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ENVIRONMENTAL PROTECTION AGENCY

[EPA-HQ-OAR-2016-0751; FRL-9958-02-OAR]

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)

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of data availability (NODA); request for public comment.

SUMMARY: The Environmental Protection Agency (EPA) is providing notice that preliminary interstate ozone transport modeling data and associated methods relative to the 2015 ozone National Ambient Air Quality Standard (NAAQS) are available for public review and comment. This information is being provided to help states develop State Implementation Plans (SIPs) to address the requirements of Clean Air Act (CAA) section 110(a)(2)(D)(i)(I) for the 2015 ozone NAAQS. The information available includes: (1) emission inventories for 2011 and 2023, supporting data used to develop those emission inventories, methods and data used to process emission inventories into a form that can be used for air quality modeling; and (2) air quality modeling results for 2011 and 2023, base period (i.e., 2009-2013) average and maximum ozone design value concentrations, projected 2023 average and maximum ozone design value concentrations, and projected 2023 ozone contributions from state-specific anthropogenic emissions

and other contribution categories to ozone concentrations at individual ozone monitoring sites.

A docket has been established to facilitate public review of the data and to track comments.

DATES: Comments must be received on or before 90 days after publication in the *Federal Register*.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-HQ-OAR-2016-0751, to the *Federal eRulemaking Portal: http://www.regulations.gov*. Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or withdrawn. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e., on the Web, Cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *http://www2.epa.gov/dockets/commenting-epa-dockets*.

When submitting comments, remember to:

1. Identify the notice by docket number and other identifying information (subject heading, *Federal Register* date and page number).
2. Explain your comments, why you agree or disagree; suggest alternatives and substitute data that reflect your requested changes.
3. Describe any assumptions and provide any technical information and/or data that you used.
4. Provide specific examples to illustrate your concerns, and suggest alternatives.
5. Explain your views as clearly as possible, avoiding the use of profanity or personal threats.
6. Make sure to submit your comments by the comment period deadline identified.

For additional information about the EPA's public docket, visit the EPA Docket Center homepage at *http://www.epa.gov/epahome/dockets.htm*.

DOCKET: All documents in the docket are listed in the *www.regulations.gov* index. Although listed in the index, some information is not publicly available (e.g., CBI or other information whose disclosure is restricted by statute). Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either electronically in *www.regulations.gov* or in hard copy at the Air and Radiation Docket and Information Center, EPA/DC, WJC West Building, Room 3334, 1301 Constitution Ave., NW, Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Air Docket is (202) 566-1742.

FOR FURTHER INFORMATION CONTACT: For questions on the emissions data and on how to submit comments on the emissions-related projection methodologies, contact Alison Eyth, Air Quality Assessment Division, Environmental Protection Agency, Mail code: C339-02, 109 T.W. Alexander Drive, Research Triangle Park, NC 27709; telephone number: (919) 541-2478; fax number: (919) 541-1903; email: *eyth.alison@epa.gov*. For questions on the preliminary air quality modeling and ozone contributions and how to submit comments on the air quality modeling data and related methodologies, contact Norm Possiel, Air Quality Assessment Division, Environmental Protection Agency, Mail code: C439-01, 109 T.W. Alexander Drive, Research Triangle Park, NC 27709; telephone number: (919) 541-5692; fax number: (919) 541-0044; email: *possiel.norm@epa.gov*.

SUPPLEMENTARY INFORMATION:

I. Background

On October 26, 2015 (80 FR 65292), the EPA published a rule revising the 8-hour ozone NAAQS from 0.075 parts per million (ppm) to a new, more protective level of 0.070 ppm. Section 110(a)(1) of the CAA requires states to submit SIPs that provide for the implementation, maintenance, and enforcement of a NAAQS within 3 years of the promulgation of a new or revised standard. Such plans are required to address the applicable requirements of CAA section 110(a)(2) and are generally referred to as "infrastructure" SIPs. Among the requirements in CAA section 110(a)(2) that must be addressed in these plans is the "Good Neighbor" provision, section 110(a)(2)(D)(i)(I), which requires states to develop SIPs that prohibit any source or other emissions activity within the state from emitting air pollutants in amounts that will contribute significantly to nonattainment or interfere with maintenance of the NAAQS in another state. With respect to the 2015 ozone NAAQS, the Good Neighbor SIPs are due within 3 years of promulgation of the revised NAAQS, or by October 26, 2018.

On October 1, 2015, when EPA Administrator McCarthy signed the ozone NAAQS revision, the agency also issued a memorandum[1] to EPA Regional Administrators communicating a process for delivering the protections afforded by the revised NAAQS, including implementing CAA requirements like the Good Neighbor provision. In that memorandum, the EPA emphasized that we will be working with state, local, federal

[1] Memorandum from Janet McCabe, Acting Assistant administrator, Office of Air and Radiation to Regional Administrators, Regions 1-10, "Implementing the 2015 Ozone National Ambient Air Quality Standards," available at https://www.epa.gov/sites/production/files/2015-10/documents/implementation_memo.pdf.

and tribal partners to carry out the duties of ozone air quality management in a manner that maximizes common sense, flexibility and cost-effectiveness while achieving improved public health expeditiously and abiding by the legal requirements of the CAA.

The memorandum noted that the EPA believes that the Good Neighbor provision for the 2015 ozone NAAQS can be addressed in a timely fashion using the framework of the Cross-State Air Pollution Rule (CSAPR), especially given the court decisions upholding important elements of that framework.[2] The EPA also expressed its intent to issue timely information concerning interstate ozone transport for the 2015 ozone NAAQS as a first step to help facilitate the development of SIPs addressing the Good Neighbor provision. The EPA recognizes that the CAA provides that states have the primary responsibility to submit timely SIPs, as well as the EPA's own backstop role to develop and promulgate Federal Implementation Plans (FIPs), as appropriate.

This notice includes preliminary air quality modeling data that will help states as they develop SIPs to address the cross-state transport of air pollution under the CAA's Good Neighbor provision as

[2] *See EPA v. EME Homer City Generation, L.P.*, 134 S. Ct. 1584, 1607 (2014) (holding the EPA's use of uniform oxides of nitrogen (NOx) stringency to apportion emission reduction responsibilities among upwind states "is an efficient and equitable solution to the allocation problem the Good Neighbor Provision requires the Agency to address"); *EME Homer City Generation, L.P. v. EPA*, 795 F.3d 118, 135-36 (D.C. Cir. 2015) (affirming EPA's use of air quality modeling to project future nonattainment and maintenance receptors and to calculate emissions budgets, and holding that the EPA affords independent effect to the "interfere with maintenance" prong of the Good Neighbor provision in identifying maintenance receptors).

it pertains to the 2015 ozone NAAQS. These data are considered preliminary because states may choose to modify or supplement these data in developing their Good Neighbor SIPs and/or EPA may update these data for the purpose of potential future analyses or regulatory actions related to interstate ozone transport for the 2015 ozone NAAQS.

The EPA has applied what it refers to as the CSAPR framework to address the requirements of the Good Neighbor provision for regional pollutants like ozone. This framework involves a 4-step process: (1) identifying downwind receptors that are expected to have problems attaining or maintaining clean air standards (i.e., NAAQS); (2) determining which upwind states contribute to these problems in amounts sufficient to "link" them to the downwind air quality problems; (3) for states linked to downwind air quality problems, identifying upwind emissions that significantly contribute to nonattainment or interfere with maintenance of the NAAQS by quantifying upwind reductions in ozone precursor emissions and apportioning emission reduction responsibility among upwind states; and (4) for states that are found to have emissions that significantly contribute to nonattainment or interfere with maintenance or the NAAQS downwind, adopting SIPs or FIPs that eliminate such emissions. The EPA applied this framework in the original CSAPR rulemaking (76 FR 48208) to address the Good Neighbor provision for the 1997 ozone NAAQS and the 1997 and 2006 fine particulate matter ($PM_{2.5}$) NAAQS. On October 26, 2016 (81 FR 74504), the EPA again applied this framework in an update to CSAPR (referred to as the CSAPR Update) to address the Good Neighbor provision for the 2008 ozone NAAQS. This notice provides information regarding steps 1 and 2 of the CSAPR framework for purposes of evaluating interstate transport with respect to the 2015 ozone NAAQS. This preliminary modeling to quantify contributions for the year 2023 is intended to help inform state efforts to address interstate transport with respect to the 2015 ozone NAAQS.

The year 2023 was used as the analytic year for this preliminary modeling because that year aligns with the expected attainment year for Moderate ozone nonattainment areas, given that the CAA requires the EPA to finalize area designations for the 2015 ozone NAAQS in October 2017.[3] *See North Carolina v. EPA*, 531 F.3d 896, 911-12 (D.C. Cir. 2008), *modified on reh'g*, 550 F.3d 1176 (holding the Good Neighbor provision requires implementation of emissions reductions be harmonized with the applicable downwind attainment dates).

As noted above, this notice meets the EPA's stated intention in the October 2015 memorandum to provide information relevant to the

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[3] *See* 42 USC 7407(d)(1)(B) (requiring the EPA to finalize designations no later than 2 years after promulgation of a new or revised NAAQS). On November 17, 2016 (81 FR 81276), the EPA proposed to retain its current approach in establishing attainment dates for each nonattainment area classification, which run from the effective date of designations. This approach is codified at 40 CFR 51.1103 for the 2008 ozone NAAQs, and the EPA proposed to retain the same approach for the 2015 ozone NAAQS. In addition, the EPA proposed the maximum attainment dates for nonattainment areas in each classification, which for Moderate ozone nonattainment is 6 years.

Good Neighbor provision for the 2015 ozone NAAQS. Specifically, this notice evaluates states' contributions to downwind ozone problems relative to the screening threshold – equivalent to 1 percent of the NAAQS – that the CSAPR framework uses to identify states "linked" to downwind air quality problems for further consideration to address interstate ozone transport. The EPA believes that states will find this information useful in their development of Good Neighbor SIPs for the 2015 ozone NAAQS, and we seek their comments on it.[4] The EPA believes that states may rely on this or other appropriate modeling, data or analyses to develop approvable Good Neighbor SIPs which, as noted previously, are due on October 26, 2018. States that act now to address their planning obligation pursuant to the Good Neighbor provision would benefit from improved ozone air quality both within the state and with respect to other states.

This notice provides an opportunity for review and comment on the agency's preliminary ozone transport modeling data relevant for the 2015 ozone NAAQS.

II. Air Quality Modeling and Related Data and Methodologies

A. Base Year and Future Base Case Emissions

For this transport assessment, the EPA used a 2011-based modeling platform to develop base year and future year emissions

[4] Note that the emissions projections in this NODA are consistent with the implementation of various state and federal regulations, and that any change to the future implementation of these regulations may impact these projections and related findings.

inventories for input to air quality modeling. This platform included meteorology for 2011, base year emissions for 2011, and future year base case emissions for 2023. The 2011 and 2023 air quality modeling results were used to identify areas that are projected to be nonattainment or have problems maintaining the 2015 ozone NAAQS in 2023. Ozone source apportionment modeling for 2023 was used to quantify contributions from emissions in each state to ozone concentrations at each of the projected nonattainment and maintenance receptors in that future year.[5]

The 2011 and 2023 emissions data and the state and federal rules included in the 2023 base case are described in detail in the documents, "Preparation of Emissions Inventories for the Version 6.3 2011 Emissions Modeling Platform"; "Updates to Emissions Inventories for the Version 6.3, 2011 Emissions Modeling Platform for the Year 2023"; and "EPA Base Case v.5.16 for 2023 Ozone Transport NODA Using IPM Incremental Documentation"; all of which are available in the docket for this notice.

In brief, the 2011 base year emissions and projection methodologies used here to create emissions for 2023 are similar to what was used in the final CSAPR Update. The key differences between

[5] The 2023 ozone source apportionment modeling was performed using meteorology for the period May through September in order to focus on transport when 8-hour ozone concentrations are typically high at most locations. This modeling did not include high winter ozone concentrations that have been observed in certain parts of the Western U.S. which are believed to result from the combination of strong wintertime inversions, large NOx and volatile organic compound (VOC) emissions from nearby oil and gas operations, increased ultraviolet (UV) radiation intensity due to reflection off of snow-covered surfaces and potentially other local factors.

the 2011 inventories used for the final CSAPR Update and the 2011 inventories used for the 2015 ozone NAAQS preliminary interstate transport modeling include updates to mobile source and electric generating unit (EGU) emissions, the inclusion of fire emissions in Canada and Mexico, and updated estimates of anthropogenic emissions for Mexico. The key differences in methodologies for projecting non-EGU sector emissions (e.g., onroad and nonroad mobile, oil and gas, non-EGU point sources) to 2023 as compared to the methods used in the final CSAPR Update to project emissions to 2017 include (1) the use of data from the U.S. Energy Information Administration Annual Energy Outlook 2016 (AEO 2016) to project activity data for onroad mobile sources and the growth in oil and gas emissions, (2) additional general refinements to the projection of oil and gas emissions, (3) incorporation of data from the Mid-Atlantic Regional Air Management Association (MARAMA) for projection of non-EGU emissions for states in that region, and (4) updated mobile source emissions for California.

For EGUs, the EPA has included several key updates to the Integrated Planning Model (IPM) and its inputs for the agency’s 2023 EGU projections used for the air quality modeling provided in this NODA. The updated IPM assumptions incorporated in the EPA’s Base Case v.5.16 capture several market trends occurring in the power sector today, and the 2023 EGU projections reflect a continuation of these trends. Notably, natural gas prices remain historically low and are expected to remain low in the foreseeable future given that gas production and pipeline capacity continue to increase while storage is already at an all-time high. These factors have contributed to record-setting U.S. natural gas production levels for the fifth consecutive year in 2015 and record-setting consumption levels for the sixth consecutive year. Additionally, electricity demand growth (including retail sales and direct use) has slowed in every decade since the 1950s, from 9.8 percent per year from 1949 to 1959 to 0.5 percent per year from 2000 to 2015. This trend is projected to continue: AEO 2016 projects lower growth than projected in AEO 2015. In addition, these updated emission projections account for a continuing decline in the cost of renewable energy technologies such as wind and solar, as well as the recently extended production and investment tax credits that support their deployment. All of these factors result in decreased generation and capacity from conventional coal steam relative to EPA's EGU analyses that preceded these updated IPM inputs. Over the past 10 years, coal-fired electricity generation in the U.S. has declined from providing roughly half of the nation's supply to about one-third, and has been replaced with lower-cost sources such as natural gas, wind, and solar.

The updated EGU projections also include the Clean Power Plan (CPP), 80 FR 64662 (October 23, 2015). The modeling for the CSAPR Update did not include the CPP due to the former rule's focus on the 2017 ozone season, *see* 81 FR at 74529. In the CSAPR Update rulemaking, the agency had identified several key factors and uncertainties associated with measuring the effects of the CPP in 2017, but explained that the EPA "continues to believe that the modeling for the CPP . . . was useful and reliable with respect to the model years analyzed for [the CPP] (i.e., 2020, 2025, and 2030)." *Id.*. The period of focus for the modeling here is in the mid-2020s, which falls within the CPP's interim performance period, and the EPA therefore believes it is appropriate to include the CPP in the modeling.[6] The CPP is targeted at reducing carbon pollution, but on average, nationwide, the CPP would also reduce NO_X emissions from EGUs. The agency therefore anticipates that, if the CPP were removed from the modeling, the overall net effect could be higher levels of NO_X emissions, on average, and potentially higher ozone concentrations and contributions at receptors. However, note that NO_X emissions from EGUs represent just one part of the total NO_X inventory. In this regard, for many states it is possible that changes in EGU NO_X emissions on the order of what might be expected in 2023 due to the CPP may have limited impact on the concentration and contribution data in this NODA, which are based on total NO_X emissions.

As noted above, EGU emissions used for the air quality modeling in this NODA are based on IPM v5.16 projections. However, states may

[6] The CPP is stayed by the Supreme Court. *West Virginia et al. v. EPA,* No. 15A773 (U.S. Feb. 9, 2016). It is currently unclear what adjustments, if any, will need to be made to the CPP's implementation timing in light of the stay.

choose to use other EGU projections in developing their Good Neighbor SIPs. To continue to update and improve both EPA's and states' EGU projections, the EPA and state agencies, with the facilitation of multi-jurisdictional organizations (MJOs), have been collaborating in a technical engagement process to inform future-year emission projections for EGUs. The ongoing information exchange and data comparison have facilitated a clearer understanding of the capabilities and constraints of various tools and methods. This process will continue to inform how the EPA and states produce EGU emission projections to inform efforts to reduce ozone transport.

The EPA observes there are differences between recent emissions and generation data and the corresponding future-year projections in this NODA. The EPA's modeling directly simulates how future-year energy trends and economic signals affect the composition of the fleet. In the 2023 projections presented in this NODA, the EPA's modeling does not project the operation of a number of coal-fired and oil-fired units due to simulated future-year economic conditions, whether or not such capacity has publicly-released plans to retire.[7] Some other projection methodologies, such as the approach used by the Eastern Regional Technical Advisory Committee (ERTAC), purposefully

[7] Note that much of this change in operation is projected to occur as early as 2020, which is the first year of the 25-year horizon over which EPA's model is optimizing. EPA's modeling adopts the assumption of perfect foresight, which implies that agents know precisely the nature and timing of conditions in future years (e.g., future natural gas supply, future demand) that affect the ultimate cost of decisions along the way. With this perfect foresight, the model looks throughout the entire modeling horizon and selects the overall lowest cost solution for the power sector over that time.

maintain the current composition of the fleet except where operators have announced expected changes. Comparing these projections is informative because there is inherent uncertainty in anticipating any future-year composition of the EGU fleet, since analysts cannot know in advance exactly which operators will decide to retire which facilities at any given time. The EPA is soliciting comments on whether and, if so, how different projection techniques for EGUs would affect emissions and air quality in a manner that could further assist states with their analysis of transported air pollution.

B. Air Quality Modeling

For the final CSAPR Update, EPA used the Comprehensive Air Quality Model with Extensions (CAMx) v6.20 as the air quality model. After the EPA performed air quality modeling for the final CSAPR Update, Ramboll Environ, the CAMx model developer, released an updated version of CAMx (version 6.30). In addition, EPA has recently sponsored updates to the Carbon Bond chemical mechanism in CAMx v6.30 related to halogen chemistry reactions that deplete ozone in marine (i.e., salt water) environments. The updated chemistry is included in a new version 6.32 which the EPA has used for this analysis. Specifically, EPA used CAMx v6.32 for the 2011 base year and 2023 future base case air quality modeling to identify receptors and quantify contributions for the 2015 NAAQS transport assessment. Information on this version of CAMx can be found in the Release Notes and User's Guide for CAMx v6.30 and in a technical report describing the updated halogen chemistry in version 6.32. These documents can be found in the docket for this notice.[8] Details of the 2011 and 2023 CAMx model applications are described in the "Air Quality Modeling Technical Support Document for the 2015 Ozone NAAQS Preliminary Interstate Transport Assessment" (AQM TSD) which is available in the docket for this notice.

C. Information Regarding Potential 2023 Nonattainment and Maintenance Sites

The ozone predictions from the 2011 and 2023 CAMx model simulations were used to project 2009-2013 average and maximum ozone design values[9] to 2023 following the approach described in the EPA's draft guidance for attainment demonstration modeling.[10] Using the approach in the final CSAPR Update, we evaluated the 2023 projected average and maximum design values in conjunction with the most recent measured ozone design values (i.e., 2013-2015) to identify sites that may warrant further consideration as potential nonattainment or maintenance sites in 2023.[11] If the approach in the CSAPR Update is applied to evaluate the projected design values,

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[8] CAMx v6.32 is a pre-release version of CAMx v6.40 which is expected to be made public by Ramboll Environ in late 2016 or early 2017.

[9] The ozone design value for a monitoring site is the 3-year average of the annual fourth-highest daily maximum 8-hour average ozone concentration.

[10] The December 3, 2014 ozone, fine particulate matter, and regional haze SIP modeling guidance is available at *http://www.epa.gov/ttn/scram/guidance/guide/Draft_O3-PM-RH_Modeling_Guidance-2014.pdf.*

[11] In determining compliance with the NAAQS, ozone design values are truncated to integer values. For example, a design value of 70.9 parts per billion (ppb) is truncated to 70 ppb which is attainment. In this manner, design values at or above 71.0 ppb are considered to exceed the NAAQS.

those sites with 2023 average design values that exceed the NAAQS and that are currently measuring nonattainment would be considered to be nonattainment receptors in 2023. Similarly, with the CSAPR Update approach, monitoring sites with a projected 2023 maximum design value that exceeds the NAAQS would be projected to be maintenance receptors in 2023. In the CSAPR Update approach, maintenance-only receptors include both those monitoring sites where the projected 2023 average design value is below the NAAQS, but the maximum design value is above the NAAQS, and monitoring sites with projected 2023 average design values that exceed the NAAQS, but for which current design values based on measured data do not exceed the NAAQS.

The base period 2009-2013 ambient and projected 2023 average and maximum design values and 2013-2015 and preliminary 2014-2016 measured design values at individual projected 2023 nonattainment receptor sites and maintenance-only receptor sites are provided in Tables 1 and 2, respectively.[12]

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[12] The preliminary 2014-2016 design values are based on data from the Air Quality System (AQS) and AirNow and have not been certified by state agencies. Note that for some sites the preliminary 2014-2016 design values are higher than the corresponding data for 2013-2015.

Table 1a. 2009-2013 and 2023 average and maximum design values and 2013-2015 and preliminary 2014-2016 design values (DVs) at projected nonattainment receptor sites in the East[13] (units are ppb).

Site ID	County	St	2009-2013 Average DV	2009-2013 Maximum DV	2023 Average DV	2023 Maximum DV	2013-2015 DV	2014-2016 DV
240251001	Harford	MD	90.0	93	71.3	73.7	71	73
360850067	Richmond	NY	81.3	83	71.2	72.7	74	76
361030002	Suffolk	NY	83.3	85	71.3	72.7	72	72
480391004	Brazoria	TX	88.0	89	74.4	75.3	80	75
482010024	Harris	TX	80.3	83	71.1	73.5	79	79
482011034	Harris	TX	81.0	82	71.6	72.5	74	73
484392003	Tarrant	TX	87.3	90	73.9	76.2	76	73
484393009	Tarrant	TX	86.0	86	72.0	72.0	78	75
551170006	Sheboygan	WI	84.3	87	71.0	73.3	77	79

Table 1b. 2009-2013 and 2023 average and maximum design values and 2013-2015 and preliminary 2014-2016 design values at projected nonattainment receptor sites in the West (units are ppb).

Site ID	County	St	2009-2013 Average DV	2009-2013 Maximum DV	2023 Average DV	2023 Maximum DV	2013-2015 DV	2014-2016 DV
60190007	Fresno	CA	94.7	95	78.9	79.1	86	86
60190011	Fresno	CA	93.0	96	77.8	80.3	85	88
60190242	Fresno	CA	91.7	95	79.2	82.0	86	86
60194001	Fresno	CA	90.7	92	73.0	74.0	89	91
60195001	Fresno	CA	97.0	99	79.1	80.8	88	94
60250005	Imperial	CA	74.7	76	72.8	74.1	77	76
60251003	Imperial	CA	81.0	82	78.5	79.5	78	76
60290007	Kern	CA	91.7	96	76.9	80.5	81	87
60290008	Kern	CA	86.3	88	71.2	72.6	78	81

13 In this notice, the East includes all states from Texas northward to North Dakota and eastward to the East Coast. All states in the contiguous U.S. from New Mexico northward to Montana and westward to the West Coast are considered, for this notice, to be in the West.

Site ID	County	St	2009-2013 Average DV	2009-2013 Maximum DV	2023 Average DV	2023 Maximum DV	2013-2015 DV	2014-2016 DV
60290014	Kern	CA	87.7	89	72.7	73.8	84	84
60290232	Kern	CA	87.3	89	72.7	74.1	78	77
60311004	Kings	CA	87.0	90	71.0	73.5	80	84
60370002	Los Angeles	CA	80.0	82	73.9	75.7	82	86
60370016	Los Angeles	CA	94.0	97	86.8	89.6	92	95
60371201	Los Angeles	CA	90.0	90	80.3	80.3	84	85
60371701	Los Angeles	CA	84.0	85	78.3	79.2	89	90
60376012	Los Angeles	CA	97.3	99	86.5	88.0	94	96
60379033	Los Angeles	CA	90.0	91	76.7	77.5	89	90
60392010	Madera	CA	85.0	86	71.7	72.6	81	83
60650012	Riverside	CA	97.3	99	83.0	84.4	92	93
60651016	Riverside	CA	100.7	101	85.1	85.3	98	97
60652002	Riverside	CA	84.3	85	72.2	72.8	81	81
60655001	Riverside	CA	92.3	93	79.4	80.0	87	87
60656001	Riverside	CA	94.0	98	78.4	81.7	90	91
60658001	Riverside	CA	97.0	98	86.7	87.6	92	95
60658005	Riverside	CA	92.7	94	82.9	84.1	85	91
60659001	Riverside	CA	88.3	91	73.3	75.6	84	86
60670012	Sacramento	CA	93.3	95	74.1	75.4	80	83
60710005	San Bernardino	CA	105.0	107	96.3	98.1	102	108
60710012	San Bernardino	CA	95.0	97	84.4	86.2	88	91
60710306	San Bernardino	CA	83.7	85	75.5	76.7	86	86
60711004	San Bernardino	CA	96.7	98	89.7	91.0	96	100
60712002	San Bernardino	CA	101.0	103	92.9	94.7	97	97
60714001	San Bernardino	CA	94.3	97	86.0	88.5	88	91
60714003	San Bernardino	CA	105.0	107	94.1	95.9	101	101
60719002	San Bernardino	CA	92.3	94	79.8	81.2	86	86

Site ID	County	St	2009-2013 Average DV	2009-2013 Maximum DV	2023 Average DV	2023 Maximum DV	2013-2015 DV	2014-2016 DV
60719004	San Bernardino	CA	98.7	99	88.5	88.7	99	104
60990006	Stanislaus	CA	87.0	88	73.6	74.5	82	83
61070009	Tulare	CA	94.7	96	75.8	76.9	89	89
61072010	Tulare	CA	89.0	90	72.6	73.4	81	82

Table 2a. 2009-2013 and 2023 average and maximum design values and 2013-2015 and preliminary 2014-2016 design values at projected maintenance-only receptor sites in the East (units are ppb).

Site ID	County	St	2009-2013 Average DV	2009-2013 Maximum DV	2023 Average DV	2023 Maximum DV	2013-2015 DV	2014-2016 DV
90013007	Fairfield	CT	84.3	89	69.4	73.2	83	81
90019003	Fairfield	CT	83.7	87	70.5	73.3	84	85
90099002	New Haven	CT	85.7	89	69.8	72.5	78	76
260050003	Allegan	MI	82.7	86	68.8	71.5	75	74
261630019	Wayne	MI	78.7	81	69.6	71.7	70	72
360810124	Queens	NY	78.0	80	69.9	71.7	69	69
481210034	Denton	TX	84.3	87	70.8	73.0	83	80
482010026	Harris	TX	77.3	80	68.6	71.0	68	68
482011039	Harris	TX	82.0	84	73.0	74.8	69	67
482011050	Harris	TX	78.3	80	69.5	71.0	71	70

Table 2b. 2009-2013 and 2023 average and maximum design values and 2013-2015 and preliminary 2014-2016 design values at projected maintenance-only receptor sites in the West (units are ppb).

Site ID	County	St	2009-2013 Average DV	2009-2013 Maximum DV	2023 Average DV	2023 Maximum DV	2013-2015 DV	2014-2016 DV
60295002	Kern	CA	84.3	91	70.4	76.0	85	88
60296001	Kern	CA	84.3	86	70.6	72.0	79	81
60372005	Los Angeles	CA	78.0	82	70.6	74.3	74	83
61070006	Tulare	CA	81.7	85	69.1	71.8	84	84

Site ID	County	St	2009-2013 Average DV	2009-2013 Maximum DV	2023 Average DV	2023 Maximum DV	2013-2015 DV	2014-2016 DV
61112002	Ventura	CA	81.0	83	70.7	72.4	77	77
80350004	Douglas	CO	80.7	83	69.6	71.6	79	77
80590006	Jefferson	CO	80.3	83	70.5	72.9	79	77
80590011	Jefferson	CO	78.7	82	69.7	72.7	80	80

D. Information Regarding Quantification of Ozone Contributions

The EPA performed nationwide, state-level ozone source apportionment modeling using the CAMx Ozone Source Apportionment Technology/Anthropogenic Precursor Culpability Analysis (OSAT/APCA) technique[14] to provide information regarding the expected contribution of 2023 base case NO_X and VOC emissions from all sources in each state to projected 2023 ozone concentrations at each air quality monitoring site. In the source apportionment model run, we tracked the ozone formed from each of the following contribution categories (i.e., "tags"):

- States – anthropogenic NO_X and VOC emissions from each of the contiguous 48 states and the District of Columbia tracked individually (emissions from all anthropogenic sectors in a given state were combined);
- Biogenics – biogenic NO_X and VOC emissions domain-wide (i.e., not by state);

[14] As part of this technique, ozone formed from reactions between biogenic VOC and NO_X with anthropogenic NO_X and VOC are assigned to the anthropogenic emissions.

- Boundary Concentrations – concentrations transported into the modeling domain from the lateral boundaries;
- Tribes – the emissions from those tribal lands for which we have point source inventory data in the 2011 NEI (we did not model the contributions from individual tribes);
- Canada and Mexico – anthropogenic emissions from sources in the portions of Canada and Mexico included in the modeling domain (contributions from Canada and Mexico were not modeled separately);
- Fires – combined emissions from wild and prescribed fires domain-wide (i.e., not by state); and
- Offshore – combined emissions from offshore marine vessels and offshore drilling platforms (i.e., not by state).

The CAMx source apportionment model simulation was performed for the period May 1 through September 30 using the 2023 future base case emissions and 2011 meteorology for this time period. The hourly contributions[15] from each tag were processed to obtain the 8-hour average contributions corresponding to the time period of the 8-hour daily maximum concentration on each day in the 2023 model simulation. This step was performed for those model grid cells containing monitoring sites in order to obtain 8-hour average contributions for each day at the location of each site. The model-predicted

[15] Ozone contributions from anthropogenic emissions under "NOx-limited" and "VOC-limited" chemical regimes were combined to obtain the net contribution from NOx and VOC anthropogenic emissions in each state.

contributions were applied in a relative sense to quantify the contributions to the 2023 average design value at each site. Additional details on the source apportionment modeling and the procedures for calculating contributions can be found in the AQM TSD. The resulting 2023 contributions from each tag to each monitoring site are provided in a file in the docket for this notice.[16] The largest contributions from each state to 2023 downwind nonattainment receptors and to downwind maintenance-only receptors are provided in Tables 3-1 and 3-2, respectively.

Table 3-1. Largest Contribution from Each State to Downwind 8-Hour Ozone Nonattainment Receptors (units are ppb).

Upwind States	Largest Contribution to a Downwind Nonattainment Receptor	Upwind States	Largest Contribution to a Downwind Nonattainment Receptor
Alabama	0.37	Montana	0.09
Arizona	0.74	Nebraska	0.37
Arkansas	1.16	Nevada	0.62
California	0.19	New Hampshire	0.01
Colorado	0.32	New Jersey	11.73
Connecticut	0.43	New Mexico	0.18
Delaware	0.55	New York	0.19
District of Columbia	0.70	North Carolina	0.43
Florida	0.49	North Dakota	0.15
Georgia	0.38	Ohio	2.38
Idaho	0.07	Oklahoma	2.39
Illinois	14.92	Oregon	0.61
Indiana	7.14	Pennsylvania	9.11
Iowa	0.43	Rhode Island	0.00

[16] The file containing the contributions is named: "2015 O3 NAAQS Transport Assessment_Design Values & Contributions."

Upwind States	Largest Contribution to a Downwind Nonattainment Receptor	Upwind States	Largest Contribution to a Downwind Nonattainment Receptor
Kansas	1.01	South Carolina	0.16
Kentucky	2.15	South Dakota	0.08
Louisiana	2.87	Tennessee	0.52
Maine	0.01	Texas	1.92
Maryland	1.73	Utah	0.24
Massachusetts	0.05	Vermont	0.00
Michigan	1.77	Virginia	5.04
Minnesota	0.43	Washington	0.15
Mississippi	0.56	West Virginia	2.59
Missouri	1.20	Wisconsin	0.47
-	-	Wyoming	0.31

Table 3-2. Largest Contribution from Each State to Downwind 8-Hour Ozone Maintenance Receptors (units are ppb).

Upwind States	Largest Contribution to a Downwind Maintenance Receptor	Upwind States	Largest Contribution to a Downwind Maintenance Receptor
Alabama	0.48	Montana	0.11
Arizona	0.52	Nebraska	0.41
Arkansas	2.20	Nevada	0.43
California	2.03	New Hampshire	0.02
Colorado	0.25	New Jersey	8.65
Connecticut	0.36	New Mexico	0.41
Delaware	0.38	New York	15.36
District of Columbia	0.08	North Carolina	0.43
Florida	0.22	North Dakota	0.13
Georgia	0.31	Ohio	3.82
Idaho	0.16	Oklahoma	1.30
Illinois	21.69	Oregon	0.17
Indiana	6.45	Pennsylvania	6.39
Iowa	0.60	Rhode Island	0.02

Upwind States	Largest Contribution to a Downwind Maintenance Receptor	Upwind States	Largest Contribution to a Downwind Maintenance Receptor
Kansas	0.64	South Carolina	0.15
Kentucky	1.07	South Dakota	0.06
Louisiana	3.37	Tennessee	0.69
Maine	0.00	Texas	2.49
Maryland	2.20	Utah	1.32
Massachusetts	0.11	Vermont	0.01
Michigan	1.76	Virginia	2.03
Minnesota	0.34	Washington	0.11
Mississippi	0.65	West Virginia	0.92
Missouri	2.98	Wisconsin	1.94
-	-	Wyoming	0.92

In CSAPR and the CSAPR Update, the EPA used a contribution screening threshold of 1 percent of the NAAQS to identify upwind states that may significantly contribute to downwind nonattainment and/or maintenance problems and which warrant further analysis to determine if emissions reductions might be required from each state to address the downwind air quality problem. The EPA determined that 1 percent was an appropriate threshold to use in the analysis for those rulemakings because there were important, even if relatively small, contributions to identified nonattainment and maintenance receptors from multiple upwind states mainly in the eastern U.S. The agency has historically found that the 1 percent threshold is appropriate for identifying interstate transport linkages for states collectively contributing to downwind ozone nonattainment or maintenance problems because that threshold captures a high percentage of the total pollution transport affecting downwind receptors.

Based on the approach used in CSAPR and the CSAPR Update, upwind states that contribute ozone in amounts at or above the 1 percent of the NAAQS threshold to a particular downwind nonattainment or maintenance receptor would be considered to be "linked" to that receptor in step 2 of the CSAPR framework for purposes of further analysis in step 3 to determine whether and what emissions from the upwind state contribute significantly to downwind nonattainment and interfere with maintenance of the NAAQS at the downwind receptors. For the 2015 ozone NAAQS, the value of a 1 percent threshold would be 0.70 ppb. The individual upwind state to downwind receptor "linkages" and contributions based on a 0.70 ppb threshold are identified in the AQM TSD for this notice.

The EPA notes that, when applying the CSAPR framework, an upwind state's linkage to a downwind receptor alone does not determine whether the state significantly contributes to nonattainment or interferes with maintenance of a NAAQS to a downwind state. While the 1 percent screening threshold has been traditionally applied to evaluate upwind state linkages in eastern states where such collective contribution was identified, the EPA noted in the CSAPR Update that, as to western states, there may be geographically specific factors to consider in determining whether the 1 percent screening threshold is appropriate. For certain receptors, where the collective contribution of emissions from one or more upwind states may not be a considerable portion of the ozone concentration at the downwind receptor, the EPA and states have considered, and could continue to consider, other factors to evaluate those states' planning obligation pursuant to the Good Neighbor provision.[17] However, where the collective contribution of emissions from one or more upwind states is responsible for a considerable portion of the downwind air quality problem, the CSAPR framework treats a contribution from an individual state at or above 1 percent of the NAAQS as significant, and this reasoning applies regardless of where the receptor is geographically located.

III. Analytic Information Available for Public Comment

The EPA has placed key information related to the air quality model applications into the electronic docket for this notice. This information includes the AQM TSD, an Excel file which contains the 2009-2013 base period and 2023 projected average and maximum ozone design values at individual monitoring sites and the ozone contributions to individual monitoring sites from anthropogenic emissions in each state and from the other individual categories included in the source apportionment

[17] *See, e.g.*, 81 FR 31513 (May 19, 2016) (approving Arizona Good Neighbor SIP addressing 2008 ozone NAAQS based on determination that upwind states would not collectively contribute to a considerable portion of the downwind air quality problem).

modeling. Also in the docket for this notice are a number of emission summaries by sector, state, county, source classification code, month, unit, day, and control program. In addition, the raw emission inventory files, ancillary data, and scripts used to develop the air quality model-ready emissions which are not in a format accepted by the electronic docket are available from the Air Emissions Modeling website for the Version 6.3 Platform at https://www.epa.gov/air-emissions-modeling/2011-version-63-platform. Electronic copies of the emissions and non-emissions air quality modeling input files, the CAMx v6.32 model code and run scripts, and the air quality modeling output files from the 2011 and 2023 air quality modeling performed for the 2015 NAAQS ozone transport assessment can be obtained by contacting Norm Possiel at *possiel.norm@epa.gov*.

The EPA is requesting comment on the components of the 2011 air quality modeling platform, the methods for projecting 2023 ozone design value concentrations and the methods for calculating ozone contributions. The EPA is also seeking comment on the methods used to project emissions to future years, where 2023 is an example of such a year. Specifically, comments are requested regarding new datasets, impacts of existing and planned federal, state, and local control programs on emissions, and new methods that could be used to prepare more representative emissions projections. That is, EPA is seeking comments on the projection approach and data sets that are potentially useful for computing projected emissions. Commenters wishing to comment on inventory projection methods should submit to the docket comments that describe an alternative approach to the existing methods, along with documentation describing why that method is an improvement over the existing method. Summaries of the base and projected future year emission inventories are provided in the docket to aid in the review of these data. As indicated above, the comment period for this notice is 90 days from the date of publication in the *Federal Register*.

Dated: December 28, 2016

Stephen Page, Director,
Office of Air Quality Planning and Standards.

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