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Re: Docket ID No. EPA–HQ–OAR–2016-0751

Submitted on April 5, 2017 To: *The Federal eRulemaking Portal: http://www.regulations.gov* and A-and-R-Docket@epa.gov

I. Introduction

These comments are being submitted in response to the Environmental Protection Agency's ("EPA's") *Notice of Availability of the Environmental Protection Agency's Preliminary Interstate Ozone Transport Modeling Data for the 2015 Ozone National Ambient Air Quality Standard (NAAQS)*, (the "NODA"), published in the Federal Register on January 6, 2017 (82 Fed. Reg. 1733). The Oklahoma Department of Environmental Quality ("ODEQ") appreciates this opportunity to contribute to EPA's efforts in improving the accuracy of its data and the overall effectiveness of its future rulemaking. ODEQ would like to reiterate our support for EPA's efforts to reduce the interstate transport of pollutants and believes that the cap-and-trade approach, described in the notice as "the CSAPR [Cross-State Air Pollution Rule] framework," represents an effective mechanism for reaching those goals. An appropriate cap on emissions (established to protect human health and the environment) coupled with the market efficiencies of an allowance trading program should, if implemented properly, provide substantial benefits while reducing the costs of implementation. However, as we discussed in our comments on the previous CSAPR rulemakings,[1] we are concerned that there are a number of problems with the data incorporated into this modeling platform that, if not properly addressed, could undermine the benefits of the rule by causing substantial negative consequences. With those concerns in mind and after careful consideration and evaluation of this proposal, ODEQ submits the following comments.

II. Planned Retirements and Additions to Oklahoma's Fossil Fuel Fired Units That Should Be Incorporated into the Modeling Platform

A. Public Service Company of Oklahoma ("PSO")

PSO, a subsidiary of American Electric Power, has stated in their Integrated Resource Plan ("IRP") that the company plans to retire two (2) units located at their Southwestern facility. They plan to retire Unit 1 in 2021, and Unit 2 in 2023.

[1] See comments submitted by ODEQ on October 15, 2015 and January 29, 2016.

PSO also stated in its IRP that it plans to retire Units 4, 5, and 6 located at its Weleetka facility in 2022.

B. Oklahoma Gas and Electric ("OGE")

OGE has obtained a permit to install seven (7) 58 Megawatt ("MW") simple cycle turbines at its Mustang facility. These turbines will utilize Wet Low Emitting nitrogen oxides ("NOx") burners, and an oxidative catalyst for carbon monoxide ("CO") control.

C. Grand River Dam Authority ("GRDA")

GRDA has obtained a permit for and commenced construction of a 495 MW combined-cycle turbine at its Grand River Energy Center facility. The combined-cycle combustion turbine, to be identified as Unit 3 (Mitsubishi Heavy Industries, Model M501J), will include a combustion turbine generator ("CTG"), a duct-fired heat recovery steam generator, and a steam turbine generator. Unit 3 will have a total heat input of 4,160.9 million British Thermal Units per hour with an output of 495 MW (net). The CTG will be designed to operate only in a combined-cycle mode. Selective catalytic reduction for NO_X control is included in the project design.

III. Planned Installation of New Utility-Scale Solar-Powered Electric Generation Systems in Oklahoma That Should Be Incorporated into the Modeling Platform

A. PSO

PSO plans to install 50 MW of utility-scale solar resources per year from 2021 – 2024 for a total of 200 MW of utility-scale solar by the end of the planning period. PSO 2015 IRP: http://www.occeweb.com/pu/PSOIRP2015_Final_09292015.pdf

B. OGE

OGE currently has 2.5 MW of solar generation installed at their Mustang facility. OGE Webpage:
https://www.oge.com/wps/portal/oge/about-us/environment/alternative-energy-technologies/!ut/p/a1/

C. Western Farmers Electric Cooperative ("WFEC")

WFEC has plans to install 21.5 MW of utility-scale solar generation by 2023. WFEC Solar fact sheet:
http://www.wfec.com/sites/default/files/media-center/files/FINAL%20EDIT%20solar%20flyer%20AM%20-%20w%20photos.pdf

IV. Are Oklahoma's Major Reductions Captured by EPA's Methods?

ODEQ is concerned that EPA's attempt to model Oklahoma's electric generating unit ("EGU") ozone-season emissions is failing to adequately capture the resulting NOx reductions that have occurred in the state since the development of the 2011 National Emissions Inventory ("NEI"). A quick analysis of the Acid Rain database (the CSAPR database could not be used because it only contains data from 2015 to present) comparing 2011 to 2016 ozone-season data for the state of Oklahoma shows:

1. Heat input reduced 27%
2. Gross load reduced 23%
3. NOx tons reduced 67%

ODEQ respectfully requests that EPA evaluate the outputs generated by the Integrated Planning Model ("IPM") to ensure that the model is capturing these significant reductions.

V. Additional Wind Generation That Should be Included in the Modeling Platform

Included with these comments is an Excel spreadsheet titled 2015_CSAPR_NODA_comments_wind.xlsx, which contains Oklahoma wind generation information for existing and planned wind farms not included in EPA's National Electric Energy Data System database. ODEQ respectfully requests that EPA incorporate these additions into the modeling platform.

VI. Acknowledgment of Modifications Made to the 2011 Modeling Platform Based on ODEQ's Previous Request

While ODEQ will make the case herein that a new base year should be chosen, we would like to acknowledge the changes made to the 2011 modeling platform in response to our request included in comments submitted on October 23, 2015, for the transport modeling NODA for the 2008 ozone NAAQS. ODEQ appreciates EPA's incorporation of those changes and would like to respectfully request that, if EPA elects to proceed with a rulemaking using the 2011 modeling platform, those changes be retained.

VII. Alternative Projection Methodologies – The Eastern Regional Technical Advisory Committee ("ERTAC") Electric Generating Unit Forecasting Tool

ODEQ is supportive of EPA's engagement with groups working on alternative projection methodologies. In particular, the ERTAC EGU Forecasting Tool represents a promising alternative to IPM, which is used in the modeling platform that is the subject of this NODA.

Recently, ODEQ has taken a more active role in working with the ERTAC group to assist in updating emission factors, configuration data, and operational information associated with Oklahoma EGUs. However, a number of issues remain to be addressed before the ODEQ would be comfortable with the use of the ERTAC model as an alternative to IPM for the anticipated rulemaking to address interstate ozone transport for the 2015 ozone NAAQS ("CSAPR 3"). The

ERTAC modeling platform is based on actual hourly emissions from subject EGUs obtained during the 2011 base year. ODEQ has concerns about the representativeness of the 2011 meteorological data (discussed later), and it is notable that its anomalous weather conditions resulted in unrepresentative operating parameters and emissions for Oklahoma EGUs. Emission factors may be adjusted to reflect the installation of new emission controls, and Oklahoma has provided updates so that the model will better reflect current operations. However, the pattern-matching nature of the model ensures that the heat input values and the dispatch of units will reflect the pattern established in 2011. Those operations may be scaled based on forecasts from the U.S. Energy Information Administration's Annual Energy Outlook, but the underlying patterns are locked down to the 2011 base year. Annual curtailment of certain operations (e.g., reduced operation of coal-fired units) is possible, but curtailment exclusively during ozone season is not currently possible for the ERTAC EGU Forecasting Tool.

The goal of the ERTAC EGU Forecasting Tool is to provide a more accurate estimation of future operations by, among other things, ensuring that units that have operated in the past continue to do so in the future unless there is a planned shutdown. This leads to superior modeling performance as compared to IPM because IPM will prematurely close or stop operation of a unit based on its cost-minimization algorithm, which does not always reflect actual future operations. In spite of these benefits, for Oklahoma units, the ERTAC tool tends to over-predict emissions when compared to actual results available from the Clean Air Markets Division ("CAMD") as well as those obtained from IPM. Oklahoma is working with ERTAC to help remedy that problem, but the current version of the tool (Version 2.6) predicts ozone-season NOx emissions from Oklahoma EGUs to be 20,784 tons in 2017. In comparison, the actual emissions from the 2016 ozone season were 12,761 tons.

The predictions from the ERTAC tool have consistently shown Oklahoma EGUs exceeding, in aggregate, the state NOx budget levels established under the original CSAPR and the CSAPR update. The ERTAC group is working on developing solutions to that problem.

ODEQ would like to acknowledge a number of benefits of the ERTAC EGU Forecasting Tool. It is open-source, low-cost, and can be run by state agency personnel. However, to date, the pattern-matching and projection approach has not captured the actual emissions reductions experienced by the EGU fleet in Oklahoma. ODEQ therefore recommends that EPA continue to use IPM for the CSAPR 3 rulemaking for Oklahoma. While preferring the IPM approach at this time, ODEQ is encouraged by the efforts of the ERTAC group to continue to upgrade the ERTAC EGU Forecasting Tool. ODEQ supports keeping the option open for each state to allow them to use the ERTAC model for SIP development and other planning work. ODEQ also recommends allowing each individual state the opportunity to provide input identifying which modeling approach (ERTAC or IPM) is preferred, and we encourage EPA to incorporate each state's preference into the modeling performed to inform the CSAPR 3 rulemaking. ODEQ believes that the NODA mechanism (the notice and request for comments) represents a workable approach for soliciting state regulatory input (including a request for either using IPM or the ERTAC model) prior to any significant rulemaking. Even though we prefer IPM for this rulemaking effort for Oklahoma, we do not want to foreclose the opportunity for other agencies to request a different approach, and we would like to retain the option of requesting an alternative approach for the future.

VIII. Request for Adoption of a New Modeling Platform Based on Updated Emissions Inventory and Meteorology Data

ODEQ recommends that EPA move away from the 2011 modeling platform for the CSAPR 3 rulemaking. Our basis for this recommendation is summarized below.

A. The Clean Power Plan

The NODA states that the updated EGU projections include the effects of the Clean Power Plan ("CPP") in the future year modeling analysis used to identify the upwind states, which are linked to downwind nonattainment and maintenance areas (82 Fed. Reg. 1736). It now appears unlikely that the CPP will be implemented in time to have a substantial influence on EGU emissions during the time period under consideration, or possibly not be implemented at all, given President Trump's Executive Order of March 28, 2017 to reevaluate the CPP.[2] With that in mind, ODEQ recommends that EPA abandon the preliminary modeling performed to date and proceed with a new modeling platform based on the 2014 NEI and updated meteorological data.

B. 2011 Meteorological Anomalies

In ODEQ's comments submitted in response to the transport NODA for the 2008 ozone NAAQS, we shared our concerns about the anomalously warm and dry weather experienced in the south-central U.S. in 2011. In Oklahoma, the 2011 ozone season was the single warmest on record. The five-month period from May to September, 2011, showed a positive temperature departure from the 20th century mean of 5.3°F (3.0°C).[3] For Texas, this period is also the warmest on record with a positive temperature departure of 5.5°F. That period was also the driest period on record for Texas and the 3rd driest period on record for Oklahoma. ODEQ recognizes that, when modeling ozone formation, it is important to select a variety of meteorological conditions that are generally associated with elevated ambient ozone concentrations;[4] however, there is an important distinction between using a reasonably conservative scenario and adopting the single most extreme case on record.

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[2] Presidential Executive Order on Promoting Energy Independence and Economic Growth, Exec. Order No. 13,783, 82 Fed. Reg. 16093 (March 28, 2017).

[3] See the National Oceanic and Atmospheric Administration (NOAA), National Center for Environmental Information web site, accessed March 16, 2017. https://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php?periods%5B%5D=5&parameter=tmax&state=34&div=0&month=9&year=2011#ranks-form

[4] U.S. Environmental Protection Agency, "Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM2.5, and Regional Haze," Research Triangle Park, NC, December, 2014, p. 16. https://www3.epa.gov/ttn/scram/guidance/guide/Draft_O3-PM-RH_Modeling_Guidance-2014.pdf

In addition to the concerns about the unrepresentativeness of the 2011 ozone season, ODEQ would like to note that EPA guidance recommends using more recent data where available.

> There is no recommended default base year for modeling. However, it is recommended to use a recent base year period. This ensures that the emissions projection period is as short as possible and the base year ambient data is as current as possible. For example, projecting emissions from 2011 to 2018 (using a 2009-2013 base year average design value) should be less uncertain than projecting emissions from 2005 to 2018 (using a 2003-2007 base year average design value). The most recent ambient design values reflect actual emissions changes that have occurred over time. It is therefore better to use recent design values, which are actual measurements, and modeled emissions changes to project future concentrations, than to use older ambient data to estimate the change in design values.[5]

ODEQ is of the opinion that both the anomalous nature of the 2011 ozone-season weather patterns in the south-central U.S. and the availability of more recent data justify adoption of a more recent modeling base year. ODEQ respectfully requests that EPA take this approach.

C. The Superiority of the 2014 National Emissions Inventory

In Oklahoma, recent reductions in ozone-season NOx emissions from EGUs have elevated the significance of the remaining sources. The following table highlights the various source categories, based on the 2014 NEI.

Oklahoma 2014 NOx Emissions

Source Category	2014 Annual NOx Emissions (tons)	Percent of the 2014 Total
Mobile On-Road	91,919	23.5%
Oil and Gas E&P + Midstream Sectors	78,659	20.1%
Non-EGU Industrial Boilers	66,508	17.0%
EGUs	39,333	10.1%
Biogenic	37,854	9.7%
Remaining Sources (Fires, Residential Combustion, Etc.)	33,183	8.5%
Mobile (Air, Rail, and Marine)	22,499	5.8%
Mobile Non-Road	21,191	5.4%
Total 2014 Statewide NOx Emissions	391,147	

In 2011, statewide Oklahoma NOx emissions totaled 411,509 tons. The 2014 total NOx emissions were 4.9% lower. In 2011, ozone-season EGU NOx emissions totaled 38,285 tons, a

[5] "Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM2.5, and Regional Haze," p. 4. In addition, see the discussion on p. 16 of the same document.

total which excluded some units not then subject to CAMD reporting requirements. In 2016, ozone-season EGU emissions dropped to 12,761 tons, a 66.7% decrease compared to the 2011 ozone-season emissions. As EGU emissions have decreased, other NOx sources have become relatively more important. In Oklahoma, the second largest source category (after on-road mobile sources) is the combined oil and gas exploration, production, and midstream sectors. Considering the importance of that broad source category, the 2014 NEI represents a significant improvement for two primary reasons: (1) the Oklahoma NEI submission incorporated detailed inventories from over 4,000 permitted wellhead facilities in the state and (2) the National Oil and Gas Emissions Inventory Tool included basin-specific data obtained from the Greenhouse Gas Reporting Program ("GHGRP").

A brief review of the submission history for the combined oil and gas exploration, production, and midstream sector source category should help demonstrate the nature of the improvements made in the 2014 NEI submission. Very few states reported area source oil and gas emissions to the triennial NEI prior to 2008. For the 2008 NEI, Oklahoma joined a handful of states[6] who reported area source oil and gas emissions. The Oklahoma submission was based on a Central Regional Air Planning Association study prepared by Environ.[7] For the 2011 NEI, Central States Air Resource Agencies commissioned a more detailed study,[8] the results of which were incorporated into the EPA 2011 Nonpoint Oil and Gas Emission Estimation Tool.[9] The 2011 NEI represented a significant improvement over the 2008 NEI, with superior basin factors and emissions estimated for a much larger number of states. Even more improvements were made to the EPA 2014 Nonpoint Oil and Gas Emission Estimation Tool, including the incorporation of basin factors obtained from the GHGRP for the following sources: associated gas venting, condensate tanks, crude oil tanks, heaters, and pneumatic devices. In addition to using this improved version of the Tool for its 2014 NEI submission, ODEQ incorporated county-specific natural gas compositions, emission factors for pneumatic controllers obtained from a study performed by the Oklahoma Independent Petroleum Association,[10] and a detailed point-to-

[6] Arkansas, California, Oklahoma, Texas, and Wyoming.

[7] Bar-Ilan, Amnon, Rajashi Parikh, John Grant, Tejas Shah, and Alison K. Pollack, Environ International Corporation, "Recommendations for Improvements to the CenRAP States' Oil and Gas Emissions Inventories," Final Report, prepared for the Central States Regional Air Partnership, November 13, 2008.

[8] Environ International Corporation and Eastern Research Group, Inc., "2011 Oil and Gas Emission Inventory Enhancement Project for CenSARA States," prepared for the Central States Air Resources Agencies, December 21, 2012.

[9] Eastern Research Group, Inc., "Estimating Nonpoint Emissions from the Oil and Gas Production Sector," Revised Draft, prepared for the U.S. Environmental Protection Agency, August 8, 2014.

[10] Oklahoma Independent Petroleum Association, "Pneumatic Controller Emissions from a Sample of 172 Production Facilities," November 2014, available online: http://www.oipa.com/page_images/1418911081.pdf

nonpoint crosswalk to integrate ODEQ's emissions inventory data collected from the approximately 4,500 wellhead facilities that had obtained air quality permits from ODEQ by the end of 2014.[11]

As emissions from the EGU sector have decreased, developing more accurate estimates of the emissions from the oil and gas sector has become even more important.[12] The 2014 NEI represents the best available characterization of emissions from that sector nationwide, but especially from Oklahoma.

D. The Oil and Gas Midstream Inventory Gap

In ODEQ's comments submitted in response to the transport NODA for the 2008 ozone NAAQS, we discussed some of the issues associated with the potential underreporting of emissions from oil and gas facilities that fall into a "midstream gap." For the natural gas sector, the term "midstream" typically refers to all operations downstream of the wellhead and upstream of the city gate. In Oklahoma, every permitted midstream facility (including true minor and synthetic minor facilities) is inventoried as a point source and ODEQ submits all of their emissions to the triennial NEI. Many other states have procedures in place to capture emissions from this sector; however, there is little uniformity and some states have no mechanism in place to accurately estimate emissions from these sources.

While some work has been done to investigate this issue,[13] ODEQ believes that the concerns raised in our previous submission remain relevant. To address those concerns, ODEQ would like to see additional work done to explore the likelihood that a number of sources downstream of the wellhead, but upstream of the city gate may be omitted from the NEI. These facilities may fall into an inventory gap, because their emissions are below the Air Emissions Reporting Requirements Type A & B thresholds and (with the exception of the initial lateral/gathering compressor engines) there is no current mechanism for aggregating their emissions into the nonpoint oil and gas emissions estimation tool.

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[11] A description of the process is available online: http://vibe.cira.colostate.edu/ogec/docs/meetings/2016-05-12/OKDEQ_Presentation_V5_05112016.pptx

[12] See, for example, the U.S. Environmental Protection Agency, Office of Inspector General, "EPA Needs to Improve Air Emissions Data for the Oil and Natural Gas Production Sector," Report No. 13-P-0161, February 20, 2013.

[13] Marchese, Anthony J., Timothy L. Vaughn, Daniel J. Zimmerle, David M. Martinez, Laurie L. Williams, Allen L. Robinson, Austin L. Mitchell, R. Subramanian, Daniel S. Tkacik, Joseph R. Roscioli, and Scott Herndon, "Methane Emissions from United States Natural Gas Gathering and Processing," *Environmental Science & Technology*, Volume 49, Number 9, August 18, 2015, pp. 10718-10727, available online: http://pubs.acs.org/doi/pdf/10.1021/acs.est.5b02275

Alternatively, it is possible that the inclusion of the lateral/gathering compressor engines in the tool has resulted in some double-counting of emissions in states like Oklahoma, where there is an effort to inventory each midstream facility as a point source.

The National Oil and Gas Emissions Committee is engaged in an ongoing effort to investigate these concerns and to propose solutions. If sufficient resources are available, we may be able to resolve these issues (e.g., by developing a third "midstream" component of the tool with a simple mechanism for point source subtraction), yielding even greater improvements in sector-wide emissions for the 2017 NEI.

IX. Conclusion

ODEQ is appreciative of EPA's willingness to work with states to develop regulations in the spirit of cooperative federalism. ODEQ recognizes that the process is challenging under the best of circumstances, and especially so when state partners request substantive changes. ODEQ recognizes that the request to abandon the 2011 base year in favor of something more recent could push back the rulemaking calendar for CSAPR 3. This would definitely be the case if, as we have requested, EPA issues a new NODA for an updated modeling platform, which incorporates the 2014 NEI. While this might appear to delay improvements in air quality, ODEQ believes that a too-hasty rulemaking process could actually lead to greater delays in implementation and deferred realization of air quality improvements. Oklahoma EGUs were not subject to the CSAPR ozone-season NOx trading program until 2015. That rule was promulgated to address interstate transport associated with the 1997 ozone NAAQS. The changes to the allowances under the CSAPR update (associated with the 2008 ozone NAAQS) are due to take place this year (2017). For CSAPR 3, it is worth taking some additional time to promulgate a rule supported by more representative meteorological data and more complete emission inventory data. Ultimately, a better, more well-founded rule should yield actual emissions reductions sooner than a flawed rule that is open to challenge. Again, ODEQ appreciates EPA's consideration of our comments.