transport modeling. The EPA should make more effort to confirm assumptions inputted into and generated by IPM by contacting the companies directly, particularly for critical assumptions such as predicted future retirements of units in the base case which have not been announced by the companies. The typical comment period allowed by the EPA, and in particular the compressed comment period for the current NODA, is not sufficient for companies and states to perform an exhaustive review and flawed assumptions by the EPA may be missed. The issues specifically identified by the TCEQ with the IPM results and supporting documentation are as follows.

* The EPA’s parsed data file for the IPM results lists AES Deepwater (ORIS Code 10670, Harris County) as still an active unit in 2018. AES Deepwater ceased operations in 2013 and no longer reports data to the Clean Air Markets Division (CAMD) Air Markets Program Data system. Furthermore, AES Deepwater is no longer identified in the most recent Electric Reliability Council of Texas (ERCOT) Capacity, Demand, and Reserves Report as a generation resource. AES Deepwater has been permanently shut down and should be removed from IPM’s future projections for 2018.
* The EPA has excluded a number of existing Texas power plant units from the IPM results based on incorrect assumptions. Table 4-36 of EPA Base Case v.5.14 Using IPM Incremental Documentation identifies units that the EPA excluded based on recent announcements. The TCEQ has identified the following errors in Table 4-36. This list is not exhaustive and only includes those errors that the TCEQ was able to identify in the limited amount of time the EPA made available for comments on the data.
  + EPA lists Monticello Units 1 and 2 (ORIS Code 6147, Titus County) as retired in 2013. While Monticello Units 1 and 2 are classified as seasonal mothball resources by ERCOT, no announcement of retirement of these units has been made and both units should be considered still active. Additionally, Monticello Unit 1 reported emissions data to the CAMD as recent as June 2015 and Monticello Unit 2 reported emissions data in 2014.
  + EPA lists Plant X (ORIS Code 3485, Lamb County) Units 113B and 114B as retired in 2014. Both Units 113B and 114B reported emissions data to CAMD as recent as June 2015 and are currently active.
  + EPA lists Welsh (ORIS Code 6139, Titus County) Unit 2 as retired in 2014. While the retirement of Welsh Unit 2 has been announced it is not scheduled to occur until 2016. Welsh Unit 2 is still active and reporting emissions to CAMD as recent as June 2015. For consistency, Welsh Unit 2 should be included with the IPM results but shutdown in the projected future year based on American Electric Power’s announced shutdown of the unit in 2016.
* As the TCEQ previously commented on the EPA’s 2018 emissions modeling platform (Docket ID. EPA-HQ-OAR-2013-0809), IPM predicts that the San Miguel unit (ORIS Code 6183, Atascosa County) will retire before 2018 even though the San Miguel Electric Cooperative has made no announcement of plans to retire their facility. The TCEQ notes that the San Miguel unit is only one example of an active Texas power plant that IPM projects will retire in the future-base case without clear justification. Only announced shutdowns should be included in the IPM base-case modeling. A company’s decision to retire an asset as substantial as a utility unit is based on many factors the EPA is not privy to and that cannot be factored into IPM.

### C. Identifying Maintenance Areas

#### C.1 The EPA’s methodology to identify maintenance sites is flawed and does not give distinct and separate meaning to maintenance sites. By using the maximum design value from the 2011-centered five-year period, the methodology ignores any emissions reductions trends that might exist in recent years. The TCEQ recommends that the EPA revise the method for identifying sites with projected maintenance problems to be based on the 2013 design value (the latest year in the 2011 centered five-year period) in order to account for design value trends.

To identify sites with projected maintenance problems in 2017 for the 2008 ozone NAAQS, the EPA followed the CSAPR approach of using the maximum ambient design value from the 2011-centered five-year period (i.e., the maximum of design values from 2009-2011, 2010-2012, and 2011-2013), projected to 2017. Following the CSAPR approach, monitoring sites with a maximum design value that exceeds the NAAQS, even if the average design value is below the NAAQS, are projected to have a maintenance problem in 2017. The rationale for using a five-year weighted average of fourth-highest concentrations in the future design value calculation is that it smooths out short-term variation in meteorological effects on ozone concentrations.

The application of this CSAPR approach is not appropriate for areas with design values that have been decreasing as a result of emissions reductions and not merely due to meteorological variability. By using this approach, areas may be identified as having maintenance issues in 2017 that do not actually have maintenance issues. If the EPA considered design value trends, it could identify such areas that would be able to maintain the NAAQS without requiring additional emissions reductions from other states. By choosing the maximum design value from the 2011-centered five-year period, EPA’s methodology ignores any downward trends in ozone concentrations due to emission reductions that might exist in recent years.

Additionally, to truly give separate meaning for maintenance the EPA must apply a separate criterion for linking states to maintenance sites. The EPA claims that they gave distinct meaning to maintenance because they used a more conservative method to define maintenance sites, but in truth all sites flagged as nonattainment automatically meet the criteria for maintenance. The EPA acknowledges this fact in the NODA (80 FR 46274) by stating “…nonattainment sites are also maintenance sites because the maximum design value at nonattainment sites is always greater than or equal to the five-year weighted average.” The EPA gives the appearance of differential treatment by listing sites that are maintenance only separately from those that are both nonattainment and maintenance. However, it is unclear as to how any remedy that the EPA designs can appropriately reflect the difference between nonattainment and maintenance sites if all nonattainment sites automatically become maintenance sites too.

Both the issue of truly separate meaning for maintenance and accounting for declining ozone concentrations can be addressed simultaneously by basing the future design value calculation on the most recent design value in the 2011 centered five year period (i.e. 2013) instead of using the maximum design values from the 2011-centered five-year period to project the 2017 future design value. Under this approach, a monitor can be nonattainment without being maintenance, which is not possible under EPA’s current methodology. In addition, this approach is in line with the concept of areas with maintenance plans - which are areas that had been in nonattainment but have since attained the NAAQS. An illustrative example of the method described above is provided in Table 1, Example of Alternate Methodology for Identifying Maintenance Areas, for some of the monitors identified as maintenance-only and nonattainment and maintenance under EPA’s method.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Monitor ID/  State/  County | 2011 Design Value (ppb) | 2012 Design Value (ppb) | 2013 Design Value (ppb) | Relative Response Factor (RRF)[[1]](#footnote-1) | 2017 Projected Average Design Value Used to Identify Nonattainment Sites  (ppb) | 2017 Projected Maximum Design Value per NODA Used to Identify Maintenance Sites  (ppb) | Monitor Classification per NODA | 2017 Projected from 2013 Design Value per TCEQ’s Alternate Methodology for Identifying Maintenance Sites (ppb) | Monitor Classification per TCEQ’s Alternate Methodology for Identifying Maintenance Sites |
| 80590011/ Colorado/  Jefferson | 79 | 83 | 87 | 0.9133 | 75.8 | 78.9 | Maintenance Only | 79 | Maintenance Only |
| 240251001/ Maryland/  Harford | 92 | 93 | 85 | 0.9000 | 81.3 | 84.0 | Nonattainment and Maintenance | 76 | Nonattainment and Maintenance |
| 340290006/ New Jersey/  Ocean | 81 | 85 | 80 | 0.8988 | 73.9 | 76.6 | Maintenance Only | 71 | Attainment |
| 360850067/ New York/  Richmond | 83 | 83 | 79 | 0.9330 | 76.3 | 77.8 | Nonattainment and Maintenance | 73 | Nonattainment Only |

Table 1: Example of Alternate Methodology for Identifying Maintenance Areas

### D. Modeling

#### D.1 The EPA should only use contributions from days that were accounted for in the calculation of the RRF when calculating an upwind state’s contributions to future design values.

The EPA has used contributions from the days that had a modeled eight-hour daily maximum concentration greater than the 2008 Ozone NAAQS (≥76 parts per billion (ppb)) to determine a state’s contribution to a monitor’s future design value. Since the number of days that have modeled eight-hour daily maximum concentrations greater than 76 ppb might not be the same as the top 10 days that went into the RRF calculations, this approach is inconsistent with how the future year design values are calculated. Using one set of days to calculate the future year design value that is the basis for a monitor’s future attainment status (attainment/maintenance/nonattainment) and a different set to determine the states’ contribution to that design value is inconsistent and seemingly arbitrary. The EPA should use a consistent basis for both assessing future attainment status and for calculating state contributions or provide a rational justification for doing otherwise.

#### D.2 The EPA should evaluate model performance for not just ozone but also for ozone precursors to ensure that the model is getting the “right answer for the right reason”.

The EPA appears to have focused only on ozone metrics for its model performance evaluation (MPE). This is contradictory to EPA’s guidance to states regarding MPE. The December 2014 draft modeling guidance document “Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM2.5, and Regional Haze” states “An operational evaluation for ozone should include collocated measurements of ozone precursors NOX, carbon monoxide and VOC, and ideally, vertical profile measurements that can be used to determine the extent of vertical mixing of pollutants and the concentration of ozone and precursors above the boundary layer.” The EPA should be consistent with its guidance and follow the same guidelines to which it expects states to adhere.

1. The RRF was reconstructed using the 2017 Projected Average Design Value from EPA’s NODA and average of the 2011-2013 design values. RRF = 2017 Project Average Design Value \* Average of the 2011 to 2013 design values. The reconstructed RRFs are approximate due to how many significant digits are available so the RRF\*2013 design values are approximate. [↑](#footnote-ref-1)