ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA–R05–OAR–2022–0006; EPA–HQ–OAR–2021–0663; FRL–9431–01–R5]

Air Plan Disapproval; Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin; Air Plan Disapproval; Region 5 Interstate Transport of Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: Pursuant to the Federal Clean Air Act (CAA or the Act), the Environmental Protection Agency (EPA) is proposing to disapprove State Implementation Plan (SIP) submittals from Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin regarding interstate transport for the 2015 ozone national ambient air quality standards (NAAQS). The ''good neighbor'' or ''interstate transport'' provision requires that each state's SIP contain adequate provisions to prohibit emissions from within the state from significantly contributing to nonattainment or interfering with maintenance of the NAAQS in other states. This requirement is part of the broader set of ''infrastructure'' requirements, which are designed to ensure that the structural components of each state's air quality management program are adequate to meet the state's responsibilities under the CAA. This disapproval, if finalized, will establish a 2-year deadline for EPA to promulgate a Federal Implementation Plan (FIP) to address the relevant interstate transport requirements, unless EPA approves a subsequent SIP submittal that meets these requirements. Disapproval does not start a mandatory sanctions clock.

DATES: *Comments:* Written comments must be received on or before April 25, 2022.

ADDRESSES: You may send comments, identified as Docket No. EPA–R05–OAR–2022–0006, by any of the following methods: Federal Rulemaking Portal at *https://www.regulations.gov* following the online instructions for submitting comments or via email to *arra.sarah@epa.gov.* Include Docket ID No. EPA–R05–OAR–2022–0006 in the subject line of the message.

Instructions: All submissions received must include the Docket ID No. for this rulemaking. Comments received may be posted without change to *https://www.regulations.gov/,* including any personal information provided. For detailed instructions on sending comments and additional information on the rulemaking process, see the ''Public Participation'' heading of the **SUPPLEMENTARY INFORMATION** section of this document. Out of an abundance of caution for members of the public and our staff, the EPA Docket Center and Reading Room are open to the public by appointment only to reduce the risk of transmitting COVID–19. Our Docket Center staff also continues to provide remote customer service via email, phone, and webform. For further information on EPA Docket Center services and the current status, please visit us online at *https://www.epa.gov/dockets.*

FOR FURTHER INFORMATION CONTACT: Olivia Davidson, Environmental Scientist, Attainment Planning and Maintenance Section, Air Programs Branch (AR–18J), Environmental Protection Agency, Region 5, 77 West Jackson Boulevard, Chicago, Illinois 60604, (312) 886–0266, *davidson.olivia@epa.gov.* The EPA Region 5 office is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding Federal holidays and facility closures due to COVID–19.

SUPPLEMENTARY INFORMATION:

Public Participation: Submit your comments, identified by Docket ID No. EPA–R05–OAR–2022–0006, at *https://www.regulations.gov* (our preferred method), or the other methods identified in the **ADDRESSES** section. Once submitted, comments cannot be edited or removed from the docket. EPA may publish any comment received to its public docket. Do not submit to EPA's docket at *https://www.regulations.gov* 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. 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).

There are two dockets supporting this action, EPA–R05–OAR–2022–0006 and EPA–HQ–OAR–2021–0663. Docket No. EPA–R05–OAR–2022–0006 contains information specific to Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin, including the notice of proposed rulemaking. Docket No. EPA–HQ–OAR–2021–0663 contains additional modeling files, emissions inventory files, technical support documents, and other relevant supporting documentation regarding interstate transport of emissions for the 2015 ozone NAAQS which are being used to support this action. All comments regarding information in either of these dockets are to be made in Docket No. EPA–R05–OAR–2022–0006. For additional submission methods, please contact Olivia Davidson, (312) 886–0266, *davidson.olivia@epa.gov.* For the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *https://www.epa.gov/dockets/commenting-epa-dockets.* Due to public health concerns related to COVID–19, the EPA Docket Center and Reading Room are open to the public by appointment only. Our Docket Center staff also continues to provide remote customer service via email, phone, and webform. For further information and updates on EPA Docket Center services, please visit us online at *https://www.epa.gov/dockets.*

EPA continues to carefully and continuously monitor information from the Centers for Disease Control and Prevention (CDC), local area health departments, and our Federal partners so that we can respond rapidly as conditions change regarding COVID–19. The index to the docket for this action, Docket No. EPA–R05–OAR–2022–0006, is available electronically at *www.regulations.gov.* While all documents in the docket are listed in the index, some information may not be publicly available due to docket file size restrictions or content (*e.g.,* CBI).

Throughout this document, ''we,'' ''us,'' and ''our'' means EPA.

I. Background

A. Description of Statutory Background

On October 1, 2015, EPA promulgated a revision to the ozone NAAQS (2015 ozone NAAQS), lowering the level of both the primary and secondary standards to 0.070 parts per million (ppm).[1] Section 110(a)(1) of the CAA requires states to submit, within 3 years after promulgation of a new or revised standard, SIP submissions meeting the applicable requirements of section 110(a)(2).[2] One of these applicable

[1] National Ambient Air Quality Standards for Ozone, Final Rule, 80 FR 65292 (October 26, 2015). Although the level of the standard is specified in the units of ppm, ozone concentrations are also described in parts per billion (ppb). For example, 0.070 ppm is equivalent to 70 ppb.

[2] SIP revisions that are intended to meet the applicable requirements of section 110(a)(1) and (2) of the CAA are often referred to as infrastructure

requirements is found in CAA section 110(a)(2)(D)(i)(I), otherwise known as the ''interstate transport'' or ''good neighbor'' provision, which generally requires SIPs to contain adequate provisions to prohibit in-state emissions activities from having certain adverse air quality effects on other states due to interstate transport of pollution. There are two so-called ''prongs'' within CAA section 110(a)(2)(D)(i)(I). A SIP for a new or revised NAAQS must contain adequate provisions prohibiting any source or other type of emissions activity within the state from emitting air pollutants in amounts that will significantly contribute to nonattainment of the NAAQS in another state (prong 1) or interfere with maintenance of the NAAQS in another state (prong 2). EPA and states must give independent significance to prong 1 and prong 2 when evaluating downwind air quality problems under CAA section 110(a)(2)(D)(i)(I).[3]

B. Description of EPA's Four Step Interstate Transport Regulatory Process

EPA is using the 4-step interstate transport framework (or 4-step framework) to evaluate the states' SIP submittals addressing the interstate transport provision for the 2015 ozone NAAQS. EPA has addressed the interstate transport requirements of CAA section 110(a)(2)(D)(i)(I) with respect to prior ozone NAAQS in several regional regulatory actions, including the Cross-State Air Pollution Rule (CSAPR), which addressed interstate transport with respect to the 1997 ozone NAAQS as well as the 1997 and 2006 fine particulate matter standards,[4] and the Cross-State Air Pollution Rule Update (CSAPR Update) [5] and the Revised CSAPR Update, both of which addressed the 2008 ozone NAAQS.[6]

Through the development and implementation of the CSAPR rulemakings and prior regional rulemakings pursuant to the interstate transport provision,[7] EPA, working in partnership with states, developed the following 4-step interstate transport framework to evaluate a state's obligations to eliminate interstate transport emissions under the interstate transport provision for the ozone NAAQS: (1) Identify monitoring sites that are projected to have problems attaining and/or maintaining the NAAQS (*i.e.,* nonattainment and/or maintenance receptors); (2) identify states that impact those air quality problems in other (*i.e.,* downwind) states sufficiently such that the states are considered ''linked'' and therefore warrant further review and analysis; (3) identify the emissions reductions necessary (if any), applying a multifactor analysis, to eliminate each linked upwind state's significant contribution to nonattainment or interference with maintenance of the NAAQS at the locations identified in Step 1; and (4) adopt permanent and enforceable measures needed to achieve those emissions reductions.

C. Background on EPA's Ozone Transport Modeling Information

In general, EPA has performed nationwide air quality modeling to project ozone design values which are used in combination with measured data to identify nonattainment and maintenance receptors. To quantify the contribution of emissions from specific upwind states on 2023 ozone design values for the identified downwind nonattainment and maintenance receptors, EPA performed nationwide, state-level ozone source apportionment modeling for 2023. The source apportionment modeling provided contributions to ozone at receptors from precursor emissions of anthropogenic nitrogen oxides (NO_X) and volatile organic compounds (VOCs) in individual upwind states.

EPA has released several documents containing projected ozone design values, contributions, and information relevant to evaluating interstate transport with respect to the 2015 ozone NAAQS. First, on January 6, 2017, EPA published a notice of data availability (NODA) in which we requested comment on preliminary interstate ozone transport data including projected ozone design values and interstate contributions for 2023 using a 2011 base year platform.[8] In the NODA, EPA used the year 2023 as the analytic year for this preliminary modeling because that year aligns with the expected attainment year for Moderate ozone nonattainment areas for the 2015 ozone NAAQS.[9] On October 27, 2017, we released a memorandum (October 2017 memorandum) containing updated 2011 platform-based modeling data for 2023, which incorporated changes made in response to comments on the NODA, and noted that the modeling may be useful for states developing SIPs to address interstate transport obligations for the 2008 ozone NAAQS.[10] On March 27, 2018, we issued a memorandum (March 2018 memorandum) noting that the same 2023 modeling data released in the October 2017 memorandum could also be useful for identifying potential downwind air quality problems with respect to the 2015 ozone NAAQS at Step 1 of the 4-step interstate transport framework.[11] The March 2018 memorandum also included the then newly available contribution modeling data for 2023 to assist states in evaluating their impact on potential downwind air quality problems for the 2015 ozone NAAQS under Step 2 of the 4-step interstate transport framework.[12] EPA subsequently issued two more memoranda in August and October 2018, providing additional information to states developing interstate transport SIP submissions for the 2015 ozone NAAQS concerning, respectively,

SIPs and the applicable elements under section 110(a)(2) are referred to as infrastructure requirements.

[3] *See North Carolina* v. *EPA,* 531 F.3d 896, 909–11 (D.C. Cir. 2008).

[4] *See* Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 FR 48208 (Aug. 8, 2011).

[5] Cross-State Air Pollution Rule Update for the 2008 Ozone NAAQS, 81 FR 74504 (Oct. 26, 2016).

[6] In 2019, the D.C. Circuit Court of Appeals remanded the CSAPR Update to the extent it failed to require upwind states to eliminate their significant contribution by the next applicable attainment date by which downwind states must come into compliance with the NAAQS, as established under CAA section 181(a). *Wisconsin* v. *EPA,* 938 F.3d 303, 313 (D.C. Cir. 2019). The Revised CSAPR Update for the 2008 Ozone NAAQS, 86 FR 23054 (April 30, 2021), responded to the remand of the CSAPR Update in *Wisconsin* and the vacatur of a separate rule, the ''CSAPR Close-Out,'' 83 FR 65878 (December 21, 2018), in *New York* v. *EPA,* 781 F. App'x. 4 (D.C. Cir. 2019).

[7] In addition to the CSAPR rulemakings, other regional rulemakings addressing ozone transport include the ''NO_X SIP Call,'' 63 FR 57356 (October 27, 1998) and the ''Clean Air Interstate Rule'' (CAIR), 70 FR 25162 (May 12, 2005).

[8] *See* 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), 82 FR 1733 (January 6, 2017).

[9] 82 FR at 1735.

[10] *See* Information on the Interstate Transport State Implementation Plan Submissions for the 2008 Ozone National Ambient Air Quality Standards under Clean Air Act Section 110(a)(2)(D)(i)(I), October 27, 2017, available in docket EPA–HQ–OAR–2021–0663 or at *https://www.epa.gov/interstate-air-pollution-transport/interstate-air-pollution-transport-memos-and-notices.*

[11] *See* Information on the Interstate Transport State Implementation Plan Submissions for the 2015 Ozone National Ambient Air Quality Standards under Clean Air Act Section 110(a)(2)(D)(i)(I), March 27, 2018, available in docket EPA–HQ–OAR–2021–0663 or at *https://www.epa.gov/interstate-air-pollution-transport/interstate-air-pollution-transport-memos-and-notices.*

[12] The March 2018 memorandum, however, provided, ''While the information in this memorandum and the associated air quality analysis data could be used to inform the development of these SIPs, the information is not a final determination regarding states' obligations under the good neighbor provision. Any such determination would be made through notice-and-comment rulemaking.''

potential contribution thresholds that may be appropriate to apply in Step 2 of the 4-step interstate transport framework, and considerations for identifying downwind areas that may have problems maintaining the standard at Step 1 of the 4-step interstate transport framework.[13]

Since the release of the modeling data shared in the March 2018 memorandum, EPA has performed modeling using a 2016-based emissions modeling platform (*i.e.,* 2016v1) This emissions platform was developed under the EPA/Multi-Jurisdictional Organization (MJO)/state collaborative project.[14] This collaborative project was a multi-year joint effort by EPA, MJOs, and states to develop a new, more recent emissions platform for use by EPA and states in regulatory modeling as an improvement over the dated 2011-based platform that EPA had used to project ozone design values and contribution data provided in the 2017 and 2018 memoranda. EPA used the 2016v1 emissions to project ozone Design values and contributions for 2023. On October 30, 2020, in the Notice of Proposed Rulemaking for the Revised CSAPR Update, EPA released and accepted public comment on 2023 modeling that used the 2016v1 emissions platform.[15] *See* 85 FR 68964, 68981. Although the Revised CSAPR Update addressed transport for the 2008 ozone NAAQS, the projected design values and contributions from the 2016v1 platform are also useful for identifying downwind ozone problems and linkages with respect to the 2015 ozone NAAQS.[16]

Following the final Revised CSAPR Update, EPA made further updates to the 2016 emissions platform to include mobile emissions from EPA's Motor Vehicle Emission Simulator MOVES3 model[17] and updated emissions projections for electric generating units (EGUs) that reflect the emissions reductions from the Revised CSAPR Update, recent information on plant closures, and other sector trends. The construct of the updated emissions platform, 2016v2, is described in the emissions modeling technical support document (TSD) for this proposed rule.[18]

EPA's latest projections of the baseline EGU emissions uses the version 6—Summer 2021 Reference Case of the Integrated Planning Model (IPM).[19] IPM is a multi-regional, dynamic, and deterministic linear programming model of the U.S. electric power sector. The model provides forecasts of least cost capacity expansion, electricity dispatch, and emission control strategies, while meeting energy demand, environmental, transmission, dispatch, and reliability constraints.

The IPM version 6—Summer 2021 Reference Case incorporated recent updates through the Summer of 2021 to account for updated Federal and State environmental regulations for EGUs. This projected base case accounts for the effects of the finalized Mercury and Air Toxics Standards rule (MATS), CSAPR, the CSAPR Update, the Revised CSAPR Update, New Source Review settlements, the final Effluent Limitation Guidelines (ELG) Rule, the Coal Combustion Residual (CCR) Rule, and other on-the-books Federal and State rules (including renewable energy tax credit extensions from the Consolidated Appropriations Act of 2021) through early 2021 impacting sulfur dioxide (SO_2), NO_X, directly emitted particulate matter, carbon dioxide, and power plant operations. It also includes final actions EPA has taken to implement the Regional Haze Rule and Best Available Retrofit Technology (BART) requirements. Further, the EPA Platform v6 uses demand projections from the Energy Information Agency's (EIA) Annual Energy Outlook (AEO) 2020.

The IPM version 6—Summer 2021 Reference Case uses the National Electric Energy Data System (NEEDS) v6 database as its source for data on all existing and planned-committed units. Units are removed from the NEEDS inventory only if a high degree of certainty could be assigned to future implementation of the announced future closure or retirement. The available retirement-related information was reviewed for each unit, and the following rules are applied to remove:

(i) Units that are listed as retired in the December 2020 EIA Form 860M

(ii) Units that have a planned retirement year prior to June 30, 2023 in the December 2020 EIA Form 860M

(iii) Units that have been cleared by a regional transmission operator (RTO) or independent system operator (ISO) to retire before 2023, or whose RTO/ISO clearance to retire is contingent on actions that can be completed before 2023

(iv) Units that have committed specifically to retire before 2023 under Federal or state enforcement actions or regulatory requirements

(v) And finally, units for which a retirement announcement can be corroborated by other available information. Units required to retire pursuant to enforcement actions or state rules on July 1, 2023 or later are retained in NEEDS v6.

Retirements or closures taking place on or after July 1, 2023 are captured as constraints on those units in the IPM modeling, and the units are retired in future year projections per the terms of the related requirements. Any retirements excluded from the NEEDS v6 inventory can be viewed in the NEEDS spreadsheet.[20]

As highlighted in previous rulemakings, the IPM documentation, and EPA's Power Sector Modeling website, EPA's goal is to explain and document the use of IPM in a transparent and publicly accessible manner, while also providing for concurrent channels for improving the model's assumptions and representation by soliciting constructive feedback to improve the model. This includes making all inputs and assumptions to the model, output files from the model, and IPM feedback form publicly available on EPA's website.

EPA performed air quality modeling of the 2016v2 emissions using the most recent public release version of the Comprehensive Air-quality Model with extensions (CAMx) photochemical modeling, version 7.10.[21] EPA now proposes to primarily rely on modeling

[13] *See* Analysis of Contribution Thresholds for Use in Clean Air Act Section 110(a)(2)(D)(i)(I) Interstate Transport State Implementation Plan Submissions for the 2015 Ozone National Ambient Air Quality Standards, August 31, 2018 (''August 2018 memorandum''), and Considerations for Identifying Maintenance Receptors for Use in Clean Air Act Section 110(a)(2)(D)(i)(I) Interstate Transport State Implementation Plan Submissions for the 2015 Ozone National Ambient Air Quality Standards, October 19, 2018, available in docket EPA–HQ–OAR–2021–0663 or at *https://www.epa.gov/airmarkets/memo-and-supplemental-information-regarding-interstate-transport-sips-2015-ozone-naaqs*.

[14] The results of this modeling, as well as the underlying modeling files, are included in docket ID No. EPA–HQ–OAR–2021–0663.

[15] *See* 85 FR 68964, 68981.

[16] *See* the Air Quality Modeling Technical Support Document for the Final Revised Cross-State Air Pollution Rule Update, included in the Headquarters docket ID No. EPA–HQ–OAR–2021–0663.

[17] Additional details and documentation related to the MOVES3 model can be found at *https://www.epa.gov/moves/latest-version-motor-vehicle-emission-simulator-moves*.

[18] See Technical Support Document (TSD) Preparation of Emissions Inventories for the 2016v2 North American Emissions Modeling Platform included in the Headquarters docket ID No. EPA–HQ–OAR–2021–0663.

[19] Detailed information and documentation of EPA's Base Case, including all the underlying assumptions, data sources, and architecture parameters can be found on EPA's website at: *https://www.epa.gov/airmarkets/epas-power-sector-modeling-platform-v6-using-ipm-summer-2021-reference-case*.

[20] The ''Capacity Dropped'' and the ''Retired Through 2023'' worksheets in NEEDS lists all units that are removed from the NEEDS v6 inventory—NEEDS v6 Summer 2021 Reference Case. This data can be found on EPA's website at: *https://www.epa.gov/airmarkets/national-electric-energy-data-system-needs-v6*.

[21] Ramboll Environment and Health, January 2021, *www.camx.com*.

based on the updated and newly available 2016v2 emissions platform in evaluating these submissions with respect to Steps 1 and 2 of the 4-step interstate transport framework and generally referenced within this action as 2016v2 modeling for 2023. By using the updated modeling results, EPA is using the most current and technically appropriate information for this proposed rulemaking. Section III of this action and the Air Quality Modeling TSD for 2015 Ozone NAAQS Transport SIP Proposed Actions, included in Docket ID No. EPA–HQ–OAR–2021–0663 for this proposal, contain additional detail on EPA's 2016v2 modeling. In this action, EPA is accepting public comment on this updated 2023 modeling, which uses a 2016v2 emissions platform. Comments on EPA's air quality modeling should be submitted in the Regional docket for this action, docket ID No. EPA–R05–OAR–2022–0006. Comments are not being accepted in docket ID No. EPA–HQ–OAR–2021–0663.

States may have chosen to rely on the results of EPA modeling and/or alternative modeling performed by states or MJOs to evaluate downwind air quality problems and contributions as part of their submissions. As most Region 5 states have done so, in Sections III.A, III.B, III.C, III.D, and III.E, we evaluate how Region 5 states used air quality modeling information in their submissions.

D. EPA's Approach to Evaluating Interstate Transport SIPs for the 2015 Ozone NAAQS

EPA proposes to apply a consistent set of policy judgments across all states for purposes of evaluating interstate transport obligations and the approvability of interstate transport SIP submittals for the 2015 ozone NAAQS. These policy judgments reflect consistency with relevant case law and past agency practice as reflected in the CSAPR and related rulemakings. Nationwide consistency in approach is particularly important in the context of interstate ozone transport, which is a regional-scale pollution problem involving many smaller contributors. Effective policy solutions to the problem of interstate ozone transport going back to the NOx SIP Call have necessitated the application of a uniform framework of policy judgments to ensure an ''efficient and equitable'' approach. *See EME Homer City,* 572 U.S. 489, 519 (2014).

In the March, August, and October 2018 memoranda, EPA recognized that states may be able to establish alternative approaches to addressing their interstate transport obligations for the 2015 ozone NAAQS that vary from a nationally uniform framework. EPA emphasized in these memoranda, however, that such alternative approaches must be technically justified and appropriate in light of the facts and circumstances of each particular state's submittal. In general, EPA continues to believe that deviation from a nationally consistent approach to ozone transport must be substantially justified and have a well-documented technical basis that is consistent with relevant case law. Where states submitted SIPs that rely on any potential ''flexibilities'' as may have been identified or suggested in the past, EPA will evaluate whether the state adequately justified the technical and legal basis for doing so.

EPA notes that certain concepts included in an attachment to the March 2018 memorandum require unique consideration, and these ideas do not constitute agency guidance with respect to transport obligations for the 2015 ozone NAAQS. Attachment A to the March 2018 memorandum identified a ''Preliminary List of Potential Flexibilities'' that could potentially inform SIP development.[22] However, EPA made clear in that Attachment that the list of ideas were not suggestions endorsed by the Agency but rather ''comments provided in various forums'' on which EPA sought ''feedback from interested stakeholders.'' [23] Further, Attachment A stated, ''EPA is not at this time making any determination that the ideas discussed below are consistent with the requirements of the CAA, nor are we specifically recommending that states use these approaches.'' [24] Attachment A to the March 2018 memorandum, therefore, does not constitute agency guidance, but was intended to generate further discussion around potential approaches to addressing ozone transport among interested stakeholders. To the extent states sought to develop or rely on these ideas in support of their SIP submittals, EPA will thoroughly review the technical and legal justifications for doing so.

The remainder of this section describes EPA's proposed framework with respect to analytic year, definition of nonattainment and maintenance receptors, selection of contribution threshold, and multifactor control strategy assessment.

[22] *March 2018 memorandum, Attachment A.*

[23] *Id.* at A–1.

[24] *Id.*

1. Selection of Analytic Year

In general, the states and EPA must implement the interstate transport provision in a manner ''consistent with the provisions of [title I of the CAA.]'' CAA section 110(a)(2)(D)(i). This requires, among other things, that these obligations are addressed consistently with the timeframes for downwind areas to meet their CAA obligations. With respect to ozone NAAQS, under CAA section 181(a), this means obligations must be addressed ''as expeditiously as practicable'' and no later than the schedule of attainment dates provided in CAA section 181(a)(1).[25] Several D.C. Circuit court decisions address the issue of the relevant analytic year for the purposes of evaluating ozone transport air-quality problems. On September 13, 2019, the D.C. Circuit issued a decision in *Wisconsin* v. *EPA,* remanding the CSAPR Update to the extent that it failed to require upwind states to eliminate their significant contribution by the next applicable attainment date by which downwind states must come into compliance with the NAAQS, as established under CAA section 181(a). 938 F.3d at 313.

On May 19, 2020, the D.C. Circuit issued a decision in *Maryland* v. *EPA* that cited the *Wisconsin* decision in holding that EPA must assess the impact of interstate transport on air quality at the next downwind attainment date, including Marginal area attainment dates, in evaluating the basis for EPA's denial of a petition under CAA section 126(b). *Maryland* v. *EPA,* 958 F.3d 1185, 1203–04 (D.C. Cir. 2020). The court noted that ''section 126(b) incorporates the Good Neighbor Provision,'' and, therefore, ''EPA must find a violation [of section 126] if an upwind source will significantly contribute to downwind nonattainment at the *next downwind attainment deadline*. Therefore, the agency must evaluate downwind air quality at that deadline, not at some later date.'' *Id.* at 1204 (emphasis added). EPA interprets the court's holding in *Maryland* as requiring the states and the Agency, under the good neighbor provision, to assess downwind air quality as expeditiously as practicable and no later than the next applicable attainment date,[26] which is

[25] For attainment dates for the 2015 ozone NAAQS, refer to CAA section 181(a), 40 CFR 51.1303, and Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards, 83 FR 25776 (June 4, 2018, effective Aug. 3, 2018).

[26] We note that the court in *Maryland* did not have occasion to evaluate circumstances in which EPA may determine that an upwind linkage to a downwind air quality problem exists at steps 1 and

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now the Moderate area attainment date under CAA section 181 for ozone nonattainment. The Moderate area attainment date for the 2015 ozone NAAQS is August 3, 2024.[27] EPA believes that 2023 is now the appropriate year for analysis of interstate transport obligations for the 2015 ozone NAAQS, because the 2023 ozone season is the last relevant ozone season during which achieved emissions reductions in linked upwind states could assist downwind states with meeting the August 3, 2024 Moderate area attainment date for the 2015 ozone NAAQS.

EPA recognizes that the attainment date for nonattainment areas classified as Marginal for the 2015 ozone NAAQS was August 3, 2021. Under the *Maryland* holding, any necessary emissions reductions to satisfy interstate transport obligations should have been implemented by no later than this date. At the time of the statutory deadline to submit interstate transport SIPs (October 1, 2018), many states relied upon EPA modeling of the year 2023, and no state provided an alternative analysis using a 2021 analytic year (or the prior 2020 ozone season). However, EPA must act on SIP submittals using the information available at the time it takes such action. In this circumstance, EPA does not believe it would be appropriate to evaluate states' obligations under CAA section 110(a)(2)(D)(i)(I) as of an attainment date that is wholly in the past, because the Agency interprets the interstate transport provision as forward looking. *See* 86 FR at 23074; *see also Wisconsin,* 938 F.3d at 322. Consequently, in this proposal EPA will use the analytical year of 2023 to evaluate each state's CAA section 110(a)(2)(D)(i)(I) SIP submission with respect to the 2015 ozone NAAQS.

2. Step 1 of the 4-Step Interstate Transport Framework

In Step 1, EPA identifies monitoring sites that are projected to have problems attaining and/or maintaining the NAAQS in the 2023 analytic year. Where EPA's analysis shows that a site does not fall under the definition of a nonattainment or maintenance receptor, that site is excluded from further analysis under EPA's 4-step interstate transport framework. For sites that are identified as a nonattainment or maintenance receptor in 2023, we proceed to the next step of our 4-step interstate transport framework by identifying the upwind state's contribution to those receptors.

EPA's approach to identifying ozone nonattainment and maintenance receptors in this action is consistent with the approach used in previous transport rulemakings. EPA's approach gives independent consideration to both the ''contribute significantly to nonattainment'' and the ''interfere with maintenance'' prongs of CAA section 110(a)(2)(D)(i)(I), consistent with the D.C. Circuit's direction in *North Carolina* v. *EPA*.[28]

For the purpose of this proposal, EPA identifies nonattainment receptors as those monitoring sites that are projected to have average design values that exceed the NAAQS and that are also measuring nonattainment based on the most recent monitored design values. This approach is consistent with prior transport rulemakings, such as the CSAPR Update, where EPA defined nonattainment receptors as those areas that both currently measure nonattainment and that EPA projects will be in nonattainment in the future analytic year (*i.e.,* 2023).[29]

In addition, in this proposal, EPA identifies a receptor to be a ''maintenance'' receptor for purposes of defining interference with maintenance, consistent with the method used in the CSAPR and upheld by the D.C. Circuit in *EME Homer City Generation, L.P.* v. *EPA,* 795 F.3d 118, 136 (D.C. Cir. 2015).[30] Specifically, EPA identified maintenance receptors as those receptors that would have difficulty maintaining the relevant NAAQS in a scenario that takes into account historical variability in air quality at that receptor. The variability in air quality was determined by evaluating the ''maximum'' future design value at each receptor based on a projection of the maximum measured design value over the relevant period. EPA interprets the projected maximum future design value to be a potential future air quality outcome consistent with the meteorology that yielded maximum measured concentrations in the ambient data set analyzed for that receptor (*i.e.,* ozone conducive meteorology). EPA also recognizes that previously experienced meteorological conditions (*e.g.,* dominant wind direction, temperatures, air mass patterns) promoting ozone formation that led to maximum concentrations in the measured data may reoccur in the future. The maximum design value gives a reasonable projection of future air quality at the receptor under a scenario in which such conditions do, in fact, reoccur. The projected maximum design value is used to identify upwind emissions that, under those circumstances, could interfere with the downwind area's ability to maintain the NAAQS.

Recognizing that nonattainment receptors are also, by definition, maintenance receptors, EPA often uses the term ''maintenance-only'' to refer to those receptors that are not nonattainment receptors. Consistent with the concepts for maintenance receptors, as described above, EPA identifies ''maintenance-only'' receptors as those monitoring sites that have projected average design values above the level of the applicable NAAQS, but that are not currently measuring nonattainment based on the most recent official design values. In addition, those monitoring sites with projected average design values below the NAAQS, but with projected maximum design values above the NAAQS are also identified as ''maintenance only'' receptors, even if they are currently measuring nonattainment based on the most recent official design values.

3. Step 2 of the 4-Step Interstate Transport Framework

In Step 2, EPA quantifies the contribution of each upwind state to each receptor in the 2023 analytic year. The contribution metric used in Step 2 is defined as the average impact from each state to each receptor on the days with the highest ozone concentrations at the receptor based on the 2023 modeling. If a state's contribution value does not equal or exceed the threshold of 1 percent of the NAAQS (*i.e.,* 0.70 ppb for the 2015 ozone NAAQS), the upwind state is not ''linked'' to a downwind air quality problem, and EPA, therefore, concludes that the state does not significantly contribute to nonattainment or interfere with maintenance of the NAAQS in the

2 of the interstate transport framework by a particular attainment date, but for reasons of impossibility or profound uncertainty the Agency is unable to mandate upwind pollution controls by that date. *See Wisconsin,* 938 F.3d at 320. The D.C. Circuit noted in *Wisconsin* that upon a sufficient showing, these circumstances may warrant flexibility in effectuating the purpose of the interstate transport provision.

[27] *See* CAA section 181(a); 40 CFR 51.1303; Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards, 83 FR 25776 (June 4, 2018, effective Aug. 3, 2018).

[28] *See North Carolina* v. *EPA,* 531 F.3d at 910–11 (D.C. Cir. 2008) (holding that EPA must give ''independent significance'' to each prong of CAA section 110(a)(2)(D)(i)(I)).

[29] *See* 81 FR 74504 (October 26, 2016). This same concept, relying on both current monitoring data and modeling to define nonattainment receptor, was also applied in CAIR. *See* 70 FR 25241, 25249 (January 14, 2005); *see also North Carolina,* 531 F.3d at 913–14 (affirming as reasonable EPA's approach to defining nonattainment in CAIR).

[30] *See* 76 FR 48208 (August 8, 2011). CSAPR Update and Revised CSAPR Update also used this approach. *See* 81 FR 74504 (October 26, 2016) and 86 FR 23054 (April 30, 2021).

downwind states. However, if a state's contribution equals or exceeds the 1 percent threshold, the state's emissions are further evaluated in Step 3, considering both air quality and cost as part of a multi-factor analysis, to determine what, if any, emissions might be deemed ''significant'' and, thus, must be eliminated under CAA section 110(a)(2)(D)(i)(I). EPA is proposing to rely in the first instance on the 1 percent threshold for the purpose of evaluating a state's contribution to nonattainment or maintenance of the 2015 ozone NAAQS (*i.e.,* 0.70 ppb) at downwind receptors. This is consistent with the Step 2 approach that EPA applied in CSAPR for the 1997 ozone NAAQS, which has subsequently been applied in the CSAPR Update when evaluating interstate transport obligations for the 2008 ozone NAAQS. EPA continues to find 1 percent to be an appropriate threshold. For ozone, as EPA found in the Clean Air Interstate Rule (CAIR), CSAPR, and the CSAPR Update, a portion of the nonattainment problems from anthropogenic sources in the U.S. result from the combined impact of relatively small contributions from many upwind states, along with contributions from in-state sources and, in some cases, substantially larger contributions from a subset of particular upwind states. EPA's analysis shows that much of the ozone transport problem being analyzed in this proposed rule is still the result of the collective impacts of contributions from many upwind states. Therefore, application of a consistent contribution threshold is necessary to identify those upwind states that should have responsibility for addressing their contribution to the downwind nonattainment and maintenance problems to which they collectively contribute. Continuing to use 1 percent of the NAAQS as the screening metric to evaluate collective contribution from many upwind states also allows EPA and states to apply a consistent framework to evaluate interstate emissions transport under the interstate transport provision from one NAAQS to the next. *See* 81 FR at 74518. *See also* 86 FR at 23085 (reviewing and explaining rationale from CSAPR, 76 FR at 48237–38, for selection of 1 percent threshold).

i. EPA's Experience With Alternative Step 2 Thresholds

EPA's August 2018 memorandum recognized that in certain circumstances, a state may be able to establish that an alternative contribution threshold of 1 ppb is justifiable. Where a state relies on this alternative threshold, and where that state determined that it was not linked at Step 2 using the alternative threshold, EPA will evaluate whether the state provided a technically sound assessment of the appropriateness of using this alternative threshold based on the facts and circumstances underlying its application in the particular SIP submission.

EPA here shares further evaluation of its experience since the issuance of the August 2018 memorandum regarding use of alternative thresholds at Step 2. This experience leads the Agency to now believe it may not be appropriate to continue to attempt to recognize alternative contribution thresholds at Step 2. The August 2018 memorandum stated that ''it may be reasonable and appropriate'' for states to rely on an alternative threshold of 1 ppb threshold at Step 2.[31] (The memorandum also indicated that any higher alternative threshold, such as 2 ppb, would likely not be appropriate.) However, EPA also provided that ''air agencies should consider whether the recommendations in this guidance are appropriate for each situation.'' Following receipt and review of 49 good neighbor SIP submittals for the 2015 ozone NAAQS, EPA's experience has been that nearly every state that attempted to rely on a 1 ppb threshold did not provide sufficient information and analysis to support a determination that an alternative threshold was reasonable or appropriate for that state.

For instance, in nearly all submittals, the states did not provide EPA with analysis specific to their state or the receptors to which its emissions are potentially linked. In one case, the proposed approval of Iowa's SIP submittal, EPA expended its own resources to attempt to supplement the information submitted by the state, in order to more thoroughly evaluate the state-specific circumstances that could support approval.[32] It was at EPA's sole discretion to perform this analysis in support of the state's submittal, and the Agency is not obligated to conduct supplemental analysis to fill the gaps whenever it believes a state's analysis is insufficient. The Agency no longer intends to undertake supplemental analysis of SIP submittals with respect to alternative thresholds at Step 2 for purposes of the 2015 ozone NAAQS.

Furthermore, EPA's experience since 2018 is that allowing for alternative Step 2 thresholds may be impractical or otherwise inadvisable for a number of additional policy reasons. For a regional air pollutant such as ozone, consistency in requirements and expectations across all states is essential. Based on its review of submittals to-date and after further consideration of the policy implications of attempting to recognize an alternative Step 2 threshold for certain states, the Agency now believes the attempted use of different thresholds at Step 2 with respect to the 2015 ozone NAAQS raises substantial policy consistency and practical implementation concerns.[33] The availability of different thresholds at Step 2 has the potential to result in inconsistent application of good neighbor obligations based solely on the strength of a state's implementation plan submittal at Step 2 of the 4-Step interstate transport framework. From the perspective of ensuring effective regional implementation of good neighbor obligations, the more important analysis is the evaluation of the emissions reductions needed, if any, to address a state's significant contribution after consideration of a multifactor analysis at Step 3, including a detailed evaluation that considers air quality factors and cost. Where alternative thresholds for purposes of Step 2 may be ''similar'' in terms of capturing the relative amount of upwind contribution (as described in the August 2018 memorandum), nonetheless, use of an alternative threshold would allow certain states to avoid further evaluation of potential emission controls while other states must proceed to a Step 3 analysis. This can create significant equity and consistency problems among states.

Further, it is not clear that national ozone transport policy is best served by allowing for less stringent thresholds at Step 2. EPA recognized in the August 2018 memorandum that there was some similarity in the amount of total upwind contribution captured (on a nationwide basis) between 1 percent and 1 ppb. However, EPA notes that while this may be true in some sense, that is hardly a compelling basis to move to a 1 ppb threshold. Indeed, the 1 ppb threshold has the disadvantage of losing a certain

[31] August 2018 memorandum at 4.

[32] *Air Plan Approval; Iowa; Infrastructure State Implementation Plan Requirements for the 2015 Ozone National Ambient Air Quality Standard,* 85 FR 12232 (March 2, 2020). The Agency received adverse comment on this proposed approval and has not taken final action with respect to this proposal.

[33] EPA notes that Congress has placed on EPA a general obligation to ensure the requirements of the CAA are implemented consistently across states and regions. *See* CAA section 301(a)(2). Where the management and regulation of interstate pollution levels spanning many states is at stake, consistency in application of CAA requirements is paramount.

amount of total upwind contribution for further evaluation at Step 3 (*e.g.,* roughly seven percent of total upwind state contribution was lost according to the modeling underlying the August 2018 memorandum; [34] in EPA's updated modeling, the amount lost is five percent). Considering the core statutory objective of ensuring elimination of all significant contribution to nonattainment or interference of the NAAQS in other states and the broad, regional nature of the collective contribution problem with respect to ozone, there does not appear to be a compelling policy imperative in allowing some states to use a 1 ppb threshold while others rely on a 1 percent of the NAAQS threshold.

Consistency with past interstate transport actions such as CSAPR, and the CSAPR Update and Revised CSAPR Update rulemakings (which used a Step 2 threshold of 1 percent of the NAAQS for two less stringent ozone NAAQS), is also important. Continuing to use a 1 percent of NAAQS approach ensures that as the NAAQS are revised and made more stringent, an appropriate increase in stringency at Step 2 occurs, so as to ensure an appropriately larger amount of total upwind-state contribution is captured for purposes of fully addressing interstate transport. *See* 76 FR 48208, 48237–38.

Therefore, notwithstanding the August 2018 memorandum's recognition of the potential viability of alternative step 2 thresholds, and in particular, a potentially applicable 1 ppb threshold, EPA's experience since the issuance of that memorandum has revealed substantial programmatic and policy difficulties in attempting to implement this approach. Nonetheless, EPA is not at this time rescinding the August 2018 memorandum. EPA invites comment on this broader discussion of issues associated with alternative thresholds at Step 2. Depending on comment and further evaluation of this issue, EPA may determine to rescind the August 2018 memorandum in the future.

4. Step 3 of the 4-Step Interstate Transport Framework

Consistent with EPA's longstanding approach to eliminating significant contribution or interference with maintenance at Step 3, states linked at Steps 1 and 2 are generally expected to prepare a multifactor assessment of potential emissions controls. EPA's analysis at Step 3 in prior Federal actions addressing interstate transport requirements has primarily focused on an evaluation of the cost-effectiveness of potential emissions controls (on a marginal cost-per-ton basis), the total emissions reductions that may be achieved by requiring such controls (if applied across all linked upwind states), and an evaluation of the air quality impacts such emissions reductions would have on the downwind receptors to which a state is linked; other factors may potentially be relevant if adequately supported. In general, where EPA's or alternative air quality and contribution modeling establishes that a state is linked at Steps 1 and 2, it will be insufficient at Step 3 for a state merely to point to its existing rules requiring control measures as a basis for approval. In general, the emissions-reducing effects of all existing emissions control requirements are already reflected in the air quality results of the modeling for Steps 1 and 2. If the state is shown still to be linked to one or more downwind receptor(s), the state must provide a well-documented evaluation determining whether their emissions constitute significant contribution or interference with maintenance by evaluating additional available control opportunities by preparing a multifactor assessment. While EPA has not prescribed a particular method for this assessment, EPA expects states at a minimum to present a sufficient technical evaluation. This would typically include information on emissions sources, applicable control technologies, emissions reductions, costs, cost effectiveness, and downwind air quality impacts of the estimated reductions, before concluding that no additional emissions controls should be required.[35]

5. Step 4 of the 4-Step Interstate Transport Framework

At Step 4, states (or EPA) develop permanent and federally enforceable control strategies to achieve the emissions reductions determined to be necessary at Step 3 to eliminate significant contribution to nonattainment or interference with maintenance of the NAAQS. For a state linked at Steps 1 and 2 to rely on an emissions control measure at Step 3 to address its interstate transport obligations, that measure must be included in the state's SIP so that it is permanent and federally enforceable. *See* CAA section 110(a)(2)(D) (''Each such [SIP] shall . . . contain adequate provisions . . .''). *See also* CAA 110(a)(2)(A); *Committee for a Better Arvin* v. *U.S. E.P.A.,* 786 F.3d 1169, 1175–76 (9th Cir. 2015) (holding that measures relied on by state to meet CAA requirements must be included in the SIP).

II. SIP Submissions Addressing Interstate Transport of Air Pollution for the 2015 Ozone NAAQS

Five of the six states within EPA Region 5 that are included in this multi-state proposed disapproval have chosen to use air quality modeling performed by the Lake Michigan Air Directors Consortium (LADCO) [36] as an alternative to or in addition to EPA's modeling for the purpose of identifying downwind receptors and upwind state contributions to these receptors relevant to their submissions. The LADCO modeling consisted of ozone season (May 1–September 30, 2011) model simulations using the Comprehensive Air Quality Model with Extensions, CAMx version 6.4 for a 2011 base year and 2023 as the future analytic year. In their modeling, LADCO used EPA's 2011-based ''EN'' emissions modeling platform, except for emissions from EGU's in 2023. In their modeling, LADCO used the Eastern Regional Technical Advisory Committee (ERTAC) EGU Tool version 2.7 [37] to provide EGU emissions for 2023, whereas EPA used projected EGU emissions based on engineering analytics.[38]

LADCO provided projected 2023 future year average and maximum design values using the methodology in EPA's 2014 modeling guidance.[39] Although projected design values were presented based on the 3x3 approach and the ''no water cell'' approach, described in the March 2018 memorandum, LADCO relied upon design values from the 3x3 approach for

[34] *See* August 2018 memorandum at 4.

[35] As examples of general approaches for how such an analysis could be conducted for their sources, states could look to the CSAPR Update, 81 FR 74504, 74539–51; CSAPR, 76 FR 48208, 48246–63; CAIR, 70 FR 25162, 25195–229; or the NO_X SIP Call, 63 FR 57356, 57399–405. *See also* Revised CSAPR Update, 86 FR 23054, 23086–23116. Consistently across these rulemakings, EPA has developed emissions inventories, analyzed different levels of control stringency at different cost thresholds, and assessed resulting downwind air quality improvements.

[36] LADCO works collaboratively with state governments, tribal governments, and various Federal agencies in Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

[37] *https://www.marama.org/2013-ertac-egu-forecasting-tool-documentation.*

[38] Technical Support Document (TSD) Additional Updates to Emissions Inventories for the Version 6.3, 2011 Emissions Modeling Platform for the Year 2023 *https://www.epa.gov/air-emissions-modeling/additional-updates-2011-and-2023-emissions-version-63-platform-technical.*

[39] *See* EPA's 2014 Draft Guidance Document, ''Draft Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM2s, and Regional Haze'', *https://www.epa.gov/sites/default/files/2020–10/documents/draft-o3-pm-rh-modeling_guidance-2014.pdf.*

calculating contribution metric values at each receptor.

Source apportionment modeling was performed by LADCO using the CAMx Anthropogenic Precursor Culpability Assessment (APCA) tool to calculate contributions from individual states to ozone at downwind monitoring sites. In their modeling, LADCO tracked ozone contributions from only those states that contributed at or above a 1 percent of the NAAQS threshold to nonattainment and maintenance monitors in the EPA 2023 modeling provided in the March 2018 memorandum.

A. Illinois

Illinois Environmental Protection Agency (IEPA) submitted a SIP revision to address CAA Section 110(a)(2)(D)(i)(I) on May 21, 2019. The submission utilized LADCO modeling results previously mentioned. IEPA followed the 4-step interstate transport framework using an analytic year of 2023 to identify receptors, Illinois' linkages to receptors, and assess some emission reduction considerations. The following sections will discuss IEPA's submission and the information provided for each step in the process.

1. Information Provided by Illinois Regarding Step 1

For Step 1 in the 4-step framework, the IEPA relied on LADCO modeling to identify monitoring sites that are projected to have problems attaining or maintaining the 2015 ozone NAAQS in 2023. As previously mentioned, the LADCO modeling used the same technique as EPA to calculate future year design values which were used to identify maintenance and nonattainment receptors but used the ERTAC EGU Tool for EGU emissions. IEPA noted they believed that the ERTAC EGU tool provides better estimates of growth and forecasts than EPA's EGU emission projections. IEPA identified two maintenance receptors in the Great Lakes area (Sheboygan, Wisconsin and Allegan County, Michigan) as well as and three nonattainment receptors and five additional maintenance receptors in the Northeast. Across the continental U.S., IEPA identified a total of twelve nonattainment or maintenance receptors: seven nonattainment receptors and five maintenance receptors.[40]

2. Information Provided by Illinois Regarding Step 2

IEPA's submittal at Step 2 presented Illinois' projected 2023 contribution of ozone emissions to the downwind maintenance and nonattainment receptors and based on LADCO's ''with water'' modeling [41] IEPA used a contribution threshold of 1 ppb to define linkage as opposed to one percent of the 2015 ozone NAAQS standard (0.70 ppb). Illinois, relying on the August 2018 memorandum, argued that the state's reliance on the 1 ppb threshold to identify linkages was justified. First, IEPA asserted that the one percent of the NAAQS contribution threshold is arbitrary because it is not in the CAA. Second, IEPA claimed that a one percent of the NAAQS contribution threshold is inappropriate for the 2015 ozone NAAQS because 0.70 ppb is an order of magnitude smaller than the biases and errors typically documented for regional photochemical modeling. IEPA noted that 1 ppb is very small compared to the allowable error in peak performance and bias and in IEPA's view is a conservative Step 2 contribution threshold.

IEPA identified that Illinois is projected to contribute 14.93 ppb and 19.25 ppb, respectively, in 2023 to two maintenance receptors: Sheboygan, Wisconsin (Site ID: 55–117–0006), and Allegan, Michigan (Site ID: 26–005–0003). IEPA concluded that Illinois is linked above a contribution threshold of 1 ppb to these receptors.

3. Information Provided by Illinois Regarding Step 3

IEPA provided several arguments to justify their conclusion that no additional emission reductions are necessary to satisfy Illinois' ozone transport obligations. The submittal stated that Illinois is developing new NO_X RACT standards for the Chicago area that, in conjunction with existing NO_X reductions, are estimated to reduce NO_X emissions by up to 20,000 tons/year relative to existing state and Federal regulations impacting non-EGUs since 2014. IEPA claims that these reductions were not included in any 2023 modeling. Illinois claims these expected emissions reductions, alongside future Federal rules, will be enough to meet Illinois' good neighbor obligations.

IEPA asserted that Illinois' contributions to the Sheboygan, Wisconsin and Allegan County maintenance monitors, which are both in the LADCO domain, can be addressed in a manner that is fair and equitable for all involved states through Illinois' participation in LADCO. Illinois has been a member of LADCO since 1991. IEPA says that since the inception of LADCO in 1991, ambient ozone concentrations have drastically decreased in the Lake Michigan region. IEPA stated that it is working through LADCO to refine ozone forecasting for air quality and ozone receptors in the Midwest through various means including updating emissions inventories and a base case for the modeling that LADCO is preparing. IEPA stated that it expects field data from the 2017 Lake Michigan Ozone Study will inform the LADCO states to better simulate the meteorology and chemistry of ozone in the Lake Michigan area.

IEPA also attempted to rely on a concept related to international emissions, which was developed by outside parties and listed in Attachment A to the March 2018 memorandum. IEPA noted that if international emissions and offshore contributions to receptors from LADCO's modeling, 1.40 ppb to the Sheboygan, Wisconsin receptor and 0.98 ppb at the Allegan County receptor, were subtracted off the top of the receptors' maximum design values, Allegan, Michigan receptor's maximum design value would be below 71 ppb and the Sheboygan, Wisconsin receptor's maximum design value would drop down to 71.4 ppb. IEPA noted that subtracting international and offshore contributions would result in Allegan County no longer qualifying as a maintenance receptor.

4. Information Provided by Illinois Regarding Step 4

IEPA did not consider any new permanent and enforceable measures to reduce emissions in the SIP submission. IEPA instead noted they would continue to assist LADCO with future modeling and analysis and would work with EPA to identify additional ''flexibilities'' to define maintenance, quantify transport, and demonstrate attainment.[42]

B. Indiana

On November 2, 2018 the Indiana Department of Environmental Management (IDEM) submitted a revision to the Indiana SIP addressing interstate transport of air pollution for the 2015 ozone NAAQS. The submission contained what the state characterized as a weight of evidence analysis of Indiana's ozone transport receptors utilizing LADCO modeling results previously mentioned. Indiana did not explicitly follow the 4-Step interstate transport framework but did examine downwind air quality and Indiana's contributions using an analytic year of 2023 to describe

[40] IEPA's SIP submission, Table CC, page 15.

[41] *Id.*

[42] Illinois' SIP submission at 16.

Indiana's linkages to receptors. The following sections will describe IDEM's submission, and the information provided for each step in the process.

1. Information Provided by Indiana Regarding Step 1

For Step 1 of the 4-Step framework, IDEM identified monitoring sites that are projected to have problems attaining and/or maintaining the 2015 ozone NAAQS in 2023. As previously mentioned, the LADCO modeling used the same technique as EPA to calculate future year design values which were used to identify maintenance and nonattainment receptors but used the ERTAC EGU Tool for EGU emissions. IDEM noted they believed that the ERTAC EGU tool provides better estimates of growth and forecasts than EPA's EGU emission projections. IDEM presented the LADCO results, based on the ''3x3'' approach, which identified ten receptors: Seven monitors with 2023 maximum design values above the NAAQS, or maintenance receptors, and three monitors with 2023 average design values greater than the 2015 ozone standard, or nonattainment receptors.[43]

2. Information Provided by Indiana Regarding Step 2

IDEM's submittal presented Indiana's projected 2023 ozone contributions to maintenance and nonattainment receptors projected by the LADCO modeling. IDEM relied primarily on the August 2018 memorandum to justify the State's reliance on a 1 ppb contribution threshold to identify linkages, as opposed to the 1 percent of the 2015 ozone NAAQS standard (0.70 ppb) contribution threshold. IDEM noted that (1) the tolerance level of ozone monitors is 1 ppb and (2) model run results may contain biases larger than 1 percent of the NAAQS (0.70 ppb). Using a 1 ppb threshold, IDEM identified that Indiana is linked to three maintenance receptors: Sheboygan, Wisconsin (Monitor ID: 551170006), Allegan, Michigan (Monitor ID: 260050003), and Richmond, New York (Monitor ID: 360850067), and one nonattainment receptor: Harford, Maryland (Monitor ID: 240251001).[44] [45] However, IDEM concluded on the basis of its weight of evidence analysis, summarized in the following subsection, that the monitors at Sheboygan, Wisconsin and Allegan, Michigan would be in attainment in 2023.[46]

3. Information Provided by Indiana Regarding Step 3

IDEM cited Indiana's rule amendments under CSAPR to conclude the State was already satisfying its good neighbor obligations for the ozone NAAQS.[47] In support, IDEM provided a weight-of-evidence analysis to justify their conclusion that no additional emission reductions as necessary to satisfy Indiana's ozone transport obligations. The evidence consisted of an ozone monitoring data analysis, emissions analysis, and photochemical modeling analyses, including a back trajectory analysis.

IDEM provided information ozone and emissions trends. They cited a general decline in monitored ozone concentrations across Indiana from 2007 through 2017, a decrease in Indiana's overall statewide NO_X emissions and VOC emissions from 2005 to 2014, a decrease in Indiana EGU NO_X emissions from 2011 to 2016, and projected decreases in Region 5 EGU NO_X and VOC emissions through 2023 relative to a 2011 base year (based on both the ERTAC EGU Tool and EPA's EGU projections using the Integrated Planning Model (IPM)). IDEM credited the downward emissions trends to permanent and enforceable control measures. IDEM made the argument that overall decreasing ozone concentration and emissions trends in the State, and in the LADCO states, correlate with reduced contributions to nonattainment and maintenance receptors outside of Indiana. IDEM also identified air quality trends at the four downwind receptors to which IDEM determined Indiana was linked. IDEM asserted that a declining trend in three-year design values at the receptors in Harford, Maryland and Richmond, New York in combination with national emission reduction regulations in place for EGUs, tighter mobile source emission controls and other transport related emission reduction measures, would result in those two receptors reaching attainment over time. For the Sheboygan, Wisconsin and Allegan, Michigan receptors, IDEM concluded that if ozone design value trends continued as expected then those two receptors would reach attainment before 2023. IDEM also asserted they believed that the receptors in the Northeast (Harford, Maryland and Richmond, New York) received a greater contribution from local sources. IDEM represented EPA had reached the same conclusion, citing a May 14, 2018 presentation.

Next, IDEM presented an analysis of NOx controls for EGUs and non-EGUs in the state from 2008 to 2017. IDEM considered current NOx control measures, consent decree requirements, and future fuel switches and retirements for large EGUs and non-EGUs. IDEM reported that the State has seen a downward trend in annual NO_X emissions from both EGUs and non-EGUs due a combination of state and Federal rules targeting fossil fueled EGUs and other large sources of NO_X. IDEM argued that it would not be cost-effective for non-EGUs to implement further NO_X controls because in 2017 there were more than 93% fewer NO_X emissions from non-EGUs when compared to EGUs. IDEM stated they expect to see continued future NO_X emission reductions through 2028 from implementation of Federal rules, the expected shutdown of nine EGUs, planned fuel switches to natural gas for three EGUs, and enforceable consent decree caps on NO_X emissions at eleven EGUs. IDEM noted that future retirements or retrofits to coal fired EGUs in Indiana were expected to reduce NO_X emissions by several thousand tons beyond those projected by either LADCO or EPA. IDEM argued that the non-modeled emission reductions would further assure future year attainment of the ozone NAAQS at downwind receptors.

For their photochemical analyses, IDEM presented LADCO modeling results to show contributions from individual states to 12 monitors,[48] as well as contributions from individual sectors to the same 12 monitors.[49] IDEM noted that Indiana contributed above 1 ppb to monitors that would be receptors based on EPA's definitions. IDEM used these data as the backdrop to several arguments related to potential flexibilities identified in Attachment A to the March 2018 memorandum.[50] IDEM stated that additional emissions reductions from EGU and non-EGU sources in Indiana are becoming more difficult to require because of reduced effectiveness of controls to make significant decreases in ozone values, operational concerns, and increased

[43] Indiana's SIP submission Attachment 1, Table 7, page 30.

[44] Indiana's SIP submission Attachment 1, Table 1, page 12.

[45] IDEM acknowledged that both the Harford, Maryland and Richmond, New York receptors are nonattainment receptors in EPA's modeling. Indiana's SIP submission Attachment 1, page 12.

[46] Indiana's SIP submission Attachment 1, page 38, 53.

[47] Indiana's SIP submission, page 6.

[48] Indiana's SIP submission, Attachment 1, Table 9.

[49] Indiana's SIP submission, Attachment 1, Table 11.

[50] Based on the reference to the potential flexibilities in Attachment A to the March 2018 memorandum on page 2 of Attachment 1 to Indiana's SIP submission, EPA assumes the reference to ''flexibilities'' on page 38 of Attachment 1 likewise references Attachment A to the March 2018 memorandum.

costs for customers. IDEM asserted that emission reductions from local mobile and nonroad sources would be more beneficial to the receptors than additional reductions from EGUs and non-EGUs in Indiana because EGUs and non-EGUs contribute less to the receptors than either the mobile or nonroad sectors. IDEM also argued that EPA should address contributions from Canada and Mexico as well as contributions from offshore commercial marine vessels. In addition, IDEM compared 2012–2017 monitoring data to LADCO's and EPA's modeling and concluded that all four linked receptors were already below the projected 2023 design values. IDEM also calculated Indiana's portion of contribution to the Harford, Maryland receptor as 0.077 ppb (based on a contribution threshold of 1 ppb) and determined that Indiana would need to reduce its contribution by 0.0077 ppb to bring the Harford, Maryland receptor into attainment. IDEM argued that 0.0077 ppb is well within the error of the model and it would be ''difficult'' to translate into an emission reduction requirement.[51]

Finally, IDEM provided a back trajectory analysis to evaluate contributions from Indiana to the Harford, Maryland and Richmond, New York receptors on exceedance days from 2015 to 2017. These back trajectories were conducted at 10 meters and 750 meters and initialized at 18Z Greenwich Mean Time over a three-year period from 2015–2017. The trajectories were run backwards over a 72-hour period from the exceedance day measured at each of the monitors. Considering the Harford, Maryland receptor, Indiana measured one back trajectory at 10 meters and six back trajectories at 750 meters that passed through Indiana. For the Richmond, New York receptor, out of 27 exceedance days, Indiana measured three back trajectories at 10 meters and eight trajectories at 750 meters that passed through Indiana. Indiana argues that only a fraction of the exceedance days at the Harford and Richmond receptors has back trajectories that pass-through Indiana. Based on this analysis, IDEM concluded that those receptors are more likely to be impacted by local emissions and suggested that emission reductions should come first from the surrounding areas in the Northeast before from Indiana.

4. Information Provided by Indiana Regarding Step 4

IDEM did not provide a Step 4 analysis.

[51] Indiana's SIP submission, Attachment 1 at 42.

C. Michigan

Environment, Great Lakes and Energy (EGLE) (formerly Michigan Department of Environmental Quality) submitted a SIP revision to address CAA Section 110(a)(2)(D)(i)(I) on March 5, 2019. EGLE utilized EPA modeling released with the March 2018 memorandum and LADCO modeling and followed the 4-step interstate transport framework using an analytic year of 2023 to describe Michigan's linkages to receptors in other states. The submission also contained a weight-of-evidence analysis to support EGLE's conclusions. The following sections will discuss EGLE's submission and the information provided for each step in the process.

1. Information Provided by Michigan Regarding Step 1

For Step 1 in the 4-step framework, EGLE identified monitoring sites that are projected to have problems attaining and/or maintaining the 2015 ozone NAAQS in 2023. EGLE presented the results from both the EPA modeling from the March 2018 memorandum and LADCO (using both the with- and without-water approaches). EGLE noted that they believe the ERTAC EGU Tool uses a more transparent and state-driven data gathering mechanism for EGU emissions and control projects. EPA's modeling projected 16 receptors to which Michigan is projected to contribute in 2023. LADCO modeling (with and without water) identified 15 receptors to which Michigan is projected to contribute in 2023.

2. Information Provided by Michigan Regarding Step 2

The first part of EGLE's submittal's step 2 analysis presented Michigan's projected contributions to maintenance and nonattainment receptors in 2023 from both the LADCO modeling (with and without water) and the EPA modeling released with the March 2018 memorandum. The submittal noted similar contribution concentrations between the two, but found that the LADCO results often yielded slightly lower contribution from Michigan sources than the EPA modeling for some receptors. The state claimed this is attributed to LADCO's use of the ERTAC EGU tool which they stated includes information on EGU shutdowns and facility-specific information not included in the EPA modeling. EGLE stated they had more confidence in the LADCO modeling.

Further, EGLE attempted to rely on the 1 ppb Significant Impact Level (SIL) threshold from *Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program* (April 17, 2018) [52] for the Prevention of Significant Deterioration (PSD) permitting program as an appropriate contribution threshold to determine whether Michigan was linked to any receptors at step 2. Michigan argued that if a stationary source's contributions are insignificant below 1 ppb, then a state's interstate transport contributions below 1 ppb are likewise insignificant. EGLE performed an analysis on contribution thresholds to analyze whether a 1 ppb threshold is appropriate for identifying Michigan's linkages. The analysis looked at all 15 receptors to which Michigan contributes, based on the LADCO with water modeling, and plotted potential contribution thresholds ranging from 0.5 to 1.4 ppb against collective upwind contributions from all source categories and states with contribution above 0.5 ppb. EGLE plotted the collective contribution as a function of contribution threshold and concluded the first inflection point occurred in a majority of the collective contribution at a contribution threshold between 0.9 and 1 ppb, correlating with the PSD permitting SIL of 1 ppb. Based on this analysis, EGLE concluded that a 1 ppb contribution threshold was appropriate for use in the good neighbor context. EGLE also mentioned the August 2018 memorandum, described in Section I of this proposal, as additional support for the use of a 1 ppb contribution threshold.[53]

EGLE's Step 2 conclusion was that, based on LADCO with water modeling, Michigan was projected to be linked above a 1 ppb contribution threshold in 2023 to three maintenance receptors; 1.85 ppb to Sheboygan, Wisconsin (Site ID: 36–081–0124), 1.22 ppb to Queens, New York (Site ID: 36–085–0067), and 1.03 ppb to Richmond, New York (Site ID: 55–117–0006).

3. Information Provided by Michigan Regarding Step 3

EGLE provided what it characterized as a ''weight-of-evidence analysis'' in step 3 to justify their conclusion that no additional emissions reductions are necessary to satisfy Michigan's ozone transport obligations for the ozone NAAQS. The evidence presented in EGLE's submittal consisted primarily of an argument that upwind states should have a lower responsibility to other states when the upwind state is only linked to maintenance-only receptors.

[52] *https://www.epa.gov/sites/default/files/2018-04/documents/sils_policy_guidance_document_final_signed_4-17-18.pdf.*

EGLE's analysis focused in large part on the Sheboygan, Wisconsin maintenance receptor (Site ID: 36–081–0124), as EGLE concluded it was the receptor to which Michigan was projected to contribute the most in 2023 at 1.85 ppb.

On the issue of maintenance receptors, the state referenced a concept identified by outside parties and listed in Attachment A to the March 2018 memorandum, which was to consider whether the remedy for upwind states linked to maintenance receptors could be less stringent than those linked to nonattainment receptors. EGLE reasoned that because the CAA incudes different SIP development requirements for nonattainment and maintenance areas, that likewise nonattainment and maintenance areas should be treated differently in good neighbor SIPs. EGLE argued that because the CAA does not require emission reductions from maintenance areas, then upwind states can potentially make a sufficient showing they have no obligation to reduce emissions to monitors in other states projected to be maintaining the NAAQS. EGLE said they believe the reduction of projected contributions to projected maintenance receptors is not required in certain circumstances, such as when: (1) The projected maintenance exceedance is very small in magnitude, (2) the projected contribution is very small, especially compared to other states' contributions, (3) sector contributions demonstrate the majority of contribution is from either sources already federally regulated or sources without the possibility of additional regulation, (4) there are large impacts of international emissions, and (5) there are downward emission trends.

Applying this logic to the Sheboygan, Wisconsin receptor, EGLE argued that because the projected maximum design value at that receptor is 72.8 ppb, the projected exceedance above the 2015 ozone NAAQS of 1.9 ppb is very small (values are truncated to ppb, thus 70.9 ppb would be considered in attainment of the NAAQS). Based on this number, EGLE argued that further emissions reductions from Michigan would be overly burdensome. Secondly, citing a potential flexibility in Attachment A to the March 2018 memorandum related to sector contribution, EGLE claimed that 77% of contribution to the Sheboygan receptor is from federally regulated sources or sources that cannot be regulated by Michigan. EGLE noted that the other sectors of contribution it identified—oil and gas, EGUs, and non-EGUs—are already controlled by Michigan. EGLE argued Michigan sources should not be required to implement additional contribution reductions in light of the relative size of their contribution.

Citing Attachment A to the March 2018 memorandum, again, EGLE argued that the three receptors to which Michigan is linked are heavily influenced by international emissions and other states. EGLE shared that LADCO modeling projects Michigan's contribution to the Sheboygan receptor (1.85 ppb) is less than projected contributions from international contributions and boundary conditions (16.61 ppb), Illinois (14.93 ppb), Wisconsin (9.1 ppb), biogenic sources (7.19 ppb), and Indiana (6.19 ppb). EGLE used these numbers and an apportionment of contributions from states and other sources to the amount the Sheboygan monitor exceeds the 2015 ozone NAAQS to conclude that additional emissions reductions from Michigan should not be required. Additionally, EGLE argued that international contributions to the Sheboygan receptor, which is geographically close to Canada, should be eliminated from the projected DV, in which case the Sheboygan monitor would be in attainment.

EGLE also cited Attachment A to the March 2018 memorandum along with an interpretation of *EME Homer City* to argue that EPA cannot require reductions that would result in a reduction greater than an upwind state's portion of the difference between the NAAQS and a maintenance receptor's projected maximum design value. EGLE claimed that Michigan's apportioned contribution to three linked receptors, when distributed proportionally among other states that also contribute more than 1 ppb to those receptors, is less than 0.12 ppb, but that Michigan's responsibility to the exceedance is actually substantially less than that amount when the home state's responsibility is considered. EGLE also stated Michigan's apportioned contribution is at less than 0.05 ppb of the projected maintenance exceedance at the Sheboygan receptor, which is less than the variation among the modeled maximum design values by both LADCO and EPA. EGLE concluded that because of built-in modeling noise it would be ''difficult'' to either verify that Michigan contributed 0.05 ppb to the Sheboygan, Wisconsin receptor or for Michigan to require any additional reduction from sources in the state.[54] EGLE speculated it was quite likely that the three linked receptors would maintain the NAAQS without any emissions reductions from Michigan at all because the projected exceedances were small.

The state also stated that Michigan has downward emissions trends (44% and 18% reduction in industrial point source NO_X and VOC emissions from 2008 through 2016, respectively) that are expected to continue to decline or stay consistent over time due to projected reductions in emissions from point sources of NO_X and VOCs EGUs, mobile sources and through other Federal measures. For EGUs, EGLE pointed out that the shutdown of the Marquette Board of Light & Power Shiras Steam Plant shut down was not included in either EPA or LADCO modeling and that the U.S. Energy Information Agency's Annual Energy Outlook anticipates growth in renewable energy in Michigan in 2019 and a decline in coal beginning in 2022. EGLE also provided a list of additional coal-fired EGUs that they stated were expected to retire by 2023. To support the conclusion that emissions will further be reduced from mobile sources and through other Federal action, EGLE listed several on the books and on the way Federal regulations. Finally, EGLE noted existing controls on the oil and gas sector (applicable Federal standards), non-EGUs (subject to the NO_X SIP Call), and EGUs (subject to CSAPR Update).

4. Information Provided by Michigan Regarding Step 4

EGLE concluded it would be unreasonable for Michigan to take further actions to address its obligations under the good neighbor provisions for the ozone NAAQS, and so at Step 4 EGLE determined that no permanent and enforceable measures to reduce emissions were necessary.

D. Minnesota

Minnesota Pollution Control Agency (MPCA) submitted a SIP revision to address CAA Section 110(a)(2)(D)(i)(I) on October 1, 2018. The submission utilized both EPA modeling released with the March 2018 memorandum and LADCO modeling results previously mentioned. Minnesota followed the 4-step interstate transport framework and used an analytic year of 2023 to describe Minnesota's lack of contributions to out of state receptors and assess emission reduction considerations. The following sections will summarize MPCA's submission and the information provided for each step in the process.

[54] Michigan's SIP submission at 27.

1. Information Provided by Minnesota Regarding Step 1

For Step 1 in the 4-step framework, MPCA identified monitoring sites that are projected to have problems attaining and/or maintaining the 2015 ozone NAAQS in 2023 according to LADCO modeling and EPA modeling released in the March 2018 memorandum.[55] As previously mentioned, the LADCO modeling efforts used the same technique as EPA to calculate future year design values which are used to identify maintenance and nonattainment receptors. The submittal expressed MPCA's opinion that the ERTAC EGU tool used in LADCO's modeling is superior to EPA's 2023en modeling platform because the ERTAC EGU tool addresses economic factors, preserves system reliability, and includes controls or emissions reductions measure justified through some legal framework.

2. Information Provided by Minnesota Regarding Step 2

MPCA's submittal at Step 2 presented Minnesota's projected 2023 ozone contributions to maintenance and nonattainment receptors identified by both LADCO modeling and EPA modeling released in the March 2018 memorandum.[55] The submittal noted there were differences in identified receptors between the two modeling results, and that the LADCO results overall yielded slightly lower projected contributions to downwind receptors from Minnesota sources than EPA modeling.

Minnesota relied on a contribution threshold of 1 percent of the ozone NAAQS (0.70 ppb) to define linkages for a state's contribution to downwind air quality problems. Both the LADCO modeling and the EPA modeling released in the March 2018 memorandum projected that Minnesota contributes less than 1 percent of the NAAQS to all downwind receptors. MPCA showed in Table 2 of its submission that the highest projected contribution to a receptor in 2023 was 0.40 ppb, based on EPA modeling released in the March 2018 memorandum, or 0.45 ppb, based on LADCO ''no water'' modeling, to the Milwaukee, Wisconsin receptor (Site ID: 55–079–0085). Based on this analysis, MPCA concluded that Minnesota was not linked above 1 percent of the NAAQS to any downwind receptor, and therefore would not contribute to nonattainment or interference with maintenance in other state with respect to the ozone NAAQS.

3. Information Provided by Minnesota Regarding Step 3

Despite concluding Minnesota was not linked at Step 2, MPCA proceeded with a Step 3 analysis. MPCA provided air quality data in Step 3 to justify that no additional emissions reductions are necessary to satisfy their transport obligations. MPCA provided evidence of decreasing ambient ozone concentrations in Minnesota from the mid-1990s through 2017 as well as decreasing NO_X and VOC emissions from the state from 2002 through 2015 to further support their conclusion.[56]

The state concluded that decreasing ambient ozone concentrations in the state point to Minnesota contributing less to ozone in downwind states as time goes on. Minnesota provided an analysis of NO_X and VOC emissions levels in the state from 2002 through 2015 to further support this point. According to MPCA, NO_X emissions have been steadily declining in the state from all sectors and especially from EGUs due to emission limits and reductions required in that category. MPCA also asserted that VOCs emissions have also seen a similar decline in Minnesota in the years reported. MPCA concluded that decreasing emissions in the state would make it unlikely for the state to contribute significantly to nonattainment or interference with maintenance in downwind states.

4. Information Provided by Minnesota Regarding Step 4

Citing declining emissions and their conclusion that Minnesota was not projected to contribute above 1 percent of the NAAQS to any receptor, MPCA concluded that no additional permanent or enforceable measures would be needed to address ozone transport contribution from Minnesota sources. MPCA determined the existing emission controls would be sufficient to maintain Minnesota's continued contribution of less than 1 percent of the NAAQS to downwind receptors. In support of this argument, Minnesota provided a list of several Federal and State emissions regulations applicable to sources in Minnesota, including Part 70 permits, the CSAPR NO_X trading programs, Mercury and Air Toxics Standards, and various state standards for SO_2, particulate matter, NO_X, NO_2, and VOC. Hence, Minnesota declined to consider any new permanent and enforceable measures to reduce emissions as part of the Step 4 analysis.

E. Ohio

On September 28, 2018 the Ohio Environmental Protection Agency (OEPA) submitted a revision to the Ohio SIP addressing interstate transport of air pollution for the 2015 ozone NAAQS. OEPA stated that its submittal, which relied on an analytic year of 2023, conforms with EPA's four-step framework. The following sections will describe what OEPA provided for each step.

1. Information Provided by Ohio Regarding Step 1

For Step 1 in the 4-step framework, OEPA first identified 10 monitoring sites in the Northeast and Midwest that are projected to be nonattainment, nonattainment/maintenance, or maintenance-only receptors for the 2015 ozone NAAQS in 2023 based on LADCO's modeling and EPA's method for defining nonattainment and maintenance receptors (*See* Table 1 below, reproduced from OEPA's submission).

TABLE 1—OHIO'S PROJECTED 2023 NONATTAINMENT AND MAINTENANCE MONITORS

Site ID	County	State	2015–2017 DV	2023 Average DV	2023 Max DV	OH contribution	Status	2023 Maintenance DV (TX approach)	Status (TX approach)
36–103–0002	Suffolk	NY	76	71.6	73.1	1.75	Nonattainment/ Maintenance.	69.7	Nonattainment.
09–001–9003	Fairfield	CT	83	71.4	74.2	1.58	Nonattainment/ Maintenance.	73.7	Nonattainment/ Maintenance.

[55] MPCA's SIP submittal at Tables 2 and 3, pages 8–9.

[56] *See* Minnesota's SIP submittal Figures 1–3, pages 10–11.

TABLE 1—OHIO'S PROJECTED 2023 NONATTAINMENT AND MAINTENANCE MONITORS—Continued

Site ID	County	State	2015–2017 DV	2023 Average DV	2023 Max DV	OH contribution	Status	2023 Maintenance DV (TX approach)	Status (TX approach)
24–035–1001	Harford	MD	75	71.0	73.3	2.83	Nonattainment/ Maintenance.	67.0	Nonattainment.
36–085–0067	Richmond	NY	76	70.9	72.4	2.24	Maintenance	68.0	Attainment.
55–117–0006	Sheyboygan	WI	80	70.5	72.8	1.17	Maintenance	71.1	Maintenance.
09–009–9002	New Haven	CT	82	69.9	72.6	1.12	Maintenance	72.6	Maintenance.
09–001–3007	Fairfield	CT	83	69.8	73.7	1.84	Maintenance	73.7	Maintenance.
36–081–0124	Queens	NY	74	69.2	71.0	1.88	Maintenance	70.1	Attainment.
09–001–0017	Fairfield	CT	79	68.9	71.2	1.05	Maintenance	71.2	Maintenance.
26–005–0003	Allegan	MI	73	68.8	71.5	0.19	Maintenance—Not Linked.	71.5	Maintenance—Not Linked.

OEPA then claimed that EPA's methodology for determining maintenance-only receptors is inappropriate because it is more stringent than EPA's methodology for identifying nonattainment monitors and is inconsistent with the CAA. In OEPA's view, EPA's methodology results in greater emissions reduction requirements to address maintenance receptors than nonattainment receptors. Citing stakeholder-identified potential flexibilities that were listed in an attachment to EPA's March 2018 memorandum, OEPA used an alternative method developed by the Texas Commission for Environmental Quality (TCEQ) to identify maintenance receptors. This method determines a future year design value (DV) for purposes of identifying maintenance-only receptors by applying the model-predicted relative response factor (RRF) to the most recent 3-year design value (*i.e.,* 2011–2013 design value) within the five-year base period (*i.e.,* 2009–2013), rather than the highest 3-year DV in the same 5-year base period, which is used in EPA's approach. OEPA stated that using the TCEQ approach accounts for emissions reductions over the five-year period, while also accounting for meteorological variability, since the design value is calculated based on monitoring data from a three-year period. By using the TCEQ approach, Ohio concluded that four monitors which would be either nonattainment/maintenance receptors under EPA's method would, under the TCEQ method, actually be nonattainment-only receptors (*i.e.,* sites 261030002 in Suffolk, New York, 240251001 in Harford, Maryland) or monitors in attainment (*i.e.,* sites 360850067 in Richmond, New York, and 360810124 in Queens, New York) in 2023.[57]

OEPA's submittal provided information on inter-annual meteorological variability, ozone design value trends at the four monitoring sites that the state eliminated as receptors, as well as recent and projected trends in NO_X and VOC emissions to support the use of an alternative definition of maintenance receptors. The meteorological information provided in OEPA's submission included nationwide maps showing the maximum temperature anomaly (*i.e.,* departure from the long-term average or ''normal'') for the period May through October in the years 2011, 2012, and 2013. OEPA concluded from these maps that temperatures in the Northeast and Midwest were above or much above average during May through October in each of the years 2011, 2012, and 2013. OEPA examined trends in ozone design values at each of the four monitoring sites in question and concluded that design values at these sites have declined substantially from 2000 through 2017 and that although there has been a slight leveling off or increase in recent years, this is no greater than the normal year to year variability. In addition, based on the emissions trends data, OEPA stated that NO_X emissions have declined in concert with these trends in design values and are projected to continue to decline through 2028 for the continental U.S. as well as those states that were projected to be linked to the four monitors eliminated under the TCEQ approach. Based on their analysis of the meteorological and ozone and emissions trends data, OEPA concluded that the four monitoring sites identified previously are not reasonably expected to have difficulty maintaining the standards in 2023.

2. Information Provided by Ohio Regarding Step 2

OEPA's submittal presented the projected 2023 ozone contributions from Ohio to ten maintenance and nonattainment receptors in the Northeast and Midwest using data from the LADCO source apportionment modeling. LADCO's contribution data identified a total of nine receptors in 2023 (3 nonattainment and 6 maintenance-only) with modeled contributions from emissions in Ohio that exceed both a one percent of the 2015 NAAQS threshold (*i.e.,* 0.70 ppb) and a 1 ppb contribution threshold (Table 1). Despite acknowledging Ohio was linked to the same number of receptors under either a 1 percent of the NAAQS or 1 ppb, OEPA maintained they had concerns about both thresholds being too stringent, noting that Ohio would have two linkages if the threshold were 3 percent and zero linkages if the threshold were 4 percent.

As noted above, OEPA applied the TCEQ method for identifying maintenance-only receptors, and concluded that four of the receptors to which Ohio was linked would not have difficulty maintaining the NAAQS in 2023. However, after eliminating these four monitoring sites as having maintenance issues, OEPA acknowledged that Ohio would still be linked to seven receptors in 2023.

3. Information Provided by Ohio Regarding Step 3

OEPA provided what they characterize as a weight of evidence analysis in Step 3 to justify their conclusion that no additional emissions reductions are necessary to satisfy Ohio's interstate transport obligations under the 2015 ozone NAAQS. OEPA argued that their analysis demonstrated that any additional controls beyond those on the books or already planned would result in overcontrol of sources in Ohio, likely at cost-prohibitive levels.

First, OEPA attempted to show that NO_X and VOC 2023 emissions from EGU, nonEGU, and onroad sectors had been overestimated by 21,761 tons of NO_X and 3,240 tons of VOC annually, and 7,040 tons of NO_X and 878 tons of VOC per ozone season. The submittal performed an evaluation of the ERTAC EGU Tool, emphasizing that projected 2023 EGU emissions from eight facilities

[57] Ohio's SIP submission, Table 1.

were overestimated, analyzed through a comparison of actual emissions data obtained from EPA's Clean Air Markets Database (CAMD) and CSAPR/CSAPR Update allocations obtained from EPA's CSAPR website with projected emissions in 2023 obtained from ERTAC EGU tool. OEPA also based its conclusions on an expected increase of natural gas sources projected by the U.S. Energy Information's Annual Energy Outlook 2018 and recently permitted natural gas facilities not reflected in the ERTAC EGU tool. Further, OEPA evaluated emissions from nine non-EGU sources to claim EPA's 2023 projected emissions were overestimated. For this analysis, OEPA compared actual emissions data trends from Ohio's Emissions Inventory System18 with projected emissions from EPA's Air Emissions Modeling Platform 2011v6.319 to conclude EPA's projections overestimated non-EGU emissions. OEPA also asserted that EPA's projections of vehicle miles traveled (VMT) were higher than the local projections.

OEPA's submittal also looked at NO_X and VOC emissions trends, and asserted that from 2011 to 2016, NO_X emissions declined while VOC emissions remained steady. Additionally, based on state-specific data, OEPA posited that Ohio's VOC emissions will decrease even more rapidly than predicted by EPA because the large growth in the State's oil and gas sector had begun to level off. OEPA attributed the trends it identified to several Federal and State programs, including SIP approved state programs, non-SIP approved programs such as NO_X RACT, Architectural and Industrial Maintenance (AIM) Coatings rules, Ohio's Beneficiary Mitigation Plan for the Volkswagen settlement, and Federal programs such as CAIR and CSAPR, NO_X SIP Call, the National Emission Standards for Hazardous Air Pollutants (NESHAP), the Regional Haze Rule, BART, SO_2 Data Requirements Rule, and MATS.

In addition to emissions trends data, OEPA noted LADCO modeling projected downwind trends in design values at the ten receptors from 2000 through 2017 and included a reference to ''a May 14, 2018 presentation, U.S. EPA Office of Air Quality Planning and Standards (OAQPS)''.[58] OEPA also stated that LADCO sector-based source apportionment modeling indicates a significant contribution from onroad sources at nine receptors. OEPA argued that local onroad emissions should be addressed by EPA before EPA requires additional reductions from upwind states. OEPA also suggested EPA should take into account the impact on ozone of the proposed Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule before taking final action on SAFE. Further, OEPA asserted that Ohio's contribution to nine monitors is in the 1 or 2 ppb range while the home state and initial and boundary contributions are each up to 19 ppb, and the contribution from Canada/Mexico is in the same range as Ohio's. OEPA argued that ignoring international emissions sources and placing all responsibility for addressing receptors on upwind states would result in overcontrol.

OEPA concluded that there were no cost-effective measures to be taken for EGU or non-EGU sources in Ohio. To support this claim, OEPA pointed to the cost effectiveness threshold of $1400/ton from the CSAPR Update (81 FR 74508, October 26, 2016), and while OEPA recognized that it was developed for the 2008 ozone standard, OEPA stated they believed it is a reasonable cost-effectiveness level for the 2015 ozone NAAQS. As for non-EGUs, OEPA asserted that those sectors were adequately controlled by the Boiler MACT and numerous other MACT categories, BART, SO_2 Data Requirements Rule and other Federal regulations.

4. Information Provided by Ohio Regarding Step 4

OEPA concluded, based on its weight of evidence analysis, that no additional emissions reduction measures beyond existing and planned controls are necessary to address ozone transport contribution from Ohio sources for the 2015 ozone NAAQS.

F. Wisconsin

Wisconsin Department of Natural Resources (WDNR) submitted a SIP revision to address CAA Section 110(a)(2)(D)(i)(I) on September 14, 2018. The submittal notes state and Federal rules applicable to sources in Wisconsin that are relevant to interstate transport, as well as Wisconsin's participation in LADCO. WDNR identified CAIR, CSAPR, CSAPR Update, Wisconsin's regional haze SIP applicable for the 2008–2018 planning period, and state PSD programs. Further, WDNR cited continued consultation with LADCO, three Wisconsin Administrative Code statutes that could be relied on ''[i]f needed'' to address disagreements for SIP development in other states' nonattainment areas, and an adequate PSD program.[59] The statues mentioned include Wisconsin Administrative Code, Natural Resources (Wis. Admin. Code, NR), subsections 285.11, 285.13 and 285.15. The first two address air pollution control department duties and powers. The third, Wisconsin Statute 285.15, entitled Interstate Agreement, gives the governor the authority to enter an agreement to solve interstate pollution transport with Illinois, Indiana and Michigan if the area includes portions of both Wisconsin and Illinois.[60] WDNR does not explicitly reach the conclusion that Wisconsin has satisfied the good neighbor provision for the 2015 ozone NAAQS, but it is implied. WDNR did not reference the 4-step framework. WDNR did not rely on any modeling, identify any receptors, or determine whether Wisconsin contributes any amount of ozone precursor emissions to downwind states. The submittal does not include an analysis of potential NO_X controls. WDNR did not rely on any EPA memoranda. No supporting documentation was provided. Apart from the cited rules and LADCO membership, WDNR provided no discussion or analysis to determine whether they have any obligations under the 2015 ozone NAAQS.

III. EPA Evaluation

EPA is proposing to find that the Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin's SIP submissions do not meet the states' obligations with respect to prohibiting emissions that contribute significantly to nonattainment or interfere with maintenance of the 2015 ozone NAAQS in any other state based on EPA's evaluation of the SIP submissions using the 4-step interstate transport framework, and EPA is therefore proposing to disapprove Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin's SIP submissions.

A. Illinois

1. Evaluation of Information Provided by Illinois Regarding Step 1

For Step 1 in the 4-step framework, IEPA identified monitoring sites that are projected to have problems attaining or maintaining the 2015 ozone NAAQS in 2023. As previously mentioned, the LADCO modeling efforts used the same technique as EPA to calculate future year design values used to identify maintenance and nonattainment receptors. IEPA presented the LADCO results with water cells, which identified five monitors with 2023 maximum design values greater than the

[58] Ohio's SIP submission at 43.

[59] Wisconsin's SIP submission at 4.

[60] *See* Wis. Admin. Code NR 285.15 (2021), available at *https://docs.legis.wisconsin.gov/statutes/statutes/285/ii/11.*

2015 ozone standard, or maintenance receptors, and seven monitors with 2023 average design values greater than the 2015 ozone standard, or nonattainment receptors. Since new modeling has been performed by EPA with updated emission data, EPA proposes to rely on the most recent modeling to identify nonattainment and maintenance receptors with linkage to Wisconsin in 2023. Nonetheless, the alternative modeling relied on by IEPA also identified a number of nonattainment and maintenance receptor sites in 2023. *See* Table CC on page 15 of IEPA's submittal. Thus, even under the alternative modeling of 2023, IEPA acknowledges in its submittal the existence of several nonattainment and maintenance receptors.

2. Evaluation of Information Provided by the State Regarding Step 2

Although Illinois relied on alternative modeling to EPA's modeling, Illinois acknowledged in their SIP submission that it is linked to one or more downwind receptors above either a 1 percent of the NAAQS or a 1 ppb contribution threshold in 2023. Because the alternative modeling relied on by the state also demonstrates that a linkage exists between the state and downwind receptors at step 2, EPA need not conduct a comparative assessment of the alternative modeling; the state concedes that it is linked. IEPA's analysis corroborates the conclusion in EPA's most recent modeling in that the modeling demonstrates the State to be linked above 1 percent of the NAAQS to a downwind receptor, as described in the next section.

IEPA, relying on a concept listed in Attachment A to the March 2018 memorandum, attempted to justify the use of a 1 ppb threshold at step 2 to identify whether the state was ''linked'' to a projected downwind nonattainment or maintenance receptor. As explained in Section I above, the concepts presented in Attachment A to the March 2018 memorandum were developed by outside parties; they are neither guidance nor determined by EPA to be consistent with the CAA. However, EPA's August 2018 memorandum also addressed possible alternative thresholds and suggested that, with appropriate additional analysis, it may be reasonable for states to use a 1 ppb contribution threshold, as an alternative to a 1 percent of the NAAQS threshold, at Step 2 of the 4-Step interstate transport framework for the purposes of identifying linkages to downwind receptors.

As an initial matter, EPA does not accept Illinois' argument that a 1 percent of the NAAQS contribution threshold at Step 2 is ''inappropriate'' for the 2015 ozone NAAQS due to modeling biases and errors.[61] The explanation for how the 1 percent contribution threshold was originally derived is available in the 2011 CSAPR rulemaking. *See* 76 FR 48208, 48237–38. Further, in the CSAPR Update, EPA re-analyzed the threshold for purposes of the 2008 ozone NAAQS and determined it was appropriate to continue to apply this threshold. EPA compared the 1 percent threshold to a 0.5 percent of NAAQS threshold and a 5 percent of NAAQS threshold. EPA found that the lower threshold did not capture appreciably more upwind state contribution compared to the 1 percent threshold, while the 5 percent threshold allowed too much upwind state contribution to drop out from further analysis. *See* Final CSAPR Update Air Quality Modeling TSD, at 27–30 (EPA–HQ–OAR–2015–0596–0144). If EPA were to apply this analysis to the 2015 ozone NAAQS using the updated modeling based on the 2016v2 emissions platform, a 5 percent of the NAAQS contribution threshold (*i.e.,* 3.5 ppb) only captures approximately 50 percent of the total upwind contribution. Compared to a 1 percent threshold, a 5 percent threshold would, on average, forgo 27 percent of the total upwind contribution. As EPA noted in the August 2018 memorandum, the use of even a 2 ppb contribution threshold under the modeling released with the March 2018 memorandum would only capture about 55 percent of all upwind contributions, and therefore ''emission reductions from states linked at that higher threshold may be insufficient to address collective upwind state contribution to downwind air quality problems.'' [31]

With these figures in mind, IEPA's claims that the contribution threshold should be substantially higher than 1 or even 2 ppb solely on the basis of modeling uncertainty cannot be accepted. First, both LADCO's and EPA's modeling techniques are sufficiently reliable and fit for the purpose to measure upwind contribution levels down to at least one percent of the NAAQS. EPA's recommended model attainment test is based on application of the model in a relative sense rather than relying upon absolute model predictions.[62] All models have limitations resulting from uncertainties in inputs and scientific formulation. To minimize the effects of these uncertainties, the modeling is anchored to base period measured data in EPA's guidance approach for projecting design values. Notably, EPA also uses our source apportionment modeling in a relative sense when calculating the average contribution metric (used to identify linkages). In this method the magnitude of the contribution metric is tied to the magnitude of the projected average design value which is tied to the base period average measured design value. EPA's guidance has not established a bright line criteria for judging whether or not statistical measures of model performance constitute acceptable or unacceptable model performance. So, contrary to what Illinois appears to be claiming with regards to modeling biases, there are no EPA recommended measures of allowable error. Although EPA does not typically focus on using particular benchmarks as the sole criteria for model performance, EPA notes that the model performance for the updated modeling based on the 2016v2 emissions platform is generally within the benchmarks recommended by Emery.[63]

EPA has successfully applied a 1 percent of NAAQS threshold to identify linked upwind states in three prior rulemakings. And the D.C. Circuit has declined to establish bright line criteria for model performance. In upholding EPA's approach to evaluating interstate transport in CSAPR, the D.C. Circuit held that they would not ''invalidate EPA's predictions solely because there might be discrepancies between those predictions and the real world. That possibility is inherent in the enterprise of prediction.'' *EME Homer City Generation, L.P.* v. *EPA,* 795 F.3d 118, 135 (2015). The court continued to note that ''the fact that a 'model does not fit every application perfectly is no criticism; a model is meant to simplify reality in order to make it tractable.''' *Id.* at 135–36 (quoting *Chemical Manufacturers Association* v. *EPA,* 28 F.3d 1259, 1264 (D.C. Cir. 1994).

Finally, EPA's August 2018 memorandum provided that whether use of a 1 ppb threshold is appropriate must be based on an evaluation of state-specific circumstances, and no such evaluation was included in the

[61] Illinois' SIP submission at 8, 14.

[62] See Section 4.1' ''Overview of Modeled Attainment Test in EPA Modeling Guidance for Demonstrating Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze. November 2018. EPA 454–R–18–009. *https://www.epa.gov/scram/sip-modeling-guidance-documents.*

[63] Christopher Emery, Zhen Liu, Armistead G. Russel, M. Talat Odman, Greg Yarwood and Naresh Kumar (2017). Recommendations on statistics and benchmarks to assess photochemical model performance, Journal of the Air & Waste Management Association, 67:5,582–598, *DOI: 10.1080/10962247.2016.1265027.*

submission. IEPA did not conduct such an analysis. EPA's experience with the alternative Step 2 thresholds is further discussed in Section I.D.3.i. As discussed there, EPA is considering withdrawing the August 2018 memorandum.

However, based on both the state's alternative modeling and EPA's updated modeling, the state is projected to contribute greater than both the 1 percent and alternative 1 ppb thresholds. While EPA does not, in this action, approve of the IEPA's application of the 1 ppb threshold, based on Illinois' linkages greater than 1 ppb to projected downwind nonattainment or maintenance receptors, the state's use of this alternative threshold at step 2 of the 4-step interstate framework would not alter our review and proposed disapproval this SIP submittal.

3. Results of EPA's Step 1 and Step 2 Modeling and Findings for Illinois

As described in Section I, EPA performed air quality modeling using the 2016v2 emissions platform to project design values and contributions for 2023. These data were examined to determine if Illinois contributes at or above the threshold of 1 percent of the 2015 ozone NAAQS (0.70 ppb) to any downwind nonattainment or maintenance receptor. As shown in Table 2, the data[64] indicate that in 2023, emissions from Illinois contribute greater than 1 percent of the standard to nonattainment or maintenance-only receptors in Wisconsin.[65]

TABLE 2—ILLINOIS LINKAGE RESULTS BASED ON EPA UPDATED 2023 MODELING

Receptor ID	Location	Nonattainment/maintenance	2023 Average design value (ppb)	2023 Maximum design value (ppb)	Illinois contribution (ppb)
550590025	Kenosha, WI	Maintenance	69.2	72.3	18.55
550590019	Kenosha, WI	Nonattainment	72.8	73.7	18.13
551010020	Racine, WI	Nonattainment	71.3	73.2	13.86

Therefore, based on EPA's evaluation of the information submitted by IEPA, and based on EPA's most recent modeling results for 2023, EPA proposes to find that Illinois is linked at Steps 1 and 2 and has an obligation to assess potential emissions reductions from sources or other emissions activity at Step 3 of the 4-step framework. EPA will proceed to Step 3 of the 4-step interstate transport framework to assess the arguments the state presented as to why, despite this linkage, the state should not be considered to significantly contribute to nonattainment or interfere with maintenance of the NAAQS in any other state.

4. Evaluation of Information Provided Regarding Step 3

At Step 3 of the 4-step interstate transport framework, a state's emissions are further evaluated, in light of multiple factors, including air quality and cost considerations, to determine what, if any, emissions significantly contribute to nonattainment or interfere with maintenance and, thus, must be eliminated under CAA section 110(a)(2)(D)(i)(I).

To effectively evaluate which emissions in the state should be deemed ''significant'' and therefore prohibited, states generally should prepare an accounting of sources and other emissions activity for relevant pollutants and assess potential, additional emissions reduction opportunities and resulting downwind air quality improvements. EPA has consistently applied this general approach (*i.e.,* Step 3 of the 4-step interstate transport framework) when identifying emissions contributions that the Agency has determined to be ''significant'' (or interfere with maintenance) in each of its prior Federal, regional ozone transport rulemakings, and this interpretation of the statute has been upheld by the Supreme Court. *See EME Homer City,* 572 U.S. 489, 519 (2014). While EPA has not directed states that they must conduct a Step 3 analysis in precisely the manner EPA has done in its prior regional transport rulemakings, state implementation plans addressing the obligations in CAA section 110(a)(2)(D)(i)(I) must prohibit ''any source or other type of emissions activity within the state'' from emitting air pollutants which will contribute significantly to downwind air quality problems. Thus, states must complete something similar to EPA's analysis (or an alternative approach to defining ''significance'' that comports with the statute's objectives) to determine whether and to what degree emissions from a state should be ''prohibited'' to eliminate emissions that will ''contribute significantly to nonattainment in or interfere with maintenance of'' the NAAQS in any other state. IEPA did not conduct such an analysis in Illinois' SIP submission.

IEPA argued that Illinois' contributions to the nonattainment monitors in the LADCO domain, namely the Allegan and Sheboygan receptors, EPA can be fairly and adequately addressed through Illinois' participation in LADCO. Though IEPA suggested that LADCO may be partially responsible for decreases in ambient ozone concentrations in the Lake Michigan area, LADCO is not a regulatory agency responsible for implementing emissions controls. Furthermore, Illinois did not provide any information on any planned emission reductions, or evaluation of control strategies that the LADCO states intend to implement within their domain, that would reduce either the ozone concentrations or Illinois' contributions at the nonattainment or maintenance monitors to which IEPA identified Illinois as linked. IEPA's basis for concluding that LADCO participation may relieve Illinois of any good neighbor obligations to downwind receptors is entirely unsubstantiated and does not present any basis on which EPA can approve IEPA's SIP submittal. As such, EPA proposes to find Illinois' LADCO participation as inadequate to resolve Illinois' good neighbor obligations for the 2015 ozone NAAQS.

[64] Design values and contributions at individual monitoring sites nationwide are provide in the file:'' 2016v2_DVs_state_contributions.xlsx'' which is included in docket ID No. EPA–HQ–OAR–2021–0663.

[65] These modeling results are consistent with the results of a prior round of 2023 modeling using the 2016v1 emissions platform which became available to the public in the fall of 2020 in the Revised CSAPR Update, as noted in Section I. That modeling showed that Illinois had a maximum contribution greater than 0.70 ppb to at least one nonattainment or maintenance-only receptor in 2023. These modeling results are included in the file ''Ozone Design Values And Contributions Revised CSAPR Update.xlsx'' in docket ID No. EPA–HQ–OAR–2021–0663.

The submittal also stated that Illinois is developing new NO_X RACT standards for the Chicago area that, in conjunction with existing regulations and future Federal reductions, are estimated to reduce NO_X emissions by up to 20,000 tons/year which had not yet been reflected in modeling to 2023. However, Illinois failed to provide any information on the control measures or implementation schedule that would achieve the estimated 20,000 tons/year in reductions. IEPA did not quantify how the emissions reductions they estimated would impact air quality at downwind receptors or Illinois' contributions. In fact, Illinois has not yet finalized the NO_X RACT rule for Chicago. In general, any changes in the emissions inventory and on-the-books controls relevant to emissions in 2023 have now been incorporated into EPA's modeling using the 2016v2 emissions platform, which projects a continuing contribution from Illinois to out of state receptors above a threshold of 1 percent of the NAAQS (at Steps 1 and 2) despite these measures. Therefore, IEPA's SIP submission should have evaluated the availability of *additional* air quality controls to improve downwind air quality at nonattainment and maintenance receptors at Step 3.

Additionally, states may not rely on non-SIP measures to meet SIP requirements. *See* CAA section 110(a)(2)(D) (''Each such [SIP] shall . . . contain adequate provisions . . . .''). *See also* CAA section 110(a)(2)(A); *Committee for a Better Arvin* v. *U.S. E.P.A.,* 786 F.3d 1169, 1175–76 (9th Cir. 2015) (holding that measures relied on by state to meet CAA requirements must be included in the SIP). IEPA did not attempt to revise Illinois' SIP to include these measures in order to implement its good neighbor obligations. Further, the listing of existing or on-the-way control measures, whether approved into the State's SIP or not, does not substitute for a complete Step 3 analysis under EPA's 4-step framework to define ''significant contribution.'' IEPA did not identify the control measures, provide an assessment of the overall effects of these measures, note when the reductions would be achieved, or explain what the overall resulting air quality effects would be at identified out of state receptors. IEPA did not evaluate additional, potential emissions control opportunities, or their costs or impacts, or attempt to analyze whether, if applied more broadly across linked states, the emissions reductions would constitute the elimination of significant contribution on a regional scale. IEPA did not offer an explanation as to whether any faster or more stringent emissions reductions that may be available were prohibitively costly or infeasible. Although EPA acknowledges states are not necessarily bound to follow its own analytical framework at Step 3, IEPA did not attempt to determine or justify an appropriate uniform cost-effectiveness threshold for the more stringent 2015 ozone NAAQS. This would have been similar to the approach to defining significant contribution that EPA has applied in prior rulemakings such as CSAPR and or the CSAPR Update, even if such an analysis is not technically mandatory.

Finally, under the *Wisconsin* decision, states and EPA may not delay implementation of measures necessary to address good neighbor requirements beyond the next applicable attainment date without a showing of impossibility or necessity. *See* 938 F.3d at 320. The IEPA's submittal is insufficient to the extent the implementation timeframes for identified control measures were left unidentified, unexplained, or too uncertain to permit EPA to form a judgment as to whether the timing requirements for good neighbor obligations have been met.

IEPA also attempted to rely on a concept related to international emissions identified in Attachment A to the March 2018 memorandum—a concept that apparently had its origins outside EPA and was not endorsed or recommend by EPA at the time or since. IEPA noted that Illinois would be linked to only one receptor if international and offshore emissions were simply subtracted from the receptor's maximum design values. As explained in Section I.D above, the concepts presented in Attachment A to the March 2018 memorandum were neither guidance nor determined by EPA to be consistent with the CAA. EPA made clear at the time that it would thoroughly review the technical and legal justifications states put forward in relying on any concepts from Attachment A to the March 2018 memorandum. In this case, what IEPA proposes is clearly unacceptable.

The state's reasoning related to international and offshore emissions is inapplicable to the requirements of CAA section 110(a)(2)(D)(i)(I). The good neighbor provision requires states and EPA to address interstate transport of air pollution that contributes to downwind states' ability to attain and maintain NAAQS. Whether emissions from other states or other countries also contribute to the same downwind air quality issue is irrelevant in assessing whether a downwind state has an air quality problem, or whether an upwind state is significantly contributing to that problem. States are not obligated under CAA section 110(a)(2)(D)(i)(I) to reduce emissions sufficient on their own to resolve downwind receptors' nonattainment or maintenance problems. Rather, states are obligated to eliminate their own ''significant contribution'' or ''interference'' with the ability of other states to attain or maintain the NAAQS.

Indeed, the D.C. Circuit in *Wisconsin* specifically rejected petitioner arguments suggesting that upwind states should be excused from good neighbor obligations on the basis that some other source of emissions (whether international or another upwind state) could be considered the ''but-for'' cause of downwind air quality problem. *See* 938 F.3d at 323–324. The court viewed petitioners' arguments as essentially an argument ''that an upwind state 'contributes significantly' to downwind nonattainment only when its emissions are the sole cause of downwind nonattainment.'' *Id.* at 324. The court explained that ''an upwind state can 'contribute' to downwind nonattainment even if its emissions are not the but-for cause.'' *Id.* at 324–325. *See also Catawba County* v. *EPA,* 571 F.3d 20, 39 (D.C. Cir. 2009) (rejecting the argument ''that 'significantly contribute' unambiguously means 'strictly cause' '' because there is ''no reason why the statute precludes EPA from determining that [an] addition of [pollutant] into the atmosphere is significant even though a nearby county's nonattainment problem would still persist in its absence''); *Miss. Comm'n on Envtl. Quality* v. *EPA,* 790 F.3d 138, 163 n.12 (D.C. Cir. 2015) (observing that the argument that ''there likely would have been no violation at all . . . if it were not for the emissions resulting from [another source]'' is ''merely a rephrasing of the but-for causation rule that we rejected in *Catawba County*''). Therefore, a state is not excused from eliminating its significant contribution on the basis that international emissions also contribute some amount of pollution to the same receptors to which the state is linked. Illinois' argument related to international and offshore emissions fails to change the status of any receptor at Step 1, to eliminate Illinois' linkages at Step 2, or to provide sufficient evidence that Illinois does not contribute significantly to receptors at Step 3.

We therefore propose that Illinois was required to analyze emissions from the sources and other emissions activity from within the state to determine whether its contributions were

significant, and we propose to disapprove its submission because Illinois failed to do so.

5. Evaluation of Information Provided Regarding Step 4

Step 4 of the 4-step interstate transport framework calls for development of permanent and federally enforceable control strategies to achieve the emissions reductions determined to be necessary at Step 3 to eliminate significant contribution to nonattainment or interference with maintenance of the NAAQS. IEPA identified future NO_X RACT standards for the Chicago area and unnamed Federal rules were sufficient to resolve Illinois' good neighbor obligations for the 2015 ozone NAAQS. However, Illinois did not revise its SIP to include these emission reductions in a revision to its SIP to ensure the reductions were permanent and enforceable. As a result, EPA proposes to disapprove Illinois' submittal on the separate,[66] additional basis that the Illinois has not included permanent and enforceable emissions reductions in its SIP as necessary to meet the obligations of CAA section 110(a)(2)(d)(i)(I).

6. Conclusion

Based on EPA's evaluation of Illinois SIP submission, EPA is proposing to find that the portion of Illinois' May 21, 2018 SIP submission addressing CAA section 110(a)(2)(D)(i)(I) does not meet the state's interstate transport obligations, because it fails to contain the necessary provisions to eliminate emissions that will contribute significantly to nonattainment or interfere with maintenance of the 2015 ozone NAAQS in any other state.

B. Indiana

1. Evaluation of Information Provided by Indiana Regarding Step 1

IDEM relied on LADCO modeling released in 2018 to identify nonattainment and maintenance receptors in 2023. As described previously in this action, LADCO performed a modeling demonstration like that of EPA's 2018 transport modeling efforts, except with use of the ERTAC EGU Tool for EGU emissions. LADCO identified nonattainment and maintenance receptors using EPA methodology identified in Section I. IDEM elected to rely on LADCO's modeling results, which identified similar receptors to EPA's modeling included in the March 2018 memo. Since new modeling has been performed by EPA which includes updated emission data using the 2016v2 platform, EPA proposes to primarily rely on the most recent modeling to identify nonattainment and maintenance receptors in 2023 (see Table 3 further in this action).

Nonetheless, the LADCO modeling relied on by IDEM also identified a number of nonattainment and maintenance receptor sites in 2023. *See* Table 7 on page 30 of Attachment 1 to Indiana's submittal. Thus, even under the LADCO modeling for 2023, IDEM acknowledges in its submittal the existence of several nonattainment and maintenance receptors.

IDEM essentially argues that two of the receptors to which Indiana was linked would not actually be receptors in 2023. Based on updated modeling of EPA's 2016v2 emissions platform, EPA agrees with IDEM that that the Allegan, Michigan monitor is not expected to be a receptor in 2023, but not the receptor in Sheboygan, Wisconsin. Regardless, EPA disagrees with the line of reasoning IDEM put forward to argue that those two monitors would not be receptors to the extent such reasoning could be applied to Indiana's linkages in EPA's modeling using the 2016v2 emissions platform. First, IDEM concluded that if ozone design value trends continued as expected then those two receptors would reach attainment before 2023. In addition, IDEM compared 2012–2017 monitoring data with LADCO's and EPA's modeling and concluded that the Sheboygan, Wisconsin and Allegan, Michigan receptor monitors were already below the 2023 projections. Additionally, EPA's updated modeling, which considers more recent design values and emissions, continues to find that Indiana is linked to downwind nonattainment and maintenance receptors, despite downward trends in emissions and design values

2. Evaluation of Information Provided by the State Regarding Step 2

Although Indiana relied on alternative modeling to EPA's modeling, Indiana acknowledged in its SIP submission that it is linked to one or more downwind receptors above either a 1 percent of the NAAQS or 1 ppb contribution threshold in 2023. Because the alternative modeling relied on by IDEM also demonstrates that a linkage exists between the state and one or more downwind receptors at Step 2, EPA need not conduct a comparative assessment of the alternative modeling; the State concedes that it is linked. IDEM's analysis corroborates the conclusion in EPA's most recent modeling, described in the next section.

IDEM additionally utilized a 1 ppb threshold at Step 2 to identify whether it was linked to a projected downwind nonattainment or maintenance receptor. As discussed in EPA's August 2018 memorandum, with appropriate additional analysis it may be reasonable for states to use a 1 ppb contribution threshold, as an alternative to a 1 percent threshold, at Step 2 of the 4-Step interstate transport framework, for the purposes of identifying linkages to downwind receptors. However, IDEM's submission did not contain any additional analysis of contributions at the receptors to which they were linked to support their claim that a 1 ppb threshold was an appropriate Step 2 screening threshold. Rather, IDEM claimed that a threshold of 1 percent was too low because it is less than the ozone monitoring ''tolerance level'' of 1 ppb (*i.e.,* precision) used for reporting measured ozone concentrations. In its submittal IDEM failed to provide any basis for asserting that the precision of an ozone monitor is applicable to the precision of ozone contributions which are not a directly measured quantity. Regardless, total upwind contributions are well above 1 ppb at all receptors to which Indiana is linked based on modeling by LADCO and by EPA. In addition, Indiana alone contributes above 1 ppb to several downwind receptors. Because contributions are not directly measured, modeling is used to apportion projected ozone design values into contributions from individual states and other sources of ozone precursors (*e.g.,* fires and biogenic sources). The projected ozone design values are calculated using the method recommended in EPA's modeling guidance.[67] As part of this method, projected design values are reported with a precision of a tenth of a ppb. Consistent with our modeling guidance, ozone contributions are evaluated with a precision of a tenth of a ppb. For example, a contribution of 0.6999 . . . ppb is reported as 0.69 ppb and evaluated as 0.6 ppb which is below the 1 percent threshold.

Indiana seemingly conflates the contribution threshold at Step 2 with a Step 3 determination of ''significance'' (which is reached only after the application of a multi-factor analysis), regardless EPA does not accept

[66] Pointing to anticipated upcoming emission reductions is not sufficient as a step 3 analysis, for the reasons discussed in Section 4. In this section, we explain that to the extent such anticipated reductions are not included in the SIP and rendered permanent and enforceable, reliance on such anticipated reductions is also insufficient at step 4.

[67] Modeling Guidance for Demonstrating Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze. November 2018. EPA 454–R–18–009. *https://www.epa.gov/scram/sip-modeling-guidance-documents.*

Indiana's argument that a 1 percent of the NAAQS contribution threshold at Step 2 is ''not appropriate'' for the 2015 ozone NAAQS on the basis of unwarranted modeling reliability concerns.[68] The explanation for how the 1 percent contribution threshold was originally derived is available in the 2011 CSAPR rulemaking. *See* 76 FR 48208, 48237–38. Further, in the CSAPR Update, EPA re-analyzed the threshold for purposes of the 2008 ozone NAAQS and determined it was appropriate to continue to apply this threshold. EPA compared the 1 percent threshold to a 0.5 percent of NAAQS threshold and a 5 percent of NAAQS threshold. EPA found that the lower threshold did not capture appreciably more upwind state contribution compared to the 1 percent threshold, while the 5 percent threshold allowed too much upwind state contribution to drop out from further analysis. *See* Final CSAPR Update Air Quality Modeling TSD, at 27–30 (EPA–HQ–OAR–2015–0596–0144). If EPA were to apply this analysis to the 2015 ozone NAAQS using the updated modeling based on the 2016v2 emissions platform, a 5 percent of the NAAQS contribution threshold would forgo nearly 30 percent of the total upwind contribution, on average, for those receptors to which Indiana is linked using a 1 percent threshold. As EPA noted in the August 2018 memorandum, the use of even a 2 ppb contribution threshold under the modeling released with the March 2018 memorandum would only capture about 55 percent of all upwind contributions, and therefore ''emission reductions from states linked at that higher threshold may be insufficient to address collective upwind state contribution to downwind air quality problems.'' [69]

With these figures in mind, IDEM's claims that the contribution threshold should be substantially higher than 1 or even 2 ppb solely on the basis of modeling uncertainty cannot be accepted. First, both IDEM's and EPA's modeling techniques are sufficiently reliable and fit for the purpose to measure upwind contribution levels down to at least one percent of the NAAQS. EPA's recommended model attainment test is based on application of the model in a relative sense rather than relying upon absolute model predictions.[70] All models have limitations resulting from uncertainties in inputs and scientific formulation. To minimize the effects of these uncertainties, the modeling is anchored to base period measured data in EPA's guidance approach for projecting design values. Notably, EPA also uses our source apportionment modeling in a relative sense when calculating the average contribution metric (used to identify linkages). In this method the magnitude of the contribution metric is tied to the magnitude of the projected average design value which is tied to the base period average measured design value. EPA's guidance has not established a bright-line criteria for judging whether or not statistical measures of model performance constitute acceptable or unacceptable model performance. So, contrary to what Indiana appears to be claiming with regards to modeling biases, there are no EPA recommended measures of allowable error. Although EPA does not typically focus on using particular benchmarks as the sole criteria for model performance, EPA notes that the model performance for the updated modeling based on the 2016v2 emissions platform is generally within the benchmarks recommended by Emery, et al., (2017).[71]

EPA has successfully applied a 1 percent of NAAQS threshold to identify linked upwind states in three prior rulemakings. And the D.C. Circuit has declined to establish bright line criteria for model performance. In upholding EPA's approach to evaluating interstate transport in CSAPR, the Supreme Court held that they would not ''invalidate EPA's predictions solely because there might be discrepancies between those predictions and the real world. That possibility is inherent in the enterprise of prediction.'' *EME Homer City Generation, L.P.* v. *EPA,* 795 F.3d 118, 135 (2015). The court continued to note that ''the fact that a 'model does not fit every application perfectly is no criticism; a model is meant to simplify reality in order to make it tractable.' '' *Id.* at 135–36 (quoting *Chemical Manufacturers Association* v. *EPA,* 28 F.3d 1259, 1264 (D.C. Cir. 1994).

EPA's August 2018 memorandum provided that whether use of a 1 ppb threshold is appropriate must be based on an evaluation of state-specific circumstances, and no such evaluation was included in the submission. EPA's experience with the alternative Step 2 thresholds is further discussed in Section I.D.3.i. As discussed there, EPA is considering withdrawing the August 2018 memorandum.

3. Results of EPA's Step 1 and Step 2 Modeling and Findings for Indiana

As described in Section I, EPA performed air quality modeling using the 2016v2 emissions platform to project design values and contributions for 2023. These data were examined to determine if Indiana contributes at or above the threshold of 1 percent of the 2015 ozone NAAQS (0.70 ppb) to any downwind nonattainment or maintenance receptor. As shown in Table 3, the data [72] indicate that in 2023, emissions from Indiana contribute greater than 1 percent of the standard to nonattainment or maintenance-only receptors in Wisconsin, Illinois, Connecticut, and Pennsylvania.[73]

TABLE 3—INDIANA LINKAGE RESULTS BASED ON EPA UPDATED 2023 MODELING

Receptor ID	Location	Nonattainment/maintenance	2023 Average design value (ppb)	2023 Maximum design value (ppb)	Indiana contribution (ppb)
550590025	Kenosha, WI	Maintenance	69.2	72.3	7.10
170310032	Cook, IL	Maintenance	69.8	72.4	7.03

[68] Indiana's SIP submission, Attachment 1 at 4.

[69] August 2018 memorandum at 4.

[70] See Section 4.1' ''Overview of Modeled Attainment Test in EPA Modeling Guidance for Demonstrating Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze. November 2018. EPA 454–R–18–009. *https://www.epa.gov/scram/sip-modeling-guidance-documents.*

[71] Christopher Emery, Zhen Liu, Armistead G. Russel, M. Talat Odman, Greg Yarwood and Naresh Kumar (2017). Recommendations on statistics and benchmarks to assess photochemical model performance, Journal of the Air & Waste Management Association, 67:5,582–598, *DOI: 10.1080/10962247.2016.1265027.*

[72] Design values and contributions at individual monitoring sites nationwide are provide in the file: 2016v2_DVs_state_contributions.xlsx which is included in docket ID No. EPA–HQ–OAR–2021–0663.

[73] These modeling results are consistent with the results of a prior round of 2023 modeling using the 2016v1 emissions platform which became available to the public in the fall of 2020 in the Revised CSAPR Update, as noted in Section I. That modeling showed that Indiana had a maximum contribution greater than 0.70 ppb to at least one nonattainment or maintenance-only receptor in 2023. These modeling results are included in the file ''Ozone Design Values And Contributions Revised CSAPR Update.xlsx'' in docket ID No. EPA–HQ–OAR–2021–0663.

TABLE 3—INDIANA LINKAGE RESULTS BASED ON EPA UPDATED 2023 MODELING—Continued

Receptor ID	Location	Nonattainment/maintenance	2023 Average design value (ppb)	2023 Maximum design value (ppb)	Indiana contribution (ppb)
550590019	Kenosha, WI	Nonattainment	72.8	73.7	6.60
551010020	Racine, WI	Nonattainment	71.3	73.2	6.60
170317002	Cook, IL	Maintenance	70.1	73.0	6.33
170310076	Cook, IL	Maintenance	69.3	72.1	6.21
170310001	Cook, IL	Maintenance	69.6	73.4	5.44
170314201	Cook, IL	Maintenance	69.9	73.4	4.65
90099002	New Haven, CT	Nonattainment	71.8	73.9	0.87
90019003	Fairfield, CT	Nonattainment	76.1	76.4	0.76
90013007	Fairfield, CT	Nonattainment	74.2	75.1	0.75
420170012	Bucks, PA	Maintenance	70.7	72.2	0.73

Therefore, based on EPA's evaluation of the information submitted by IDEM, and based on EPA's most recent modeling results for 2023, EPA proposes to find that Indiana is linked at Steps 1 and 2 and has an obligation to assess potential emissions reductions from sources or other emissions activity at Step 3 of the 4-Step framework. EPA therefore will proceed to Step 3 of the 4-Step interstate transport framework to assess the arguments the State presented as to why, despite this linkage, the state should not be considered to significantly contribute to nonattainment or interfere with maintenance of the NAAQS in any other state.

4. Evaluation of Information Provided Regarding Step 3

At Step 3 of the 4-Step interstate transport framework, a state's emissions are further evaluated, in light of multiple factors, including air quality and cost considerations, to determine what, if any, emissions significantly contribute to nonattainment or interfere with maintenance and, thus, must be eliminated under CAA section 110(a)(2)(D)(i)(I).

To effectively evaluate which emissions in the state should be deemed ''significant'' and therefore prohibited, states generally should prepare an accounting of sources and other emissions activity for relevant pollutants and assess potential, additional emissions reduction opportunities and resulting downwind air quality improvements. EPA has consistently applied this general approach (*i.e.,* Step 3 of the 4-Step interstate transport framework) when identifying emissions contributions that the Agency has determined to be ''significant'' (or interfere with maintenance) in each of its prior Federal, regional ozone transport rulemakings, and this interpretation of the statute has been upheld by the Supreme Court. *See EME Homer City,* 572 U.S. 489, 519 (2014). While EPA has not directed states that they must conduct a Step 3 analysis in precisely the manner EPA has done in its prior regional transport rulemakings, state implementation plans addressing the obligations in CAA section 110(a)(2)(D)(i)(I) must prohibit ''any source or other type of emissions activity within the state'' from emitting air pollutants which will contribute significantly to downwind air quality problems. Thus, states must complete something similar to EPA's analysis (or an alternative approach to defining ''significance'' that comports with the statute's objectives) to determine whether and to what degree emissions from a state should be ''prohibited'' to eliminate emissions that will ''contribute significantly to nonattainment in, or interfere with maintenance of'' the NAAQS in any other state. IDEM did not conduct such an analysis in their SIP submission.

IDEM first asserted that Indiana's rule amendments under CSAPR meant that Indiana was already meeting the good neighbor requirements for the 2015 ozone NAAQS. The submittal, however, did not contain a demonstration at Step 3 that the State was adequately controlling its emissions for purposes of the good neighbor provision, particularly because the State conceded in its submission that it was potentially significantly contributing to one or more receptors in 2023 at Steps 1 and 2. The SIP submittal pointed to the state's existing NO_X control measures, consent decree requirements, and future fuel switches and retirements for large EGUs and non-EGUs for the years 2008 through 2017 to conclude Indiana is already meeting its good neighbor obligations for the 2015 ozone NAAQS.

However, the state's submittal does not include a sufficient examination or a technical justification that could support the conclusion that the state has no further good neighbor obligations for the 2015 ozone NAAQS. In particular, the state did not conduct in its submittal an analysis of potential additional emissions reductions measures to further reduce its impact on the identified downwind receptors. For example, although Indiana did include in its submission a list of controls at individual emissions units at facilities in the state, IDEM did not analyze additional potential NO_X emissions control technologies, their associated costs, estimated emissions reductions, and downwind air quality improvements. Nor does the submittal include an analysis of whether such potential, additional control technologies or measures could reduce the impact of Indiana's emissions on out of state receptors. Though there is not a prescribed method for a Step 3 analysis, EPA has consistently applied Step 3 of the good neighbor framework through a more rigorous evaluation of potential additional control technologies or measures than what Indiana provided in its submission. Identifying a range of various emissions control measures that have been or may be enacted at the state level, without analysis of the impact of those measures on the out of state receptors, is not analytically sufficient. In general, the air quality modeling that EPA has conducted (as well the modeling relied on by Indiana in its submittal) already accounts for ''on-the-books'' emissions control measures. Both sets of modeling clearly establish continued linkage from Indiana to downwind receptors in 2023 at Steps 1 and 2, despite those emissions control efforts.

IDEM provided what they characterized as a weight of evidence analysis consisting of monitoring data, emissions data, and photochemical modeling to justify their conclusion that no additional emission reductions would be necessary to satisfy Indiana's ozone transport obligations. First, IDEM

presented evidence of downward trends of statewide ozone concentrations and emissions, as well as a decrease in projected EGU emissions in 2023 relative to 2011. Despite these trends, however, the LADCO modeling that Indiana depended on for its submittal still identified that Indiana would contribute over 1 ppb to one or more receptors in 2023.

As for downwind design value trends, EPA disagrees that IDEM's reliance on trends data to conclude that the Harford, Maryland and Richmond, New York monitors would reach attainment ''over time'' is sufficient to support a conclusion that Indiana has no good neighbor obligations. The states and EPA are to address interstate transport obligations ''as expeditiously as practicable'' and no later than the attainment schedule set in accordance with CAA section 181(a). *See North Carolina,* 531 F.3d at 911–13; *Wisconsin,* 938 F.3d at 313–20; *Maryland,* 958 F.3d at 1204; *New York* v. *EPA,* 964 F.3d 1214, 1226 (D.C. Cir. 2020); *New York* v. *EPA,* 781 Fed. App'x 4, 6–7 (D.C. Cir. 2019). IDEM asserted that EGUs are well controlled in Indiana and cited several state and Federal regulations that EGUs may be subject to in Indiana. In general, however, the listing of existing or on-the-way control measures, whether approved into the state's SIP or not, does not substitute for a complete Step 3 analysis under EPA's 4-Step framework to define ''significant contribution.'' IDEM did not provide an assessment of the overall effects of the identified control measures or explain what the overall resulting air quality effects would be at identified out of State receptors. IDEM did not perform an analysis of all large NO_X emitting EGU for factors that may affect the facilities' emissions, including but not limited to allowance prices, fuel prices, and enforceable limits. IDEM did not evaluate additional, potential emissions control opportunities, or their costs or impacts, or attempt to analyze whether, if applied more broadly across linked states, the emissions reductions would constitute the elimination of significant contribution on a regional scale. IDEM did not offer an explanation as to whether any faster or more stringent emissions reductions that may be available were prohibitively costly or infeasible. Although EPA acknowledges states are not necessarily bound to follow its own analytical framework at Step 3, IDEM did not attempt to determine or justify an appropriate uniform cost-effectiveness threshold. This would have been similar to the approach to defining significant contribution that EPA has applied in prior rulemakings such as CSAPR and or the CSAPR Update, even if such an analysis is not technically mandatory. As discussed previously, both the LADCO modeling relied on by the state and EPA's updated modeling indicates sources in Indiana are linked to downwind air quality problems for the 2015 ozone standard. However, Indiana's SIP submittal did not include an analysis of potential NO_X emissions control technologies, associated costs, estimated emissions reductions, and downwind air quality in order to determine whether the State had eliminated the State's downwind contribution in amounts which will significantly contribute to nonattainment or interfere with maintenance. Thus, EPA proposes to disapprove Indiana's SIP submission on the separate, additional basis that the SIP submittal did not assess additional emission control opportunities.

IDEM concluded it is not cost-effective to evaluate and implement controls on non-EGUs in the state on the sole basis that the majority of NO_X emissions in the state come from EGUs. EPA cannot accept the assertion as it is insufficiently supported. Cost-effectiveness must be assessed in the context of the specific CAA program; assessing cost-effectiveness in the context of ozone transport should reflect a more comprehensive evaluation of the nature of the interstate transport problem, the total emissions reductions available at several cost thresholds, and the air quality impacts of the reductions at downwind receptors. EPA notes that there are as many as two dozen non-EGU facilities in Indiana with more than 300 tons per year of NO_X emissions each, but IDEM did not analyze control opportunities at these sources at all in the SIP submission.

IDEM also argued that additional emissions reductions from EGU and non-EGU sources in Indiana ''are getting more difficult to mandate'' because of reduced effectiveness of controls to make significant decreases in ozone values, operational concerns, and increased costs for customers.[74] Again, the SIP submission does not contain sufficient evidence to support that conclusion. IDEM did not identify controls that had reduced effectiveness or explain why they believed they had reduced effectiveness. IDEM did not describe what any operational concerns were for any controls, nor did IDEM provide any information to support their claim that controls would increase costs for consumers. While Indiana's existing control measures have undoubtedly reduced the amount of transported ozone pollution to other states and have contributed to the downward emissions trends and improving air quality in the State as shown in the state's SIP submittal, in the Revised CSAPR Update, EPA's analysis found that despite Indiana's existing control programs, additional emissions reductions were achievable from EGUs in the state, even under the level of control stringency EPA determined appropriate to eliminate significant contribution for the 2008 ozone NAAQS. In any case, EPA has not established a benchmark cost-effectiveness threshold for good neighbor obligations for the 2015 ozone NAAQS, and IDEM in its submittal has not conducted an analysis to establish one for EPA to evaluate.

IDEM also identified several planned retirements or retrofits to coal fired EGUs in Indiana that were not included in any modeling available at the time of Indiana's submission and stated they would reduce emissions several thousand tons beyond the modeling. Further, EPA's assessment of future air quality conditions generally accounts for on-the-books emission reductions and the most up-to-date forecast of future emissions in the absence of the transport policy being evaluated (*i.e.,* base case conditions).[75] As described in more detail in Section I, EPA's latest projections of the baseline EGU emissions uses the version 6—Summer 2021 Reference Case of the IPM. The IPM version 6—Summer 2021 Reference Case uses the NEEDS v6 database as its source for data on all existing and planned-committed units. Units are removed from the NEEDS inventory only if a high degree of certainty could be assigned to future implementation of the announced future closure or retirement. Any retirements excluded from the NEEDS v6 inventory can be viewed in the NEEDS spreadsheet.[76] EPA looked into the upcoming retirements cited by IDEM and following the guidelines regarding retirements for the IPM version—6 Summer 2021 Reference Case certain units are not excluded from the NEEDS v6 inventory. There are other retirements that were not included in the SIP submission that were excluded

[74] Indiana's SIP submission, Attachment 1 at 37.

[75] *See* 81 FR 74504 at 74517; 85 FR 68964 at 68979.

[76] The ''Capacity Dropped'' and the ''Retired Through 2023'' worksheets in NEEDS lists all units that are removed from the NEEDS v6 inventory—NEEDS v6 Summer 2021 Reference Case. This data can be found on EPA's website at: *https://www.epa.gov/airmarkets/national-electric-energy-data-system-needs-v6.*

from the NEEDS v6 inventory for the 2023 projections. This includes retirements at AES Petersburg, Merom, and RM Schahfer. In other words, in general, any changes in the emissions inventory and on-the-books controls relevant to emissions in 2023 have now been incorporated into the EPA's modeling using the 2016v2 emissions platform, which projects a continuing contribution from Indiana to out of state receptors above a threshold of 1 percent of the NAAQS (at Steps 1 and 2) despite these measures. Therefore, in light of continuing contribution to out of state receptors from Indiana notwithstanding these identified retirements, IDEM's SIP submission should have evaluated the availability of additional air quality controls to improve downwind air quality at nonattainment and maintenance receptors at Step 3 Furthermore, under the Wisconsin decision, states and EPA may not delay implementation of measures necessary to address good neighbor requirements beyond the next applicable attainment date without a showing of impossibility or necessity. See 938 F.3d at 320. The IDEM's submittal is insufficient to the extent the implementation timeframes for several claimed expected shutdowns were left unidentified, unexplained, or too uncertain to permit EPA to form a judgment as to whether the timing requirements for good neighbor obligations have been met.

Additionally, IDEM explained in only the most general terms how the unaccounted emissions reductions would influence downwind air quality or Indiana's contributions to other state. IDEM also did not quantify how the emissions reductions they estimated would impact air quality at downwind receptors or Indiana's contributions. IDEM did not demonstrate that the downwind improvements from these regulations and programs would be sufficient to eliminate Indiana's linkages or prohibit the State's emissions in amounts that will contribute significantly to nonattainment or interfere with maintenance of the NAAQS in any other state.

IDEM also made several arguments related to potential flexibilities identified in Attachment A to the March 2018 memorandum.[77] As explained previously in Section I, the concepts presented in Attachment A to the March 2018 memorandum were neither guidance nor determined by EPA to be consistent with the CAA. EPA will thoroughly review the technical and legal justifications IDEM put forward in their attempt to use a potential flexibility from Attachment A to the March 2018 memorandum.

IDEM suggested that local emissions reductions from the jurisdiction where downwind receptors are located should first be implemented and accounted for before imposing obligations on upwind states under the interstate transport provision. IDEM represented that EPA had concluded that monitors in the Northeast ''are impacted from more local emissions'' by citing a May 14, 2018 presentation. The purpose of that presentation was to share a technical, exploratory analysis of ozone trends. IDEM misrepresented the contents of the presentation, which labeled the results as ''preliminary'' and indicated that ''[f]urther exploration of the relative contribution from various source sectors within the NE Corridor and in nearby upwind states might also be informative.'' [78] These preliminary results of that analysis are generally consistent with EPA's updated modeling using the 2016v2 emissions platform. Although EPA's modeling shows that a large portion of the transport problem affecting the receptors in Coastal Connecticut is indeed from sources within the Ozone Transport Region (OTR), a substantial portion of the transport problem at these receptors, on the order of 25 percent, is the result of transport from states outside the OTR. However, the relevance of that presentation to the evaluation of Indiana's good neighbor obligations is not clear. As already discussed, the statute and the case law (particularly the holdings in *Wisconsin* and *Maryland*) make clear that good neighbor obligations are not merely supplementary to or deferable until after local emission reductions are achieved. Further, based on EPA's modeling released with the March 2018 memorandum, nearly all of the receptors to which Indiana is linked are also heavily impacted by distant upwind state emissions in addition to local sources and sources in neighboring states. The *Wisconsin* decision's holding in regard to international contribution (discussed in more detail later) is equally applicable to an upwind state's claims that some other state's emissions, or local emissions, are more to blame than its own emissions. *See* 938 F.3d 303 at 323–25 (''an upwind state can 'contribute' to downwind nonattainment even if its emissions are not the but-for cause'').

There is nothing in the CAA that supports Indiana's position on local sources, and Indiana does not provide grounds on which to approve its SIP submission. The D.C. Circuit has held on five different occasions that the timing framework for addressing interstate transport obligations must be consistent with the downwind areas' attainment schedule. In particular, for the ozone NAAQS, the states and EPA are to address interstate transport obligations ''as expeditiously as practicable'' and no later than the attainment schedule set in accordance with CAA section 181(a). *See North Carolina,* 531 F.3d at 911–13; *Wisconsin,* 938 F.3d at 313–20; *Maryland,* 958 F.3d at 1204; *New York* v. *EPA,* 964 F.3d 1214, 1226 (D.C. Cir. 2020); *New York* v. *EPA,* 781 Fed. App'x 4, 6–7 (D.C. Cir. 2019). The court in *Wisconsin* explained its reasoning in part by noting that downwind jurisdictions often may need to heavily rely on emissions reductions from upwind states in order to achieve attainment of the NAAQS, 938 F.3d at 316–17; such states would face increased regulatory burdens including the risk of bumping up to a higher nonattainment classification if attainment is not reached by the relevant deadline, *Maryland,* 958 F.3d at 1204. The statutory framework of the CAA and these cases establish clearly that states and EPA must address interstate transport obligations in line with the attainment schedule provided in the CAA in order to timely assist downwind states in attaining and maintain the NAAQS, and this schedule is ''central to the regulatory scheme.'' *Wisconsin,* 938 F.3d at 316 (quoting *Sierra Club* v. *EPA,* 294 F.3d 155, 161 (D.C. Cir. 2002)).

IDEM similarly suggested that international and offshore emissions contributions should be part of the good neighbor calculus. IDEM's reasoning related to international and offshore emissions is inapplicable to the requirements of CAA section 110(a)(2)(D)(i)(I). The good neighbor provision requires states and EPA to address interstate transport of air pollution that contributes to downwind states' ability to attain and maintain NAAQS. Whether emissions from other states or other countries also contribute to the same downwind air quality issue is irrelevant in assessing whether a downwind state has an air quality problem, or whether an upwind state is significantly contributing to that problem. States are not obligated under CAA section 110(a)(2)(D)(i)(I) to reduce

[77] Based on the reference to the potential flexibilities in Attachment A to the March 2018 memorandum on page 2 of Attachment 1 to Indiana's SIP submission, EPA assumes the reference to ''flexibilities'' on page 38 of Attachment 1 likewise references Attachment A to the March 2018 memorandum.

[78] Indiana's SIP submission, Appendix E at 4, 17.

emissions sufficient on their own to resolve downwind receptors' nonattainment or maintenance problems. Rather, states are obligated to eliminate their own ''significant contribution'' or ''interference'' with the ability of other states to attain or maintain the NAAQS.

Indeed, the D.C. Circuit in *Wisconsin* specifically rejected petitioner arguments suggesting that upwind states should be excused from good neighbor obligations on the basis that some other source of emissions (whether international or another upwind state) could be considered the ''but-for'' cause of downwind air quality problem. *See* 938 F.3d at 323–324. The court viewed petitioners' arguments as essentially an argument ''that an upwind state 'contributes significantly' to downwind nonattainment only when its emissions are the sole cause of downwind nonattainment.'' *Id.* at 324. The court explained that ''an upwind state can 'contribute' to downwind nonattainment even if its emissions are not the but-for cause.'' *Id.* at 324–325. *See also Catawba County* v. *EPA,* 571 F.3d 20, 39 (D.C. Cir. 2009) (rejecting the argument ''that 'significantly contribute' unambiguously means 'strictly cause''' because there is ''no reason why the statute precludes EPA from determining that [an] addition of [pollutant] into the atmosphere is significant even though a nearby county's nonattainment problem would still persist in its absence''); *Miss. Comm'n on Envtl. Quality* v. *EPA,* 790 F.3d 138, 163 n.12 (D.C. Cir. 2015) (observing that the argument that ''there likely would have been no violation at all . . . if it were not for the emissions resulting from [another source]'' is ''merely a rephrasing of the but-for causation rule that we rejected in *Catawba County*''). Therefore, a state is not excused from eliminating its significant contribution on the basis that international emissions also contribute some amount of pollution to the same receptors to which the state is linked.

IDEM also calculated Indiana's portion of contribution to the Harford, Maryland receptor was 0.077 ppb, and determined that Indiana would need to reduce its contribution by 0.0077 ppb (based on a contribution threshold of 1 ppb) to bring the Maryland receptor into attainment. IDEM argued that 0.0077 ppb is well within the error of the model and would be ''difficult'' to translate into an emission reduction requirement.[79] We first note that this approach is a deviation from EPA's traditional approach of apportioning upwind-state responsibility at Step 3 using a uniform cost of control metric set at a level that maximizes cost-effectiveness of emissions reductions in relation to downwind state impacts across all linked states. Thus, this is not how EPA has interpreted the statutory term ''significant'' in the past, and EPA does not reach a conclusion whether this approach would be approvable, had IDEM had imposed emissions reductions in line with this logic.

We do not need to reach that point in the analysis, however, because, having selected that approach to defining its obligations, IDEM proceeded to ignore the result. IDEM's submission identified Indiana's proportional contribution as 0.077 ppb to the Harford, Maryland receptor. Having acknowledged Indiana was responsible for eliminating up to 0.0077 ppb of contribution, IDEM claimed that because that amount was within the ''error of the model'' that it would be ''difficult'' to require that amount of reductions from Indiana sources.

This argument does not rise to the level of acceptable proof. EPA has routinely been capable of successfully implementing good neighbor obligations through the CSAPR framework, and achieving significant downwind air quality improvements through upwind-state reductions, at levels of ''significant contribution'' comparable or even less than those found in Indiana's submission, irrespective of alleged modeling errors. *See Wisconsin,* 938 F.3d at 322–23 (rejecting Wisconsin's argument that it should not face good neighbor obligations on the basis that its emission reductions would only improve a downwind receptor by two ten-thousandths of a part per billion).

After measuring Indiana's significant contribution, IDEM suggested that modeling uncertainty was too great to either require emissions reductions. But IDEM had measured the state's significant contribution and was therefore identifying the measurable amount of significant contribution the state was legally responsible for eliminating. *See Michigan* v. *EPA,* 213 F.3d 663, 683–84 (D.C. Cir. 2000) (significant contribution must be ''measurable''). Further, scientific uncertainty may only be invoked to avoid comporting with the requirements of the CAA when ''the scientific uncertainty is so profound that it precludes . . . reasoned judgment'' *Massachusetts* v. *EPA,* 127 S.Ct. 1438 (2007). *See Wisconsin,* 938 F.3d at 318–19 (''Scientific uncertainty, however, does not excuse EPA's failure to align the deadline for eliminating upwind States' significant contributions with the deadline for downwind attainment of the NAAQS.''). *See also EME Homer City,* 795 F.3d 118, 135–36 (''We will not invalidate EPA's predictions solely because there might be discrepancies between those predictions and the real world. That possibility is inherent in the enterprise of prediction.''). IDEM's arguments related to modeling uncertainty do not establish a level of uncertainty so high as to preclude reasoned judgement.

IDEM provided an analysis of back trajectories from the Harford and Richmond receptors to support its contention that Indiana does not contribute significantly to nonattainment or maintenance at those monitors, and that the receptors are more impacted by local emissions anyway. IDEM also relied on an EPA presentation from 2018 to support this conclusion.

As already discussed, the statute and the case law (particularly the holdings in *Wisconsin* and *Maryland*) make clear that good neighbor obligations are not merely supplementary to or deferable until after local emission reductions are achieved. Further, all of the receptors to which Indiana is linked are heavily impacted by upwind state emissions in addition to local sources and conditions. The *Wisconsin* decision's holding in regard to international contribution (discussed previously) is equally applicable to an upwind state's claims that some other state's emissions, or local emissions, are more to blame than its own emissions. *See* 938 F.3d 303 at 323–25 (''an upwind state can 'contribute' to downwind nonattainment even if its emissions are not the but-for cause'').

Further, EPA finds Indiana's back trajectory analysis to be deficient in proving that Indiana does not contribute significantly to nonattainment or maintenance at the Harford and Richmond monitors that the State was linked to in the LADCO modeling. Indiana's back trajectory analysis shows a linkage between Indiana and the monitors when evaluating two altitudes, 10 meters and 750 meters, on several of the exceedance days at these monitoring sites. By only evaluating two altitudes, Indiana neglects to consider the wide range of heights that might show back trajectories leading back to Indiana, potentially further tying the state to more exceedance events. Furthermore, 10 meters is too low of an altitude to measure long range transport and it would have been appropriate for Indiana to analyze several higher altitudes to bolster its back trajectory analysis.

[79] Indiana's SIP submission, Attachment 1 at 42.

Back trajectories alone are not sufficient to disconnect upwind States from downwind receptors. Relying solely on back trajectories for establishing linkages neglects the myriad of factors, most importantly photochemical reactions, that are important for determining the magnitude of ozone and precursor transport from upwind states to downwind receptors. In this regard, EPA and LADCO modeling which accounts for 3 dimensional meteorological conditions, regional emissions, and photochemical reactions is the most complete, and technically sound method to establish linkages between upwind states and downwind nonattainment and maintenance receptors.

The information and claims presented by IDEM did not provide sufficient evidence to support alternative conclusions that EPA is proposing to make in this action: Namely, that several receptors exist, Indiana contributes to those receptors above a 1 percent of the NAAQS contribution threshold, and that Indiana continues to have good neighbor obligations that need to be addressed for the 2015 ozone NAAQS. We therefore propose that Indiana was required to analyze emissions from the sources and other emissions activity from within the state to determine whether its contributions were significant, and we propose to disapprove its submission because Indiana failed to do so.

5. Evaluation of Information Provided Regarding Step 4

Step 4 of the 4-Step interstate transport framework calls for development of permanent and federally enforceable control strategies to achieve the emissions reductions determined to be necessary at Step 3 to eliminate significant contribution to nonattainment or interference with maintenance of the NAAQS. IDEM identified the State's existing NO_X control measures, consent decree requirements, and future fuel switches and retirements for large EGUs and non-EGUs for the years 2008 through 2017 [80] States may not rely on non-SIP measures to meet SIP requirements. *See* CAA section 110(a)(2)(D) (''Each such [SIP] shall . . . contain adequate provisions . . . .''). *See also* CAA section 110(a)(2)(A); *Committee for a Better Arvin* v. *U.S. E.P.A.,* 786 F.3d 1169, 1175–76 (9th Cir. 2015) (holding that measures relied on by state to meet CAA requirements must be included in the SIP). However, the state did not revise its SIP to include these emission reductions in a revision to its SIP to ensure the reductions were permanent and enforceable. As a result, EPA proposes to disapprove Indiana's submittal on the separate, additional basis that Indiana has not included permanent and enforceable emissions reductions in its SIP as necessary to meet the obligations of CAA section 110(a)(2)(d)(i)(I).6.

6. Conclusion

Based on EPA's evaluation of Indiana's SIP submission, EPA is proposing to find that the portion of Indiana's November 12, 2018 SIP submission addressing CAA section 110(a)(2)(D)(i)(I) does not meet the state's interstate transport obligations, because it fails to contain the necessary provisions to eliminate emissions that will contribute significantly to nonattainment or interfere with maintenance of the 2015 ozone NAAQS in any other state.

C. Michigan

1. Evaluation of Information Provided by Michigan Regarding Step 1

At Step 1 of the 4-step interstate transport framework, Michigan relied primarily on the LADCO modeling released in 2018 to identify nonattainment and maintenance receptors in 2023. As described previously in this action, LADCO performed a modeling demonstration like that of EPA modeling released with the March 2018 memorandum, except with use of the ERTAC EGU Tool to replace specific EGU information. LADCO identified nonattainment and maintenance receptors using EPA methodology. EGLE elected to rely on LADCO's ''water only'' modeling results, but also presented results from EPA's modeling released with the March 2018 memorandum. EGLE noted that in general, design values in the LADCO modeling were lower. However, since new modeling has been performed by EPA which includes updated emission data using the 2016v2 platform, EPA proposes to primarily rely on the most recent modeling to identify nonattainment and maintenance receptors in 2023. Nonetheless, the alternative modeling relied on by EGLE also identified a number of nonattainment and maintenance receptor sites in 2023. *See* Table 2 on page 14 of EGLE's submittal. Thus, even under its alternative modeling of 2023, EGLE acknowledges in its submittal the existence of several nonattainment and maintenance receptors.

2. Evaluation of Information Provided by the State Regarding Step 2

Although Michigan relied on alternative modeling to EPA's modeling, EGLE acknowledged in their SIP submission that Michigan is linked above either a 1 percent of the NAAQS or 1 ppb or threshold to one or more downwind receptors in 2023 (1.85 ppb to Sheboygan, Wisconsin (Site ID: 36–081–0124), 1.22 ppb to Queens, New York (Site ID: 36–085–0067), and 1.03 ppb to Richmond, New York (Site ID: 55–117–0006)). Because the alternative modeling relied on by the state also demonstrates that a linkage exists between the state and downwind receptors at Step 2, EPA need not conduct a comparative assessment of the alternative modeling; the state concedes that it is linked. EGLE's analysis corroborates the conclusion in EPA's most recent modeling, described in the next section.

EGLE, relying on a concept from outside parties listed in Attachment A to the March 2018 memorandum, attempted to justify the use of a 1 ppb threshold at Step 2 to identify whether the state was ''linked'' to a projected downwind nonattainment or maintenance receptor. In part, EGLE attempted to justify the use of a 1 ppb contribution threshold based on the 2018 PSD SIL guidance document. EGLE also referenced EPA's August 2018 memorandum, which said that with appropriate additional analysis it may be reasonable for states to use a 1 ppb contribution threshold, as an alternative to a one percent threshold, at Step 2 of the 4-Step interstate transport framework for the purposes of identifying linkages to downwind receptors. As explained in Section I above, the concepts presented in Attachment A to the March 2018 memorandum were neither guidance nor determined by EPA to be consistent with the CAA. Further, EGLE did not explain the relevance of the SILs Guidance to which it referred. This guidance relates to a different provision of the Clean Air Act regarding implementation of the prevention of significant deterioration (PSD) permitting program, *i.e.,* a program that applies in areas that have been designated attainment of the NAAQS, and it is not applicable to the good neighbor provision, which requires

[80] Pointing to anticipated upcoming emission reductions, even if they were not included in the analysis at Steps 1 and 2, is not sufficient as a Step 3 analysis, for the reasons discussed in Section II.B.4. In this section, we explain that to the extent such anticipated reductions are not included in the SIP and rendered permanent and enforceable, reliance on such anticipated reductions is also insufficient at Step 4.

states to eliminate significant contribution or interference with maintenance of the NAAQS at known and ongoing air quality problem areas in other states. Further, it is not correct to conflate the use of the term ''significance'' as used in the SIL guidance, with the term ''contribution,'' which is the appliable statutory term that EPA applies at Step 2 of the 4-step interstate transport framework. (''Significance'' within the 4-step framework is evaluated at Step 3 through a multifactor analysis, for those states that are determined to ''contribute'' to downwind receptors at Steps 1 and 2. See Section I.D.4 above.) Given the fundamentally different statutory objectives and context, EPA disagrees with EGLE's contention that the SIL guidance is applicable in the good neighbor context.

EGLE's attempt to show ''inflection points'' through collectively presenting contribution data at each linked receptor and its claim that 1 ppb reflects the most meaningful inflection point are likewise not compelling. The presented data show a range of upwind contribution levels captured by different contribution thresholds depending on which receptor is analyzed. Certain receptors show a substantial downward trend in captured total upwind contribution well before a threshold of 1 ppb. Therefore, EPA does not find this evidence supportive of a 1 ppb threshold.

EPA does not accept Michigan's position that a 1 percent of the NAAQS contribution threshold at Step 2 ''may not be appropriate'' for the 2015 ozone NAAQS due to modeling biases and errors.[81] The explanation for how the 1 percent contribution threshold was originally derived is available in the 2011 CSAPR rulemaking. *See* 76 FR 48208, 48237–38. Further, in the CSAPR Update, EPA re-analyzed the threshold for purposes of the 2008 ozone NAAQS and determined it was appropriate to continue to apply this threshold. EPA compared the 1 percent threshold to a 0.5 percent of NAAQS threshold and a 5 percent of NAAQS threshold. EPA found that the lower threshold did not capture appreciably more upwind state contribution compared to the 1 percent threshold, while the 5 percent threshold allowed too much upwind state contribution to drop out from further analysis. See Final CSAPR Update Air Quality Modeling TSD, at 27–30 (EPA–HQ–OAR–2015–0596–0144). If EPA were to apply this analysis to the 2015 ozone NAAQS using the updated modeling based on the 2016v2 emissions platform, a 5 percent of the NAAQS contribution threshold (*i.e.,* 3.5 ppb) only captures approximately 50 percent of the total upwind contribution. Compared to a 1 percent threshold, a 5 percent threshold would, on average, forgo 27 percent) of the total upwind contribution. As EPA noted in the August 2018 memorandum, the use of a 2 ppb contribution threshold under the modeling released with the March 2018 memorandum would only capture about 55 percent of all upwind contributions, and therefore ''emission reductions from states linked at that higher threshold may be insufficient to address collective upwind state contribution to downwind air quality problems.''[31]

With these figures in mind, EGLE's claim based on unwarranted concerns over modeling uncertainty cannot be accepted. Both LADCO's and EPA's modeling techniques are sufficiently reliable and fit for the purpose to measure upwind contribution levels down to at least one 1 percent of the NAAQS. EPA's recommended model attainment test is based on application of the model in a relative sense rather than relying upon absolute model predictions.[82] All models have limitations resulting from uncertainties in inputs and scientific formulation. To minimize the effects of these uncertainties, the modeling is anchored to base period measured data in EPA's guidance approach for projecting design values. Notably, EPA also uses our source apportionment modeling in a relative sense when calculating the average contribution metric (used to identify linkages). In this method the magnitude of the contribution metric is tied to the magnitude of the projected average design value which is tied to the base period average measured design value. EPA's guidance has not established a bright-line criteria for judging whether or not statistical measures of model performance constitute acceptable or unacceptable model performance. So, contrary to what Michigan appears to be claiming with regards to modeling biases, there are no EPA recommended measures of allowable error. Although EPA does not typically focus on using particular benchmarks as the sole criteria for model performance, EPA notes that the model performance for the updated modeling based on the 2016v2 emissions platform is generally within the benchmarks recommended by Emery.[83]

EPA has successfully applied a 1 percent of the NAAQS threshold to identify linked upwind states in three prior rulemakings. And the D.C. Circuit has also declined to establish bright line criteria for model performance. In upholding EPA's approach to evaluating interstate transport in CSAPR, the D.C. Circuit held that they would not ''invalidate EPA's predictions solely because there might be discrepancies between those predictions and the real world. That possibility is inherent in the enterprise of prediction.'' *EME Homer City Generation, L.P.* v. *EPA,* 795 F.3d 118, 135 (2015). The court continued to note that ''the fact that a 'model does not fit every application perfectly is no criticism; a model is meant to simplify reality in order to make it tractable.' '' *Id.* at 135–36 (quoting *Chemical Manufacturers Association* v. *EPA,* 28 F.3d 1259, 1264 (D.C. Cir. 1994).

EPA's August 2018 memorandum provided that whether use of a 1 ppb threshold is appropriate must be based on an evaluation of state-specific circumstances, and no such evaluation was included in the submission. EPA's experience with the alternative Step 2 thresholds is further discussed in Section I.D.3.i. As discussed there, EPA is considering withdrawing the August 2018 memorandum.

Based on EPA's updated modeling (as well as the LADCO's 2018 modeling (with water) the state elected to rely on in its SIP submission), the state is projected to contribute greater than both the 1 percent and alternative 1 ppb thresholds. While EPA does not, in this action, approve of the state's application of the 1 ppb threshold, based on its linkages greater than 1 ppb to projected downwind nonattainment or maintenance receptors, the state's use of this alternative threshold at Step 2 of the 4-Step interstate framework is inconsequential to our action on this SIP submission.

3. Results of EPA's Step 1 and Step 2 Modeling and Findings for Michigan

As described in Section I, EPA performed air quality modeling using the 2016v2 emissions platform to project design values and contributions for 2023. These data were examined to determine if Michigan contributes at or above the threshold of 1 percent of the

[81] Michigan's SIP submission at 16.

[82] See Section 4.1' ''Overview of Modeled Attainment Test in EPA Modeling Guidance for Demonstrating Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze. November 2018. EPA 454–R–18–009. *https://www.epa.gov/scram/sip-modeling-guidance-documents.*

[83] Christopher Emery, Zhen Liu, Armistead G. Russel, M. Talat Odman, Greg Yarwood and Naresh Kumar (2017). Recommendations on statistics and benchmarks to assess photochemical model performance, Journal of the Air & Waste Management Association, 67:5,582–598, *DOI: 10.1080/10962247.2016.1265027.*

2015 ozone NAAQS (0.70 ppb) to any downwind nonattainment or maintenance receptor. As shown in Table 4, the data[84] indicate that in 2023, emissions from Michigan contribute greater than one percent of the standard to nonattainment or maintenance-only receptors in Illinois, Connecticut, Wisconsin, and Pennsylvania.[85]

TABLE 4—MICHIGAN LINKAGE RESULTS BASED ON EPA UPDATED 2023 MODELING

Receptor ID	Location (county, state)	Nonattainment/ maintenance	2023 Average design value (ppb)	2023 Maximum design value (ppb)	Michigan contribution (ppb)
170314201	Cook, IL	Maintenance	69.9	73.4	1.67
170310076	Cook, IL	Maintenance	69.3	72.1	1.54
90099002	New Haven, CT	Nonattainment	71.8	73.9	1.27
170317002	Cook, IL	Maintenance	70.1	73.0	1.26
170310032	Cook, IL	Maintenance	69.8	72.4	1.21
550590025	Kenosha, WI	Maintenance	69.2	72.3	1.17
550590019	Kenosha, WI	Nonattainment	72.8	73.7	1.07
90010017	Fairfield, CT	Nonattainment	73.0	73.7	1.07
551010020	Racine, CT	Nonattainment	71.3	73.2	1.02
90013007	Fairfield, CT	Nonattainment	74.2	75.1	0.94
170310001	Cook, IL	Maintenance	69.6	73.4	0.93
90019003	Fairfield, CT	Nonattainment	76.1	76.4	0.92
420170012	Bucks, PA	Nonattainment	70.7	72.2	0.75

Therefore, based on EPA's evaluation of the information submitted by EGLE, and based on EPA's most recent modeling results for 2023, EPA proposes to find that Michigan is linked at Steps 1 and 2 and has an obligation to assess potential emissions reductions from sources or other emissions activity at Step 3 of the 4-step framework. EPA therefore will proceed to Step 3 of the 4-step interstate transport framework to assess the arguments the state presented as to why, despite this linkage, the state should not be considered to significantly contribute to nonattainment or interfere with maintenance of the NAAQS in any other state.

4. Evaluation of Information Provided Regarding Step 3

At Step 3 of the 4-step interstate transport framework, a state's emissions are further evaluated, in light of multiple factors, including air quality and cost considerations, to determine what, if any, emissions significantly contribute to nonattainment or interfere with maintenance and, thus, must be eliminated under CAA section 110(a)(2)(D)(i)(I).

To effectively evaluate which emissions in the state should be deemed ''significant'' and therefore prohibited, states generally should prepare an accounting of sources and other emissions activity for relevant pollutants and assess potential, additional emissions reduction opportunities and resulting downwind air quality improvements. EPA has consistently applied this general approach (*i.e.,* Step 3 of the 4-step interstate transport framework) when identifying emissions contributions that the Agency has determined to be ''significant'' (or interfere with maintenance) in each of its prior Federal, regional ozone transport rulemakings, and this interpretation of the statute has been upheld by the Supreme Court. *See EME Homer City,* 572 U.S. 489, 519 (2014). While EPA has not directed states that they must conduct a Step 3 analysis in precisely the manner EPA has done in its prior regional transport rulemakings, state implementation plans addressing the obligations in CAA section 110(a)(2)(D)(i)(I) must prohibit ''any source or other type of emissions activity within the State'' from emitting air pollutants which will contribute significantly to downwind air quality problems. Thus, states must complete something similar to EPA's analysis (or an alternative approach to defining ''significance'' that comports with the statute's objectives) to determine whether and to what degree emissions from a state should be ''prohibited'' to eliminate emissions that will ''contribute significantly to nonattainment in, or interfere with maintenance of'' the NAAQS in any other state.

EGLE did not conduct a sufficient step 3 analysis in Michigan's SIP submission. As explained previously, at Step 3 EGLE instead applied a weight of evidence analysis to argue that the state needed no additional emission reductions despite concluding Michigan was linked to three receptors at Step 2. The evidence presented in EGLE's submittal consisted primarily of support for the argument that upwind states should have a lower responsibility to other states when the upwind state is only linked to maintenance receptors. EGLE's analysis focused on the Sheboygan, Wisconsin maintenance receptor (Site ID: 36–081–0124), as EGLE concluded it was the receptor to which Michigan was projected to contribute the most in 2023 at 1.85 ppb. EGLE also relied on several ideas in Attachment A to the March 2018 memorandum to further discount the importance of its own emissions. As noted in Section I, the ideas listed in Attachment A to the March 2018 memorandum were not agency guidance nor had EPA determined them to be consistent with the requirements of the CAA. EPA will thoroughly review the technical and legal justifications ELGE made put forward in their attempt to use them as flexibilities.

In its submittal, EGLE cited a concept in Attachment A to the March 2018 memorandum to ''[c]onsider whether the remedy for upwind states linked to maintenance receptors could be less

[84] Design values and contributions at individual monitoring sites nationwide are provide in the file ''2016v2_DVs_state_contributions.xlsx'' which is included in docket ID No. EPA–HQ–OAR–2021–0663.

[85] These modeling results are consistent with the results of a prior round of 2023 modeling using the 2016v1 emissions platform which became available to the public in the fall of 2020 in the Revised CSAPR Update, as noted in Section I. That modeling showed that Illinois had a maximum contribution greater than 0.70 ppb to at least one nonattainment or maintenance-only receptor in 2023. These modeling results are included in the file ''Ozone Design Values & Contributions Revised CSAPR Update.xlsx'' in docket ID No. EPA–HQ–OAR–2021–0663.

stringent than those linked to nonattainment receptors'' and argued that because the CAA incudes different SIP development requirements for nonattainment and maintenance areas, that likewise nonattainment and maintenance areas should be treated differently in good neighbor SIPs. EGLE posited that because the CAA does not require emission reductions from maintenance areas, then upwind states can potentially make a sufficient showing they have no obligation to reduce emissions to monitors in other states projected to be maintaining the NAAQS. EGLE specifically noted that (1) the projected exceedance at the Sheboygan, Wisconsin receptor is very small, (2) the majority of the projected contribution to the Sheboygan, Wisconsin receptor is from federally regulated sources or sources Michigan cannot otherwise regulate, (3) Michigan's projected contribution to all three linked receptors is small compared to the projected contribution from other states and sources, (4) there are large projected contributions to the Sheboygan, Wisconsin receptor from international emissions, (5) Michigan's contributions to projected exceedance at the three maintenance receptors are small relative to other sources that also contribute more than 1 ppb to those receptors, (6) the modeling variability is greater than Michigan's contributions to the amount of the projected exceedance at each linked receptor and (7) there is a downward emissions trend in Michigan.

As a general matter, EPA disagrees with EGLE's premise that if no emission reductions are needed for the receptor to which Michigan contributes the most, that automatically no emission reductions are needed for the other receptors to which Michigan is linked. EGLE unreasonably failed to analyze receptor-specific circumstances present at other receptors to which it was linked, and this is particularly the case because EGLE chose to rely so heavily on receptor-specific information to support their conclusions with respect to the Sheboygan receptor. Further, while the set of receptors to which Michigan is linked has changed in the most recent modeling (and now includes nonattainment receptors), EPA disagrees with Michigan's arguments to the extent such reasoning could be applied to Michigan's linkages identified in EPA's 2016v2 emissions platform modeling.

EGLE argued that because the Sheboygan, Wisconsin receptor, had a small projected exceedance over the NAAQS, requiring additional emission reductions in Michigan would be ''premature'' and ''burdensome.'' [86] EGLE's premise goes beyond the concept in Attachment A to the 2018 memorandum that emission-reduction obligations as to maintenance receptors may be different; rather, EGLE argues that not only should Michigan have lower obligations with respect to maintenance receptors, but no obligations at all. Under the D.C. Circuit's decision in *North Carolina,* states and EPA are required to give independent significance to the ''interference with maintenance'' prong of section 110(a)(2)(D)(i)(I). 531 F.3d at 910. Since CSAPR, EPA's nationally consistent policy framework for addressing interstate ozone transport has given meaning to this prong through a separate definition of maintenance receptors at step 1 of the 4-step interstate transport framework. For states linked only to those receptors, EPA has found it appropriate to apply an emissions control solution that is uniform with the strategy applied for states that are linked to nonattainment receptors. *See* 76 FR at 48271. EPA's approach to addressing interference with maintenance under prong 2 for ozone NAAQS has been upheld twice, including on remand from the Supreme Court decision EGLE cited. *See EME Homer City Generation, L.P.,* 795 F.3d at 136; *Wisconsin,* 938 F.3d at 325–27. *See also* 86 FR at 23074. Particularly given this context, Michigan's SIP does not provide sufficient evidence to support less stringent or even no standards of emissions reductions relative to what would result from EPA's historical approach of addressing emissions activities from upwind states that are linked to maintenance-only receptors.

Further, EPA believes it would be inconsistent with the CAA for EPA to identify receptors that are at risk of NAAQS violations given certain conditions due to transported upwind emissions and then not prohibit the emissions that place the receptor at risk. The Supreme Court held that it was a permissible interpretation of the statute to apportion responsibility for states linked to nonattainment receptors considering ''both the magnitude of upwind states' contributions and the cost associated with eliminating them.'' *EME Homer City,* 572 U.S. at 518–19. It is equally reasonable and permissible to use these factors to apportion responsibility among upwind states linked to maintenance receptors because the goal in both instances is to prohibit the ''amounts'' of pollution that will either significantly contribute to nonattainment or interfere with maintenance of the NAAQS downwind. *See Id.* 515 n.18 (finding EPA's uniform-cost approach reasonable as to both prongs of the good neighbor provision). EPA's updated modeling indicates that Michigan will remain linked to downwind nonattainment and maintenance receptors for the 2015 ozone standard at least through 2023. Consequently, EPA believes EGLE's assertion that upwind states linked to maintenance-only receptors should be held to less stringent standards of emissions reductions (as compared to states linked to a nonattainment receptor) is inappropriate, whether applied to its downwind linkages in either the modeling EGLE relied on or in EPA's more recent modeling.

EGLE also claimed that Attachment A to the March 2018 memorandum suggested states linked only to maintenance receptors should consider whether emissions reduction factors should be influenced by high international contributions and high contributions from other states and sources. As a concept presented by outside parties, Attachment A to the March 2018 memorandum listed an idea that states may consider whether air quality, cost, or emission reduction factors should be weighted differently in areas where international contributions are relatively high. EPA did not at the time endorse this concept, nor does it do so now. However, EGLE did not present an approach or explain how international contributions to the linked receptors should influence the weighting of air quality, cost, or emission reductions at Step 3. Rather, EGLE suggested that if a receptor is near an international border, then international contribution could simply be removed from that monitor's projected design value. This is neither appropriate nor acceptable under the good neighbor provision or any other provision of the Clean Air Act. Michigan's approach effectively takes the position that no air quality problem should be deemed to exist at a downwind receptor location under the false assumption that the international portion of emissions affecting that area simply do not exist. EPA categorically rejects this approach as an entirely unacceptable form of air quality planning.

EGLE further cited contributions from other states and sources to the linkages it identified to conclude it would be ''unreasonable'' for linked states with relatively low contributions to reduce their contributions.[87] The Step 2 threshold (whether at 1 percent or 1

[86] See Michigan SIP submission p. 20.

[87] See Michigan SIP submission p. 32.

ppb) is intended to reflect the ''collective contribution'' nature of the interstate ozone transport problem and the complexity of the various linkages among states. *Cf. EME Homer City,* 572 U.S. at 515–16. The threshold functions as a screening step toward a more detailed analysis of emission-reduction opportunities across all of the states that contribute to some extent (*i.e.,* above the threshold) to a downwind air quality problem. To simply conclude that nothing need be done regarding emissions that exceed the step 2 threshold because those emissions can be characterized as ''small'' compared to others' emissions (by the upwind state's lights at least) is an attempt to simply move the ''contribution'' threshold at Step 2 and is clearly insufficient at Step 3.

Whether emissions from other states or other countries also contribute to the same downwind air quality issue is irrelevant in assessing whether a downwind state has an air quality problem, or whether an upwind state is significantly contributing to that problem. States are not obligated under CAA section 110(a)(2)(D)(i)(I) to reduce emissions sufficient on their own to resolve downwind receptors' nonattainment or maintenance problems. Rather, states are obligated to eliminate their own ''significant contribution'' or ''interference'' with the ability of other states to attain or maintain the NAAQS.

Further, the court in *Wisconsin* explained that downwind jurisdictions often may need to heavily rely on emissions reductions from upwind states in order to achieve attainment of the NAAQS, 938 F.3d at 316–17; such states would face increased regulatory burdens including the risk of bumping up to a higher nonattainment classification if attainment is not reached by the relevant deadline, *Maryland,* 958 F.3d at 1204. Indeed, the D.C. Circuit in *Wisconsin* specifically rejected petitioner arguments suggesting that upwind states should be excused from good neighbor obligations on the basis that some other source of emissions (whether international or another upwind state) could be considered the ''but-for'' cause of downwind air quality problem. 938 F.3d at 323–324. The court viewed petitioners' arguments as essentially an argument ''that an upwind state 'contributes significantly' to downwind nonattainment only when its emissions are the sole cause of downwind nonattainment.'' 938 F.3d at 324. The court explained that ''an upwind state can 'contribute' to downwind nonattainment even if its emissions are not the but-for cause.'' *Id.* at 324–325. *See also Catawba County* v. *EPA,* 571 F.3d 20, 39 (D.C. Cir. 2009) (rejecting the argument ''that 'significantly contribute' unambiguously means 'strictly cause' '' because there is ''no reason why the statute precludes EPA from determining that [an] addition of [pollutant] into the atmosphere is significant even though a nearby county's nonattainment problem would still persist in its absence''); *Miss. Comm'n on Envtl. Quality* v. *EPA,* 790 F.3d 138, 163 n.12 (D.C. Cir. 2015) (observing that the argument that ''there likely would have been no violation at all . . . if it were not for the emissions resulting from [another source]'' is ''merely a rephrasing of the but-for causation rule that we rejected in *Catawba County*.''). Therefore, a state is not excused from eliminating its significant contribution on the basis that emissions from other sources also contribute some amount of pollution to the same receptors to which the state is linked. Thus, the state's arguments related to contributions from other sources, including removing international emissions from projected design values at the Sheboygan, Wisconsin monitor, are insufficient at Step 3 of the analysis.

EGLE's submission included an apportionment analysis to quantify individual states' relative responsibility of the projected exceedances at the three linked receptors. EGLE cited Attachment A to the March 2018 memorandum as well as *EME Homer City Generation* to suggest Michigan could be found to be only responsible for eliminating its share of the projected exceedances relative to other states that also contribute more than 1 ppb to the same receptors. We first note that this approach is a deviation from EPA's traditional approach of apportioning upwind-state responsibility at Step 3 using a uniform cost of control metric set at a level that maximizes cost-effectiveness of emissions reductions in relation to downwind state impacts across all linked states. Thus, this is not how EPA has interpreted the statutory term ''significant'' in the past, and EPA does not reach a conclusion whether this approach would be approvable, had EGLE had imposed emissions reductions in line with this logic. We do not need to reach that point in the analysis, however, because, having selected that approach to defining its obligations, EGLE proceeded to ignore the result.

EGLE's submission identified Michigan's proportional contribution as less than 0.12 ppb to the three linked receptors and .05 ppb to the Sheboygan, Wisconsin receptor. Having acknowledged Michigan was responsible for eliminating up to 0.12 ppb of contribution to the downwind receptors, EGLE claimed that modeling ''noise'' made it ''difficult'' to require that amount of reductions from Michigan sources. EGLE further opined that the downwind jurisdiction's share of responsibilities likely made Michigan's contributions even lower and the projected exceedances were so small that those three receptors were likely to not have difficulty attaining the NAAQS anyway. EPA has routinely been capable of successfully implementing good neighbor obligations through the CSAPR framework, and achieving significant downwind air quality improvements through upwind-state reductions, at levels of ''significant contribution'' comparable or even less than those found in Michigan's submittal, irrespective of alleged ''modeling noise.'' *See Wisconsin,* 938 F.3d at 322–23 (rejecting Wisconsin's argument that it should not face good neighbor obligations on the basis that its emission reductions would only improve a downwind receptor by two ten-thousandths of a part per billion).

After measuring Michigan's significant contribution, EGLE suggested that modeling uncertainty was too great to either require emissions reductions or demonstrate that EGLE had any linkages to maintenance receptors at all. But EGLE had measured the state's significant contribution and was therefore identifying the measurable amount of significant contribution the state was legally responsible for eliminating. *See Michigan* v. *EPA,* 213 F.3d 663, 683–84 (D.C. Cir. 2000) (significant contribution must be ''measurable''). Further, scientific uncertainty may only be invoked to avoid comporting with the requirements of the CAA when ''the scientific uncertainty is so profound that it precludes . . . reasoned judgment'' *Massachusetts* v. *EPA,* 127 S.Ct. 1438 (2007). *See Wisconsin,* 938 F.3d at 318–19 (''Scientific uncertainty, however, does not excuse EPA's failure to align the deadline for eliminating upwind States' significant contributions with the deadline for downwind attainment of the NAAQS.''). *See also EME Homer City,* 795 F.3d 118, 135–36 (''We will not invalidate EPA's predictions solely because there might be discrepancies between those predictions and the real world. That possibility is inherent in the enterprise of prediction.''). EGLE's arguments related to modeling uncertainty or ''noise'' do not establish a level of uncertainty so high as to

preclude reasoned judgement. EGLE argued that the three maintenance receptors at issue could maintain the NAAQS without further emissions reductions from any linked upwind state. In support, EGLE's submission provided a list of on-the-way and on-the-books emission reductions measures to argue that Michigan's good neighbor obligations were already satisfied. EGLE provided references to certain facility retirements in Michigan, Federal mobile source rules, Federal rules reducing NO_X and VOCs such as MATS and the Oil and Natural Gas Industry Standards, the NO_X SIP Call, and CSAPR Update.

EPA's assessment of future air quality conditions generally already accounts for on-the-books emission reductions and the most up-to-date forecast of future emissions in the absence of the transport policy being evaluated (*i.e.,* base case conditions).[88] As described in more detail in Section I, EPA's latest projections of the baseline EGU emissions uses the version 6—Summer 2021 Reference Case of the IPM.[89] The IPM version 6—Summer 2021 Reference Case uses the NEEDS v6 database as its source for data on all existing and planned-committed units. Units are removed from the NEEDS inventory only if a high degree of certainty could be assigned to future implementation of the announced future closure or retirement. Any retirements excluded from the NEEDS v6 inventory can be viewed in the NEEDS spreadsheet.[90] The inventory for these projections takes account of the retirement of the Marquette Board of Light & Power Shiras Steam Plant, Lansing Board of Water and Light, Eckert Station, Units 1 and 3–6; DTE, River Rouge, Unit 3; We Energies, Presque Isle Power Plant, Units 5–9; DTE St. Clair, Units 1–4 and 6–7; DTE Trenton Channel, Unit 9; Wyandotte, Unit 5; Consumers Energy Karn, Units 1–2.

Additionally, EPA's modeling using the 2016v2 emissions platform accounts for the onroad and nonroad rules that Michigan identified, such as the Tier 3 Motor Vehicle Emission and Fuel Standards, to the extent still on the books and projected to have ozone-precursor emissions consequences.[91]

In other words, changes in the emissions inventory and on-the-books controls relevant to emissions in 2023 that EGLE claims EPA missed in its prior modeling have now been incorporated into EPA's most recent modeling of 2023 using the 2016v2 emissions platform. This modeling projects a continuing contribution from Michigan to thirteen out-of-state receptors above a threshold of 1 percent of the NAAQS (at Steps 1 and 2) despite these measures—nine of which have contribution from Michigan above 1 ppb and seven of which are nonattainment receptors (see Table 4).[92] Therefore, in light of continuing contribution to out of state receptors from Michigan notwithstanding these identified on-the-books control measures, EGLE's SIP submission should have evaluated the availability of *additional* air quality controls to improve downwind air quality at nonattainment and maintenance receptors at Step 3.

Nor does EGLE's listing of existing control measures or overall emission trends serve as an adequate substitute for a Step 3 analysis of additional potential emission reductions. In general, the listing of existing or on-the-way control measures, whether approved into the State's SIP or not, does not substitute for a complete step 3 analysis under EPA's 4-step framework to define ''significant contribution.'' ELGE did not provide an assessment of the overall effects of these measures, when the emissions reductions would be achieved, and what the overall resulting air quality effects would be at identified out of state receptors. EGLE did not identify which portion of ongoing emissions trends were not already accounted for in steps 1 and 2 of the analysis (EPA addresses specific identified changes in emissions inventory in the discussion above). EGLE did not evaluate additional, potential emissions control opportunities, or their costs or impacts, or attempt to analyze whether, if applied more broadly across linked states, the emissions reductions would constitute the elimination of significant contribution on a regional scale. The state did not offer an explanation as to whether any faster or more stringent emissions reductions that may be available were prohibitively costly or infeasible. Although EPA acknowledges states are not necessarily bound to follow its own analytical framework at step 3, we note that the state did not attempt to determine or justify an appropriate uniform cost-effectiveness threshold for the more stringent 2015 ozone NAAQS. This would have been similar to the approach to defining significant contribution that EPA has applied in prior rulemakings such as CSAPR and or the CSAPR Update, even if such an analysis is not technically mandatory.

Further, the state's attempt to categorize certain sectors of emissions as beyond its regulatory control is unpersuasive. Clearly the state possesses regulatory authority over its EGU and non-EGU large stationary sources as well as authority over other types of ''emissions activity within the state,'' *see* CAA section 110(a)(2)(D)(i). And while mobile sources are generally regulated at the Federal level under title II of the Clean Air Act, the state also has the authority to undertake any number of measures to reduce emissions from mobile sources through means and techniques that are not preempted by title II. *See, e.g.,* CAA sections 182(b)(3), 182(b)(4), 182(c)(3), 182(c)(4), 182(c)(5), 182(d)(1), 182(e)(3), and 182(e)(4) (identifying programs to control mobile source emissions that states are required to implement depending on the degree of ozone nonattainment). Specifically with respect to EGUs, EPA notes that no EGU NO_X control program has yet been established to implement good neighbor requirements for the 2015 ozone NAAQS. Thus reliance on prior programs, such as the CSAPR Update or Revised CSAPR Update, is misplaced, since those programs only addressed good neighbor obligations under the less stringent 2008 ozone NAAQS.

Finally, under the *Wisconsin* decision, states and EPA may not delay implementation of measures necessary to address good neighbor requirements beyond the next applicable attainment date without a showing of impossibility or necessity. *See* 938 F.3d at 320. In those cases where the measures identified by Michigan had implementation timeframes beyond the next relevant attainment dates, the submission did not offer a demonstration of impossibility of earlier implementation of those control measures that would go into effect after

[88] *See* 81 FR 74504 at 74517; 85 FR 68964 at 68979.

[89] Detailed information and documentation of EPA's Base Case, including all the underlying assumptions, data sources, and architecture parameters can be found on EPA's website at: *https://www.epa.gov/airmarkets/epas-power-sector-modeling-platform-v6-using-ipm-summer-2021-reference-case.*

[90] We note that for one of the units EGLE listed as projected to retire, Wyandotte—Unit 5, this facility was still included in the NEEDS as operating. Additionally, the unit IDs listed by EGLE in the SIP submittal may be different from those listed in EPA's NEEDS v6 inventory—NEEDS v6 Summer 2021 Reference Case, however we have verified that these emissions decreases have been accounted for in our most recent modeling.

[91] See Technical Support Document (TSD) Preparation of Emissions Inventories for the 2016v2 North American Emissions Modeling Platform included in the Headquarters docket ID No. EPA–HQ–OAR–2021–0663.

[92] Notably, in focusing its Step 3 analysis only on a single receptor, EGLE gave no weight to the *scope* of its contribution to downwind air quality problems. Linkages to thirteen receptor sites in EPA's most recent modeling indicate that Michigan's emissions have widespread effects in other states—effects that the State's SIP submittal would do nothing to address.

2024. Similarly, the State's submittal is insufficient to the extent the implementation timeframes for identified control measures were left unidentified, unexplained, or too uncertain to permit EPA to form a judgment as to whether the timing requirements for good neighbor obligations have been met.

For the reasons listed above, EPA proposes to find that Michigan has not satisfied its obligations of the good neighbor SIP provisions at Step 3 of the 4-step transport framework. We propose that Michigan was required to analyze emissions more fully from the sources and other emissions activity from within the state to determine whether its contributions were significant, and we propose to disapprove its submission because Michigan failed to do so.

5. Evaluation of Information Provided Regarding Step 4

Step 4 of the 4-step interstate transport framework calls for development of permanent and federally enforceable control strategies to achieve the emissions reductions determined to be necessary at Step 3 to eliminate significant contribution to nonattainment or interference with maintenance of the NAAQS. EGLE provided references to on the books and on the way Federal mobile source rules, MATS and the Oil and Natural Gas Industry Standards, the NO_X SIP Call, and CSAPR Update. As an initial matter, pointing to or listing existing state or Federal control measures is not what is called for at Step 4. Rather Step 4 requires the development of permanent and enforceable measures to implement those measures determined to be required at Step 3. EGLE claimed that nothing was required of Michigan at Step 3 and thus EGLE stated that it did not believe anything was required at Step 4. Therefore, we do not interpret the list of existing state or Federal measures to be EGLE's attempt at implementation at Step 4.

Because Michigan's SIP submission did not contain an evaluation of additional emission control opportunities (or establish that no additional controls are required), no information was provided at Step 4. As a result, EPA proposes to disapprove Michigan's submittal on the separate, additional basis that the state has not developed permanent and enforceable emissions reductions necessary to meet the obligations of CAA section 110(a)(2)(d)(i)(I).

6. Conclusion

Based on EPA's evaluation of EGLE's SIP submission, EPA is proposing to find that the portion of Michigan's March 5, 2019 SIP submission addressing CAA section 110(a)(2)(D)(i)(I) does not meet the state's interstate transport obligations, because it fails to contain the necessary provisions to eliminate emissions that will contribute significantly to nonattainment or interfere with maintenance of the 2015 ozone NAAQS in any other state.

D. Minnesota

1. Evaluation of Information Provided by Minnesota Regarding Steps 1 and 2

At Step 1 of the 4-step interstate transport framework, Minnesota relied on both LADCO modeling and EPA modeling released in the March 2018 memorandum and to identify nonattainment and maintenance receptors in 2023. As described previously, LADCO performed a modeling demonstration like that of EPA's 2018 transport modeling, except with use of the ERTAC EGU Tool to supplement state specific EGU information. LADCO identified nonattainment and maintenance receptors using EPA methodology. MPCA presented several nonattainment and maintenance receptors identified by both LADCO modeling, showing ''no water'' and ''with water'' results and EPA modeling released with the March 2018 memorandum. Since new modeling has been performed by EPA with updated emission data, EPA proposes to primarily rely on the most recent modeling to identify nonattainment and maintenance receptors in 2023. MPCA made several criticisms of EPA's method for projecting EGU emissions in EPA's modeling released with the March 2018 memorandum. Although EPA does not agree with those criticisms, we note that EPA is relying on a different method for projecting emissions from EGUs in the updated modeling using the 2016v2 emissions platform as explained in more detail in Section I.

Nonetheless, the alternative modeling relied on by MPCA also identified a number of nonattainment and maintenance receptor sites in 2023. *See* Tables 2 and 3 on pages 8 and 9 of MPCA's submittal. Thus, even under the alternative modeling of 2023, MPCA acknowledges in its submittal the existence of several nonattainment and maintenance receptors.

At Step 2 of the 4-Step interstate transport framework, MPCA relied on both LADCO modeling and EPA modeling released in the March 2018 memorandum to identify upwind state linkages to nonattainment and maintenance receptors in 2023. Based on both modeling results, MPCA concluded that Minnesota would contribute below 1 percent of the NAAQS to receptors in 2023. However, in this proposal, EPA relies on the Agency's most recently available modeling, which uses a more recent base year and more up-to-date emissions inventories, to identify upwind contributions and ''linkages'' to downwind air quality problems in 2023 using a threshold of 1 percent of the NAAQS. As shown in Table 5 (explained in the next section), the updated EPA modeling identifies Minnesota's maximum contribution to a downwind nonattainment or maintenance receptor is greater than 1 percent of the standard (*i.e.,* 0.70 ppb). Although the state did not rely on a 1 ppb contribution threshold in its SIP submittal, EPA recognizes that the modeling the MPCA used relied on the most recently available EPA modeling at the time the state submitted its SIP submittal (EPA modeling released in the March 2018 memorandum as well as the LADCO modeling). The 2018 modeling indicated the state was not projected to contribute above one 1 percent of the NAAQS to a projected downwind nonattainment or maintenance receptor. Therefore, the state may not have considered analyzing the reasonableness and appropriateness of a 1 ppb threshold at Step 2 of the 4-step Step interstate transport framework per the August 2018 memorandum. EPA's August 2018 memorandum provided that whether use of a 1 ppb threshold is appropriate must be based on an evaluation of state-specific circumstances, and no such evaluation was included in the submission. EPA's experience with the alternative Step 2 thresholds is further discussed in Section I.D.3.i. As discussed there, EPA is considering withdrawing the August 2018 memorandum.

2. Results of EPA's Step 1 and Step 2 Modeling and Findings for Minnesota

As described in Section I, EPA performed air quality modeling using the 2016v2 emissions platform to project design values and contributions for 2023. These data were examined to determine if Minnesota contributes at or above the threshold of 1 percent of the 2015 ozone NAAQS (0.70 ppb) to any downwind nonattainment or maintenance receptor. As shown in

Table 5, the data [93] indicate that in 2023, emissions from Minnesota contribute greater than 1 percent of the standards to two maintenance-only receptors in Illinois. These modeling results are consistent with the results of a prior round of 2023 modeling using the 2016v1 emissions platform that became available to the public in the fall of 2020 in the Revised CSAPR Update, as noted in Section I, which showed that Minnesota had a maximum contribution of 0.86 ppb to a nonattainment or maintenance receptor in 2023.[94]

TABLE 5—MINNESOTA LINKAGE RESULTS BASED ON EPA UPDATED 2023 MODELING

Receptor ID	Location	Nonattainment/maintenance	2023 Average design value (ppb)	2023 Maximum design value (ppb)	Minnesota contribution (ppb)
170310001	Cook	Maintenance	69.6	73.4	0.97
170310076	Cook	Maintenance	69.3	72.1	0.79

Based on EPA's evaluation of the information submitted by MPCA, and based on EPA's most recent modeling results for 2023 using the 2016v2 emissions platform, EPA proposes to find that Minnesota is linked at Steps 1 and 2 and has an obligation to assess potential emissions reductions from sources or other emissions activity at Step 3 of the 4-Step framework. Despite the linkage EPA determines exists at Step 2, the state concluded in its submission based on other factors that it should not be considered to significantly contribute to nonattainment or interfere with maintenance of the NAAQS in other states. Therefore, EPA will proceed to evaluate MPCA's additional analyses at Step 3 of the 4-Step interstate transport framework.

4. Evaluation of Information Provided Regarding Step 3

At Step 3 of the 4-Step interstate transport framework, a state's emissions are further evaluated, in light of multiple factors, including air quality and cost considerations, to determine what, if any, emissions significantly contribute to nonattainment or interfere with maintenance and, thus, must be eliminated under CAA section 110(a)(2)(D)(i)(I).

To effectively evaluate which emissions in the state should be deemed ''significant'' and therefore prohibited, states generally should prepare an accounting of sources and other emissions activity for relevant pollutants and assess potential, additional emissions reduction opportunities and resulting downwind air quality improvements. EPA has consistently applied this general approach (*i.e.,* Step 3 of the 4-step interstate transport framework) when identifying emissions contributions that the Agency has determined to be ''significant'' (or interfere with maintenance) in each of its prior Federal, regional ozone transport rulemakings, and this interpretation of the statute has been upheld by the Supreme Court. *See EME Homer City,* 572 U.S. 489, 519 (2014). While EPA has not directed states that they must conduct a Step 3 analysis in precisely the manner EPA has done in its prior regional transport rulemakings, state implementation plans addressing the obligations in CAA section 110(a)(2)(D)(i)(I) must prohibit ''any source or other type of emissions activity within the state'' from emitting air pollutants which will contribute significantly to downwind air quality problems. Thus, states must complete something similar to EPA's analysis (or an alternative approach to defining ''significance'' that comports with the statute's objectives) to determine whether and to what degree emissions from a state should be ''prohibited'' to eliminate emissions that will ''contribute significantly to nonattainment in or interfere with maintenance of'' the NAAQS in any other state. MPCA did not conduct such an analysis in their SIP submission.

Neither the LADCO modeling nor EPA modeling released with the March 2018 memorandum indicated that Minnesota would contribute over 1 percent of the NAAQS to any nonattainment or maintenance receptor in 2023. Therefore, MPCA stated they did not consider it necessary to consider further emission reductions because Minnesota was not projected to contribute to downwind air quality issues above the contribution threshold. Despite this, Minnesota provided supporting analysis to strengthen the conclusions of the modeling results. MPCA presented evidence that ambient ozone concentrations in Minnesota had been at or below the NAAQS from the late 1990s to 2017, and that NO_X and VOCs emissions had been steadily decreasing from 2002 through 2015. MPCA asserted that these trends would translate to continued reductions in ozone being transported from the state to nonattainment or maintenance receptors. Additionally, MPCA listed several state and Federal regulatory programs that control or incentivize NO_X and VOC limits, including the CSAPR NO_X trading program.

EPA does not dispute the evidence about ambient ozone concentrations and NO_X and VOC emissions trends or existence of the NO_X and VOC controls presented by Minnesota.[95] However, as explained in Section I.C, the most recent EPA modeling captures numerous updates to the 2016 emissions platform, including all existing CSAPR trading programs, in the baseline,[96] and that modeling confirms that most these control programs were not sufficient to eliminate Minnesota's linkage at Steps 1 and 2 under the 2015 ozone NAAQS. The state therefore has good neighbor obligations under the 2015 8-hour NAAQS and is obligated at Step 3 to assess additional control measures using a multifactor analysis.

MPCA identified state permitting programs, rules, voluntary programs, and the CSAPR NO_X trading program,

[93] Design values and contributions at individual monitoring sites nationwide are provide in the file: 2016v2_DVs_state_contributions.xlsx which is included in docket ID No. EPA–HQ–OAR–2021–0663.

[94] These modeling results are consistent with the results of a prior round of 2023 modeling using the 2016v1 emissions platform which became available to the public in the fall of 2020 in the Revised CSAPR Update, as noted in Section I. That modeling showed that Minnesota had a maximum contribution greater than 0.70 ppb to at least one nonattainment or maintenance-only receptor in 2023. These modeling results are included in the file ''Ozone Design Values And Contributions Revised CSAPR Update.xlsx'' in docket EPA–HQ–OAR–2021–0663.

[95] *See* Minnesota's SIP submittal Figures 1–3, pages 10–11.

[96] For a complete explanation of air quality modeling of the 2016v2 emissions platform modeling, please see ''AQ Modeling TSD_2016v2 Platform.pdf'' included in docket ID No. EPA–HQ–OAR–2021–0663.

among others, as NO_X and VOC control measures which satisfy Minnesota's good neighbor obligations under the 2015 ozone NAAQs. In general, however, the listing of existing or on-the-way control measures, whether approved into the state's SIP or not, does not substitute for a complete Step 3 analysis under EPA's 4-step framework to define ''significant contribution.'' Minnesota's submission does not include an assessment of the overall effects of these measures, when the reductions would be achieved, and what the overall resulting air quality effects would be observed at identified out-of-state receptors. Minnesota's submission does not include an evaluation of additional potential emissions control opportunities, or their costs or impacts, or attempt to analyze whether, if applied more broadly across linked states, the emissions reductions would constitute the elimination of significant contribution on a regional scale. The state's submission did not contain an explanation as to whether any faster or more stringent emissions reductions that may be available were prohibitively costly or infeasible. Furthermore, states may not rely on non-SIP measures to meet SIP requirements, and Minnesota has not revised its SIP to contain the CSAPR NO_X trading program or the non-SIP approved rules MPCA identified. *See* CAA section 110(a)(2)(D) (''Each such [SIP] shall . . . contain adequate provisions . . . .''). See also CAA section 110(a)(2)(A); *Committee for a Better Arvin* v. *U.S. E.P.A.,* 786 F.3d 1169, 1175–76 (9th Cir. 2015) (holding that measures relied on by state to meet CAA requirements must be included in the SIP).

As mentioned above, EPA has newly available information that indicates sources in Minnesota are linked to downwind air quality problems for the 2015 ozone standard. Therefore, EPA proposes to disapprove Minnesota's August 20, 2018 interstate transport SIP submission on the separate, additional basis that the SIP submittal did not assess additional emissions control opportunities.

5. Evaluation of Information Provided Regarding Step 4

Step 4 of the 4-Step interstate transport frameworks calls for development of permanent and federally enforceable control strategies to achieve the emissions reductions determined to be necessary at Step 3 to eliminate significant contribution to nonattainment or interference with maintenance of the NAAQS. MPCA identified state permitting programs, rules, voluntary programs, and the CSAPR NO_X trading program, among others, as NO_X and VOC control measures which are not all part of Minnesota's SIP. Although the state has since incorporated some of these control measures into their SIP, Minnesota did not revise its SIP to include all these emission reductions in a revision to its SIP to ensure the reductions were permanent and enforceable and eliminate their significant contribution to nonattainment or interference with maintenance of the NAAQS. As a result, EPA proposes to disapprove Minnesota's submittal on the separate, additional basis that the Minnesota has not developed permanent and enforceable emissions reductions necessary to meet the obligations of CAA section 110(a)(2)(d)(i)(I).

6. Conclusion

Based on EPA's evaluation of Minnesota's SIP submission and after consideration of updated EPA modeling using the 2016-based emissions modeling platform, EPA is proposing to find that the portion of Minnesota's October 1, 2018 SIP submission addressing CAA section 110(a)(2)(D)(i)(I) does not meet the state's interstate transport obligations for 2015 ozone NAAQS, because it fails to contain the necessary provisions to eliminate emissions that will contribute significantly to nonattainment or interfere with maintenance of the NAAQS in any other state.

E. Ohio

1. Evaluation of Information Provided by Ohio Regarding Steps 1

At Step 1 of the 4-step interstate transport framework, OEPA relied on LADCO modeling released in 2018 to identify nonattainment and maintenance receptors in 2023. As described previously in this action, LADCO performed modeling similar to EPA's modeling released in the March 2018 memorandum, except with use of ERTAC for projecting future year EGU emissions. LADCO identified nonattainment and maintenance receptors using EPA methodology. OEPA elected to rely on LADCO's ''3x3'' modeling results, which identified similar receptors to EPA's modeling included in the March 2018 memorandum.

However, OEPA elected to use an alternative method developed by TCEQ for identifying maintenance receptors at Step 1 of the 4-step framework. Using the TCEQ method to identify maintenance receptors OEPA claimed that four maintenance receptors based on EPA's approach would not have difficulty maintaining the NAAQS in 2023. OEPA relied on the potential flexibilities in Attachment A to the March 2018 in support of its use of the TCEQ method. As explained in Section I.C above, the concepts presented in Attachment A to the March 2018 memorandum were neither guidance nor determined by EPA to be consistent with the CAA. OEPA submitted Ohio's SIP submission before EPA released its October 2018 memorandum discussing maintenance receptors. Regardless, EPA will examine the legal and technical merits of OEPA's arguments related to the use of an alternative maintenance-only definition in light of the October 2018 memorandum. OEPA has not adequately explained or justified how TCEQ's method for identifying maintenance receptors reasonably identifies areas that will have difficulty maintaining the NAAQS. That is, EPA proposes to find that OEPA has provided no sound technical basis for how TCEQ's methodology gives meaning to the CAA's instruction that states submit good neighbor SIPs that prohibit their states' emissions from interfering with the maintenance of the NAAQS in another state.

In *North Carolina* v. *EPA,* 531 F.3d 896, 909–11 (D.C. Cir. 2008), the D.C. Circuit rejected EPA's CAIR on the basis that EPA had not adequately given meaning to the phrase ''interfere with maintenance'' in the good neighbor provision. Specifically, North Carolina argued that it had counties that were projected to attain the NAAQS in the future analytic year, but were at risk of falling back into nonattainment due to interference from upwind sources, particularly given year-to-year variability in ozone levels. The court agreed, holding that EPA's rule did not adequately protect ''[a]reas that find themselves barely meeting attainment.'' *Id.* at 910. Consequently, EPA has developed a methodology, used in its 2011 CSAPR and its 2016 CSAPR Update and Revised CSAPR Update, for identifying areas that may struggle to maintain the NAAQS. *See* 76 FR at 48227–28. EPA's approach to addressing maintenance receptors was upheld in the *EME Homer City* litigation. See 795 F.3d 118, 136–37. It was also upheld in *Wisconsin.* 938 F.3d at 325–26. In *Wisconsin,* the court noted that four upwind states were linked only to maintenance receptors and rejected the argument that application of the same control level as EPA imposes for those states linked to nonattainment receptors was unreasonable or unlawful absent a

particularized showing of overcontrol. *Id.* at 327.

In order to explain the differences between TCEQ's and EPA's methodology for identifying maintenance receptors, it is helpful to provide some additional context for how EPA projects future air quality. EPA's air quality modeling guidance has long recommended developing a base design value (*i.e.,* the design value that will be used as a starting point to model and analyze for purposes of projecting future air quality concentrations) that is the average of three design values spanning a five-year period, centered around one year for which an emissions inventory will be submitted (*e.g.,* if 2011 was the base emissions inventory year, a state would use monitored values from 2009–2011, 2010–2012, 2011–2013 as the starting point for projecting air quality concentrations in future years). The average of these three design values is then multiplied by a relative response factor to generate an average design value for the future year. If a receptor's average future year design value is greater than or equal to the level of the NAAQS, and the receptor has recent monitored data that violates the NAAQS, that receptor is considered a ''nonattainment'' receptor at step 1. To identify maintenance receptors, EPA's methodology looks to the highest design value of the three DVs used to calculate the 5-year weighted average design value (*e.g.,* in the 2011 example, if 2009–2011 had the highest design value of 2009–2011, 2010–2012, and 2011–2013). EPA then applies the same relative response factor to that highest design value to generate a projected future maximum design value. Where a receptor's maximum design value exceeds the level of the NAAQS, EPA has deemed those receptors to be ''maintenance'' receptors. This methodology was designed to address the D.C. Circuit's holding that the CAA's ''interference with maintenance'' prong requires states and EPA to protect areas that may struggle with maintaining the standard in the face of variable conditions.

For its maintenance receptors, TCEQ elected not to use the highest design value of the three DVs making up the base period average design value. Instead, Texas (and by extension, Ohio), used the *most recent* design value of the three DVs, regardless of whether the most recent design value was highest or lowest. OEPA's proffered explanation for using the most recent design value to identify maintenance receptors was that the latest design value ''takes into consideration . . . any emissions reductions that might have occurred.'' [97] OEPA in its submission did not explain why or how this methodology identifies those areas that may be meeting the NAAQS or that may be projected to meet the NAAQS but may nevertheless struggle to maintain the NAAQS, given interannual variability in ozone conducive meteorology. In fact, because the TCEQ's methodology adopted by OEPA uses the most recent design value to capture more recent emissions reductions rather than capture variable conditions, the methodology appears to be aimed at *limiting* receptors which could be identified as maintenance receptors, compared to EPA's methodology, which was designed to identify those areas that might struggle to maintain the NAAQS in ozone conducive conditions.

EPA disagrees that the use of latest three years for calculating a DV properly accounts for the effects of meteorological variability for the purpose of identifying projected maintenance receptors. Rather, the use of a three-year average is intended to *average out,* not account for, the effects of inter-annual variability in ozone conducive meteorology. EPA reviewed the information provided by OEPA and proposes to find that the information is insufficient to support the use of an alternative approach. OEPA analysis of meteorological information did not discuss or consider how other meteorological factors that are typically associated with high ozone episodes such as humidity, solar radiation, vertical mixing, and/or other meteorological indicators such as cooling-degree days to confirm whether conditions affecting these monitors may have been conducive to ozone formation during the 2009 through 2013 base period. In addition, the ozone trends data provided in OEPA submittal indicate that several of the receptors in Coastal Connecticut to which Ohio is linked by more than 1 ppb continue to measure ozone design values close to or exceeding 80 ppb with no overall downward trend in the most recent data in the submittal.[98] In any event, OEPA's use of an alternative approach to identifying maintenance receptors does not result in a dispositive change in receptor status for purposes of EPA's evaluation of OEPA's SIP submittal at Step 1 because OEPA did not reach the conclusion that there were no receptors in 2023 or claim at Step 2 that Ohio was not linked to any receptor on the basis of the use of an alternative definition of maintenance receptor.

In conclusion, the modeling relied on by OEPA identified a number of nonattainment and maintenance receptor sites in the Midwest and Northeast in 2023. See Table 1 on page 8 of OEPA's submittal. Under EPA's approach to defining nonattainment and maintenance receptors, Ohio was shown to be linked to three ''nonattainment/maintenance'' receptors and six ''maintenance'' receptors. Under an alternative approach to defining receptors (discussed below), OEPA concluded that Ohio was shown to be linked to two ''nonattainment'' receptors, one ''nonattainment/maintenance'' receptor, and four ''maintenance'' receptors. Thus, based on using the LADCO's 2023 modeling and even under an alternative approach to defining ''maintenance'' receptors, OEPA acknowledges in its submittal the existence of several nonattainment and maintenance receptors in the Midwest and Northeast. EPA further evaluates Ohio's linkage to these receptors in the following section.

2. Evaluation of Information Provided by the State Regarding Step 2

Although OEPA relied on alternative modeling to EPA's modeling, OEPA acknowledged in their SIP submission that Ohio is linked above either a 1 percent of the NAAQS or a 1 ppb contribution threshold to one or more downwind receptors in 2023. Because the LADCO modeling relied on by the state also demonstrates that a linkage exists between the state and downwind receptors at Step 2, EPA need not conduct a comparative assessment of the alternative modeling; the state concedes that it is linked above either 1 percent of the NAAQS or 1 ppb.

The state additionally evaluated the use of an alternative threshold exceeding 1 ppb at Step 2 to identify whether the state was ''linked'' to a projected downwind nonattainment or maintenance receptor. EPA's August 2018 memorandum provided that whether use of a 1 ppb threshold is appropriate must be based on an evaluation of state-specific circumstances, but that the use of a threshold greater than 1 ppb at Step 2 would likely not be appropriate because higher thresholds would not capture a sufficient amount of total upwind state contribution to allow for the development of effective remedies at Step 3.[31] In particular, EPA found that a 2 ppb threshold would cause 45% of total upwind contribution to be removed from further analysis across all

[97] TCEQ submission at 3–39 to 3–40.

[98] *See* ''2010 Thru 2020 Ozone Design Values.xlsx'' in docket ID No. EPA–HQ–OAR–2021–0663.

receptors as compared to a 1 percent of NAAQS threshold.

EPA does not accept Ohio's position that a 1 percent of the NAAQS contribution threshold at Step 2 is ''impractical and infeasible'' for the 2015 ozone NAAQS because ''it results in very small contributions having substantial consequences.'' [99] This argument conflates the contribution threshold at Step 2 with a determination of ''significance'' reached at Step 3 after a multi-factor analysis. In its submittal, OEPA justified a higher threshold than either 1 percent or 1 ppb by noting that, if applied, these alternative thresholds (3 or 4 percent of the NAAQS) would progressively de-link the State from an increasing number of identified downwind receptors. EPA likewise disagrees with this reasoning; selecting progressively higher contribution thresholds simply on the basis that they would excuse an ever greater number of upwind states from having any good neighbor obligations lacks any persuasive technical justification and is inconsistent with the purposes of the Act.

The explanation for how the 1 percent contribution threshold was originally derived is available in the 2011 CSAPR rulemaking. *See* 76 FR 48208, 48237–38. Further, in the CSAPR Update, EPA re-analyzed the threshold for purposes of the 2008 ozone NAAQS and determined it was appropriate to continue to apply this threshold. EPA compared the 1 percent threshold to a 0.5 percent of NAAQS threshold and a 5 percent of NAAQS threshold. EPA found that the lower threshold did not capture appreciably more upwind state contribution compared to the 1 percent threshold, while the 5 percent threshold allowed too much upwind state contribution to drop out from further analysis. *See* Final CSAPR Update Air Quality Modeling TSD, at 27–30 (EPA–HQ–OAR–2015–0596–0144). If EPA were to apply this analysis to the 2015 ozone NAAQS using the updated modeling based on the 2016v2 emissions platform, a 5 percent of the NAAQS contribution threshold (*i.e.,* 3.5 ppb) only captures approximately 50 percent of the total upwind contribution. Compared to a 1 percent threshold, a 5 percent threshold would, on average, forgo 27 nearly 30 percent) of the total upwind contribution. As EPA noted in the August 2018 memorandum, the use of a 2 ppb contribution threshold under the modeling released with the March 2018 memorandum would only capture about 55 percent of all upwind contributions, and therefore ''emission reductions from states linked at that higher threshold may be insufficient to address collective upwind state contribution to downwind air quality problems.''[31]

Based on EPA's updated modeling and the LADCO modeling, the state is projected to contribute greater than both the 1 percent and alternative 1 ppb thresholds. While EPA does not, in this action, approve of the state's application of the 1 ppb threshold, based on its linkages greater than 1 ppb to projected downwind nonattainment or maintenance receptors, the state's use of this alternative threshold at Step 2 of the 4-Step interstate framework would not alter our review and proposed disapproval of this SIP submittal.

TABLE 6—OHIO LINKAGE RESULTS BASED ON EPA UPDATED 2023 MODELING

Receptor ID	Location (county, state)	Nonattainment/maintenance	2023 Average design value (ppb)	2023 Maximum design value (ppb)	Ohio Contribution (ppb)
90099002	New Haven, CT	Nonattainment	71.8	73.9	1.94
90019003	Fairfield, CT	Nonattainment	76.1	76.4	1.90
420170012	Bucks, PA	Maintenance	70.7	72.2	1.88
90013007	Fairfield, CT	Nonattainment	74.2	75.1	1.87
170317002	Cook, IL	Maintenance	70.1	73.0	1.69
550590019	Kenosha, WI	Nonattainment	72.8	73.7	1.67
550590025	Kenosha, WI	Maintenance	69.2	72.3	1.33
170310032	Cook, IL	Maintenance	69.8	72.4	1.26
170314201	Cook, IL	Maintenance	69.9	73.4	1.23
170310076	Cook, IL	Maintenance	69.3	72.1	1.23
90010017	Fairfield, CT	Nonattainment	73.0	73.7	1.18
551010020	Racine, WI	Nonattainment	71.3	73.2	1.00
170310001	Cook, IL	Maintenance	69.6	73.4	0.82

4. Evaluation of Information Provided Regarding Step 3

At Step 3 of the 4-step interstate transport framework, a state's emissions are further evaluated, in light of multiple factors, including air quality and cost considerations, to determine what, if any, emissions significantly contribute to nonattainment or interfere with maintenance and, thus, must be eliminated under CAA section 110(a)(2)(D)(i)(I). As explained in Section II.E, Ohio relied on a combination of both cost and air quality factors to determine that there were no further reductions necessary for Ohio to meet its obligations under the interstate transport provision. In this subsection, we have evaluated the information provided by the state at Step 3 to support this conclusion.

To effectively evaluate which emissions in the state should be deemed ''significant'' and therefore prohibited, states generally should prepare an accounting of sources and other emissions activity for relevant pollutants and assess potential, additional emissions reduction opportunities and resulting downwind air quality improvements. EPA has consistently applied this general approach (*i.e.,* Step 3 of the 4-step interstate transport framework) when identifying emissions contributions that the Agency has determined to be ''significant'' (or interfere with maintenance) in each of its prior Federal, regional ozone transport rulemakings, and this interpretation of the statute has been upheld by the Supreme Court. *See* EME Homer City, 572 U.S. 489, 519 (2014). While EPA has not directed states that they must conduct a Step 3 analysis in precisely the manner EPA has done in its prior regional transport rulemakings, state implementation plans addressing the

[99] Michigan's SIP submission at 16.

obligations in CAA section 110(a)(2)(D)(i)(I) must prohibit ''any source or other type of emissions activity within the State'' from emitting air pollutants which will contribute significantly to downwind air quality problems. Thus, states must complete something similar to EPA's analysis (or an alternative approach to defining ''significance'' that comports with the statute's objectives) to determine whether and to what degree emissions from a state should be ''prohibited'' to eliminate emissions that will ''contribute significantly to nonattainment in, or interfere with maintenance of'' the NAAQS in any other state. OEPA did not conduct such an analysis in their SIP submission.

OEPA's submission concluded that projected emissions were overestimated for the EGU, non-EGU, and onroad sectors. OEPA claimed that the ERTAC EGU tool's emissions inventories were overestimated for eight specific sources for various reasons, including adoption of rules in late 2016 and early 2017, CSAPR and CSAPR Update allocations, and substantive changes in plant operation. The submission also asserted that ERTAC EGU tool version 2.7 does not consider that future energy generation sources will likely be a steady level of coal with increasing natural gas and renewable fuels, citing an un-enumerated number of natural gas source permits issued by Ohio and projected trends identified in the US Energy Information Administration's Annual Energy Outlook (AEO) 2018.[100] Similarly, the submission claimed projected emissions from EPA's Air Emissions Modeling Platform 2011v6.3 were overestimated for nine non-EGU point sources, primarily based on actual emissions trends from 2010 to 2017. OEPA also claimed that EPA over projected onroad emissions using 2023 vehicle miles traveled (VMT). However, OEPA did not explain how accounting for changed projected emissions from those 17 sources or the onroad sector would have resulted in different outcomes with regards to the identification of downwind receptors or Ohio's contributions or linkages in the 2023 analytic year. Furthermore, nationwide trends and an unspecified number of state permits are insufficient by themselves to support a conclusion that EGUs in Ohio would not be affected by generation shifting. EPA notes the information presented from the AEO is related to nationwide trends and OEPA did not explain what the nationwide trends revealed about Ohio's level of contribution or good neighbor obligations to downwind receptors. Merely claiming that the modeling used to project receptors and contributions relies on overestimated emissions projections without an explanation of how the inputs would affect the outcome is not enough to draw a conclusion at Step 2 that Ohio is not linked to any downwind receptor or a conclusion at Step 3 that Ohio does not contribute significantly or interfere with maintenance in any other state. Considered individually or in the context of the other information and arguments put forward by OEPA, select EGU, non-EGU, and onroad emissions evaluations and nation-wide projections of fuel types fail to show that additional emissions reductions are either not cost-effective or permanent and federally enforceable. OEPA did not demonstrate that the downwind improvements from these regulations and programs would be sufficient to eliminate the state's significant contribution or interference with maintenance.

Further, EPA's assessment of future air quality conditions generally accounts for on-the-books emission reductions and the most up-to-date forecast of future emissions in the absence of the transport policy being evaluated (*i.e.,* base case conditions).[101] As described in more detail in Section I, EPA's latest projections of the baseline EGU emissions uses the version 6—Summer 2021 Reference Case of the IPM.[102] The IPM version 6—Summer 2021 Reference Case uses the NEEDS v6 database as its source for data on all existing and planned-committed units. Units are removed from the NEEDS inventory only if a high degree of certainty could be assigned to future implementation of the announced future closure or retirement. Any retirements excluded from the NEEDS v6 inventory can be viewed in the NEEDS spreadsheet.[103] The inventory for these projections contains various Ohio EGUs including the Avon Lake Power Plant in Lorain County (Facility ID 0247030013), Painesville Municipal Electric Plant in Lake County (Facility ID 0243110008), and the Department of Public Utilities, City of Orrville in Wayne County (Facility ID 0285010188). Mingo Junction Energy Center in Jefferson County (Facility ID 0641090234) and the Conesville Power Plant (Facility ID 0616000000) retired in 2020.

Also, EPA's non-EGU emissions inventory in the updated modeling using the 2016v2 emissions platform does not include either Carmeuse Lime Inc Millersville Operations (Facility ID 0372000081) or RockTenn CP, LLC (Facility ID 0616010001). EPA's latest modeling also uses emissions inventories that incorporate Ohio's submitted 2023 VMT data.[104] In other words, in general, any changes in the emissions inventory and on-the-books controls relevant to emissions in 2023 have now been incorporated into EPA's modeling using the 2016v2 emissions platform, which projects a continuing contribution from Ohio to out of state receptors above a threshold of 1 percent of the NAAQS (at Steps 1 and 2) despite these measures. Therefore, in light of continuing contribution to out of state receptors from Indiana notwithstanding these identified retirements, OEPA's SIP submission should have evaluated the availability of additional air quality controls to improve downwind air quality at nonattainment and maintenance receptors at Step 3.

Ohio's projected contribution to downwind receptors in EPA's updated modeling is lower relative to the LADCO modeling results presented in OEPA's submission; it could be assumed that these decreases are due to overestimation of sources that were corrected in the updated modeling. These results could also be attributed to Federal programs in place (NO_X RACT, AIM Coatings Rules, CSAPR, NOx SIP Call, NESHAPs, RHR, BART, SO_2 Data Requirements rule, and MATS) as OEPA suggests. Regardless, despite the lessened projected contributions, Ohio's contributions continue to be projected to be above 1 percent of the NAAQS to one or more receptors in 2023 as shown in Table 6.

OEPA's assessment of actual and projected NO_X and VOC emissions trends and listing of various regulations likewise do not support a conclusion that existing controls in Ohio adequately address the state's good neighbor obligations for the 2015 ozone NAAQS. For one, OEPA listed numerous non-SIP measures and states may not rely on non-SIP measures to

[100] *See https://www.eia.gov/outlooks/archive/aeo18/,* last accessed 1/18/2022.

[101] *See* 81 FR 74504 at 74517; 85 FR 68964 at 68979.

[102] Detailed information and documentation of EPA's Base Case, including all the underlying assumptions, data sources, and architecture parameters can be found on EPA's website at: *https://www.epa.gov/airmarkets/epas-power-sector-modeling-platform-v6-using-ipm-summer-2021-reference-case.*

[103] The ''Capacity Dropped'' and the ''Retired Through 2023'' worksheets in NEEDS lists all units that are removed from the NEEDS v6 inventory—NEEDS v6 Summer 2021 Reference Case. This data can be found on EPA's website at: *https://www.epa.gov/airmarkets/national-electric-energy-data-system-needs-v6.*

[104] Technical Support Document (TSD) Preparation of Emissions Inventories for the 2016v2 North American Emissions Modeling Platform, section 4.3.2. Available in the Headquarters docket ID No. EPA–HQ–OAR–2021–0663.

meet SIP requirements. *See* CAA section 110(a)(2)(D) (''Each such [SIP] shall . . . contain adequate provisions . . . .''). *See also* CAA section 110(a)(2)(A); *Committee for a Better Arvin* v. *U.S. E.P.A.,* 786 F.3d 1169, 1175–76 (9th Cir. 2015) (holding that measures relied on by state to meet CAA requirements must be included in the SIP). OEPA did not attempt to revise Ohio's SIP to include all these measures.[105] In general, the listing of existing or on-the-way control measures, whether approved into the state's SIP or not, does not substitute for a complete Step 3 analysis under EPA's 4-step framework to define ''significant contribution.'' OEPA's submittal does not include an assessment of the overall effects of these measures, when the reductions would be achieved, and what the overall resulting air quality effects would be observed at identified out-of-state receptors. The state's submission does not include an evaluation of additional potential emissions control opportunities, or their costs or impacts, or attempt to analyze whether, if applied more broadly across linked states, the emissions reductions would constitute the elimination of significant contribution on a regional scale. The state's submission did not contain an explanation as to whether any faster or more stringent emissions reductions that may be available were prohibitively costly or infeasible. Second, the information and claims presented by OEPA did not provide sufficient evidence to support alternative conclusions that EPA is proposing to make in this action: Namely, that several receptors exist, Ohio contributes to those receptors above a 1 percent of the NAAQS contribution threshold, and that Ohio continues to have good neighbor obligations that need to be addressed for the 2015 ozone NAAQS.

OEPA also pointed to declining design values at the ten receptors identified by LADCO to support their conclusion that no further emissions reductions were required from Ohio to meet their interstate transport obligations. They additionally reference a May 14, 2018 EPA presentation, stating that EPA indicated remaining ozone air quality problems were becoming more local and less regional in nature. While it is true that since 2011, design values have generally declined, air quality problems at some locations are projected to continue out to 2023 and beyond, based on EPA's 2018 modeling provided in the March 2018 memorandum, LADCO's modeling completed in 2018, EPA's modeling results used in the Revised CSAPR Update, and EPA's updated modeling results. In addition, each of these modeling analyses show that Ohio will contribute to the air quality problems in excess of 1 percent of the 2015 ozone standards in 2023. Regarding the May 14, 2018 presentation, EPA assumes the state is referencing a presentation given by an EPA air quality modeler, which Indiana attached to their SIP submission. The purpose of that presentation was to share a technical, exploratory analysis of ozone trends. The results of that presentation, which were labeled as ''preliminary'' indicated that ''[f]urther exploration of the relative contribution from various source sectors within the NE Corridor and in nearby upwind states might also be informative.'' [106] The preliminary results of that analysis are generally consistent with EPA's updated modeling using the 2016v2 emissions platform. Although EPA's modeling shows that a large portion of the transport problem affecting the receptors in Coastal Connecticut is indeed from sources within the Ozone Transport Region (OTR), a substantial portion of the transport problem at these receptors, on the order of 25 percent, is the result of transport from states outside the OTR. However, the relevance of that presentation to the evaluation of Ohio's good neighbor obligations is not clear. As already discussed, the statute and the case law (particularly the holdings in *Wisconsin* and *Maryland*) make clear that good neighbor obligations are not merely supplementary to or deferable until after local emission reductions are achieved. Further, based on EPA's modeling released with the March 2018 memorandum, nearly all of the receptors to which Ohio is linked are also heavily impacted by distant upwind state emissions in addition to local sources and sources in neighboring states. The *Wisconsin* decision's holding in regard to international contribution (discussed in more detail later) is equally applicable to an upwind state's claims that some other state's emissions, or local emissions, are more to blame than its own emissions. See 938 F.3d 303 at 323–25 (''an upwind state can 'contribute' to downwind nonattainment even if its emissions are not the but-for cause'').

OEPA also put forward an argument that onroad mobile sources in downwind states should be more stringently controlled before any additional sources in upwind states. This is equivalent to the claim that local emissions reductions from the jurisdiction where the downwind receptor is located must first be implemented and accounted for before imposing obligations on upwind states under the interstate transport provision. However, there is nothing in the CAA that supports that position, and it does not provide grounds on which to approve OEPA's SIP submission. The D.C. Circuit has held on five different occasions that the timing framework for addressing interstate transport obligations must be consistent with the downwind areas' attainment schedule. In particular, for the ozone NAAQS, the states and EPA are to address interstate transport obligations ''as expeditiously as practicable'' and no later than the attainment schedule set in accordance with CAA section 181(a). *See North Carolina,* 531 F.3d at 911–13; *Wisconsin,* 938 F.3d at 313–20; *Maryland,* 958 F.3d at 1204; *New York* v. *EPA,* 964 F.3d 1214, 1226 (DC Cir. 2020); *New York* v. *EPA,* 781 Fed. App'x 4, 6–7 (DC Cir. 2019). The court in *Wisconsin* explained that downwind jurisdictions often may need to heavily rely on emissions reductions from upwind states in order to achieve attainment of the NAAQS, 938 F.3d at 316–17; such states would face increased regulatory burdens including the risk of bumping up to a higher nonattainment classification if attainment is not reached by the relevant deadline, *Maryland,* 958 F.3d at 1204. The statutory framework of the CAA and these cases establish clearly that states and EPA must address interstate transport obligations in line with the attainment schedule provided in the Act in order to timely assist downwind states in attaining and maintain the NAAQS, and this schedule is ''central to the regulatory scheme.'' *Wisconsin,* 938 F.3d at 316 (quoting *Sierra Club* v. *EPA,* 294 F.3d 155, 161 (D.C. Cir. 2002)).

As for the suggestion that EPA should assess the SAFE Vehicles Rule's impact on ozone before finalizing, EPA and the National Highway Traffic Safety Administration finalized the revisions to the greenhouse gas (GHG) and CAFE standards for light duty vehicles in 2020.[107] However, that final action is not expected to have a meaningful impact on ozone-precursor emissions. Because the vehicles affected by the

[105] EPA notes that OEPA submitted a source specific NO_X emission limit contained in the Ohio NO_X RACT Rules for approval into the Ohio SIP, approved by EPA on September 8, 2017 (82 FR 42451).

[106] Indiana's SIP submission, Appendix E at 4, 17.

[107] *The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks,* 85 FR 24174 (April 30, 2020) (SAFE Vehicles Rule).

2017–2025 GHG standards would still need to meet applicable criteria pollutant emissions standards (*e.g.,* the Tier 3 emissions standards; *see* 79 FR 23414), the SAFE Vehicles Rule anticipated that any impacts of the SAFE Vehicles Rule on ozone precursor emissions ''would most likely be far too small to observe.'' *See* 85 FR 25041. On December 30, 2021, EPA revised the GHG light duty standards for model years 2023 and later to make them more stringent.[108] The impacts of the SAFE Vehicles Rule are included in the 2016v2 onroad emissions as described in the emissions modeling TSD in Section 4.3.2.[109]

Further, OEPA makes the argument that assigning all responsibility to Ohio and other upwind states for downwind air quality problems despite home state and international contributions would result in overcontrol of Ohio sources. OEPA's reasoning related to emissions in downwind states and international emissions is inapplicable to the requirements of CAA section 110(a)(2)(D)(i)(I). As an initial matter, CAA section 110(a)(2)(D)(i)(I) only requires that upwind states prohibit those emissions that ''contribute significantly to nonattainment'' or ''interfere with maintenance of the NAAQS.'' It does not require that the upwind states bear the full burden of bringing downwind states into attainment or that a threshold ppb improvement from upwind states emission reductions be met in order for them to be required (once the 1 percent threshold has been satisfied). However, the good neighbor provision does require states and EPA to address interstate transport of air pollution that contributes to downwind states' ability to attain and maintain NAAQS. Whether emissions from other states or other countries also contribute to the same downwind air quality issue is irrelevant in assessing whether a downwind state has an air quality problem, or whether an upwind state is significantly contributing to that problem. States are not obligated under CAA section 110(a)(2)(D)(i)(I) to reduce emissions sufficient on their own to resolve downwind receptors' nonattainment or maintenance problems. Rather, states are obligated to eliminate their own ''significant contribution'' or ''interference'' with the ability of other states to attain or maintain the NAAQS.

Indeed, after OEPA submitted Ohio's SIP submission, the D.C. Circuit in *Wisconsin* specifically rejected petitioner arguments suggesting that upwind states should be excused from good neighbor obligations on the basis that some other source of emissions (whether international or another upwind state) could be considered the ''but-for'' cause of downwind air quality problem. 938 F.3d 303 at 323–324. The court viewed petitioners' arguments as essentially an argument ''that an upwind state 'contributes significantly' to downwind nonattainment only when its emissions are the sole cause of downwind nonattainment.'' 938 F.3d 303 at 324. The court explained that ''an upwind state can 'contribute' to downwind nonattainment even if its emissions are not the but-for cause.'' Id. at 324–325. See also *Catawba County* v. *EPA,* 571 F.3d 20, 39 (D.C. Cir. 2009) (rejecting the argument ''that 'significantly contribute' unambiguously means 'strictly cause'' because there is ''no reason why the statute precludes EPA from determining that [an] addition of [pollutant] into the atmosphere is significant even though a nearby county's nonattainment problem would still persist in its absence''); *Miss. Comm'n on Envtl. Quality* v. *EPA,* 790 F.3d 138, 163 n.12 (D.C. Cir. 2015) (observing that the argument that ''there likely would have been no violation at all . . . if it were not for the emissions resulting from [another source]'' is ''merely a rephrasing of the but-for causation rule that we rejected in Catawba County.''). Therefore, a state is not excused from eliminating its significant contribution on the basis that international emissions, or emissions from other sources, also contribute some amount of pollution to the same receptors to which the state is linked.

Finally, as part of its cost-effectiveness evaluation, OEPA relied on its EGUs being subject to the CSAPR Update (which reflected a stringency at the nominal marginal cost threshold of $1400/ton (2011$) for the 2008 8-hour ozone NAAQS) to argue that it has already implemented all cost-effective emissions reductions. For non-EGUs, OEPA did not identify a cost-effectiveness threshold, but rather listed a few regulations (the Boiler MACT and other MACT categories, BART, SO_2 Data Requirements Rule and other unidentified Federal regulations) to draw the conclusion that emissions reductions had been achieved from non-EGUs in Ohio. First, the CSAPR Update did not regulate non-electric generating units, and thus this analysis is incomplete. *See Wisconsin,* 938 F.3d at 318–20. Second, relying on the CSAPR Update's (or any other CAA program's) determination of cost-effectiveness without further Step 3 analysis is not approvable. Cost-effectiveness must be assessed in the context of the specific CAA program; assessing cost-effectiveness in the context of ozone transport should reflect a more comprehensive evaluation of the nature of the interstate transport problem, the total emissions reductions available at several cost thresholds, and the air quality impacts of the reductions at downwind receptors. While EPA has not established a benchmark cost-effectiveness value for 2015 ozone NAAQS interstate transport obligations, because the 2015 ozone NAAQS is a more stringent and more protective air quality standard, it is reasonable to expect control measures or strategies to address interstate transport under this NAAQS to reflect higher marginal control costs. As such, the marginal cost threshold of $1,400/ton for the CSAPR Update (which addresses the 2008 ozone NAAQS and is in 2011$) is not an appropriate cost threshold and cannot be approved as a benchmark to use for interstate transport SIP submissions for the 2015 ozone NAAQS. The lack of a sufficient cost-effectiveness evaluation also means that Ohio's claims that requiring additional emissions reductions would result in overcontrol is premature. Ohio's submission does present sufficient evidence to support that conclusion.

In addition, the updated EPA modeling captures all existing CSAPR trading programs in the baseline, and that modeling confirms that these control programs were not sufficient to eliminate Ohio's linkage at Steps 1 and 2 under the 2015 ozone NAAQS. The state was therefore obligated at Step 3 to assess *additional* control measures using a multifactor analysis.

Finally, relying on a FIP at Step 3 is per se not approvable if the state has not adopted that program into its SIP and instead continues to rely on the FIP. States may not rely on non-SIP measures to meet SIP requirements. *See* CAA section 110(a)(2)(D) (''Each such [SIP] shall . . . contain adequate provisions . . . .''). *See also* CAA section 110(a)(2)(A); *Committee for a Better Arvin* v. *U.S. E.P.A.,* 786 F.3d 1169, 1175–76 (9th Cir. 2015) (holding that measures relied on by state to meet CAA requirements must be included in the SIP). We therefore propose that Ohio was required to analyze emissions from the sources and other emissions activity from within the state to determine whether its contributions were

[108] *Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards,* 86 FR 74434 (December 30, 2021).

[109] See Technical Support Document (TSD) Preparation of Emissions Inventories for the 2016v2 North American Emissions Modeling Platform included in the Headquarters docket ID No. EPA–HQ–OAR–2021–0663.

significant, and we propose to disapprove its submission because Ohio failed to do so.

5. Evaluation of Information Provided Regarding Step 4

Step 4 of the 4-step interstate transport framework calls for development of permanent and federally enforceable control strategies to achieve the emissions reductions determined to be necessary at step 3 to eliminate significant contribution to nonattainment or interference with maintenance of the NAAQS. OEPA identified NO_X RACT rules limiting NO_X emissions from new and existing sources, VOC reduction measures through control of architectural and industrial maintenance coatings, and reallocation of funds received through a settlement with Volkswagen to be applied to on-road and off-road mobile emissions reductions through replacements and infrastructure updates.[110] However, OEPA did not revise Ohio's SIP to include these emission reductions in a revision to its SIP to ensure the reductions were permanent and enforceable.[105] As a result, EPA proposes to disapprove OEPA submittal on the separate, additional basis that the Ohio has not included permanent and enforceable emissions reductions in its SIP as necessary to meet the obligations of CAA section 110(a)(2)(d)(i)(I).

6. Conclusion

Based on EPA's evaluation of Ohio's SIP submission, EPA is proposing to find that the portion of Ohio's September 28, 2018 SIP submission addressing CAA section 110(a)(2)(D)(i)(I) does not meet the state's interstate transport obligations for the 2015 ozone NAAQS, because it fails to contain the necessary provisions to eliminate emissions that will contribute significantly to nonattainment or interfere with maintenance of the 2015 ozone NAAQS in any other state.

F. Wisconsin

1. Evaluation of Information Provided by Wisconsin Regarding Steps 1 and 2

WDNR did not perform an analysis under the 4-step framework to assess Wisconsin's good neighbor obligations. The submission did not identify areas in other states that may have trouble attaining or maintaining the 2015 ozone NAAQS. Nor did WDNR perform a Step 2 analysis to identify Wisconsin's contribution to areas that are projected to have difficulty attaining or maintaining the NAAQS or reach a conclusion about whether Wisconsin is linked to any receptors.

2. Results of EPA's Step 1 and Step 2 Modeling and Findings for Wisconsin

As described in Section I, EPA performed air quality modeling using the 2016v2 emissions platform to project design values and contributions for 2023. These data were examined to determine if Wisconsin contributes at or above the threshold of one percent of the 2015 ozone NAAQS (0.70 ppb) to any downwind nonattainment or maintenance receptor. As shown in Table 7, the data[111] indicate that in 2023, emissions from Wisconsin contribute greater than one percent of the standard to nonattainment or maintenance-only receptors in Illinois.[112] Therefore, based on EPA's evaluation of the information submitted by WDNR, and based on EPA's most recent modeling results for 2023, EPA proposes to find that Wisconsin is linked at Steps 1 and 2 and has an obligation to assess potential emissions reductions from sources or other emissions activity at Step 3 of the 4-step framework.

TABLE 7—WISCONSIN LINKAGE RESULTS BASED ON EPA UPDATED 2023 MODELING

Receptor ID	Location (county, state)	Nonattainment/maintenance	2023 Average design value (ppb)	2023 Maximum design value (ppb)	Wisconsin contribution (ppb)
170310032	Cook, IL	Maintenance	69.8	72.4	2.61
170314201	Cook, IL	Maintenance	69.9	73.4	2.55
170310076	Cook, IL	Maintenance	69.3	72.1	2.47
170310001	Cook, IL	Maintenance	69.6	73.4	2.41
170317002	Cook, IL	Maintenance	70.1	73.0	1.47

As shown in Table 7, the updated EPA modeling identifies Wisconsin's maximum contribution Because the entire technical basis for the state's submittal is that the state has satisfied good neighbor obligations through implementation of various rules, including CSAPR Update, EPA proposes to disapprove the SIP submission based on EPA's finding that WDNR has not provided adequate information to allow EPA to assess whether Wisconsin has adequate provisions to prohibit emissions in amounts which will contribute significantly to nonattainment or interfere with maintenance in any other state. Though this deficiency would be sufficient on its own to disapprove Wisconsin's good neighbor submission, EPA will proceed to evaluate the additional points raised by WDNR at Step 3 of the 4-step interstate transport framework.

3. Evaluation of Information Provided Regarding Step 3

At Step 3 of the 4-step interstate transport framework, a state's emissions are further evaluated, in light of multiple factors, including air quality and cost considerations, to determine what, if any, emissions significantly contribute to nonattainment or interfere with maintenance and, thus, must be eliminated under CAA section 110(a)(2)(D)(i)(I).

[110] Pointing to anticipated upcoming emission reductions, even if they were not included in the analysis at Steps 1 and 2, is not sufficient as a Step 3 analysis, for the reasons discussed in Section [Ohio step 3 analysis section]. In this section, we explain that to the extent such anticipated reductions are not included in the SIP and rendered permanent and enforceable, reliance on such anticipated reductions is also insufficient at Step 4.

[111] Design values and contributions at individual monitoring sites nationwide are provide in the file ''2016v2_DVs_state_contributions.xlsx'' which is included in docket ID No. EPA–HQ–OAR–2021–0663.

[112] These modeling results are consistent with the results of a prior round of 2023 modeling using the 2016v1 emissions platform which became available to the public in the fall of 2020 in the Revised CSAPR Update, as noted in Section I. That modeling showed that Wisconsin had a maximum contribution greater than 0.70 ppb to at least one nonattainment or maintenance-only receptor in 2023. These modeling results are included in the file ''Ozone Design Values And Contributions Revised CSAPR Update.xlsx'' in docket ID No. EPA–HQ–OAR–2021–0663.

To effectively evaluate which emissions in the state should be deemed ''significant'' and therefore prohibited, states generally should prepare an accounting of sources and other emissions activity for relevant pollutants and assess potential, additional emissions reduction opportunities and resulting downwind air quality improvements. EPA has consistently applied this general approach (*i.e.,* Step 3 of the 4-step interstate transport framework) when identifying emissions contributions that the Agency has determined to be ''significant'' (or interfere with maintenance) in each of its prior Federal, regional ozone transport rulemakings, and this interpretation of the statute has been upheld by the Supreme Court. *See EME Homer City,* 572 U.S. 489, 519 (2014). While EPA has not directed states that they must conduct a Step 3 analysis in precisely the manner EPA has done in its prior regional transport rulemakings, state implementation plans addressing the obligations in CAA section 110(a)(2)(D)(i)(I) must prohibit ''any source or other type of emissions activity within the state'' from emitting air pollutants which will contribute significantly to downwind air quality problems. Thus, states must complete something similar to EPA's analysis (or an alternative approach to defining ''significance'' that comports with the statute's objectives) to determine whether and to what degree emissions from a state should be ''prohibited'' to eliminate emissions that will ''contribute significantly to nonattainment in, or interfere with maintenance of'' the NAAQS in any other state. The state did not conduct such an analysis in their SIP submission.

WDNR listed several rules relevant to interstate transport and seemingly relied on its participation in LADCO to suggest sources in Wisconsin are adequately controlled for purposes of the good neighbor provision for the 2015 ozone NAAQS. WDNR mentioned Wisconsin's FIPs under CSAPR and CSAPR Update. EPA disagrees that this is a sufficient approach for assessing good neighbor obligations.

First, the CSAPR Update did not regulate non-electric generating units, and thus this analysis is incomplete. *See Wisconsin,* 938 F.3d at 318–20. Second, relying on the CSAPR Update (or any other CAA program) without further Step 3 analysis is not approvable. While EPA has not established a benchmark cost-effectiveness value for 2015 ozone NAAQS interstate transport obligations, because the 2015 ozone NAAQS is a more stringent and more protective air quality standard, it is reasonable to expect control measures or strategies to address interstate transport under this NAAQS to reflect higher marginal control costs. As such, the CSAPR Update Rule is not an appropriate analysis and cannot be approved to satisfy interstate transport obligations for the 2015 ozone NAAQS.

In addition, the updated EPA modeling captures all existing CSAPR trading programs in the baseline, and that modeling confirms that these control programs were not sufficient to eliminate the Wisconsin's linkage at Steps 1 and 2 under the 2015 ozone NAAQS. The state was therefore obligated at Step 3 to assess *additional* control measures using a multifactor analysis.

Finally, relying on a FIP at Step 3 is *per se* not approvable if the state has not adopted that program into its SIP and instead continues to rely on the FIP. States may not rely on non-SIP measures to meet SIP requirements. *See* CAA section 110(a)(2)(D) (''Each such [SIP] shall . . . contain adequate provisions . . . .''). *See also* CAA section 110(a)(2)(A); *Committee for a Better Arvin* v. *U.S. E.P.A.,* 786 F.3d 1169, 1175–76 (9th Cir. 2015) (holding that measures relied on by state to meet CAA requirements must be included in the SIP).

WDNR cited continued consultation with LADCO, three Wis. Admin. Code subsections that could be relied on ''if needed'' to address disagreements for SIP development in other states' nonattainment areas, and an adequate PSD program. WDNR did not attempt to revise Wisconsin's SIP to include to include all these measures. In general, the listing of existing or on-the-way control measures, including potential future emissions reductions obtained through participation in LADCO, whether approved into the state's SIP or not, does not substitute for a complete Step 3 analysis under EPA's 4-step framework to define ''significant contribution.'' WDNR did not identify control measures, provide an assessment of the overall effects of these measures, note when the reductions would be achieved, or explain what the overall resulting air quality effects would be at identified out of state receptors. WDNR did not evaluate additional, potential emissions control opportunities, or their costs or impacts, or attempt to analyze whether, if applied more broadly across linked states, the emissions reductions would constitute the elimination of significant contribution on a regional scale. WDNR did not offer an explanation as to whether any faster or more stringent emissions reductions that may be available were prohibitively costly or infeasible. Although EPA acknowledges states are not necessarily bound to follow its own analytical framework at Step 3, WDNR did not attempt to determine or justify an appropriate uniform cost-effectiveness threshold. This would have been similar to the approach to defining significant contribution that EPA has applied in prior rulemakings such as CSAPR and or the CSAPR Update, even if such an analysis is not technically mandatory.

As mentioned previously, Wis. Admin. Code NR 285.15, entitled Interstate Agreement, gives the governor the authority to enter an agreement to solve interstate pollution transport with Illinois, Indiana, and Michigan if the area includes portions of both Wisconsin and Illinois. Furthermore, Wis. Admin. Code, NR 285.1560 does not provide for emission reductions toward resolving good neighbor obligations, as while the statute allows for consultation, there is no indication this rule has been exercised to resolve good neighbor obligations or explain how the rule would impact areas in Illinois to which Wisconsin is linked. Under the *Wisconsin* decision, states and EPA may not delay implementation of measures necessary to address good neighbor requirements beyond the next applicable attainment date without a showing of impossibility or necessity. *See* 938 F.3d at 320. Wisconsin's submittal is insufficient to the extent the implementation timeframes for the cited control measures were left unidentified, unexplained, or too uncertain to permit EPA to form a judgment as to whether the timing requirements for good neighbor obligations have been met.

We therefore propose that Wisconsin was required to analyze emissions from the sources and other emissions activity from within the state to determine whether its contributions were significant, and we propose to disapprove its submission because Wisconsin failed to do so.

4. Evaluation of Information Provided Regarding Step 4

Step 4 of the 4-step interstate transport framework calls for development of permanent and federally enforceable control strategies to achieve the emissions reductions determined to be necessary at Step 3 to eliminate significant contribution to nonattainment or interference with maintenance of the NAAQS. As mentioned previously, Wisconsin's SIP submission did not contain an evaluation of additional emission

control opportunities (or establish that no additional controls are required), thus, no information was provided at Step 4. As a result, EPA proposes to disapprove Wisconsin' submittal on the separate, additional basis that the state has not developed permanent and enforceable emissions reductions necessary to meet the obligations of CAA section 110(a)(2)(d)(i)(I).

5. Conclusion

Based on EPA's evaluation of Wisconsin's SIP submission, EPA is proposing to find that the portion of Wisconsin's September 14, 2018 SIP submission addressing CAA section 110(a)(2)(D)(i)(I) does not meet Wisconsin's interstate transport obligations, because it fails to contain the necessary provisions to eliminate emissions that will contribute significantly to nonattainment or interfere with maintenance of the 2015 ozone NAAQS in any other state.

IV. Proposed Action

We are proposing to disapprove the portions of Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin's SIP submissions pertaining to interstate transport of air pollution which will significantly contribute to nonattainment or interfere with maintenance of the 2015 ozone NAAQS in other states. Under CAA section 110(c)(1), disapproval would establish a 2-year deadline for EPA to promulgate a FIP for states to address the CAA section 110(a)(2)(D)(i)(I) interstate transport requirements pertaining to significant contribution to nonattainment and interference with maintenance of the 2015 ozone NAAQS in other states, unless EPA approves a SIP that meets these requirements. Disapproval does not start a mandatory sanctions clock for Illinois, Indiana, Michigan, Minnesota, Ohio, or Wisconsin. The remaining elements of the states' submissions are not addressed in this action and either have been or will be acted on in a separate rulemaking.

V. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a significant regulatory action and was therefore not submitted to the Office of Management and Budget for review.

B. Paperwork Reduction Act (PRA)

This proposed action does not impose an information collection burden under the PRA because it does not contain any information collection activities.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action merely proposes to disapprove a SIP submission as not meeting the CAA.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. The action imposes no enforceable duty on any state, local or tribal governments or the private sector.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications as specified in Executive Order 13175. This action does not apply on any Indian reservation land, any other area where EPA or an Indian tribe has demonstrated that a tribe has jurisdiction, or non-reservation areas of Indian country. Thus, Executive Order 13175 does not apply to this action.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that EPA has reason to believe may disproportionately affect children, per the definition of ''covered regulatory action'' in section 2–202 of the Executive Order. This action is not subject to Executive Order 13045 because it merely proposes to disapprove a SIP submission as not meeting the CAA.

H. Executive Order 13211, Actions That Significantly Affect Energy Supply, Distribution or Use

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act

This rulemaking does not involve technical standards.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

EPA believes the human health or environmental risk addressed by this action will not have potential disproportionately high and adverse human health or environmental effects on minority, low-income or indigenous populations. This action merely proposes to disapprove a SIP submission as not meeting the CAA.

K. CAA Section 307(b)(1)

Section 307(b)(1) of the CAA governs judicial review of final actions by EPA. This section provides, in part, that petitions for review must be filed in the D.C. Circuit: (i) When the agency action consists of ''nationally applicable regulations promulgated, or final actions taken, by the Administrator,'' or (ii) when such action is locally or regionally applicable, if ''such action is based on a determination of nationwide scope or effect and if in taking such action the Administrator finds and publishes that such action is based on such a determination.'' For locally or regionally applicable final actions, the CAA reserves to EPA complete discretion whether to invoke the exception in (ii).[113]

EPA anticipates that this proposed rulemaking, if finalized, would be ''nationally applicable'' within the meaning of CAA section 307(b)(1) because it would take final action on SIP submittals for the 2015 ozone NAAQS for six states, which are located in three different Federal judicial circuits. It would apply uniform, nationwide analytical methods, policy judgments, and interpretation with respect to the same CAA obligations, *i.e.,* implementation of good neighbor requirements under CAA section 110(a)(2)(D)(i)(I) for the 2015 ozone NAAQS for states across the country, and final action would be based on this common core of determinations, described in further detail below.

If EPA takes final action on this proposed rulemaking, in the alternative,

[113] In deciding whether to invoke the exception by making and publishing a finding that an action is based on a determination of nationwide scope or effect, the Administrator takes into account a number of policy considerations, including his judgment balancing the benefit of obtaining the D.C. Circuit's authoritative centralized review versus allowing development of the issue in other contexts and the best use of agency resources.

the Administrator intends to exercise the complete discretion afforded to him under the CAA to make and publish a finding that the final action (to the extent a court finds the action to be locally or regionally applicable) is based on a determination of ''nationwide scope or effect'' within the meaning of CAA section 307(b)(1). Through this rulemaking action (in conjunction with a series of related actions on other SIP submissions for the same CAA obligations), EPA interprets and applies section 110(a)(2)(d)(i)(I) of the CAA for the 2015 ozone NAAQS based on a common core of nationwide policy judgments and technical analysis concerning the interstate transport of pollutants throughout the continental U.S. In particular, EPA is applying here (and in other proposed actions related to the same obligations) the same, nationally consistent 4-step framework for assessing good neighbor obligations for the 2015 ozone NAAQS. EPA relies on a single set of updated, 2016-base year photochemical grid modeling results of the year 2023 as the primary basis for its assessment of air quality conditions and contributions at steps 1 and 2 of that framework. Further, EPA proposes to determine and apply a set of nationally consistent policy judgments to apply the 4-step framework. EPA has selected a nationally uniform analytic year (2023) for this analysis and is applying a nationally uniform approach to nonattainment and maintenance receptors and a nationally uniform approach to contribution threshold analysis.[114] For these reasons, the Administrator intends, if this proposed action is finalized, to exercise the complete discretion afforded to him under the CAA to make and publish a finding that this action is based on one or more determinations of nationwide scope or effect for purposes of CAA section 307(b)(1).[115]

[114] A finding of nationwide scope or effect is also appropriate for actions that cover states in multiple judicial circuits. In the report on the 1977 Amendments that revised section 307(b)(1) of the CAA, Congress noted that the Administrator's determination that the ''nationwide scope or effect'' exception applies would be appropriate for any action that has a scope or effect beyond a single judicial circuit. See H.R. Rep. No. 95–294 at 323, 324, reprinted in 1977 U.S.C.C.A.N. 1402–03.

[115] EPA may take a consolidated, single final action on all of the proposed SIP disapproval actions with respect to obligations under CAA section 110(a)(2)(D)(i)(I) for the 2015 ozone NAAQS. Should EPA take a single final action on all such disapprovals, this action would be nationally applicable, and EPA would also anticipate, in the alternative, making and publishing a finding that such final action is based on a determination of nationwide scope or effect.

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Ozone.

Authority: 42 U.S.C. 7401 *et seq.*

Dated: January 31, 2022.

Debra Shore,

Regional Administrator, Region 5.

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