State of Maine
Clean Air Act Section 176A(a)(2) Petition and Revision to the Maine State Implementation Plan

Date

Executive Summary

The State of Maine is submitting for United States Environmental Protection Agency (EPA) approval this Clean Air Act (CAA) Section 176A(a)(2) Ozone Transport Region Petition and State Implementation Plan Revision. This document presents the technical analysis justifying the removal of certain areas of the State of Maine from the Ozone Transport Region (OTR). Maine has been and continues to be in attainment with ozone National Ambient Air Quality Standards (NAAQS) in those areas petitioned for removal, and emissions from Maine sources have only a negligible impact on the ozone attainment status of any part of the OTR. The granting of this petition will not degrade the air quality in Maine or in any other state, and information presented in this petition justifies the exclusion of a portion of the State of Maine from the OTR.

Nitrogen oxides (NO_x) and volatile organic compounds (VOC) are ozone precursor pollutants which contribute to the formation of ground-level ozone. The Maine Department of Environmental Protection's (Maine DEP, the Department) analysis affirmatively demonstrates that Maine emissions are insignificant contributors to non-attainment of ozone for the 8-hour ozone NAAQS in other states and in those areas of Maine that will remain within the OTR under this proposal; reductions of NO_x or VOC emissions in those areas petitioned for removal from the OTR have little or no impact on the ozone attainment status of those areas. The analyses consist of back trajectories for 2016-2018 ozone exceedance days recorded at monitoring locations in southern New England and in Maine, EPA ozone apportionment modeling results, and emissions inventory data for Maine and the OTR.

Maine is requesting that the State of Maine be removed from the OTR per CAA Section 176A(a)(2), except for the 111 towns and cities comprising the Portland and Midcoast Ozone Maintenance Areas (see Table 1). This action also amends Maine's State Implementation Plan (SIP) to affirm Maine's commitment to implement existing and future reasonably available control technology (RACT) requirements statewide and establishes a requirement to periodically review the impact of emissions from those areas removed from the OTR on the Portland and Midcoast Ozone Maintenance Areas and other jurisdictions within the OTR.

Table 1
Maine Towns and Cities to Remain in the Ozone Transport Region

Androscoggin County (includes only the following town): *Durham*
Cumberland County (includes only the following towns and cities): *Brunswick, Cape Elizabeth, Casco, Cumberland, Falmouth, Freeport, Frye Island, Gorham, Gray, Harpswell, Long Island, New Gloucester, North Yarmouth, Portland, Pownal, Raymond, Scarborough, South Portland, Standish, Westbrook, Windham, and Yarmouth*

Hancock County (includes only the following towns and cities): *Bar Harbor, Blue Hill, Brooklin, Brooksville, Cranberry Isles, Deer Isle, Frenchboro, Gouldsboro, Hancock, Lamoine, Mount Desert, Sedgwick, Sorrento, Southwest Harbor, Stonington, Sullivan, Surry, Swans Island, Tremont, Trenton, and Winter Harbor*
Knox County (includes only the following towns and cities): *Camden, Criehaven, Cushing, Friendship, Isle au Haut, Matinicus Isle, Muscle Ridge Shoals, North Haven, Owls Head, Rockland, Rockport, St. George, South Thomaston, Thomaston, Vinalhaven, and Warren*
Lincoln County (includes only the following towns and cities): *Alna, Boothbay, Boothbay Harbor, Breman, Bristol, Damariscotta, Dresden, Edgecomb, Monhegan, Newcastle, Nobleboro, South Bristol, Southport, Waldoboro, Westport, and Wiscasset*
Sagadahoc County (includes all towns and cities)
Waldo County (includes only the following town): *Islesboro*
York County (includes only the following towns and cities): *Alfred, Arundel, Berwick, Biddeford, Buxton, Dayton, Eliot, Hollis, Kennebunk, Kennebunkport, Kittery, Limington, Lyman, North Berwick, Ogunquit, Old Orchard Beach, Saco, Sanford, South Berwick, Wells, and York*

I. Introduction and Background

The EPA has established National Ambient Air Quality Standards (NAAQS) for several pollutants, including ozone. These standards are the basis for the designation of all geographic areas of the United States as either attainment areas (meeting the standard), or non-attainment areas (exceeding the standard) for each pollutant for which a NAAQS is specified.

Ozone is a pollutant formed by the reaction in the atmosphere of volatile organic compounds ("VOCs") and oxides of nitrogen ("NO_x") in the presence of sunlight. Ozone is highly unstable and has the tendency to react with whatever material it comes in contact, such as lung tissue. Ozone is not directly emitted from most sources. Instead, the control of ozone pollution is best accomplished by controlling emissions of ozone precursor pollutants, thereby reducing ambient concentrations of ozone to attainment levels in non-attainment areas. Once controls take effect and ambient levels of ozone drop and remain consistently at or lower than the standard, the EPA can change the designation of the area to attainment and modify required control strategies accordingly.

Ozone has been the subject of air pollution limitations since the Clean Air Act was first enacted in 1970. Large portions of the country, primarily urban areas, were identified as having unhealthy concentrations of ozone in the air. The problem of ozone attainment proved to be one of the most difficult in the environmental field. By 1990, despite considerable effort and a substantial reduction in VOC emissions, many areas remained in non-attainment for ozone. The most problematic were, and continue to be, the urban eastern states.

Recognizing that air pollutants crossing state boundaries can result in violations of standards in one state due to emissions originating in one or more other states, Congress first addressed the problem of regional ozone non-attainment through the creation of the Ozone Transport Region. Section 184(a) of the Clean Air Act Amendments of 1990 (CAA) established a single transport region comprised of the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, parts of Virginia, and the Consolidated Metropolitan Statistical Area that includes the District of Columbia. The Ozone Transport Region and the Ozone Transport Commission (OTC)[1] were created to develop regional control strategies for emissions of ozone precursor pollutants and thereby address regional ozone transport across state boundaries. Regional control requirements within the OTR are effectively equivalent to those required for designated ozone non-attainment areas, even though portions of the OTC are, in fact, designated ozone attainment areas and neither contribute to nonattainment nor interfere with maintenance of the ozone NAAQS in downwind areas.

In Maine, all areas of the state are effectively treated as "moderate" ozone nonattainment areas and are required to implement the following CAA-mandated controls:

1) Enhanced motor vehicle emissions inspection program in metropolitan statistical areas (or part thereof) with a population of 100,000 or more;

2) Reasonably available control technology with respect to all sources of volatile organic compounds in the State covered by a control techniques guideline;

3) Statewide Stage II vapor recovery control program or comparable measures;

4) Reasonably available control technology for major sources of VOCs and NO_x; and

5) Nonattainment new source review (NSR).[2]

The OTC members have also implemented a wide range of stationary, area, and mobile source controls on emissions of both volatile organic compounds and oxides of nitrogen. Since the OTC has no rulemaking authority, model rules and programs developed through the OTC process must be implemented by the individual states through their own rule adoption processes conforming to their state's requirements.[3]

This proposal is founded on extensive atmospheric, monitoring, and other scientific data that demonstrates Maine emissions from those parts of the state being removed from the OTR do not significantly contribute to nonattainment of the ozone standard in Maine or any other state. When the OTR was first formed, parts of southern Maine were in non-attainment for ozone (northern Maine has always been in attainment of the ozone standard). Since then, as VOC and NO_x emission control measures and strategies have been implemented throughout the country, including more

[1] See CAA Section 176A.

[2] Nonattainment NSR requirements for Maine consist of lowest achievable emission rate (LAER) controls and emission offset requirements at a rate of at least 1.15:1.

[3] For an overview of ozone control programs developed by the OTC and their adoption and implementation by member jurisdictions, see https://otcair.org/document.asp?fview=modelrules

aggressive efforts within the OTR, corresponding ozone levels have decreased, and Maine no longer experiences the high ozone levels of the past.

Monitoring data demonstrates that all areas of the state proposed for removal from the OTR have been in attainment with the ozone NAAQS since 2004, and the entire state has been formally designated in attainment with the ozone NAAQS since 2007. Nevertheless, the entire state remains part of the OTR and is subject to the same air pollution control requirements as areas that continue to experience significant air quality problems such as the New York, New Jersey, and Connecticut nonattainment area. Maine is therefore petitioning the EPA to provide a more appropriate regulatory structure and programmatic flexibility by removing portions of the State from the OTR in accordance with CAA Section 176A(a)(2).

Legal Authority for This Petition and Its Approval

Under CAA Section 176A, the Administrator (of EPA) has the authority to remove any state or part of a state from the Ozone Transport Region when they have reason to believe that the control of emissions from this area will not significantly contribute to the attainment of the ozone standard anywhere within the OTR. CAA Section 176A states (emphasis added):

176A. Interstate transport commissions

(a) Authority to establish interstate transport regions

Whenever, on the Administrator's own motion or by petition from the Governor of any State, the Administrator has reason to believe that the interstate transport of air pollutants from one or more States contributes significantly to a violation of a national ambient air quality standard in one or more other States, the Administrator may establish, by rule, a transport region for such pollutant that includes such States. *The Administrator, on the Administrator's own motion or upon petition from the Governor of any State, or upon the recommendation of a transport commission established under subsection (b) of this Section, may—*

(1) add any State or portion of a State to any region established under this subsection whenever the Administrator has reason to believe that the interstate transport of air pollutants from such State significantly contributes to a violation of the standard in the transport region, or

(2) remove any State or portion of a State from the region whenever the Administrator has reason to believe that the control of emissions in that State or portion of the State pursuant to this Section will not significantly contribute to the attainment of the standard in any area in the region.

The Administrator shall approve or disapprove any such petition or recommendation within 18 months of its receipt. The Administrator shall establish appropriate proceedings for public participation regarding such petitions and motions, including notice and comment.

This petition demonstrates that emissions from those areas of Maine being removed from the OTR will not significantly contribute to non-attainment of the standard in any area of the OTR, including the 111 cities, towns, and coastal islands in Maine's ozone maintenance areas.

Maine's Historical and Current Ozone Attainment Status

Ozone has been a pollutant of concern in Maine for many years. Under the 1990 Clean Air Act Amendments, nine Maine counties were designated as nonattainment of the 1-hour ozone NAAQS (0.12 parts per million (ppm)). Designated as "moderate nonattainment" were York, Cumberland, and Sagadahoc Counties (Planning Area 1); Androscoggin and Kennebec Counties (Planning Area 2); and Knox and Lincoln Counties (Planning Area 3); while Waldo and Hancock Counties (Planning Area 4) were designated as "marginal" nonattainment for ozone (see Figure 1).

After an extensive scientific review, EPA concluded that the 1-hour ozone standard did not provide sufficient health protection against extended periods of moderately elevated ozone, and on July 16, 1997, EPA issued updated final air quality standards for ozone. The 1997 8-hour ozone NAAQS (set at a level of 0.08 ppm) was based on an 8-hour average of ozone concentrations and more directly related to ozone concentrations associated with health effects.

Maine had two nonattainment areas under the 1997 ozone standard. The Portland Ozone Nonattainment Area consisted of 56 cities and towns in York, Cumberland, and Sagadahoc Counties along with the town of Durham in Androscoggin County and was designated as "marginal" nonattainment for the 1997 8-hour ozone standard (see Figure 2). The Midcoast Ozone Nonattainment Area consisted of 55 coastal towns and islands in Hancock, Knox, Lincoln, and Waldo counties and was designated as a "Basic/General" nonattainment area for the 8-hour ozone standard.

Based on 2003-2005 monitoring data, these areas were meeting the 1997 ozone NAAQS, and in 2006, the Department submitted a request to redesignate both areas to attainment and 10-year maintenance plans pursuant to Section 175A of the CAA demonstrating that the areas will maintain compliance with the NAAQS for at least the next 10 years after EPA approval of the redesignation requests. The Department's redesignation requests were approved on December 11, 2006.[4]

In 2008, the national standard was again lowered to an 8-hour average of 75 parts per billion (ppb), and Maine was designated in attainment of this standard. In 2015, the standard was further lowered to an 8-hour average of 70 ppb, and again the state was designated in attainment for this standard. The following maps illustrate the progress made in lowering ozone levels in Maine (see Figure 3).[5]

[4] 71 FR 71489

[5] For an overview of Maine's ozone monitoring network, see Appendix A.

Figure 1: Maine's 1990 1-Hour Ozone Designations: Nonattainment & Maintenance Areas

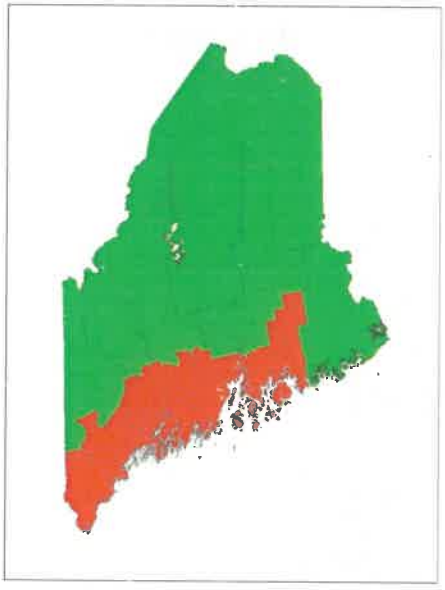


Figure 2: Maine's 1997 8-Hour Ozone Nonattainment Areas

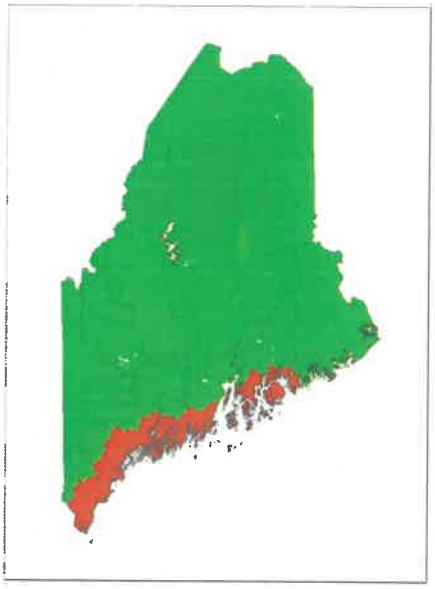
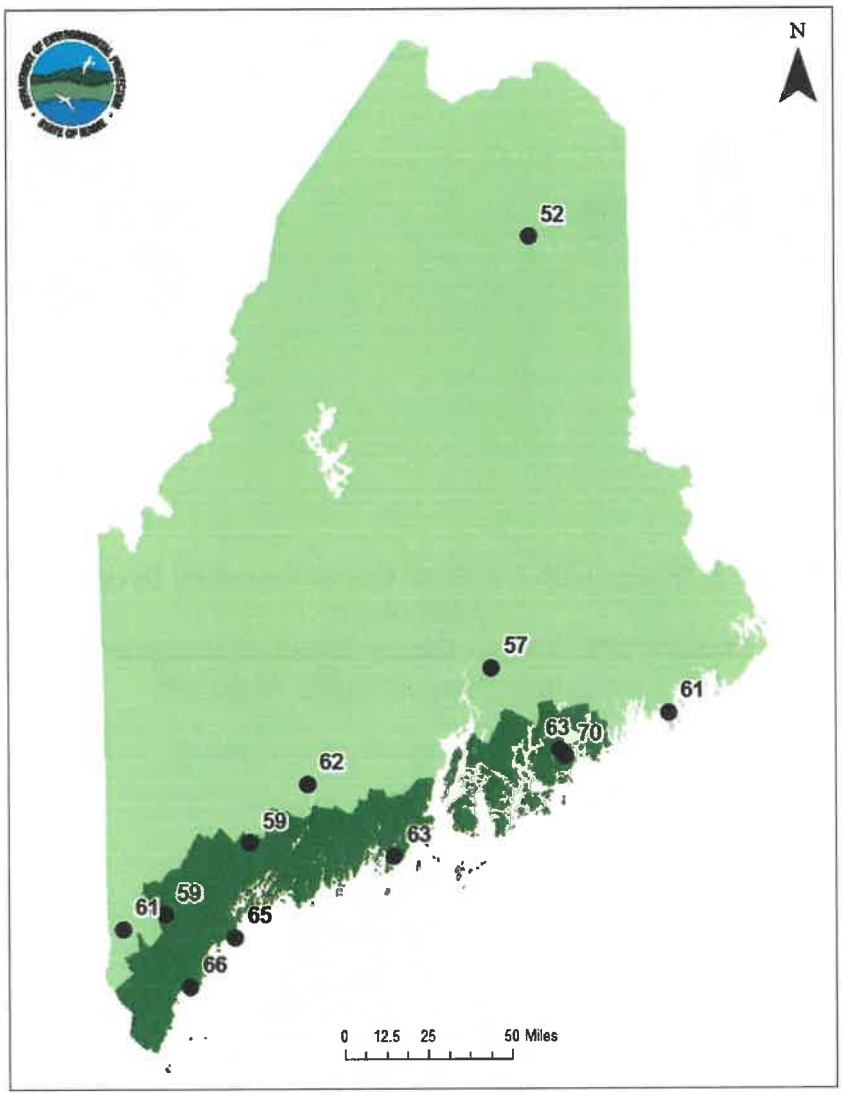


Figure 3: Maine's 2008 8-Hour Ozone Standard Designation: Attainment
Maine's 2015 8-Hour Ozone Standard Designation: Attainment/Unclassifiable Statewide

Figure 4 illustrates currently monitored ozone levels at monitoring sites throughout the State of Maine.[6] The areas proposed for removal from the OTR all have monitored ozone levels below 63 ppb, significantly below the 2015 ozone NAAQS of 70 ppb.[7]

Figure 4: Maine's Monitored Ozone 2016-2018 Design Values (based on data from 2016, 2017, and 2018)



[6] See Appendix B for a historical overview of Maine's ozone air quality status.

[7] Ozone air quality monitors within the State of Maine also confirm the presence and significance of transported ozone and its precursors. The ozone monitoring network in Maine extends along the coast from the photochemical assessment monitoring station (PAMS) located in Kittery, Maine (operated by the State of New Hampshire Department of Environmental Services) to as far as Acadia National Park. Maximum ozone concentrations along the Maine coast almost always follow a sequential pattern, with the most southerly sites monitoring daily ozone maximums in the mid to late afternoon and downwind sites experiencing maximum readings later in the day and into the evening hours.

Ozone Control Requirements in Maine

Due to its inclusion in the OTR, Maine has been required to implement the OTR regional requirements on a range of VOC and NO_x emission sources, including:

- Reasonably Available Control Technology (RACT) requirements for existing sources of VOC and NO_x emissions. (See Section 184(b)(1)(B) plan provisions for states in the OTR and Section 182(b)(C), VOC RACT).

- Reasonably available control technology with respect to all sources of volatile organic compounds in the state covered by a control techniques guideline issued before or after the date of enactment of the Clean Air Act Amendments of 1990 (See CAA Section 184 (b) (B)).

- Implementation of an enhanced motor vehicle emission inspection program in metropolitan statistical areas (or part thereof) with a population of 100,000 or more (See CAA Section 184 (b) (A)).

- Stage II vapor recovery program or equivalent. The CAA directs state or local air pollution control agencies with "moderate" or worse nonattainment areas for the ozone NAAQS to require Stage II vapor recovery systems at gasoline dispensing facilities as a control measure for VOC emissions.[8] (See CAA Section 182(b)).

- Nonattainment NSR requirements for new major stationary sources and major modifications for NO_x or VOC at existing sources, consisting of Lowest Achievable Emission Rate (LAER) control requirements and emission offset requirements. Specific control requirements are dependent upon the area's nonattainment designation. (See CAA Section 182(b)(5), Section 184(b)(2), Section 182(f)).

These and other regulatory requirements are codified in the Department's 06-096 C.M.R. Chapters 100 through 166 which include several rules addressing the control of ozone precursors (See Appendix C).

OTR Nonattainment New Source Review Requirements and Impacts in Maine

Maine's inclusion in the OTR establishes a statewide requirement for nonattainment NSR pursuant to Section 184(b)(2) of the CAA. All areas of the state are treated as moderate nonattainment for ozone, and new major sources and major modifications of existing sources are subject to LAER control requirements and to offset their emissions at a 1.15:1 NSR offset ratio (i.e., new major

[8] Section 202(a)(6) of the CAA, 42 U.S.C. 7521(a)(6), provides the Environmental Protection Agency (EPA) with authority to waive the Stage II requirements of Section 182(b)(3) when on-board refueling vapor recovery (ORVR) systems are determined to be in widespread use throughout the motor vehicle fleet. EPA waived the Stage II requirements in Maine on August 14, 2017 (82 FR 32480).

sources and major modifications of existing sources must offset every ton of VOC and/or NO_x emissions by 1.15 tons of reductions).[9]

These statewide nonattainment NSR requirements have had an insignificant impact on ozone levels. Because of atmospheric transport patterns, Maine is overwhelmingly impacted by emissions of ozone and ozone precursors from upwind states.[10] While Maine DEP is supportive of regional approaches to controlling ozone and its precursor emissions, particularly the regional control of NO_x in those states and regions that have been shown to contribute significantly to downwind non-attainment and/or interfere with maintenance of the ozone standard, there is little or no technical justification for the application of these requirements throughout the entire State of Maine.

The statewide nonattainment NSR requirements in Maine have imposed additional regulatory hurdles for those wanting to invest in new and upgraded facilities and have failed to provide the intended environmental benefits. The cost of emission offsets, in conjunction with the requirement for the application of the most stringent emissions controls regardless of cost or disbenefits[11] is unwarranted for those areas of Maine that do not significantly impact any non-attainment areas.

The CAA provides tools to at least partially address this situation. Congress, in establishing the Section 182(f) NO_x waiver provisions of the CAA, recognized that additional NO_x emission reductions are not appropriate in certain cases, and that NO_x requirements shall not apply if the Administrator determines that any one of the following tests is met:

- In any area, the net air quality benefits are greater in the absence of NO_x reductions from the sources concerned;
- In nonattainment areas not within an ozone transport region, additional NO_x reductions would not contribute to ozone attainment in the area; or
- In nonattainment areas within an ozone transport region, additional NO_x reductions would not produce net ozone air quality benefits in the transport region.

Maine has applied for and received a Section 182(f) NO_x waiver on several previous occasions. On December 26, 1995,[12] EPA approved the State of Maine's Section 182(f) NO_x waiver request for counties in northern and eastern Maine that were attaining the 1-hour ozone NAAQS applicable at that time (specifically, Aroostook, Franklin, Oxford, Penobscot, Piscataquis, Somerset, Washington, Hancock, and Waldo Counties). On February 3, 2006,[13] EPA approved a Section 182(f) NO_x waiver request for a similar area in Maine (specifically, Aroostook, Franklin, Oxford, Penobscot, Piscataquis, Somerset, Washington, and portions of Hancock and Waldo Counties) in relation to the 1997 8-hour ozone NAAQS. Finally, on July 29, 2014, EPA approved

[9] Emission offsets are emission reductions generally obtained from existing sources located in the vicinity of a proposed source which must (1) offset the emissions increase from the new major source or major modification; and (2) provide a net air quality benefit. EPA's initial emission offset policy (41 FR 55524, December 21, 1976) was developed to provide for industrial growth in areas not attaining the national ambient air quality standards.

[10] See Appendix D for a discussion of ozone transport to sites in Maine.

[11] Some VOC control options (e.g., thermal incineration) actually result in increased NO_x emissions.

[12] U.S. EPA, 1995a

[13] U.S. EPA, 2006a

a statewide Section 182(f) NO_x waiver for 2008 8-hour ozone NAAQS.[14] Thus, since December 1995, major stationary sources of NO_x in all or part of Maine have not been subject to the nonattainment NSR permitting requirements that are applicable throughout the OTR.[15]

Unfortunately, the CAA does not provide a similar VOC waiver process, and major stationary sources of VOC remain subject to nonattainment NSR requirements throughout the entire State of Maine, thereby providing the impetus for this petition.

II. Statement of Petition

Maine's Section 176(a)(2) Petition is based on a demonstration that NO_x and VOC emissions from those parts of Maine proposed for removal from the OTR are insignificant contributors to ozone nonattainment in other states. Maine DEP has also demonstrated that emissions from these areas are not significant contributors to nonattainment nor do they interfere with maintenance of the ozone NAAQS in those Maine municipalities that will remain in the OTR.

Maine DEP and EPA trajectory analyses demonstrate that Maine emissions were not transported toward the OTR on days when ozone exceedances were recorded. EPA's apportionment modeling for the 2008 and 2015 ozone NAAQS further demonstrates that Maine's contribution to every monitoring site in other states within the OTR is less than one percent of both the 2008 and the 2015 8-hour ozone NAAQS.

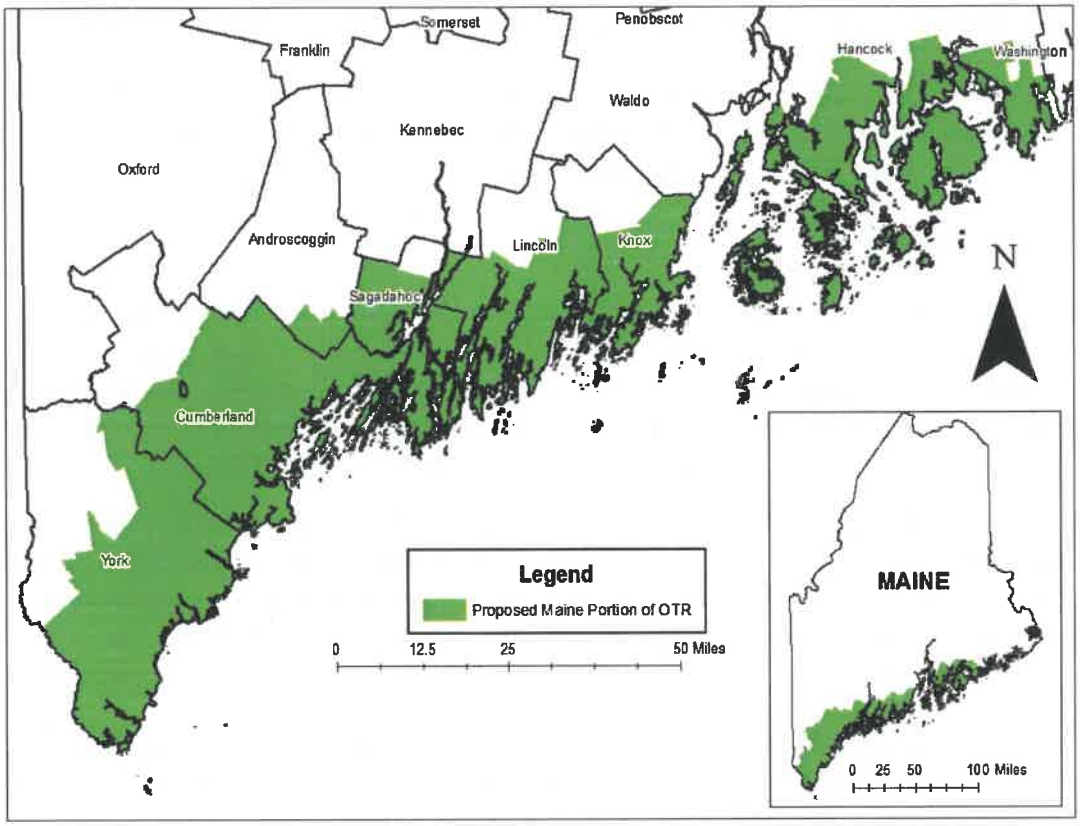
Maine hereby requests that the State of Maine be removed from the OTR per the CAA Section 176A(a)(2), except for Portland and Midcoast 8-hour Ozone Maintenance Areas as listed in Table 1 (above) and displayed in Figure 5, below.

Upon EPA's approval of this petition, nonattainment NSR will no longer be applicable except within the Portland and Midcoast Ozone Maintenance Areas. New major sources and major modifications of existing sources in those areas removed from the OTR will instead be subject to best available control technology (BACT) requirements that will allow the Department to fully consider both the environmental and economic impacts of specific emission control requirements. In addition, Maine is committing to the continued implementation of all other OTR requirements, including RACT for all sources of VOCs in the state covered by a control techniques guideline along with RACT for major sources of VOCs and NO_x and will periodically review the impact of emissions from those areas removed from the OTR on both other states and the Maine towns and cities remaining in the OTR.

[14] U.S. EPA, 2014

[15] Maine has not applied for Section 182(f) NO_x waiver under the 2015 8-hour ozone NAAQS.

Figure 5: Maine Municipalities to Remain in the OTR



III. Technical Analysis

Technical analyses included in this petition include 2016-2018 analyses of ozone exceedance day back trajectories, ozone apportionment modeling, and emissions data and an analysis of mobile source impacts. These analyses support the conclusion that NO_x and VOC emissions from that portion of Maine being removed from the OTR are insignificant contributors to ozone non-attainment in any other state and will not significantly impact ozone air quality within the 111 towns and cities of Maine remaining in the OTR.

A. Ozone Back Trajectory Analyses

A trajectory is a three-dimensional representation of the path an air parcel follows based on meteorological data. Forward trajectories are helpful for ascertaining if pollution was being transported from a single source to an area of interest, and back trajectories are helpful for ascertaining where transported pollution was being transported from multiple sources to a site of interest. The EPA's *Technical Guidance for Removing Areas from the Northeast Ozone Transport Region (OTR)* (U.S. EPA, 1995b) encourages the use of forward trajectories starting prior to an exceedance from the center of the area under consideration for removal from the OTR. Maine DEP, under EPA's guidance, used two-day back trajectories to exceedance monitor locations in the OTR. The primary reasons are to investigate whether or not Maine's emissions contribute to

ozone levels at exceedance monitor locations in the OTR during exceedance days and to show the primary transport routes to those locations. Historically, EPA has accepted back trajectory analyses for the Maine NO_x Waiver requests, and EPA used back trajectories instead of forward trajectories for their modeling apportionment and 2015 ozone NAAQS proposed non-attainment area analyses. Science continues to support the use of back trajectory analyses for this petition. The two-day (48-hour) back trajectories for monitoring sites on exceedance days as included in this petition show conclusively that Maine's emissions do not significantly contribute to those monitored exceedances.

The National Oceanic and Atmospheric Administration (NOAA) Air Resources Laboratory's Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT) Model (Draxler, 1997) is a computer model used to create and map trajectories. The model uses gridded meteorological data, which is selected with the online model's graphical user interface. For this analysis, the 'NAM 12km pressure' meteorological files were used, except for August 27, 2016, when no meteorological data was available so the 'NAM 12km hybrid' meteorological data was used for that day. To ensure the hour of ozone matches with the correct hour of meteorology, the time of the ozone value was converted from Eastern Standard Time to Universal Time Code by adding 5 hours. The model was set to include vertical velocity. Using the HYSPLIT online version, Maine DEP staff meteorologists created the trajectories included in this analysis.

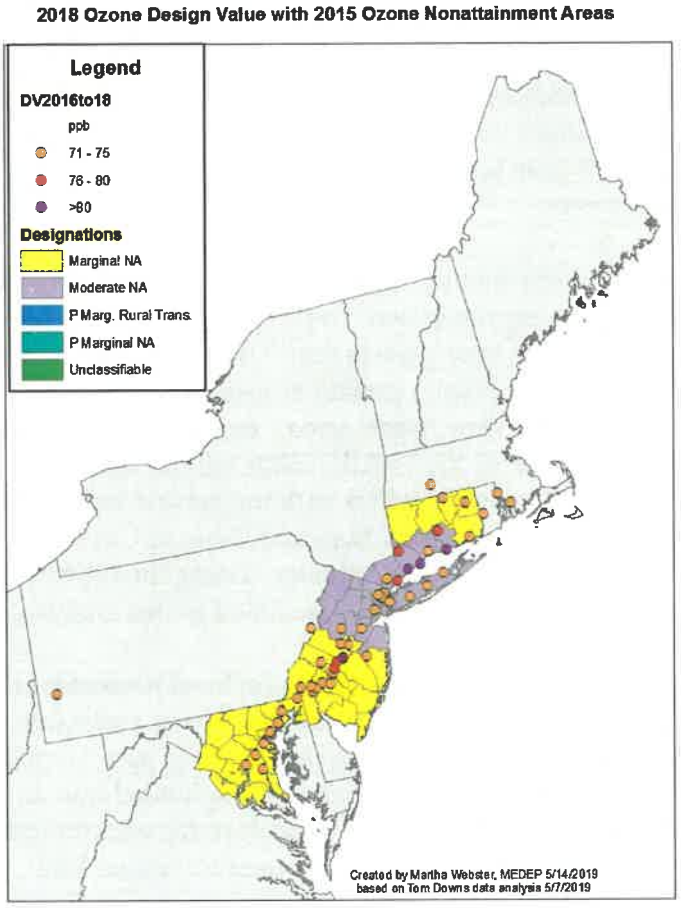
For each run, the HYSPLIT model generated both a graphical presentation of the trajectory, which was viewed as a quality check, and a text file of the hourly endpoints. The text file contains information about the hourly endpoints along each trajectory path including location in time and space. A total of 989 endpoint files were subsequently uploaded into an Access database for the analysis, resulting in 48,461 individual hourly endpoints for each height level, which was then mapped in ARCMAP, a geographical mapping tool used by Maine DEP.

(1) 2016-2018 Back Trajectory Analyses for OTR Sites Monitoring Ozone Exceedances

Maine DEP conducted back trajectory analyses for a total of 989 ozone exceedance days from the 2016 through 2018 ozone seasons at monitoring locations in the OTR with current Design Values exceeding the 2015 ozone NAAQS. These 48-hour back trajectories, using ending heights of 10 and 500 meters above ground level at a monitoring location, were created for the hour of maximum ozone for every day that an 8-hour ozone exceedance was recorded at the monitoring sites.

As shown by Figure 6, below, monitors that had 2016-2018 Design Values which exceeded the 2015 Ozone NAAQS in the OTR were the sites selected for the back trajectory analysis. (See Figures B-1 to B-3 in Appendix B for maps of design values for all monitoring sites within the northeast U.S. for each of the past three design value periods. The design value for a monitoring location is the average of each year's 4th highest daily 8-hour maximum monitored concentration.)

Figure 6: Certain Ozone Monitors Recording Exceedances in the OTR



Figures 7 and 8 display the count per 25-mile square grid cell of hourly endpoints from all modeled back trajectories calculated for all days during the 2016-2018 ozone seasons when certain monitors in OTR exceeded the 2015 ozone NAAQS ending at 10 and 500 meters, respectively. This method demonstrates that Maine emissions are clearly insignificant contributors to ozone exceedances at OTR monitors outside the State of Maine. In addition, these maps highlight common transport paths from the southwest and the west, as illustrated by the darker colors. The area containing the greatest number of hours of atmospheric transport leading to ozone exceedances at those certain monitors is concentrated to the southwest, with almost no trajectory paths from Maine. Those that do originate over Maine are not near the surface but aloft and subsequently continue on over higher emission source areas before reaching the monitor site as presented in Figure 9.

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October 25, 2019

Figures 7 & 8: HYSPLIT 2016-2018 48-hr Back Trajectory Frequencies for 10m and 500m ending heights for Monitors with DV Exceedances in the OTR

(a) **(b)**

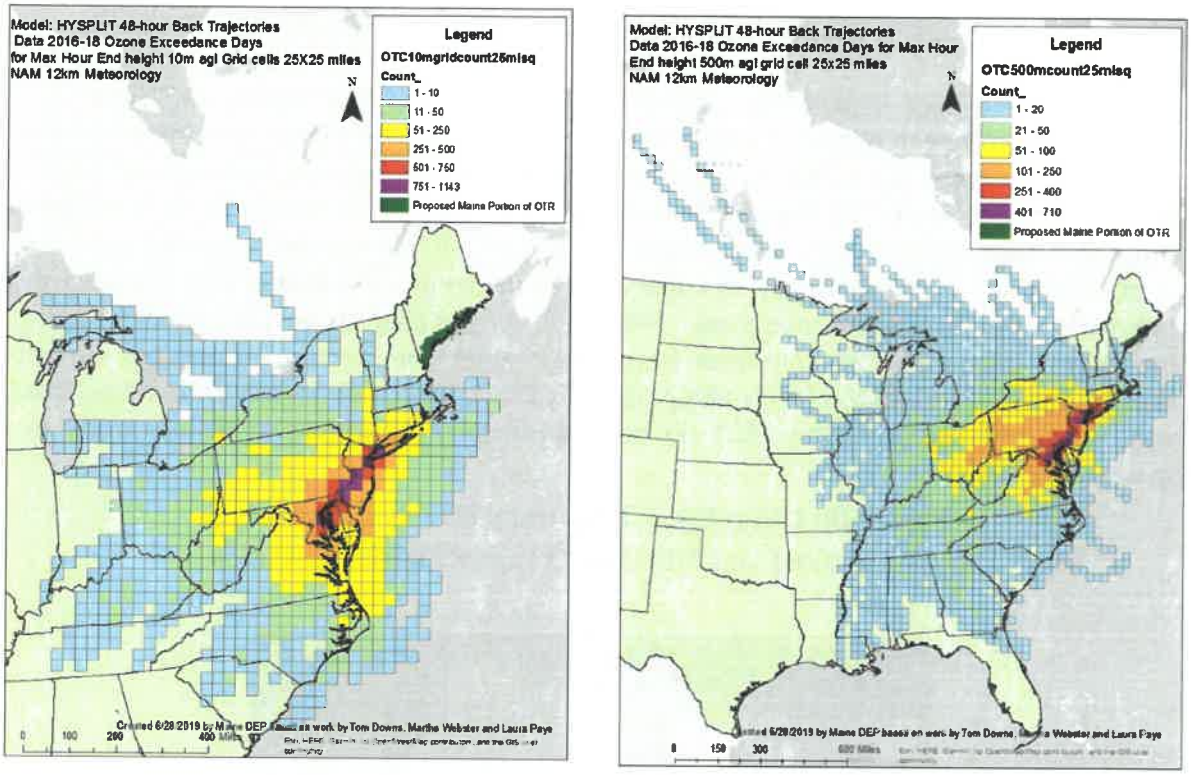
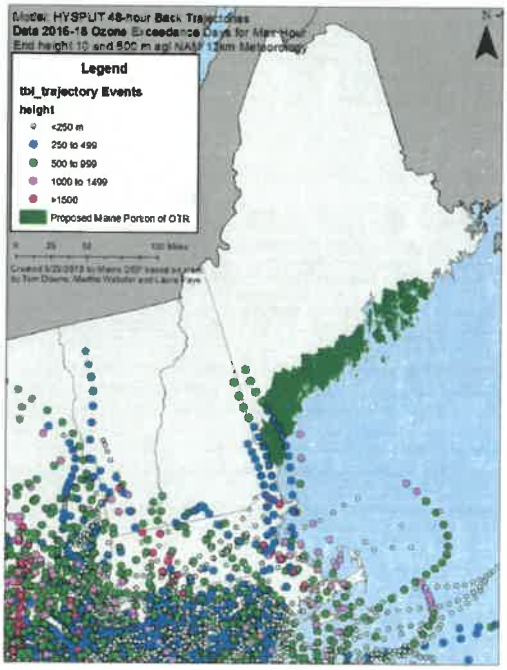


Figure 9: Close-Up of Trajectory Hourly Endpoints In or Near Maine

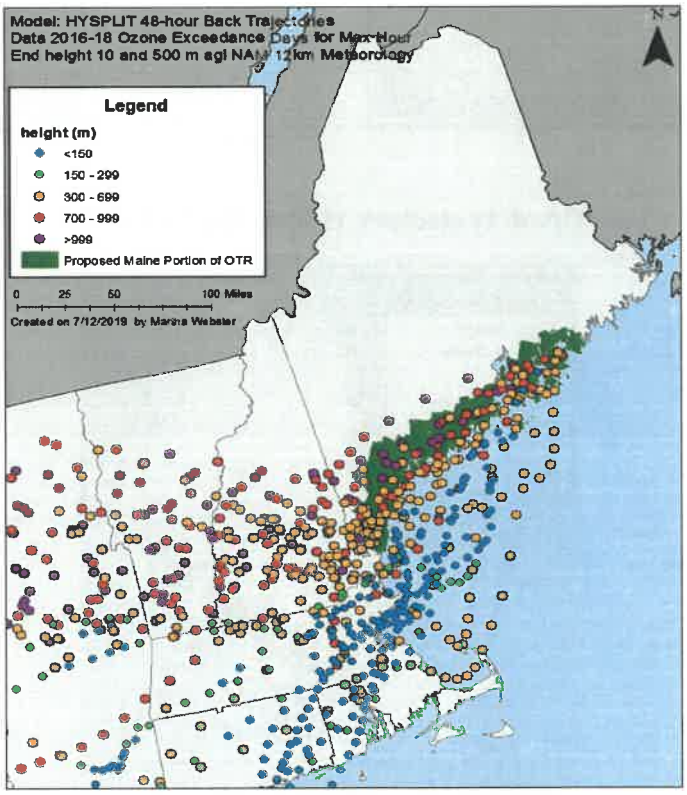


The trajectory analyses for monitors recording exceedances in the OTR demonstrate that emissions from Maine sources do not significantly contribute to ozone exceedances in the OTR outside of Maine.[16]

(2) 2016-2018 Back Trajectory Analyses for Maine Sites Monitoring Ozone Exceedances

Although 48-hour back trajectories conclusively demonstrate that Maine emissions do not significantly contribute to ozone exceedances in the OTR outside of Maine, an additional analysis is necessary to identify the source of transported emissions affecting the Portland and MidCoast Ozone Maintenance Areas. To that end, Maine DEP again utilized the HYSPLIT model to develop 48-hour back trajectories using ending heights of 10 and 500 meters above ground level for the hour of maximum ozone for every day that an 8-hour ozone exceedance was recorded at the monitoring sites in the maintenance areas. The results of this analysis are illustrated in Figure 10, which shows: 1) transported emissions from areas south and west of Maine are significant contributors to elevated ozone levels along Maine's coast; and 2) emissions from those areas of Maine being removed from the OTR do not significantly contribute to ozone levels in the maintenance areas.[17]

Figure 10: Close-Up of Trajectory Hourly Endpoints in the Portland and Midcoast Ozone Maintenance Areas



[16] See Appendix E for additional detailed New England 2013-2017 ozone back trajectory information.

(3) Back Trajectory Analyses Synthesis

Back trajectories utilizing the HYSPLIT model demonstrate that NO_x and VOC emissions from Maine sources are insignificant contributors to ozone NAAQS exceedances at OTR monitoring locations both outside and within Maine.

B. EPA Ozone Apportionment Modeling Results

EPA ozone apportionment modeling (U.S. EPA, 2018) can be used to help states determine ozone transport contributions from their state to other state's non-attainment and maintenance areas. Results from the Cross-State Air Pollution Rule (CSAPR) Update modeling for the 2008 ozone NAAQS and results from the recently released interstate transport modeling for the 2015 ozone NAAQS were evaluated in this document to determine Maine's contributions to non-attainment and maintenance monitors in the OTR. These results are useful to illustrate that emissions from Maine are insignificant contributors to ozone formation at certain monitors recording ozone exceedances in the OTR outside of Maine.

On September 7, 2016, EPA released results of ozone apportionment modeling and supporting documentation for the 2008 75 ppb 8-hour ozone NAAQS as part of the Cross-State Air Pollution Rule (CSAPR) Update (U.S. EPA, 2016a). The CSAPR Update modeling estimated 2017 emissions by growing out the 2011 base year emissions using 'on-the-books' regulations. The 2017 modeling case used the 'ek' version of the emission inventory. On March 27, 2018, EPA released a memo and supplemental information regarding Interstate Transport SIPs for the 2015 70 ppb 8-hour ozone NAAQS. In May 2018, EPA revised the contribution metric spreadsheet to include the most recent design values and information regarding state contributions.[18] The 2015 interstate transport modeling estimated 2023 emissions by growing out revised 2011 base year emissions using additional federal rules. The 2023 modeling case used the 'en' version of the emission inventory.[19] . Among the key differences between 2011 emissions data used in CSAPR Update modeling and 2015 ozone NAAQS transport contribution modeling are updates to mobile source emissions, updated electric generating units (EGU) emissions, inclusion of forest fire emissions from border countries (Canada and Mexico), and additional federal rules.

Table 2 displays modeling results from both models. EPA's CSAPR Update modeling determined ozone design values in 2017 and each state's contribution to that value for the 2008 8-hr ozone NAAQS of 75 ppb. The same was done in the 2015 ozone NAAQS of 70 ppb interstate transport assessment for the year 2023. Information in Table 2 is the maximum contribution from Maine to any site in each OTR state that was included in either modeling, listed in descending order of Maine's ozone contribution based on CSAPR Update modeling data.

[18] https://www.epa.gov/airmarkets/memo-and-supplemental-information-regarding-interstate-transport-sips-2015-ozone-naaqs

[19] Details of the 2011 Version 6.3 Platform 2011, 2017, and 2023 emission inventories used in the modeling analyses are located on the following EPA website: https://www.epa.gov/air-emissions-modeling/2011-version-63-platform

Table 2: Maine's Maximum Modeled Ozone Contribution

OTR State	2008 Ozone NAAQS CSAPR Update for 2017 (ppb)	2015 Ozone NAAQS Transport Assessment for 2023 'en' (ppb)
New Hampshire	0.47	n/a
Massachusetts	0.18	0.13
New Jersey	0.11	0.06
Connecticut	0.03	0.02
Pennsylvania	0.02	0.03
Rhode Island	0.02	0.02
New York	0.01	0.09
Virginia	0.01	0.00
Maryland	0.00	0.01
Delaware	0.00	0.00
District of Columbia	0.00	0.00

EPA uses a one percent threshold to identify a state as a significant contributor to ozone levels in another area. For the 2008 ozone NAAQS and 2015 ozone NAAQS, one percent equals 0.75 ppb and 0.70 ppb, respectively. In the CSAPR Update modeling, Maine's largest contribution to any other state is to New Hampshire (which is in attainment) at 0.47 ppb, which is less than one percent of the 2008 ozone NAAQS. In the 2015 Ozone Transport Assessment modeling, Maine's largest contribution to any other state is to Massachusetts at 0.13 ppb, which is less than one percent of the 2015 ozone NAAQS. Maine concludes that both modeling results for the 2008 8-hour ozone NAAQS and modeling results for the 2015 8-hour ozone NAAQS demonstrate that Maine emissions are insignificant contributors to ozone non-attainment in other states.

EPA's CSAPR Update modeling also determined 'non-attainment' and 'maintenance' monitor designations. In Table 3, sites determined to be either non-attainment or maintenance monitors within the OTR are listed in descending order of Maine's contribution. Modeling results in this table show Maine's highest contribution at these sites is 0.01 ppb, with all other sites displaying a zero contribution from Maine.

Table 3: CSAPR Update Model Determined Non-attainment and Maintenance Sites in the OTR

Monitor ID	State	County	2009-2013 Base Period Average Design Value (ppb)	2009-2013 Base Period Maximum Design Value (ppb)	2017 Modeled Average Design Value (ppb)	2017 Modeled Maximum Design Value (ppb)	Maine's Contri-bution (ppb)
90010017	Connecticut	Fairfield	80.3	83	74.1	76.6	0.01
90013007	Connecticut	Fairfield	84.3	89	75.5	79.7	0.00
90019003	Connecticut	Fairfield	83.7	87	76.5	79.5	0.00
90099002	Connecticut	New Haven	85.7	89	76.2	79.2	0.00
240251001	Maryland	Harford	90.0	93	78.8	81.4	0.00
360850067	New York	Richmond	81.3	83	75.8	77.4	0.00
361030002	New York	Suffolk	83.3	85	76.8	78.4	0.00
421010024	Pennsylvania	Philadelphia	83.3	87	73.6	76.9	0.00

EPA's 2015 Ozone NAAQS Interstate Ozone Transport Modeling also determined 'non-attainment' and 'maintenance' monitors, none of which are located within the State of Maine. In Table 4, the sites determined to be either non-attainment or maintenance monitors within the OTR are listed in descending order of Maine's contribution. The modeling results in this table show Maine's highest contribution at these sites is 0.01 ppb, with all other sites displaying a zero contribution from Maine. Although no sites in Maine were determined to be non-attainment or maintenance sites, modeling results are available for the Kennebunkport monitoring site on the coast in York County. The maximum modeled 2023 design value for the Kennebunkport site is 60.7 ppb, Maine's contribution to which was modeled to be 1.08 ppb. The total anthropogenic ozone contribution from upwind states was 96.9%. For both ozone standards, Maine emissions are insignificant contributors to non-attainment and maintenance within the OTR outside the State of Maine. Maine sources in southern and coastal Maine are a small but not insignificant contributor to ozone concentrations in the Portland and Midcoast Ozone Maintenance Areas that will remain in the OTR.

Table 4: Interstate Ozone Transport Model Determined Non-Attainment and Maintenance Sites in the OTR

Monitor ID	State	County	2009-2013 Base Period Maximum Design Value (ppb)	2023 Modeled Average Design Value (ppb)	2023 Modeled Maximum Design Value (ppb)	2014-2016 Design Value (ppb)	Maine's Contri-bution (ppb)
09-001-0017	Connecticut	Fairfield	83	68.9	71.2	80	0.01
09-001-3007	Connecticut	Fairfield	89	71.0	75.0	81	0.01
09-001-9003	Connecticut	Fairfield	87	73.0	75.9	85	0.00
09-009-9002	Connecticut	New Haven	89	69.9	72.6	76	0.01
24-025-1001	Maryland	Harford	93	70.9	73.3	73	0.00
36-081-0124	New York	Queens	80	70.2	72.0	69	0.00
36-103-0002	New York	Suffolk	85	74.0	75.5	72	0.01

Based on a combination of geography, ozone-event meteorology, and EPA modeling results, Maine DEP concludes that Maine's emissions are insignificant contributors to non-attainment areas in any other state.[20]

[20] To further solidify this conclusion, the Department has included trajectory analyses as found in EPA's Air Quality Modeling Technical Support Document (U.S. EPA, 2016b) for the CSAPR Update and EPA's 2017 Responses to States' Ozone NAAQS Designation Recommendations (EPA 2017) in Appendix F and G, respectively. EPA's own trajectory analyses further demonstrate that Maine does not significantly contribute to non-attainment within any other state. Trajectory analyses in the 2015 modeling technical support documents, Maine DEP's trajectory analyses, and EPA 2015 ozone designation trajectory analyses show no major transport pattern changes since 2012, the last year used in the CSAPR Update trajectory analysis.

C. Emissions Data Analysis

Using 2014 Version 2 National Emissions Inventory (NEI) emissions data (U.S. EPA, 2014b), NO_x and VOC emissions data for all states in the OTR were tallied by state into anthropogenic and biogenic source categories. Total annual anthropogenic NO_x emissions for the entire State of Maine are less than 3% of the OTR total, as displayed in Table 5. Total annual anthropogenic VOC emissions for the entire State of Maine are about 3% of the OTR total, as displayed in Table 5.[21]

Table 5: OTR 2014 NEI NO_x and VOC Emissions Inventory by State

OTR State	Annual NO_x Emissions (TPY)		Annual VOC Emissions (TPY)	
	Anthropogenic	Biogenic	Anthropogenic	Biogenic
Connecticut	63,019.90	576.08	82,522.18	60,645.85
Delaware	27,721.35	719.97	20,565.97	21,962.85
District of Columbia	8,566.19	12.26	8,938.94	1,350.28
Maine	52,408.39	2,413.13	58,856.94	436,878.38
Maryland	138,794.29	2,992.36	124,580.94	142,009.23
Massachusetts	127,360.88	868.61	85,986.39	97,680.93
New Hampshire	38,104.78	657.61	40,914.50	104,256.71
New Jersey	156,590.33	1,255.00	175,443.25	102,877.18
New York	330,989.12	8,620.89	413,841.85	381,551.21
Pennsylvania	493,292.79	9,343.22	486,451.82	439,423.86
Rhode Island	24,719.70	159.57	23,540.81	16,899.26
Vermont	15,717.13	1,205.02	27,669.60	79,524.71
Virginia	276,721.13	8,806.88	279,167.81	801,123.60
OTR Total	1,754,005.97	37,630.61	1,828,480.99	2,686,184.05
Maine's Portion	2.99%	6.41%	3.22%	16.26%

In addition to NEI total emissions data presented in Table 5, it is appropriate to consider emissions from within Maine that would be targeted for further reductions if all of Maine was to remain in the OTR. To provide perspective to Maine's emissions, Maine's point source emissions from the Maine Air Emissions Inventory Reporting system (MAIRIS) for NO_x and VOC have been trending downward over the last 25 years, as presented in Table 6 and Figure 11.

Table 6: Maine Point Source MAIRIS Emissions

Year	Annual VOC Emissions (Tons)	Annual NO_x Emissions (Tons)	Year	Annual VOC Emissions (Tons)	Annual NO_x Emissions (Tons)
1990	9,183	30,712	2007	5,022	17,743
1995	5,857	24,273	2008	4,253	16,557
2000	6,540	23,523	2009	3,267	13,359
2001	5,969	21,622	2010	3,767	13,814
2002	5,232	20,232	2011	3,429	13,101
2003	4,937	19,414	2012	3,397	13,469
2004	5,045	17,918	2013	3,629	12,569
2005	4,789	19,980	2014	3,042	11,962
2006	4,783	18,020	2015	2,839	10,850
			2016	2,623	9,829

[21] While other states in the OTR also have low emissions, Maine's emissions occur over a relatively large geographical area, and not only are emission levels from Maine sources comparatively small, but these emissions are not transported toward areas in the OTR when and where ozone exceedances are occurring.

Figure 11: Maine Point Source Emissions Trends

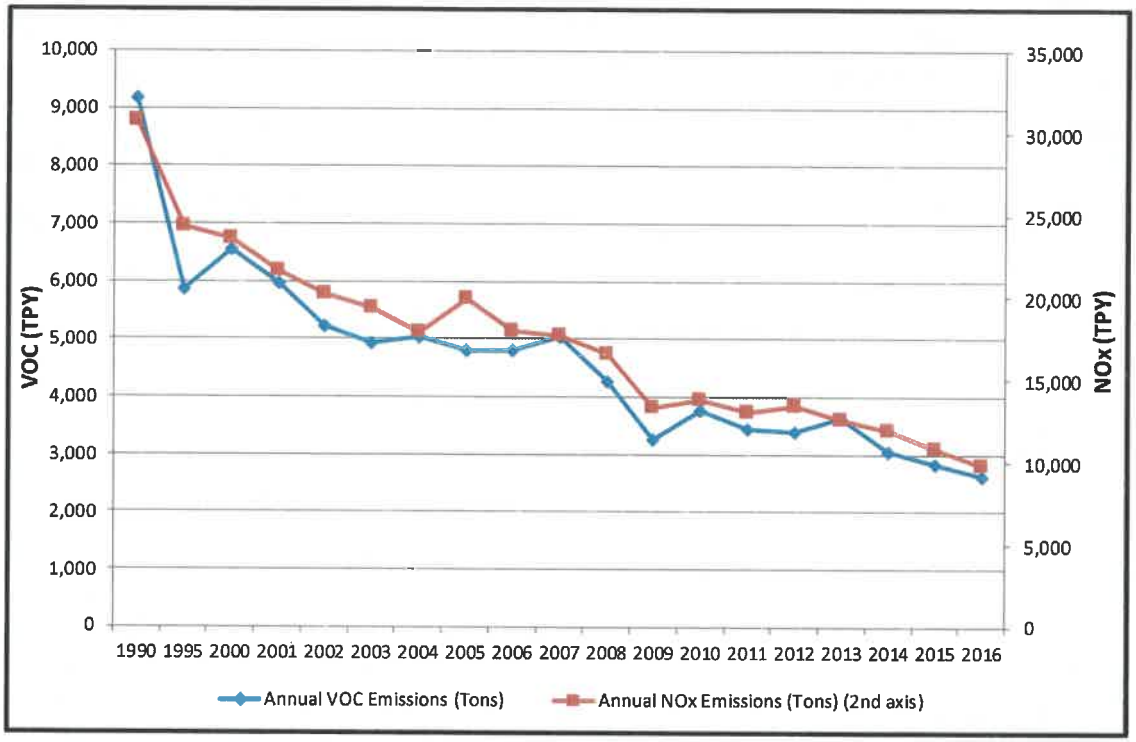


Table 7 along with Figures 12 and 13 show the latest 2011 and 2023 modeling emission inventories[22] for Maine's anthropogenic emissions using data for the sectors and from sources as identified in the table. Results show that emissions will remain significantly below 2011 levels in 2023, especially in the mobile source category that currently is the highest contributor.

Table 7: OTC 2011 Base Year Emissions / 2023 Gamma Emissions (tons per year)

Type	Anthropogenic Emissions Sector	2023 Gamma Inventory	2011 NO_x	2011 VOC	2023 NO_x	2023 VOC
Point	ERTAC Electric Generating Units (EGU)	ERTAC v2.7	575	44	240	19
Point	Non-EGU	MARAMA Gamma	12,942	3,458	11,766	3,280
Point	Oil & Gas	EPA v6.3 en	64	51	56	51
Subtotal			**13,581**	**3,552**	**12,062**	**3,351**
Mobile	Locomotive Marine (C1C2)	EPA v6.3 en	5,210	140	2,328	60
Mobile	Locomotive Rail	EPA v6.3 el			1,365	53
Mobile	Commercial Marine Vessels (C3)	EPA v6.3 en	1,215	41	1.079	71
Mobile	Non-road	EPA v6.3 en	6,734	26,464	4,552	15,427
Mobile	On-road	EPA v6.3 el	27,770	13,503	7,687	4,523
Subtotal			**40,928**	**40,148**	**17,011**	**20,134**
Area	Agricultural Burning (Agfire)	EPA v6.3 ek	1	2	1	1

[22] https://otcair.org/upload/Documents/Reports/OTC%20MANE-VU%202011%20Based%20Modeling%20Platform%20Support%20Document%20October%202018%20-%20Final.pdf

Type	Anthropogenic Emissions Sector	2023 Gamma Inventory	2011 NO_x	2011 VOC	2023 NO_x	2023 VOC
Area	Non-point	EPA v6.3 ek	4,367	13,216	2,723	12,242
Area	Prescribed Burning	2011 MARAMA Beta	43	971	43	971
Area	Residential Wood Combustion	EPA v6.3 el	485	7,048	458	6,342
Subtotal			**4,896**	**21,236**	**3,224**	**19,556**
TOTAL			**59,405**	**64,937**	**32,298**	**43,040**

Figure 12
Statewide VOC Emissions (tons per day)

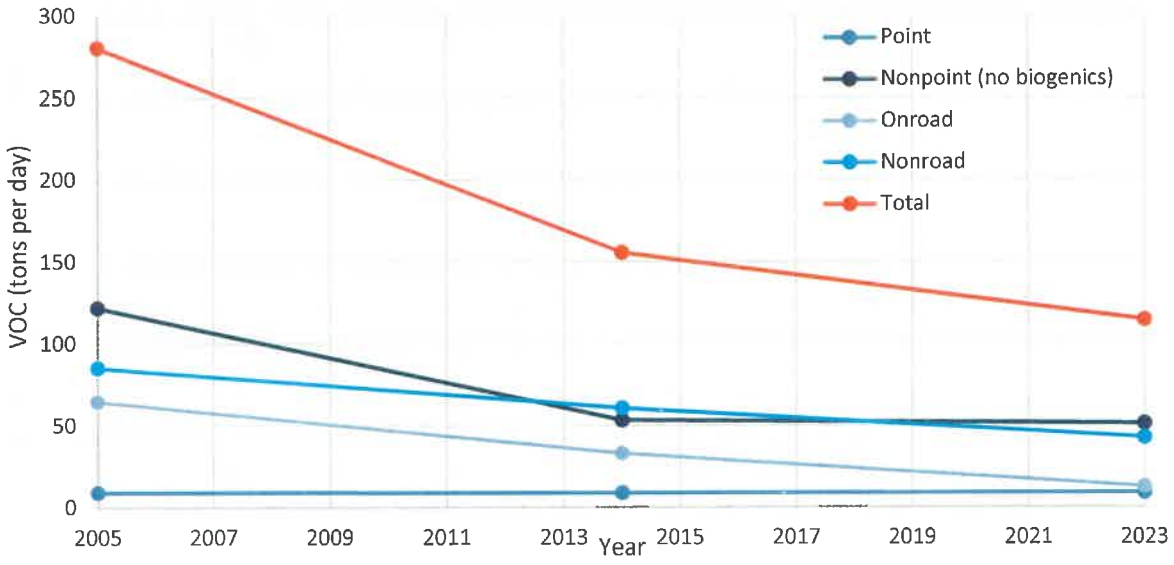
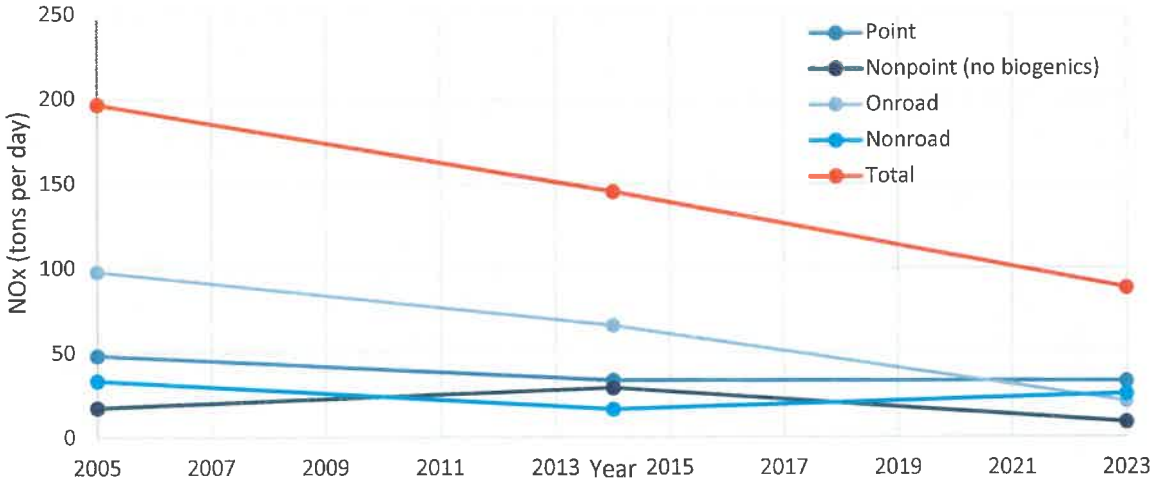


Figure 13
Statewide NO_x Emissions (tons per day)



Comparison of the 2005, 2014, and 2028 Inventories for the Portland and Midcoast Ozone Maintenance Areas

Figures 14 and 15 provide a comparison of the 2005 (redesignation), 2014, and 2028 (projected) NO_x and VOC inventories for the Portland and Midcoast Ozone Maintenance Areas and demonstrate in graphical form that emissions in this area have and will continue to decline. By 2028, total VOC emissions for the are forecast to decline by more than 65 percent. NO_x emissions are forecast to decline even further, with the Portland Ozone Maintenance Area seeing a more than 72 percent decrease between 2005 and 2028. In the Midcoast Ozone Maintenance Area, VOC and NO_x emissions are forecast to decline by 67% and 59%, respectively.

Figure 14: Portland Ozone Maintenance Area
Total VOC and NO_x (tons per summer day)

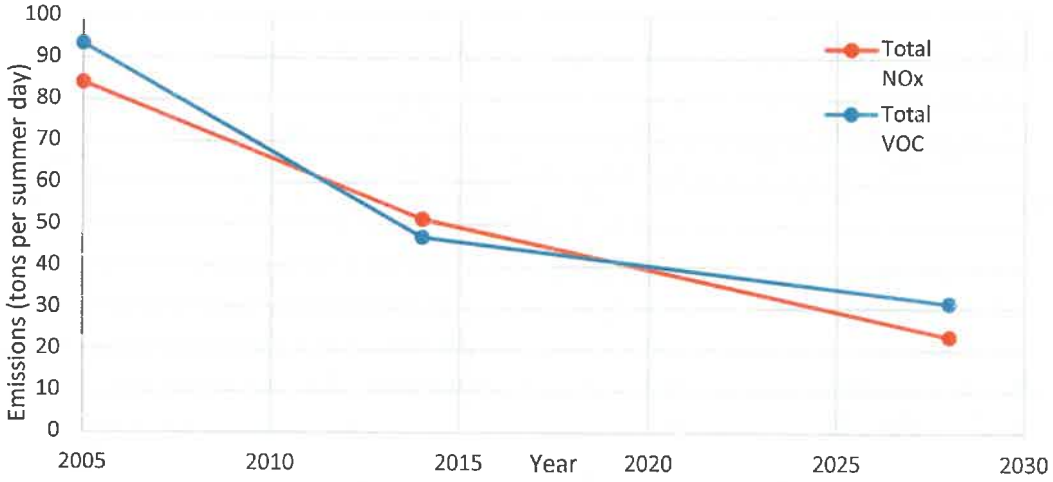
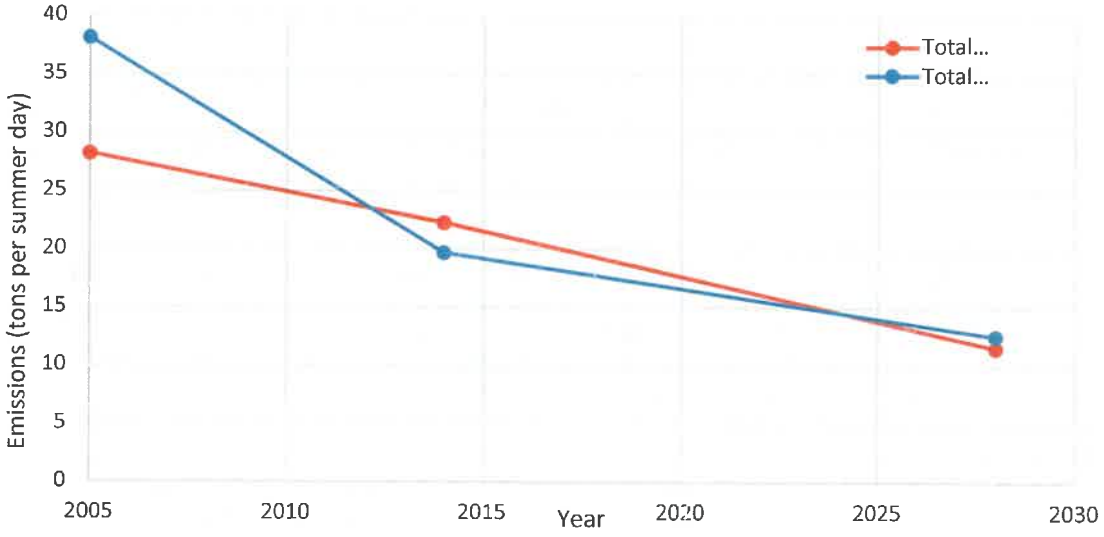


Figure 15: Midcoast Ozone Maintenance Area
Total VOC and NO_x (tons per summer day)



D. Mobile Source Impacts

EPA's technical guidance for removing regions from the OTR (U.S. EPA 1995b) encourages states to demonstrate that emissions from vehicles sold in the state will not impact air quality if driven in other OTR states.

Vehicles sold in the United States must be certified under one of two certification programs: the federal program (Tier 3) or the California program (the LEV Program). Section 177 of the Clean Air Act Amendments of 1990 provides states the ability to adopt the California program in lieu of the federal program as long as the adopted state program is identical to the California program and the state allows two model years' lead time from adoption to implementation. Maine is one of 13 states (along with the District of Columbia)[23] to adopt the more stringent LEV standards. Since Maine will continue to participate in the LEV program, vehicles purchased in Maine and driven in other OTR states will not emit more than vehicles purchased in other participating OTR states.

III. Anti-Backsliding Provisions and Emission Control Requirements

The "anti-backsliding" provisions in Section 110(l) of the CAA help to ensure that modifications to a state's SIP will not interfere with the attainment and maintenance of any of the NAAQS, reasonable further progress, or any applicable requirement of the CAA:

> Each revision to an implementation plan submitted by a State under this chapter shall be adopted by such State after reasonable notice and public hearing. The Administrator shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress (as defined in Section 171 of this title), or any other applicable requirement of this Act.

Maine's Section 176(A)(a)(2) Petition does not modify or remove existing programs or control measures currently in the Maine SIP,[24] and controls for existing facilities in Maine will not be reduced upon removal of portions of the state from the OTR, thus ensuring that air quality does not degrade. This will also eliminate any potential for backsliding, consistent with anti-backsliding provisions of the CAA.

Regulatory requirements for new or expanding facilities in the Portland and Midcoast Ozone Maintenance Areas will not be relaxed from those currently required. New minor sources and modifications at minor sources in these areas will continue to be subject to Best Available Control Technology (BACT),[25] while new major sources and major modifications of existing sources will

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[23] As of August 2019, nine states have adopted both California's zero emission vehicle (ZEV) program as well as the LEV standards: Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Rhode Island, and Vermont. These nine "ZEV states" are following California's lead in requiring automakers to produce ZEVs to improve local air quality and reduce the emissions contributing to climate change. Four other states – Colorado, Delaware, Pennsylvania, and Washington – and the District of Columbia are following California's LEV standards but have not adopted the ZEV program.

[24] See 42 CFR Subpart U

[25] "Best Available Control Technology" means an emission limitation (including a visible emissions standard) based on the maximum degree of reduction for each pollutant emitted from or which results from the new or modified

still be subject to Lowest Achievable Emission Rate (LAER)[26] control requirements. Major new sources and major modifications of existing sources in these areas will also need to offset significant emissions increases of NO_x and VOC. For that portion of the state removed from the OTR, minor and major new and modified sources will be subject to BACT control requirements.[27]

Furthermore, because the control of VOC and NO_x emissions provides a wide variety of health and environmental benefits (in addition to ozone reductions)[28], Maine will continue to implement the reasonably available control technology requirements (RACT) of CAA Section 182 on a statewide basis as a SIP strengthening measure.[29, 30]

IV. Contingency Plan

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emissions unit which the Department, on a case-by-case basis and taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such emissions unit through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combination techniques for control of each pollutant. In no event shall application of BACT result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 C.F.R. Part 60 and 61 or any applicable emission standard established by the Department. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard, or combination thereof may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emission reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.

[26] "Lowest Achievable Emission Rate" means the more stringent of the following: (a) The most stringent emission limitation contained in the implementation plan of any State for that class or category of source, unless the owner or operator of the proposed source demonstrates that those limitations are not achievable; or (b) The most stringent emission limitation which is achieved in practice by that class or category of source. In no event may LAER result in emission of any pollutant in excess of those standards and limitations promulgated pursuant to Section 111 or 112 of the United States Clean Air Act as amended, or any emission standard established by the Department.

[27] For Maine facilities, LAER emissions controls are not substantially different from those required by BACT. Controls for emissions from new or modified Maine sources after removal from the OTR will not appreciably differ from those required now; the most notable difference will be removal of the requirement to obtain emissions offsets for emissions of ozone precursors.

[28] NO_x causes a wide variety of health and environmental impacts because of the various compounds and derivatives constituting this class of compounds, such as nitrogen dioxide, nitric acid, nitrous acid, nitrates, and nitric oxide. In addition to ozone formation, NO_x is a contributor to acid rain, nitrogen deposition (eutrophication) in water bodies, particulate pollution, visibility impairment, global warming (nitrous oxide), and toxic chemicals (e.g., nitrate radicals, nitrosamines, and nitroarenes). VOC emissions contribute to particulate pollution and visibility degradation, and many VOCs are also hazardous air pollutants.

[29] The EPA has defined RACT as the lowest emission limitation a source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility (44 FR 53761, September 17, 1979).

[30] Section 182 of the CAA establishes two separate RACT requirements for ozone nonattainment areas. The first requirement, contained in Section 182(a)(A) of the CAA and referred to as RACT fix-up, requires the correction of RACT rules for which EPA identified deficiencies before the CAA was amended in 1990. The second requirement, set forth in Section 182(b)(2) of the CAA, applies to moderate or worse ozone nonattainment areas as well as to marginal and attainment areas in Ozone Transport Regions (OTRs) established pursuant to Section 184 of the CAA, and requires these nonattainment and OTR areas to implement RACT controls on all major VOC and NO_x emission sources and on all sources and source categories covered by a Control Techniques Guideline (CTG) or Alternative Control Techniques document issued by EPA.

Although not required by CAA Section 176A(a)(2), Maine is establishing a contingency plan through its Section 175A(b) Limited Maintenance Plans for the Portland and Midcoast Ozone Maintenance Areas to ensure the prompt correction of any NAAQS violation.[31] At the conclusion of each ozone season, the Department will evaluate whether the design values for the Portland and Midcoast Ozone Maintenance Areas are above or below the 8-hour ozone standard. If the design value is above the standard, the Department will evaluate the potential causes of this design value increase. The Department will examine whether this increase is due to an increase in local in-state emissions or an increase in upwind out-of-state emissions. If an increase in in-state emissions is determined to be a contributing factor to the design value increase, Maine will evaluate the projected in-state emissions for the ozone season in the following year. If in-state emissions are not expected to satisfactorily decrease in the following ozone season, Maine will implement one or more of the contingency measures listed in this Section or substitute new VOC or NO_x control measures to achieve additional in-state emissions reductions. The necessary contingency measures(s) will be selected by the Governor or the Governor's designee within six months of the end of the ozone season.

V. Periodic Implementation Plan Review

The Department is also committing to periodically review the contribution of emissions from those portions of Maine being removed from the OTR on non-attainment and maintenance of the ozone standard within the OTR, including the Portland and Midcoast Ozone Maintenance Areas. This review shall be conducted every five calendar years following the approval of Maine's Section 176A(a)(2) Petition or whenever the National Ambient Air Quality Standards for ozone are revised and shall include, at a minimum, a technical analysis utilizing back trajectories, available air quality apportionment modeling, and emissions data.

VI. Summary of Results and Conclusions

CAA Section 176A(a)(2) states that EPA's Administrator may remove any state or portion of a state from the OTR whenever control of emissions in that state or portion of the state will "not significantly contribute to the attainment of the standard in any area in the region" (i.e., emissions without OTR-mandated controls will not contribute to non-attainment in any area in the OTR). Maine herein has provided conclusive proof that emissions from that portion of Maine to be removed from the OTR are insignificant contributors to non-attainment in any portion of the OTR, including Maine's Portland and Midcoast Ozone Maintenance Areas. Maine's technical demonstration includes the following:

- Back trajectories conducted by Maine DEP and EPA illustrating Maine's emissions are insignificant contributors to ozone transport in any non-attainment areas within the OTR. Thus, reductions of either NO_x or VOC emissions in Maine are irrelevant to bringing other areas of the OTR into attainment and do not impact ozone air quality in Maine's Portland and Midcoast Ozone Maintenance Areas.

[31] See "Limited Maintenance Plan for the Portland Ozone Maintenance Area" and "Limited Maintenance Plan for the Midcoast Ozone Maintenance Area," Maine Department of Environmental Protection, 2019.

- EPA's source apportionment modeling results for both the 2008 and 2015 ozone standards demonstrate that Maine's contribution to other states in the OTR is less than one percent.

- An analysis of Maine's emissions demonstrates that statewide VOC and NO_x emissions in 2023 are forecast to decline by more than 32% and 45%, respectively, from 2011 levels.

Removal of portions of Maine from the OTR and the elimination of nonattainment NSR requirements in this region will not interfere with attainment and maintenance of the ozone NAAQS or any other applicable requirement of the CAA in the 111 Maine towns and cities that will remain in the OTR. The application of VOC and NO_x RACT on a statewide basis as a SIP strengthening measure will help to guarantee the continued maintenance of ozone air quality throughout the state while providing ancillary benefits addressing a variety of air quality concerns, including regional haze, fine particulates, hazardous air pollutants, eutrophication, and acid deposition. Finally, the Department's Limited Maintenance Plans for the Portland and Midcoast Ozone Maintenance Areas and implementation plan review will ensure that ozone air quality throughout the state is periodically reassessed and that Maine DEP will swiftly address any violations of the ozone NAAQS.

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U.S. EPA, 2014b: 2014 National Emission Inventory (NEI) Version 2: https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-data

U.S.EPA, 2016a: Cross-State Air Pollution Rule Update for the 2008 Ozone NAAQS. Federal Register 81:207 (26 Oct, 2016) p. 74504: https://www.gpo.gov/fdsys/pkg/FR-2016-10-26/pdf/2016-22240.pdf

U.S.EPA, 2016b: Air Quality Modeling Technical Support Document for the Final Cross State Air Pollution Rule Update. Office of Air Quality Planning and Standards United States Environmental Protection Agency (August 2016): https://www.epa.gov/airmarkets/air-quality-modeling-technical-support-document-final-cross-state-air-pollution-rule

U.S. EPA, 2017: 2015 Ozone Standards – State Recommendations, EPA Responses, and Technical Support Documents, (22 December, 2017): https://www.epa.gov/ozone-designations/2015-ozone-standards-state-recommendations-epa-responses-and-technical-support

U.S. EPA, 2018, Interstate Air Pollution Transport website: https://www.epa.gov/airmarkets/interstate-air-pollution-transport

Appendix A: Maine's Ozone Monitoring Network

The DEP currently operates ground level ozone monitoring sites throughout the state in accordance with EPA SLAMS[32] network requirements. Three of the Maine DEP sites operate year-round while the remainder are "seasonal sites." The EPA operates a year-round ozone site in Ashland as part of CASTNet.[33] The ozone site in Howland is at tree top level, and the Portland Deering Oaks site is within a metropolitan setting, so the data from these two sites are not used for regulatory purposes. Two other ozone sites in Maine are operated by Maine Indian tribes. Situating an ozone monitor somewhere on the coast of Maine within the large gap between ozone sites at Cape Elizabeth and Port Clyde remains a Bureau of Air Quality objective. Although the federally required ozone season for Maine runs from April through September, most of the Maine sites now operate from the first of March through the first of October, weather permitting. The Maine sites are scattered throughout the state, with most of them situated along the coast and in southern Maine. The highest ozone concentrations tend to occur along the coast because plumes of contaminated air are often transported into the Gulf of Maine from metropolitan areas to the south. These air masses are subsequently blown ashore and carried inland. In addition to determining attainment/nonattainment status, the ozone sites in Maine collect data that is used by the mapping and forecasting programs to provide the public and scientific community with quality data in a timely fashion and to forecast air quality alerts when necessary. Table A-1 provides an overview of Maine DEP ozone monitoring sites.

[32]The SLAMS (State and Local Air Monitoring Stations) in Maine are part of a standardized, national network administered by the EPA in accordance with the Clean Air Act and subsequent Federal Regulations. Every state must monitor for criteria air pollutants following strict criteria set by EPA that govern all aspects of the monitoring and reporting process. SLAMS sites must meet stringent monitor siting requirements and utilize specified equipment types. The pollution monitoring instruments at these sites must be approved by the EPA and be designated as either Federal Reference Method (FRM) or Federal Equivalence Method (FEM). In addition, SLAMS site operators must follow all quality assurance criteria and submit detailed quarterly and annual monitoring results to EPA. Data from SLAMS stations are used to determine attainment/nonattainment areas.

[33] The CASTNet (Clean Air Status and Trends Network) is a nationwide monitoring operation that collects air pollutant concentrations to evaluate the effectiveness of national and regional emission control programs, to determine compliance with the National Ambient Air Quality Standards for ozone, and to determine rural trends in ozone, nitrogen, and sulfur concentrations. It was established in 1991 as a cooperative program with the EPA, the National Park Service, and state and local partners. CASTNet site locations in Maine are in Ashland and Acadia. The data are now incorporated in several regional air quality models. https://www.epa.gov/castnet

Table A-1: Maine DEP Ozone Monitoring Sites

Ozone Monitoring Site Address	Monitoring Objective	Sampling Frequency
Ashland - Loring AFB	Background	Continuous
Bar Harbor - McFarland Hill	Transport, Background	Continuous
Bar Harbor - Top of Cadillac Mountain	Transport	Continuous - Seasonal
Bethel, Smith Farm Road	Max. Conc., Transport	Continuous - Seasonal
Cape Elizabeth - Two Lights State Park	Transport	Continuous
Durham - Fire Station - Route 9	Max. Concentration	Continuous - Seasonal
Gardiner - Pray Street, Schoolyard	Max. Conc., Transport	Continuous - Seasonal
Holden - Rider Bluff	Max. Conc., Transport	Continuous - Seasonal
Jonesport - Public Landing	Max. Concentration	Continuous - Seasonal
Kennebunkport - Parsons Way	Max. Conc., Transport	Continuous - Seasonal
Perry - Pleasant Point/Sipayik, 184 County Road	Tribal	Continuous
Port Clyde - Marshall Point Lighthouse	Max. Conc., Transport	Continuous - Seasonal
Portland - Deering Oaks	High Pop. Exposure	Continuous
Presque Isle - 8 Northern Road	-	Continuous
Shapleigh - Ball Park, West Newfield Road	Max. Conc., Transport	Continuous - Seasonal
West Buxton - Plains Road Fire Dept.	Transport	Continuous - Seasonal

Appendix B: 8-Hour Ozone Design Values in Maine and the Northeast U.S.

Figures B-1, B-2, and B-3 provide a geographic understanding of the region displaying the past three 2015 Ozone NAAQS design value periods. The core of the OTR (Washington, DC to southern New England) continues to experience the highest ozone levels in the northeast with monitors that record exceedances throughout that area. Figure B-3 represents the latest design value period of 2016-2018 and shows that the monitors nearest to Maine recording exceedances are in Rhode Island, Connecticut, and Massachusetts. Note that sites in Massachusetts and Rhode Island as well as the site on the summit of Cadillac Mountain in Maine were not exceeding the NAAQS during the 2014-2016 design value period, and the 2016-2018 design value is below the NAAQS at the summit of Cadillac Mountain.

Figure B-1: 2014-2016 8-hr Ozone Design Values

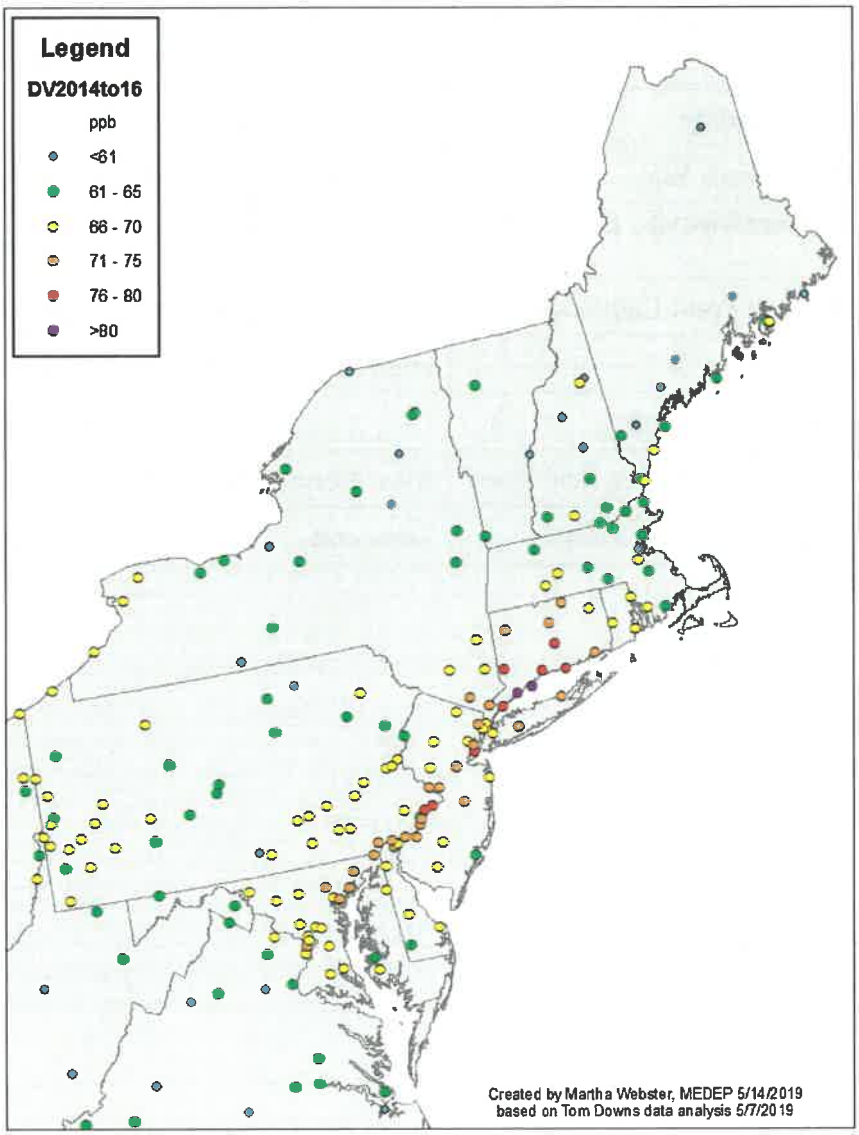


Figure B-2: 2015-2017 8-hr Ozone Design Values

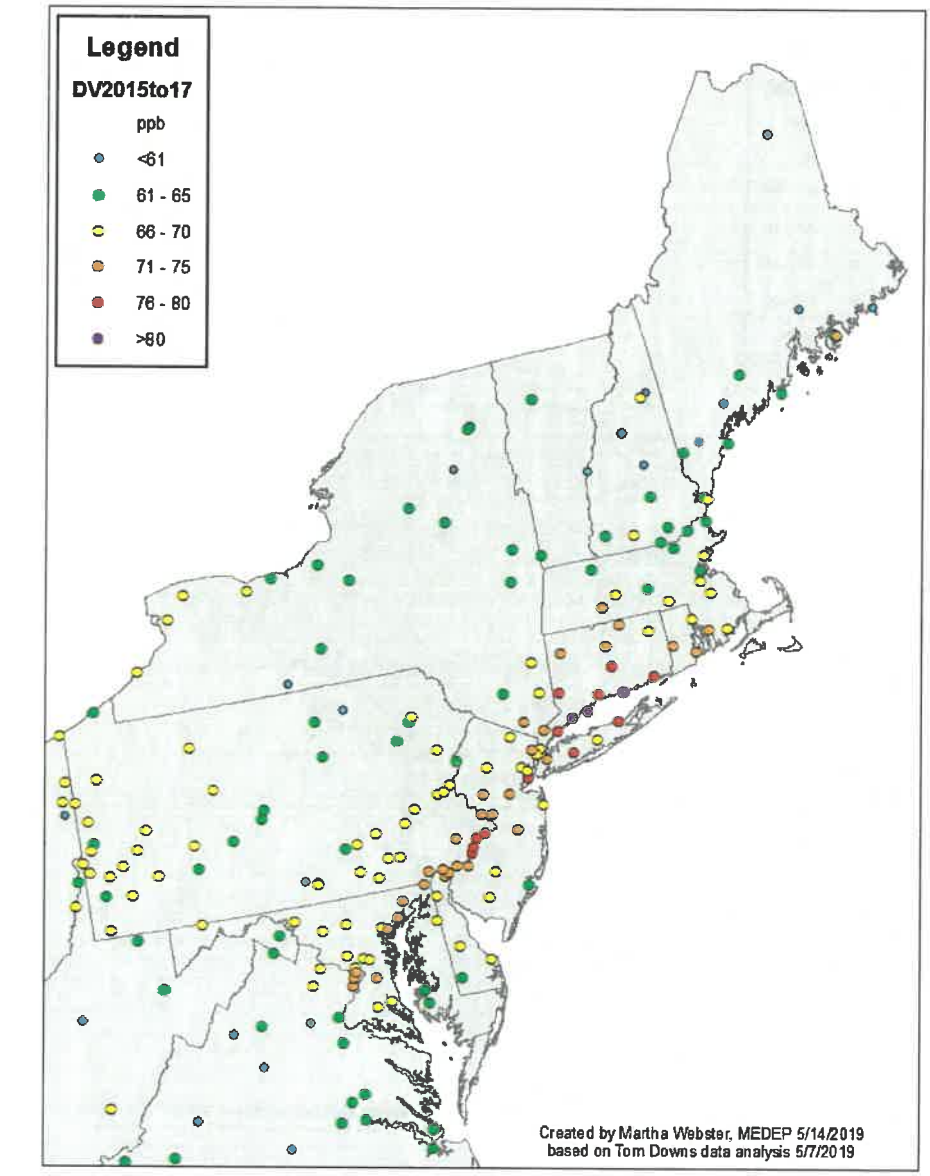
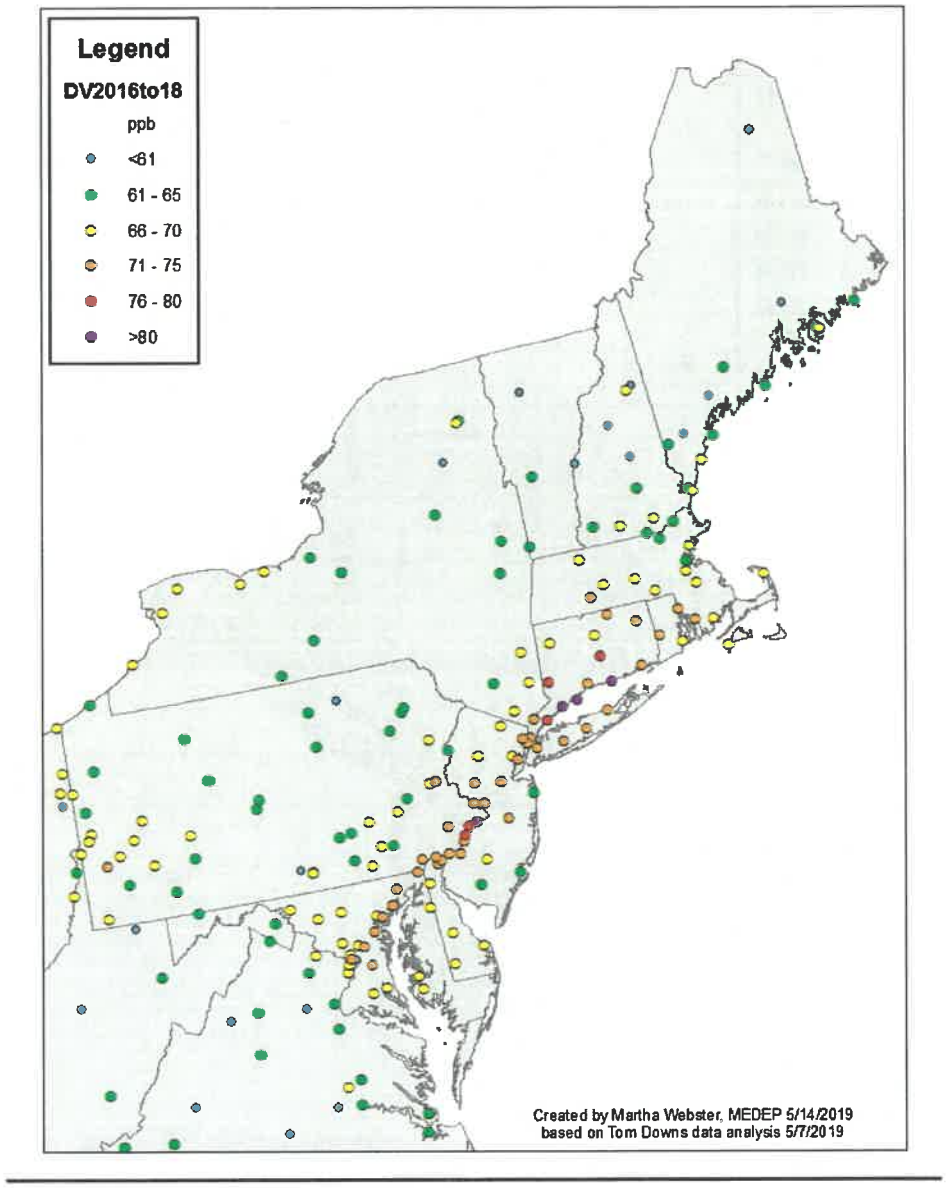


Figure B-3: 2016-2018 8-hr Ozone Design Values



Ozone values in Maine have been trending downward for years. Figure B-4 shows Maine's ozone design value trend. Table B-1 shows ozone data from the last five ozone seasons for all monitoring sites in Maine. Ozone design values for the entire State of Maine are currently below the 2015 8-hr Ozone NAAQS, as presented in Table B-1. Before 2017, the last year an ozone season 4th highest daily maximum ozone concentration was greater than 70 ppb at the summit of Cadillac Mountain was in 2010. Given that 2017 was an anomalous year for transport to high elevations of Acadia National Park, Maine DEP fully expects the summit of Cadillac Mountain design value to continue to remain below 70 ppb.

Figure B-4: Maine's Statewide Maximum 8-hour Ozone Design Value Trends

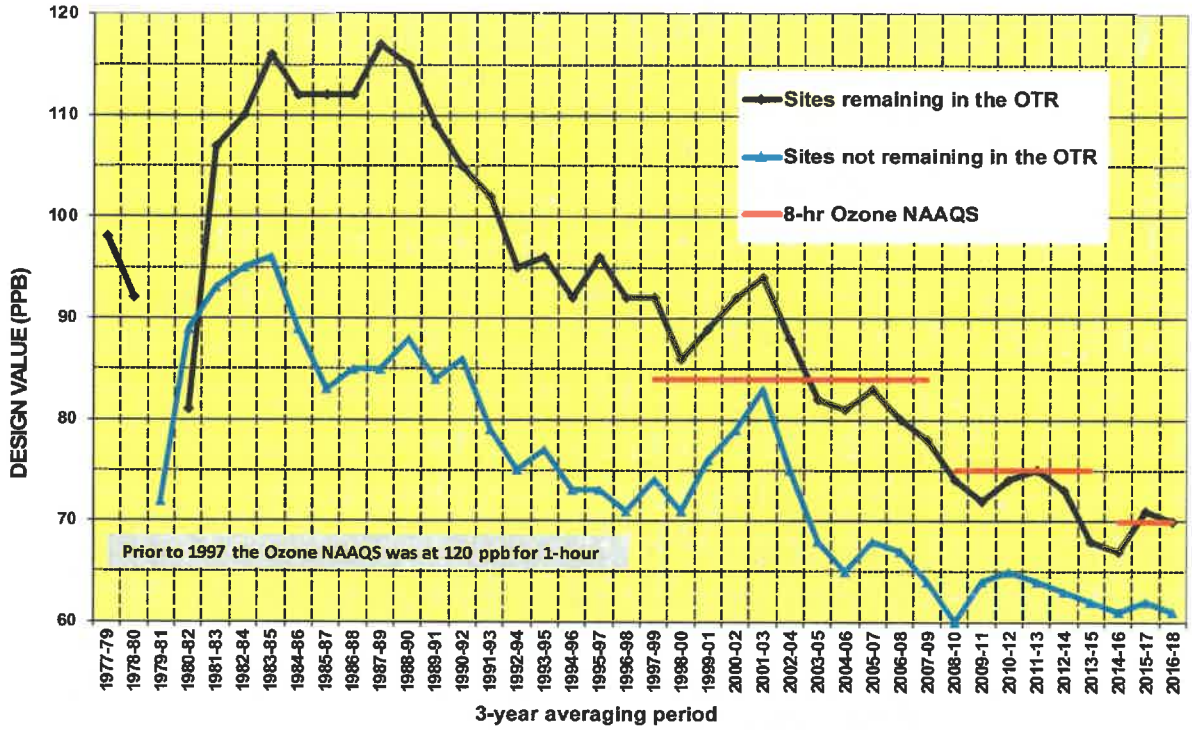


Table B-1: Maine's Ozone Data 2014-2018, Inclusive

Site Name	2014 4th Highest	2015 4th Highest	2016 4th Highest	2017 4th Highest	2018 4th Highest	2014-2016 Design Value	2015-2017 Design Value	2016-2018 Design Value
Sites in areas proposed to remain in the OTR								
Cadillac Mt Summit	65	69	66	80	64	66	71	70
Kennebunkport	66	67	68	62	68	67	65*	66
Cape Elizabeth	66	64	65	64	67	65	64	65
Port Clyde-Marshall Pt	61	67	63	62	64	63	64	63
McFarland Hill	62	65	60	67	64	62	64	63
Hollis/West Buxton	59	58	58	63	56	58	59	59
Bowdoinham	58	57						
Durham	65	58	57	62	59	60	59	59
Sites in areas proposed to be excluded from the OTR								
Gardiner-Pray	57	63	59	67	60	59	63	62
Shapleigh-Ballpark	61	62	61	64	60	61	62	61
Jonesport	54	62	57	62	65	57	60	61
Holden-Riders Bluff	54	63	57	60	56	58	60	57
Ashland	51	55	52	51	55	52	52	52
Bethel			54	59	58			
Sipayik	56	50		54	55			
MicMac	49		48					
North Lovell	53	53						
Penobscot Nation	51							

* Data recovery did not meet 3-year 90% requirements

Table B-2 Historic Ozone Actions and Status for Maine

Date	Action
1979	EPA promulgated a 1-hour Ozone NAAQS of 0.12 ppm.
1991	After promulgation of the Clean Air Act Amendments of 1990, EPA classified nine counties in Maine as non-attainment for the 1979 1-hour Ozone NAAQS: · Portland ME Non-Attainment Area (York, Cumberlan,d and Sagadahoc Counties), moderate non-attainment; · Lewiston-Auburn ME Non-Attainment Area (Androscoggin and Kennebec Counties), moderate non-attainment; · Knox & Lincoln Counties, moderate non-attainment; and · Hancock & Waldo Counties, marginal non-attainment.
December 26, 1995	*EPA granted a Section 182(f) NO_x Waiver for Maine for the 1979 1-hour Ozone NAAQS.*
April 28, 1997	EPA re-designated the Hancock & Waldo Counties area to attainment.
1997	EPA promulgated an 8-hour Ozone NAAQS of 0.08 ppm.
2004	EPA designated and classified 8-hour Ozone NAAQS non-attainment areas in Maine based on the 1997 Ozone NAAQS of an 8-hour average of 0.08 parts per million, as follows: · Portland, ME – Subpart 2 marginal non-attainment (includes Sagadahoc County and parts of Cumberland, York, and Androscoggin Counties); and · Hancock, Knox, Lincoln, and Waldo Counties, ME – Subpart 1 non-attainment (includes parts of each of the counties listed in the name).
June 15, 2005	EPA revoked the 1979 1-hour Ozone NAAQS.
2006	*EPA granted a Section 182(f) NO_x Waiver to Maine based on the 1997 8-hour Ozone NAAQS.*
January 10, 2007	Effective this date, Portland, ME and Hancock, Knox, Lincoln, and Waldo Counties, ME 8-hour ozone non-attainment areas were re-designated as attainment, becoming 175A maintenance areas.
2008	The 8-hour Ozone NAAQS was promulgated at 0.075 parts per million, which is equivalent to 75 parts per billion (ppb).
July 20, 2012	Maine was designated as attainment/unclassifiable for the 2008 NAAQS.
2014	*EPA granted a third Section 182(f) NO_x Waiver to Maine based on the 2008 8-hour Ozone NAAQS.*
April 6, 2015	EPA revoked the 1997 8-hour Ozone NAAQS.
October 2015	The 8-hour Ozone NAAQS was promulgated at 0.070 parts per million, which is equivalent to 70 parts per billion (ppb).
January16, 2018	Maine was designated as attainment/unclassifiable for the 2015 NAAQS

Appendix C: Maine Rules Addressing Ozone Precursors

A number of the Department's rules address the emissions and control of ozone precursors, including the following:

06-096 CMR Chapter 100 Definitions Regulation
06-096 CMR Chapter 110 Ambient Air Quality Standards
06-096 CMR Chapter 111 Petroleum Liquid Storage Vapor Control
06-096 CMR Chapter 112 Petroleum Liquids Transfer Vapor Recovery
06-096 CMR Chapter 113 Growth Offset Regulation
06-096 CMR Chapter 114 Classification of Air Quality Control Regions
06-096 CMR Chapter 115 Major and Minor Source Air Emission License Regulations
06-096 CMR Chapter 116 Prohibited Dispersion Techniques
06-096 CMR Chapter 117 Source Surveillance
06-096 CMR Chapter 118 Gasoline Dispensing Facilities Vapor Control
06-096 CMR Chapter 119 Motor Vehicle Fuel Volatility Limit
06-096 CMR Chapter 120 Gasoline Tank Truck Tightness Self-Certification
06-096 CMR Chapter 123 Paper Coating Regulation
06-096 CMR Chapter 126 Capture Efficiency Test Procedures
06-096 CMR Chapter 127 New Motor Vehicle Emission Standards
06-096 CMR Chapter 129 Surface Coating facilities
06-096 CMR Chapter 130 Solvent Degreasers
06-096 CMR Chapter 131 Cutback Asphalt and Emulsified Asphalt
06-096 CMR Chapter 132 Graphic Arts-Rotogravure and Flexography
06-096 CMR Chapter 133 Petroleum Liquids Transfer Vapor Recovery at Bulk Gasoline Plants
06-096 CMR Chapter 134 Reasonably Available Control Technology for Facilities that Emit Volatile Organic Compounds
06-096 CMR Chapter 137 Emission Statements
06-096 CMR Chapter 138 Reasonably Available Control Technology for Facilities that Emit Nitrogen Oxides
06-096 CMR Chapter 139 Transportation Conformity
06-096 CMR Chapter 140 Part 70 Air Emission License Regulations
06-096 CMR Chapter 143 New Source Performance Standards (NSPS)
06-096 CMR Chapter 145 NO_x Control Program
06-096 CMR Chapter 148 Emissions from Smaller-Scale Electric Generating Resources
06-096 CMR Chapter 151 Architectural and Industrial Maintenance (AIM) Coatings
06-096 CMR Chapter 152 Control of Emissions of Volatile Organic Compounds from Consumer Products
06-096 CMR Chapter 153 Mobile Equipment Repair and Refinishing
06-096 CMR Chapter 154 Control of Volatile Organic Compounds from Flexible Package Printing
06-096 CMR Chapter 159 Control of Volatile Organic Compounds from Adhesives and Sealants
06-096 CMR Chapter 161 Graphic Arts- Offset Lithography and Letterpress Printing
06-096 CMR Chapter 162 Control for Fiberglass Boat Manufacturing Materials
06-096 CMR Chapter 166 Industrial Cleaning Solvents

Appendix C-1: Control Techniques Guidelines Applicable to Maine Sources

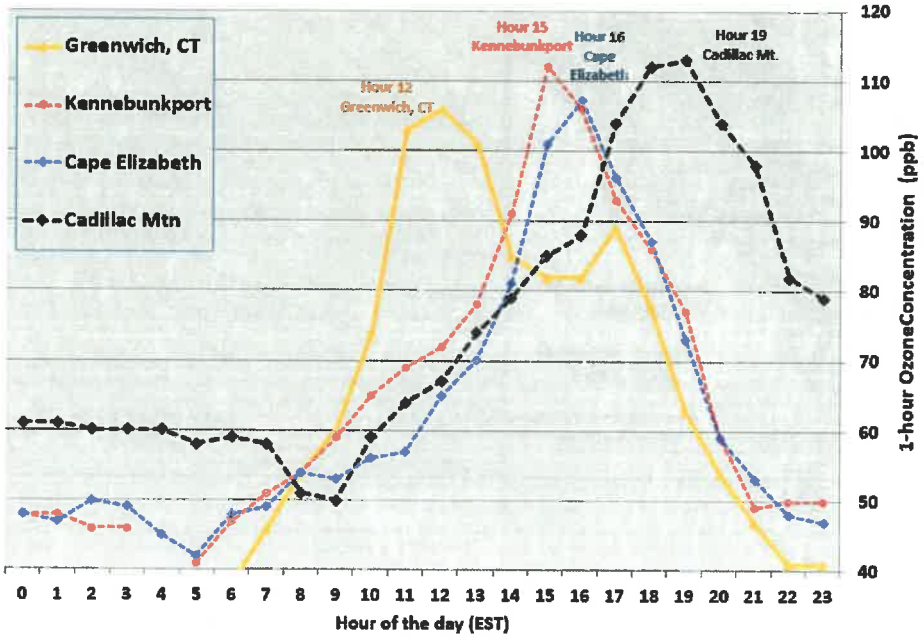
The following Control Techniques Guidelines (CTGs) currently apply to Maine:

- Design Criteria for Stage I Vapor Control Systems – Gasoline Service Stations
- Control of Volatile Organic Emissions from Existing Stationary Sources – Volume I: Control Methods for Surface Coating Operations
- Control of Volatile Organic Emissions from Existing Stationary Sources – Volume II: Surface Coating of Cans, Coils, Paper, Fabrics, Automobiles, and Light-Duty Trucks
- Control of Volatile Organic Emissions from Solvent Metal Cleaning
- Control of Volatile Organic Emissions from Existing Stationary Sources – Volume VI: Surface Coating of Miscellaneous Metal Parts and Products
- Control of Volatile Organic Emissions from Existing Stationary Sources – Volume VII: Factory Surface Coating of Flat Wood Paneling
- Control of Hydrocarbons from Tank Truck Gasoline Loading Terminals
- Control of Volatile Organic Emissions from Existing Stationary Sources – Volume III: Surface Coating of Metal Furniture
- Control of Volatile Organic Emissions from Existing Stationary Sources – Volume VIII: Graphic Arts-Rotogravure and Flexography
- Control of Volatile Organic Emissions from Bulk Gasoline Plants
- Control of Volatile Organic Emissions from Storage of Petroleum Liquids in Fixed-Roof Tanks
- Control of Volatile Organic Emissions from Use of Cutback Asphalt
- Control of Volatile Organic Emissions from Petroleum Liquid Storage in External Floating Roof Tanks
- Control of Volatile Organic Emissions from Perchloroethylene Dry Cleaning Systems
- Control of Volatile Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems
- Control of Volatile Organic Compound Emissions from Wood Furniture Manufacturing Operations
- Control Techniques Guidelines for Shipbuilding and Ship Repair Operations (Surface Coating)
- Control Techniques Guidelines for Offset Lithographic Printing and Letterpress Printing
- Control Techniques Guidelines for Flexible Package Printing
- Aerospace (CTG & MACT)
- Control Techniques Guidelines for Flat Wood Paneling Coatings
- Control Techniques Guidelines for Paper, Film, and Foil Coatings
- Control Techniques Guidelines for Large Appliance Coatings
- Control Techniques Guidelines for Metal Furniture Coatings
- Control Techniques Guidelines for Miscellaneous Metal and Plastic Parts Coatings
- Control Techniques Guidelines for Fiberglass Boat Manufacturing Materials
- Control Techniques Guidelines for Miscellaneous Industrial Adhesives
- Ozone Transport Commission Model Rule for Architectural and Industrial Maintenance (AIM) Coatings
- Ozone Transport Commission Model Rule for Consumer Products
- Ozone Transport Commission Model Rule for Mobile Equipment Repair and Refinishing
- Ozone Transport Commission Model Rule for Portable Fuel Containers

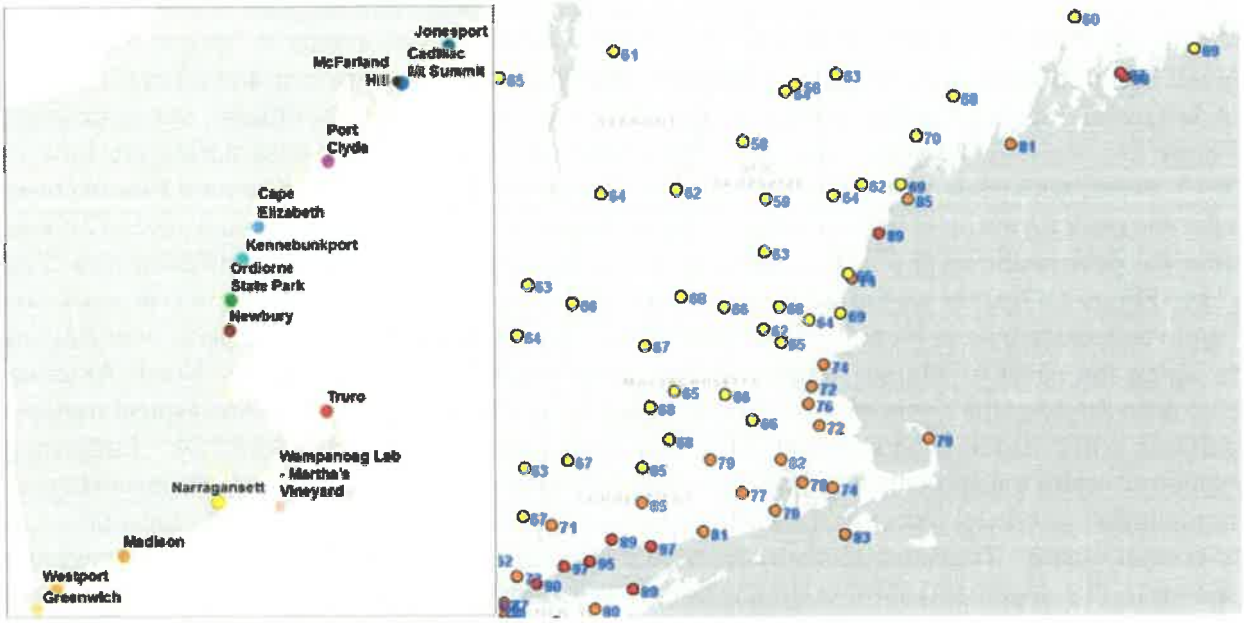
Appendix D: Time Series Analysis of Ozone Transport to Sites Along the Maine Coast

The primary ozone transport route to high elevations of Acadia National Park is over the Gulf of Maine and along the Maine coastline. Historically, during ozone events in Maine, peak ozone levels are monitored first along the southern Maine coast, then they are monitored later in the day at downwind locations as the air mass moves along the coastline to the Northeast. As an example, Figure D-1 shows the coastal track of a high-ozone air mass which occurred during the June 12, 2017, event, with peak ozone levels monitored at the summit of Cadillac Mountain four (4) hours after the peak ozone level was recorded at the Kennebunkport monitoring site and seven (7) hours after the peak ozone level was recorded at a Connecticut monitoring site just outside of New York City. Figure D-2(a) shows the locations of those sites, and Figure D-2(b) shows maximum 8-hour ozone concentrations in New England where exceedances occurred from southern New England to along the coast of Maine. Figure D-3(a), from NARSTO 2000 (formerly North American Research Strategy for Tropospheric Ozone), citing Blumenthal *et al.*, 1997, shows typical transport patterns when ozone events occur in the Northeast (Blumenthal and NARSTO). Long-range (synoptic scale) transport aloft occurs from the Midwestern states. Regional scale transport occurs in nocturnal low-level jets over the northeast urban corridor, and sea breezes can transport ozone to coastal Maine. Trajectory analyses for Maine 2016-2018 ozone events in Figure 12 (previously shown in this document) show a similar transport pattern at the surface and aloft. Figure D-3(b) shows surface wind streams during the afternoon of June 12, 2017, where the sea breeze transport pattern matches the historical transport pattern for ozone events along the Maine coast.

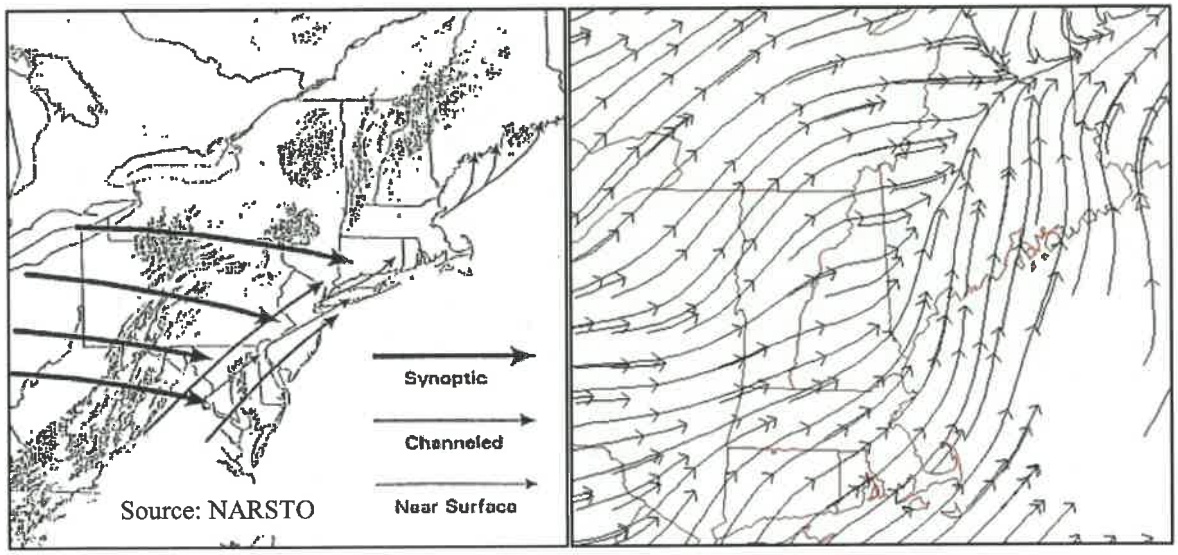
Figure D-1: June 12, 2017 Hourly Ozone Concentrations (ppb) at a Site Near New York City and at Sites Along the Coast of Maine



Figures D-2(a) and (b): Coastal Ozone Monitoring Sites in New England and Maximum 8-Hour Ozone Levels (ppb) During June 12, 2017



Figures D-3(a) and (b): Historical Ozone Transport Routes in the Northeast and June 12, 2017 1 PM (18Z) Surface Wind Streamlines



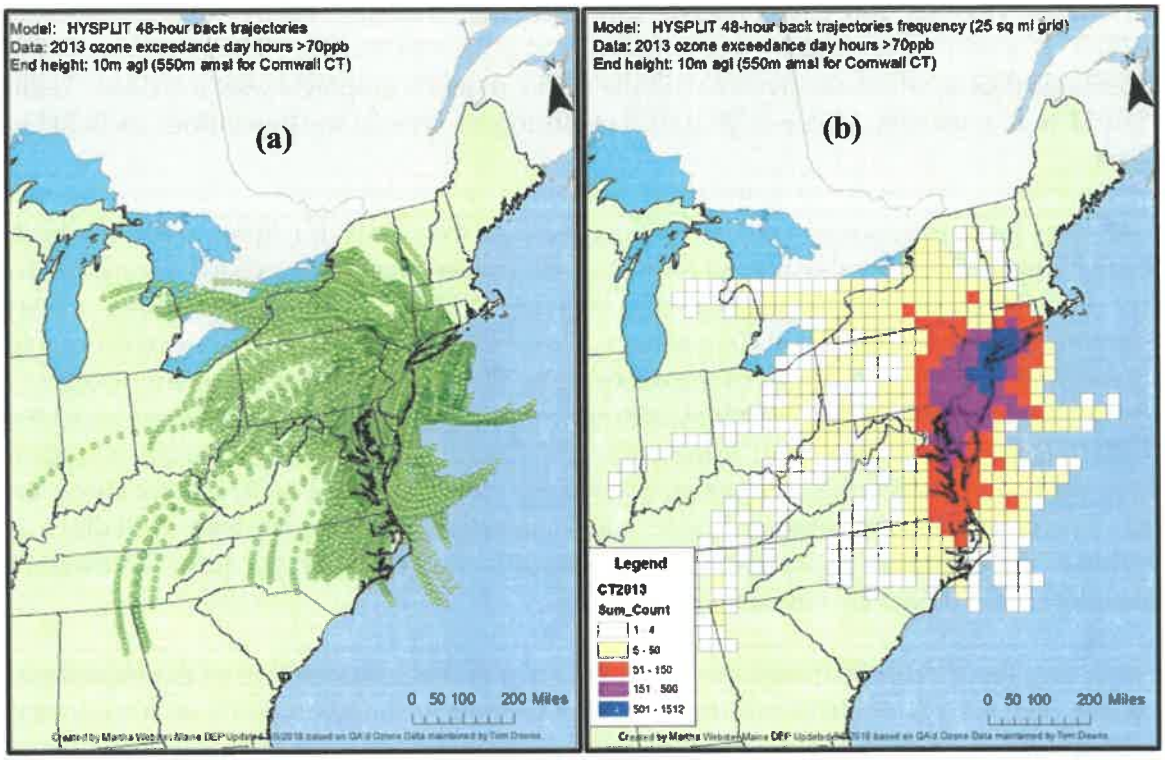
Appendix E: New England Ozone Back Trajectory Information

The National Oceanic and Atmospheric Administration (NOAA) Air Resources Laboratory's HYSPLIT is a computer model used to create and map trajectories. The model uses gridded meteorological data, which is selected with the online model's graphical user interface. Using the HYSPLIT online version, Maine DEP staff meteorologists created the trajectories included in this analysis.

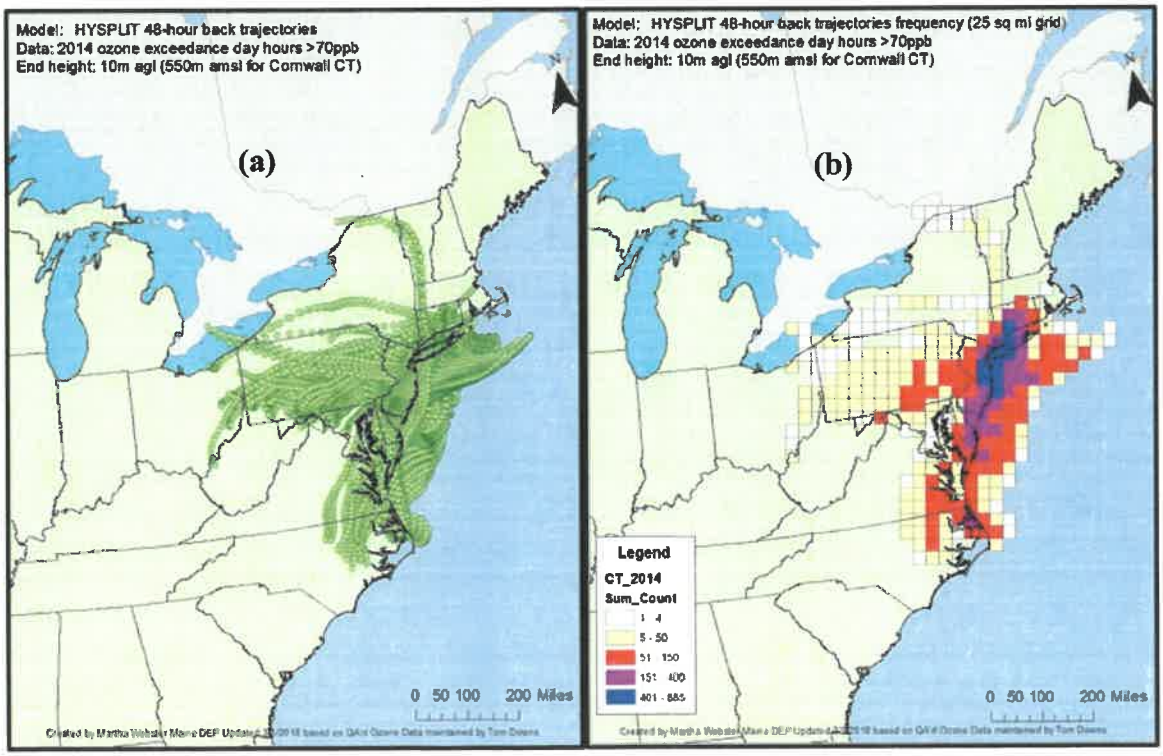
The 48-hour back trajectories created for this petition were only for hours when ozone levels exceeded 70 ppb for every day that an 8-hour ozone exceedance was recorded during 2013-2017 ozone seasons at certain monitoring sites (based on 2015-2017 ozone design values) in Massachusetts, Rhode Island, and Connecticut. To ensure the end hour of ozone matches with the end hour of meteorology, the time of the ozone value was converted from Eastern Standard Time (EST) to Universal Time Code (UTC) by adding 5 hours. Archived Eta Data Assimilation System (EDAS) meteorological data at 40 kilometers grid resolution was used. The model was set to include vertical velocity. For most sites, trajectories were initialized at 10-meters above ground level. For high elevation sites in Maine and Connecticut, trajectories were initialized at the elevation of the site above mean sea level. For example, the ending height at the Cornwall Site in Connecticut was 505 meters above mean sea level.

For each run, the HYSPLIT model generated both a graphical presentation of the trajectories and a text file. The text file contains information about the hourly endpoints along each trajectory path including location in time and space. Hundreds of endpoint text files were subsequently loaded into an Access database for the analysis, which was then mapped in ARCMAP, a geographic mapping tool used by the Maine DEP. Figures E-1 to E-11 show the resulting trajectories and trajectory frequency plots by state by year.

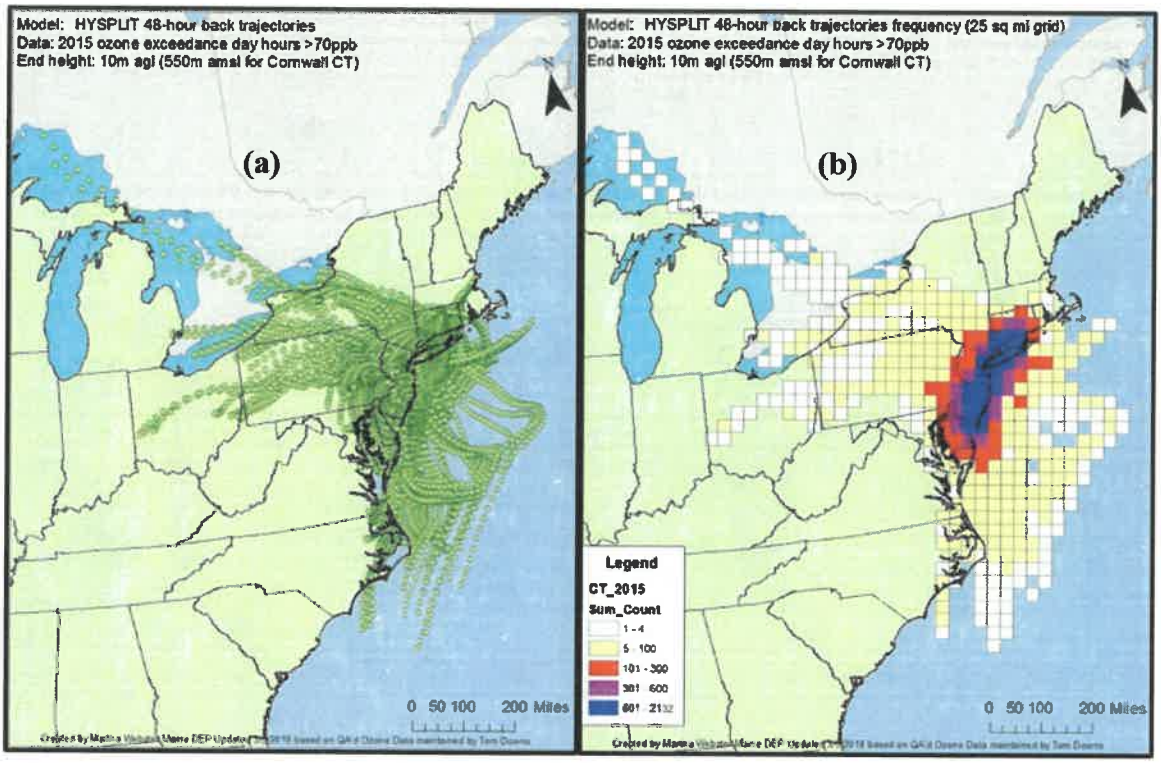
Figures E-1(a) and (b): HYSPLIT 2013 48-hour Back Trajectories and Trajectory Frequencies for Monitors in Connecticut



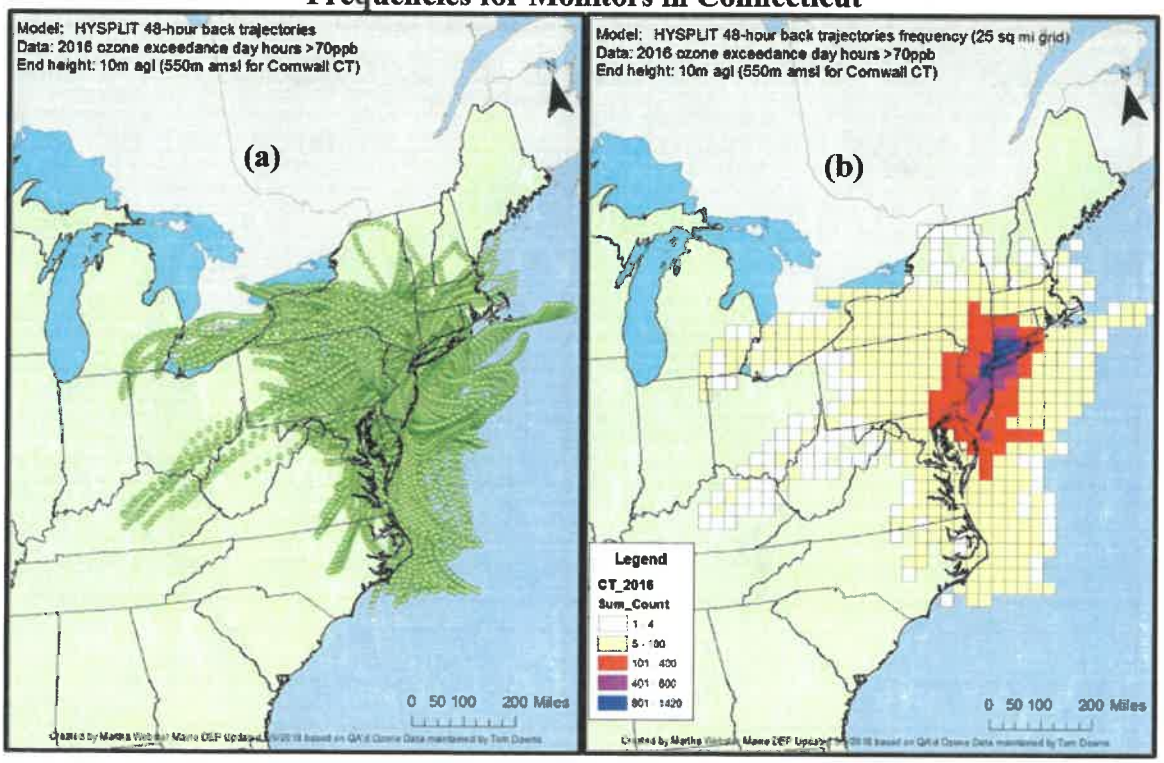
Figures E-2(a) and (b): HYSPLIT 2014 48-hour Back Trajectories and Trajectory Frequencies for Monitors in Connecticut



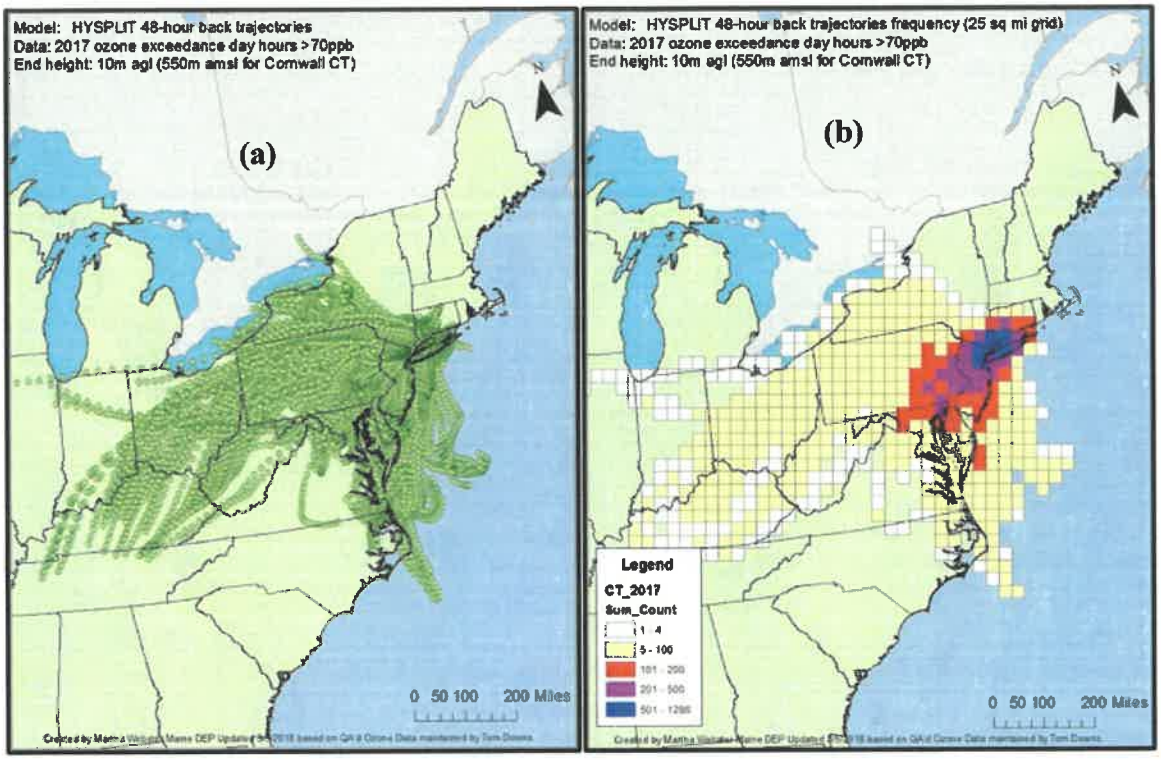
Figures E-3(a) and (b): HYSPLIT 2015 48-hour Back Trajectories and Trajectory Frequencies for Monitors in Connecticut



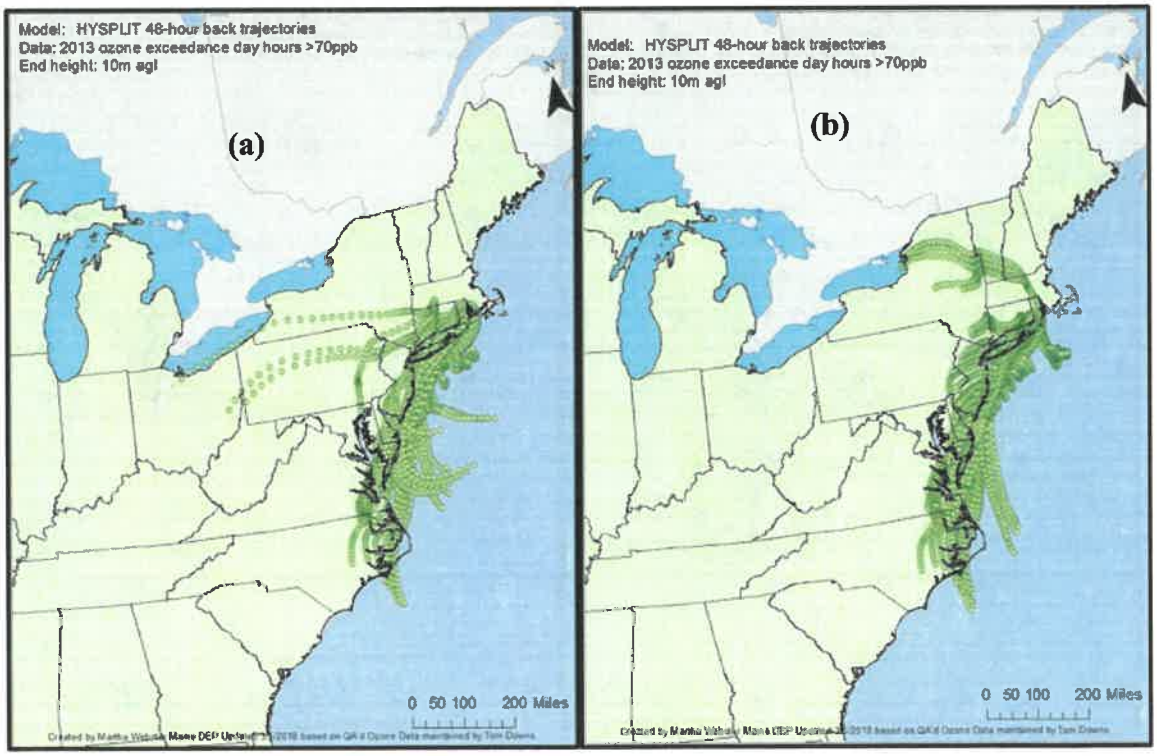
Figures E-4(a) and (b): HYSPLIT 2016 48-hour Back Trajectories and Trajectory Frequencies for Monitors in Connecticut



Figures E-5(a) and (b): HYSPLIT 2017 48-hour Back Trajectories and Trajectory Frequencies for Monitors in Connecticut

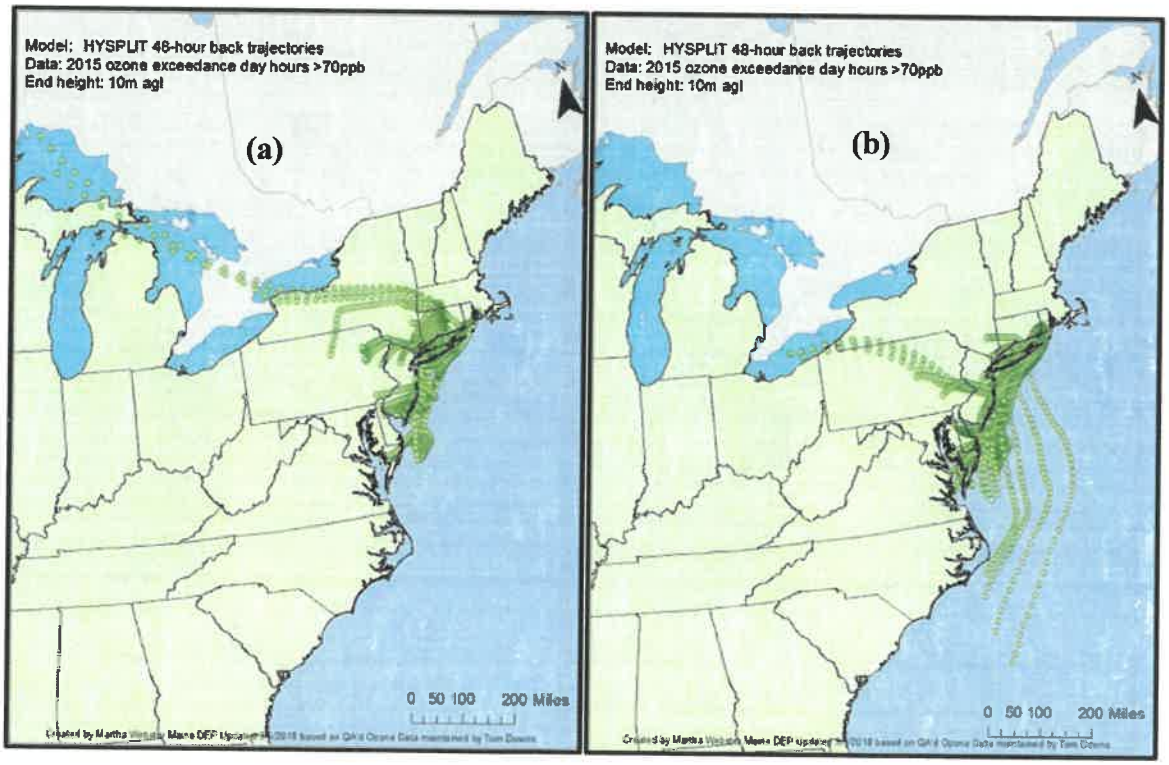


Figures E-6(a) and (b): HYSPLIT 2013 48-hour Back Trajectories for Certain Monitors Recording Exceedances in Massachusetts and Rhode Island

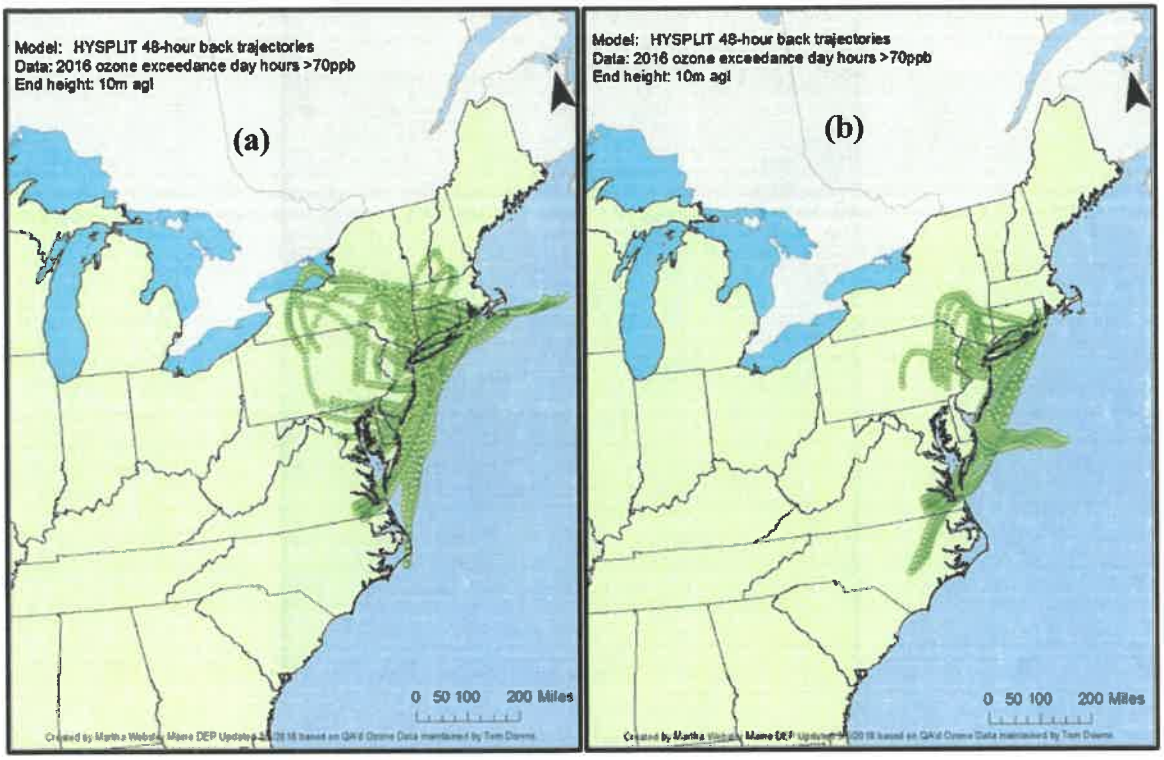


Figures E-7: HYSPLIT 2014 48-hour Back Trajectories for a Certain Monitor in Rhode Island (no Exceedances in Massachusetts)

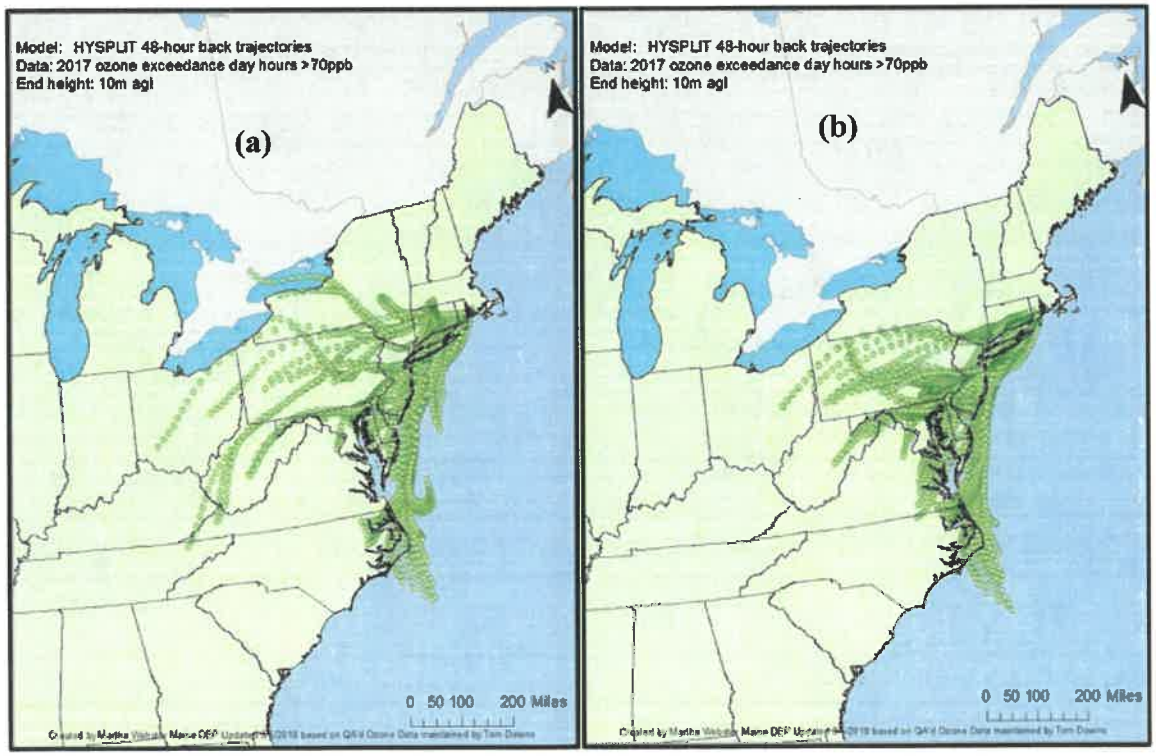
Figures E-8(a) and (b): HYSPLIT 2015 48-hour Back Trajectories for Certain Monitors Recording Exceedances in Massachusetts and Rhode Island



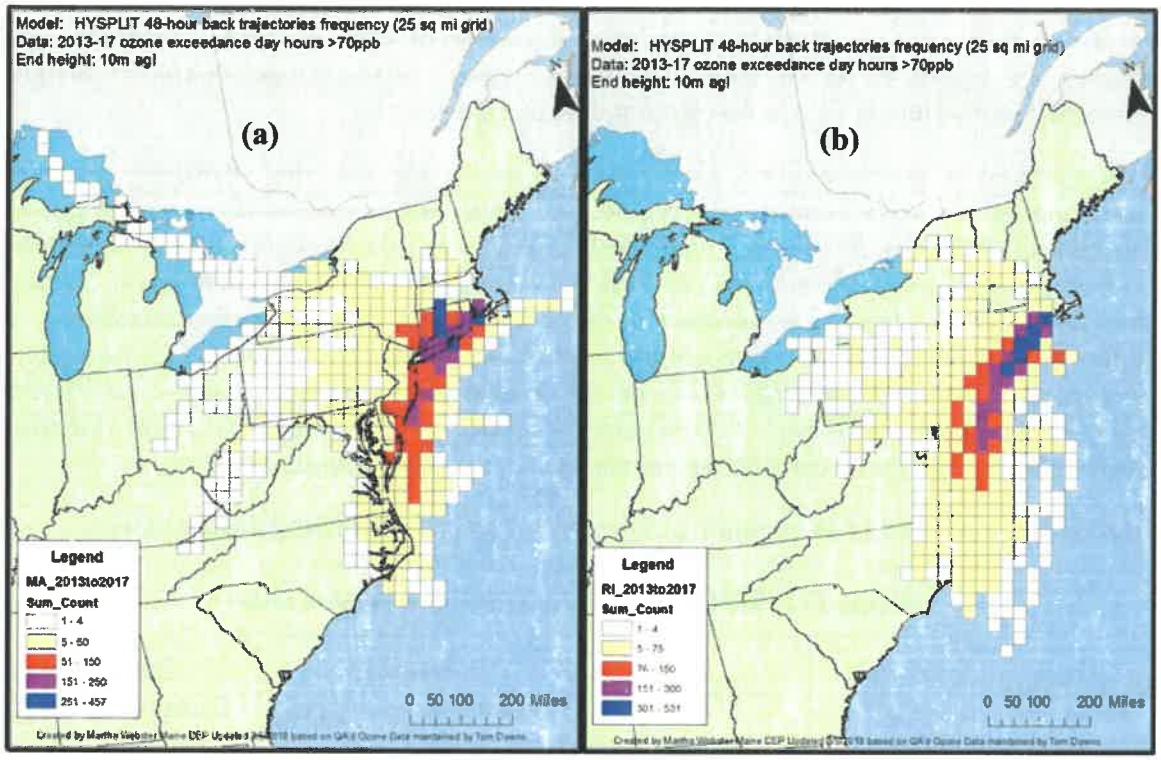
Figures E-9(a) and (b): HYSPLIT 2016 48-hour Back Trajectories for Certain Monitors Recording Exceedances in Massachusetts and Rhode Island



Figures E-10(a) and (b): HYSPLIT 2017 48-hour Back Trajectories for Certain Monitors Recording Exceedances in Massachusetts and Rhode Island



Figures E-11(a) and (b): HYSPLIT 2013-2017 48-hour Back Trajectories Frequencies for Certain Monitors in Massachusetts and Rhode Island



Appendix F: Trajectory Analyses as Found in EPA's December 22, 2017, Responses to States' 2015 Ozone NAAQS Designation Recommendations (EPA 2017b)

There are HYSPLIT back trajectory analyses available in each of EPA's technical support documents of responses (U.S. EPA 2017b) to states' 2015 Ozone NAAQS designation recommendations. Here is EPA's description of those analyses:

> *...Evaluation of meteorological data helps to assess the fate and transport of emissions contributing to ozone concentrations and to identify areas potentially contributing to the monitored violations. Results of meteorological data analysis may inform the determination of non-attainment area boundaries. In order to determine how meteorological conditions, including, but not limited to, weather, transport patterns, and stagnation conditions, could affect the fate and transport of ozone and precursor emissions from sources in the area., EPA evaluated 2014-2016 HYSPLIT (HYbrid Single-Particle Lagrangian Integrated Trajectory) trajectories at 100, 500, and 1000 meters (m) above ground level (AGL) that illustrate the three-dimensional paths traveled by air parcels to a violating monitor...*

The following is a list of OTR monitoring sites with their corresponding design values.

Table F-1: 2015 Ozone NAAQS Site Design Values

County, State	AQS Site ID	2014-2016 Design Value (ppb)	2015-2017 Design Value (ppb)
Greater Connecticut Area			
Hartford, CT	09-003-1003	74	72
Litchfield, CT	09-005-0005	72	72
New London, CT	09-011-0124	72	76
Tolland, CT	09-013-1001	73	71
New York-Northern New Jersey-Long Island, NY-NJ-CT Area			
Fairfield, CT	09-001-0017	80	79
	09-001-1123	78	77
	09-001-3007	81	83
	09-001-9003	83	83
Middlesex, CT	09-007-0007	79	79
New Haven, CT	09-009-0027	76	77
	09-009-9002	76	82
Queens, NY	36-081-0124	69	74
Richmond, NY	36-085-0067	76	76
Rockland, NY	36-087-0005	72	72
Suffolk, NY	36-103-0002	72	76
	36-103-0004	72	76
Westchester, NY	36-119-2004	74	73
Bergen, NJ	34-003-0006	74	74
Hudson, NJ	34-017-0006	72	70
Middlesex, NJ	34-023-0011	74	75
Hunterdon, NJ	34-019-0001	70	72

County, State	AQS Site ID	2014-2016 Design Value (ppb)	2015-2017 Design Value (ppb)
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE			
Camden, NJ	34-007-0002	74	77
Gloucester, NJ	34-015-0002	73	74
Mercer, NJ	34-021-0005	71	71
	34-021-9991	73	73
Ocean, NJ	34-029-0006	72	73
New Castle, DE	10-003-1010	74	74
	10-003-1013	70	71
	10-003-2004	71	72
Cecil, MD	24-015-0003	74	74
Bucks, PA	42-017-0012	77	80
Chester, PA	42-029-0100	73	73
Delaware, PA	42-045-0002	72	71
Montgomery, PA	42-091-0013	70	72
Philadelphia, PA	42-101-0024	77	78
	42-101-0048	74	76
Baltimore, MD Area			
Baltimore, MD	24-005-1007	72	No data for 2017
	24-005-3001	72	73
Harford, MD	24-025-1001	72	75
	24-025-9001	73	73
Washington, DC-MD-VA Area			
Prince George's, MD	24-033-8003	70	71
District of Columbia	11-001-0043	70	71
Arlington, VA	51-013-0020	72	71
Fairfax, VA	51-059-0030	70	71

Figures F-1 to F-23 in the following pages contain EPA's trajectory analysis results for the proposed non-attainment areas. In each figure's title, the non-attainment area sites are specified.

Figure F-1: HYSPLIT Back Trajectories for Monitors in the Greater Connecticut Non-Attainment Area

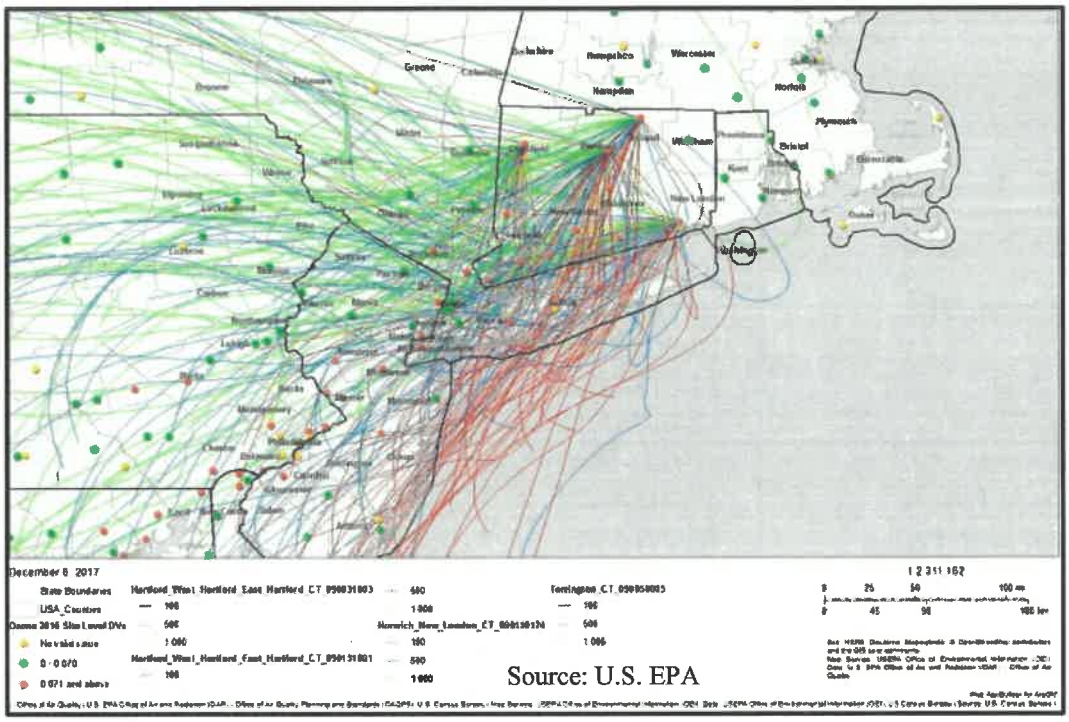


Figure F-2: HYSPLIT Back Trajectories for Monitors in the New York-Northern New Jersey-Long Island, NY-NJ-CT Non-Attainment Area

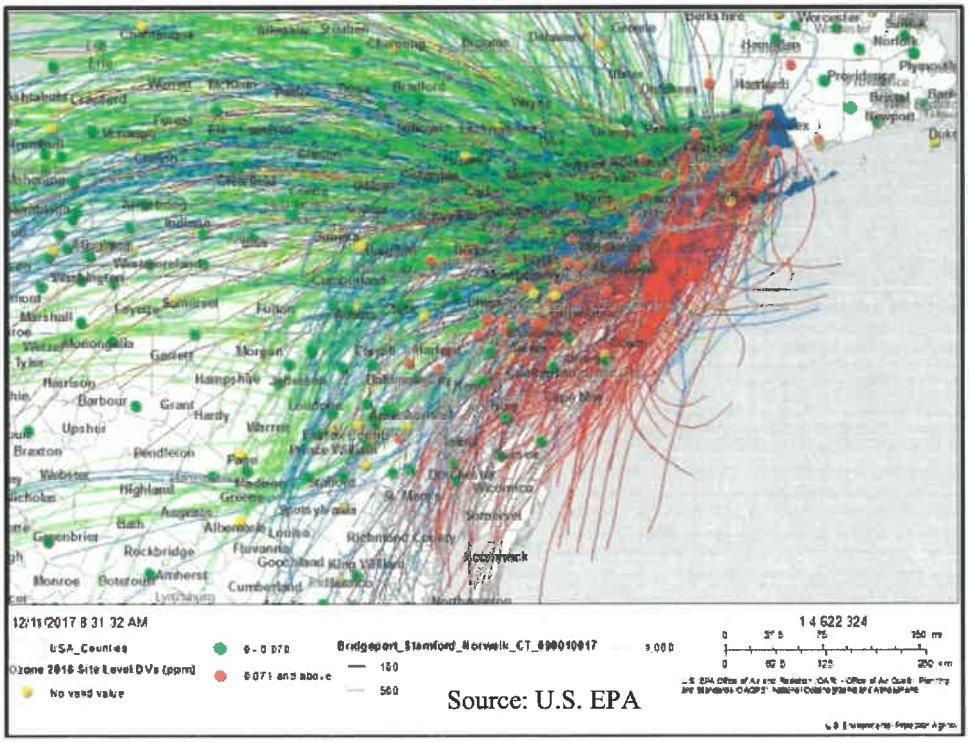


Figure F-3: HYSPLIT Back Trajectories for Monitor 34-007-0002 Camden County, NJ
(in the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE Non-Attainment Area)

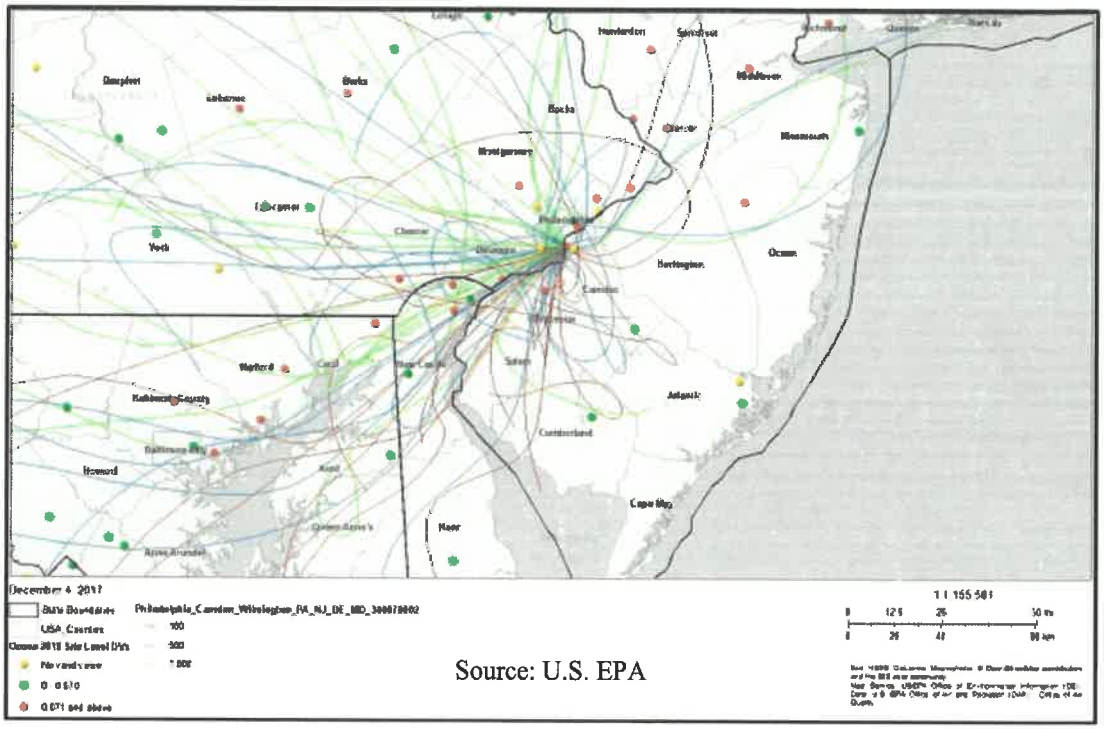


Figure F-4: HYSPLIT Back Trajectories for Monitor 34-015-0002 Gloucester County, NJ
(in the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE Non-Attainment Area)

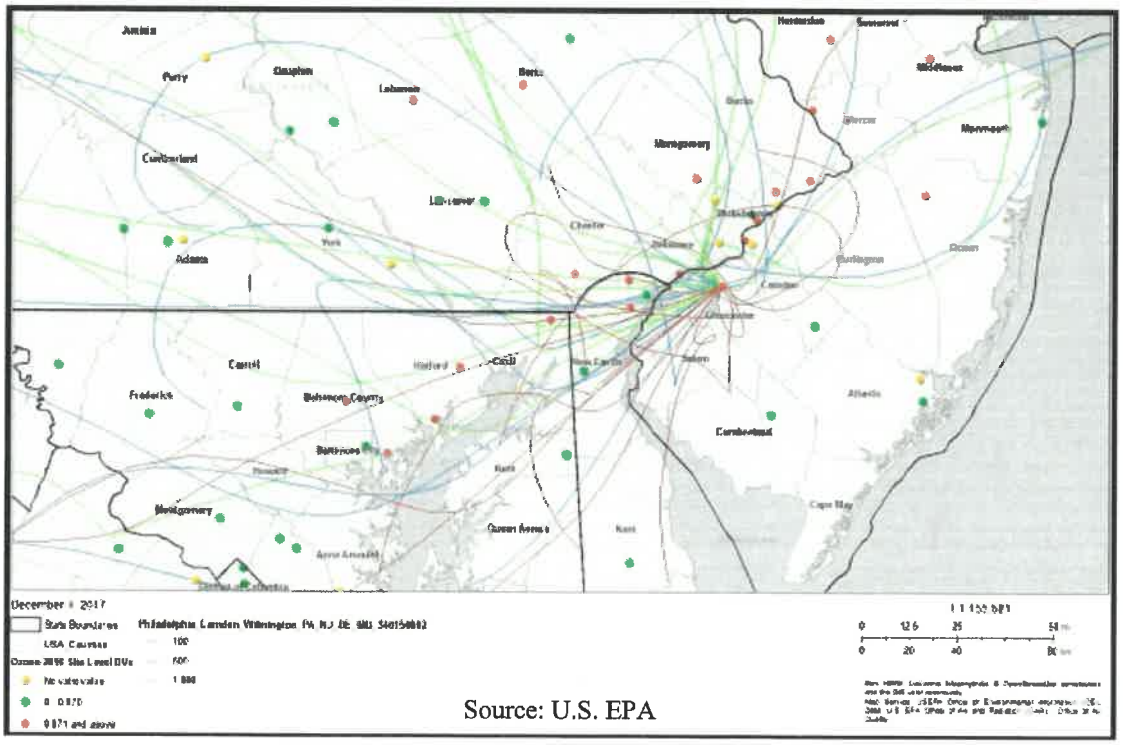


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Figure F-7: HYSPLIT Back Trajectories for Monitor 34-029-0006 Ocean County, NJ
(in the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE Non-Attainment Area)

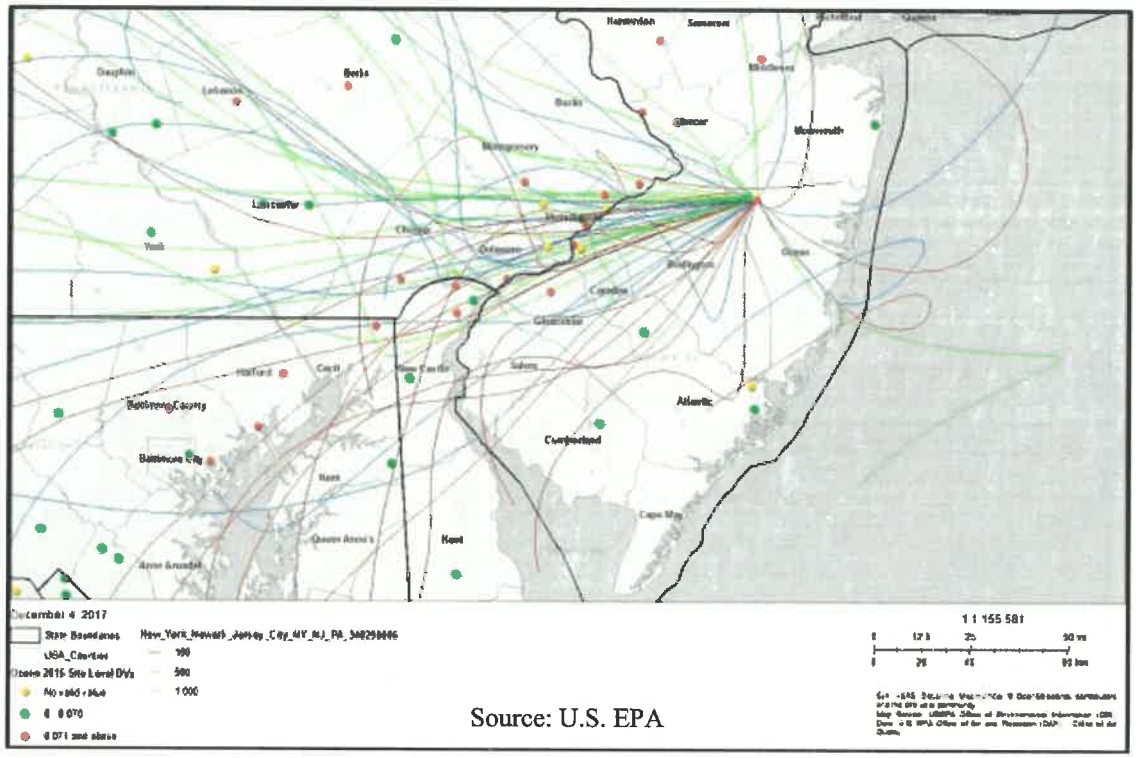


Figure F-8: HYSPLIT Back Trajectories for Monitor 10-003-1010 New Castle County, DE
(in the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE Non-Attainment Area)

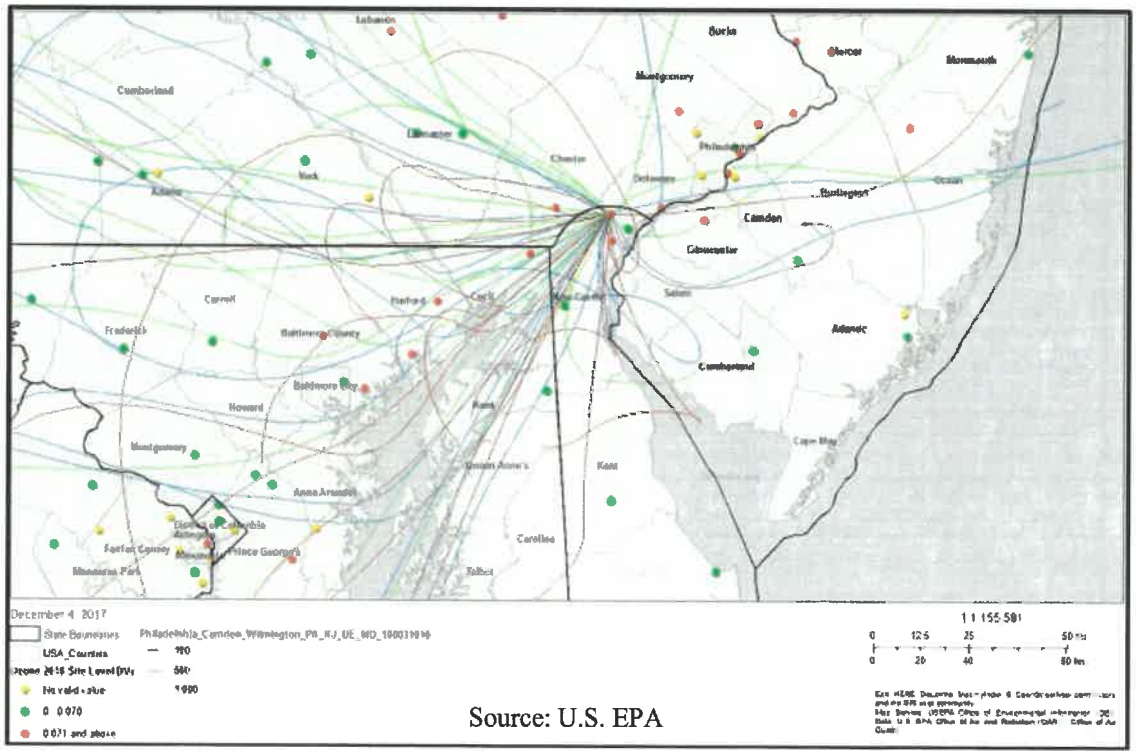


Figure F-9: HYSPLIT Back Trajectories for Monitor 10-003-2004 New Castle County, DE
(in the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE Non-Attainment Area)

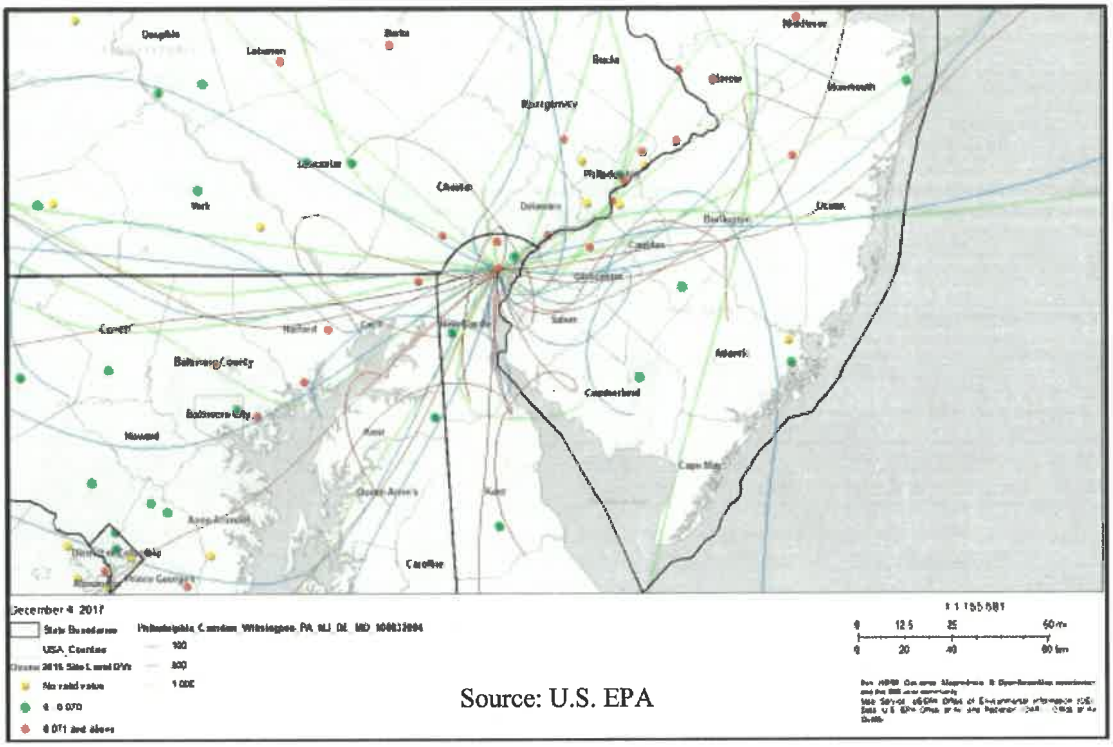


Figure F-10: HYSPLIT Back Trajectories for Monitor 24-015-0003 Cecil County, MD
(in the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE Non-Attainment Area)

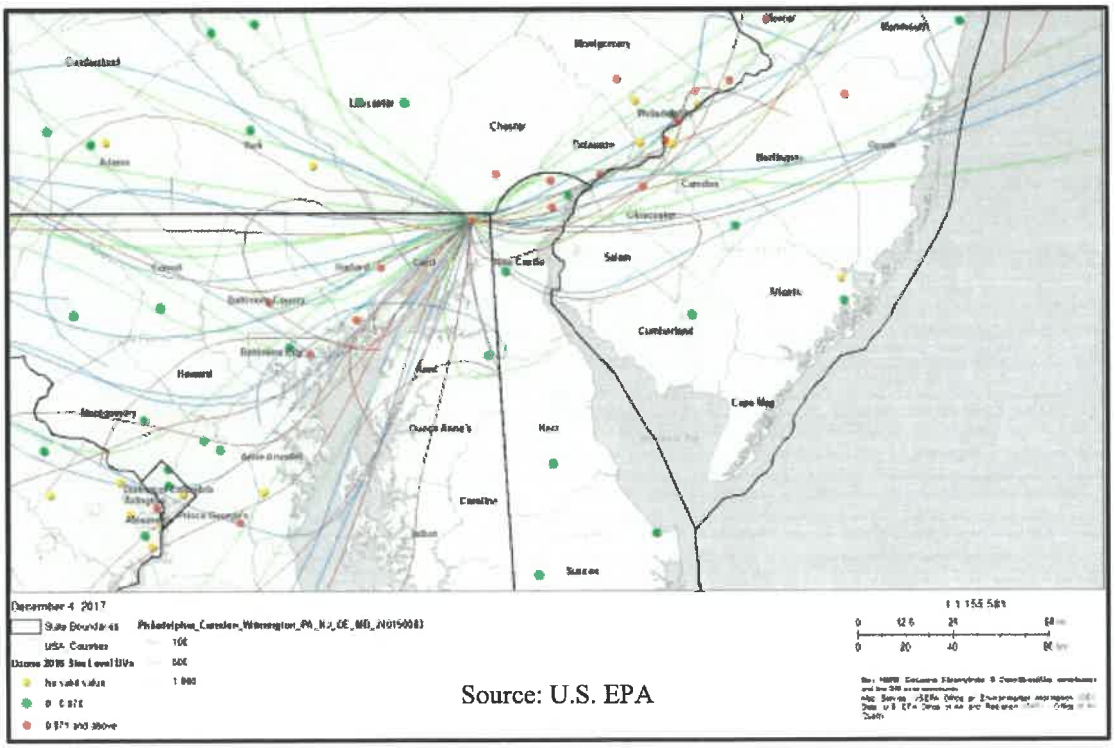


Figure F-11: HYSPLIT Back Trajectories for Monitor 42-017-0012 Bucks County, PA
(in the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE Non-Attainment Area)

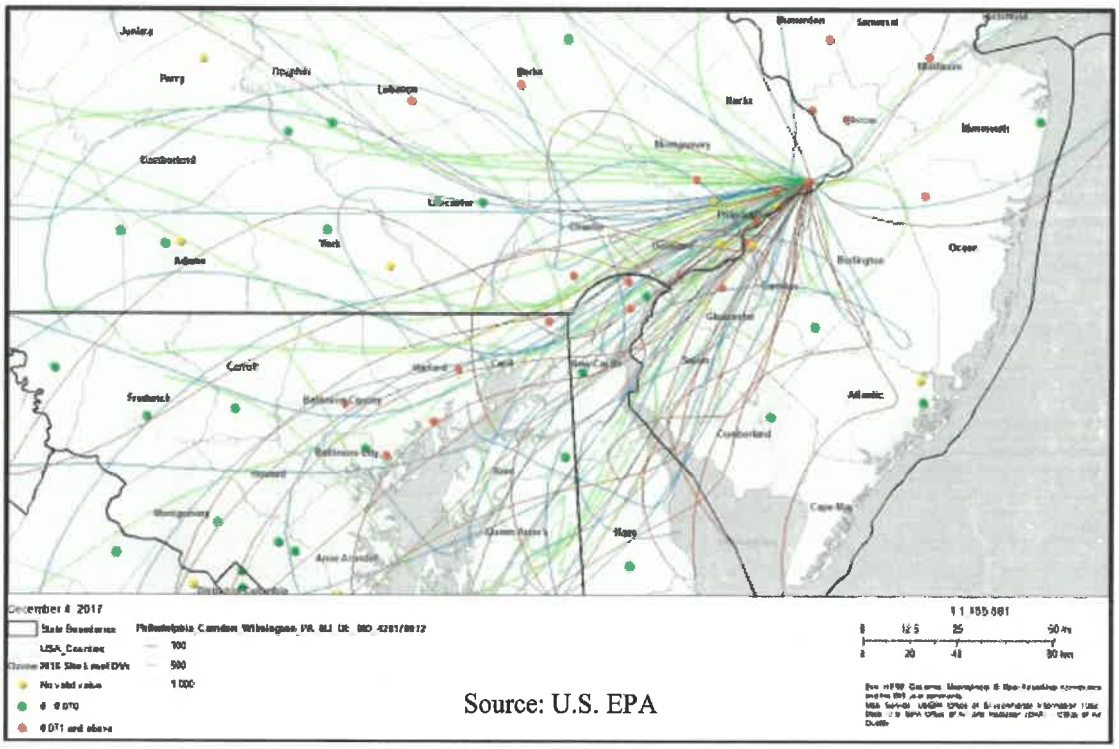


Figure F-12: HYSPLIT Back Trajectories for Monitor 42-029-0100 Chester County, PA
(in the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE Non-Attainment Area)

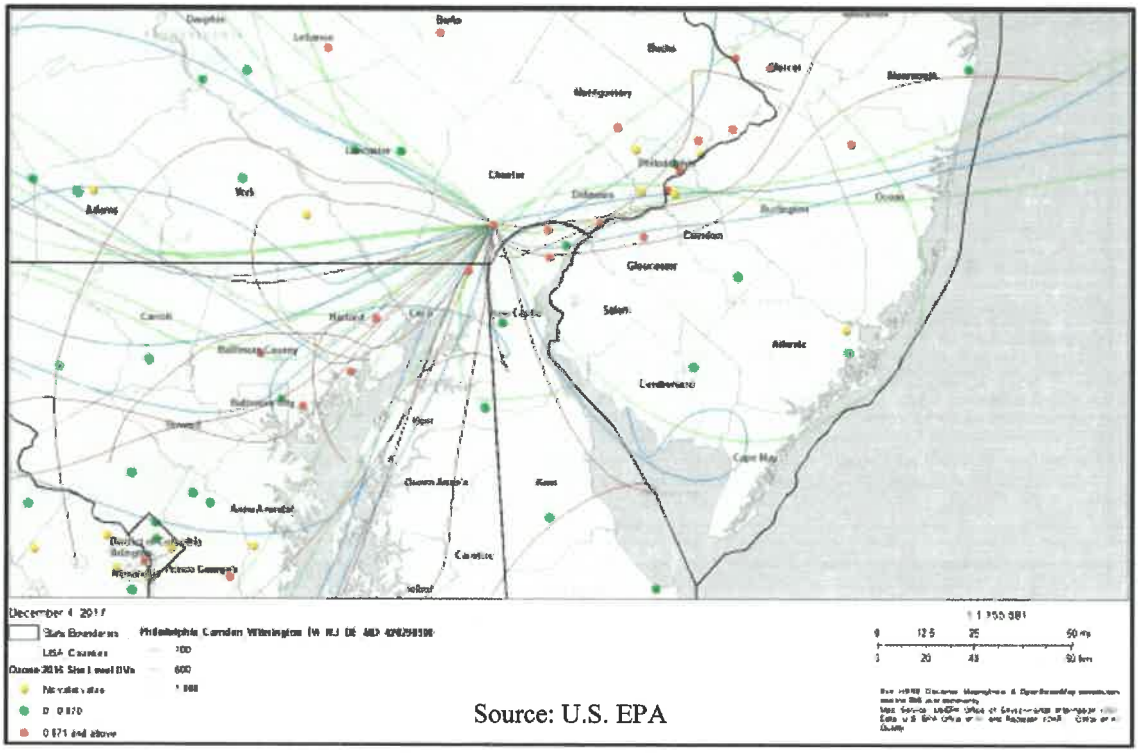


Figure F-13: HYSPLIT Back Trajectories for Monitor 42-045-0002 Delaware County, PA
(in the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE Non-Attainment Area)

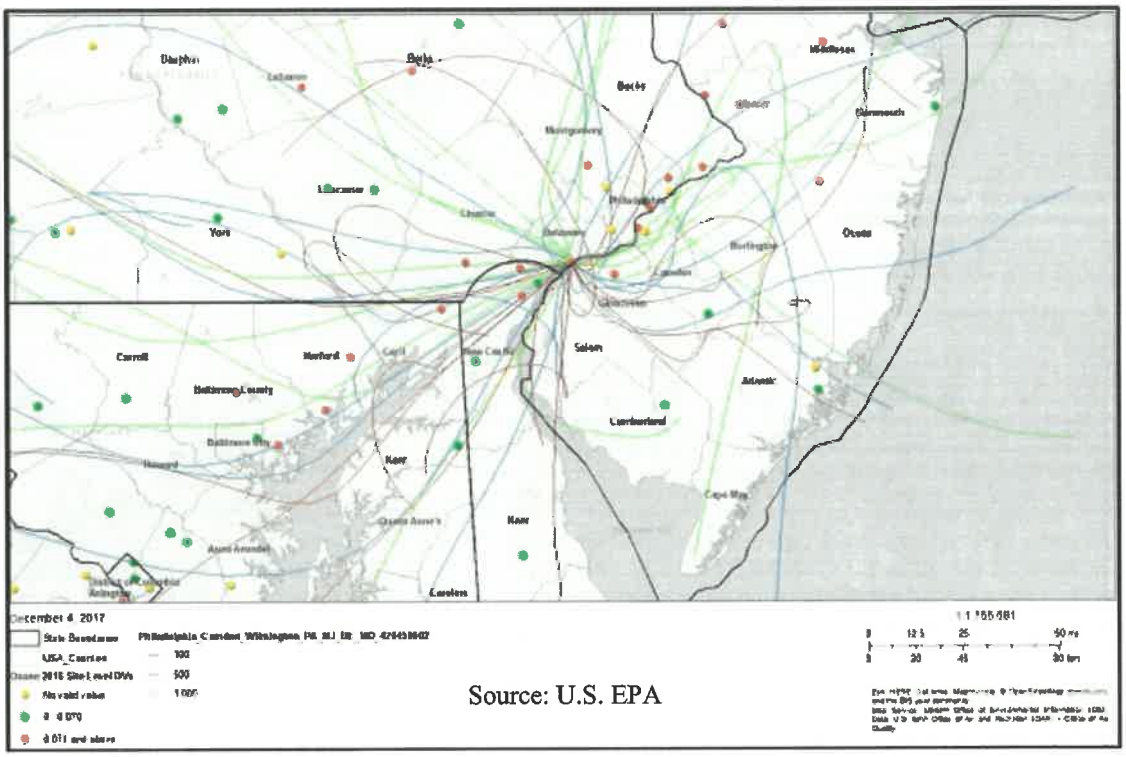


Figure F-14: HYSPLIT Back Trajectories for Monitor 42-101-0024 Philadelphia County, PA
(in the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE Non-Attainment Area)

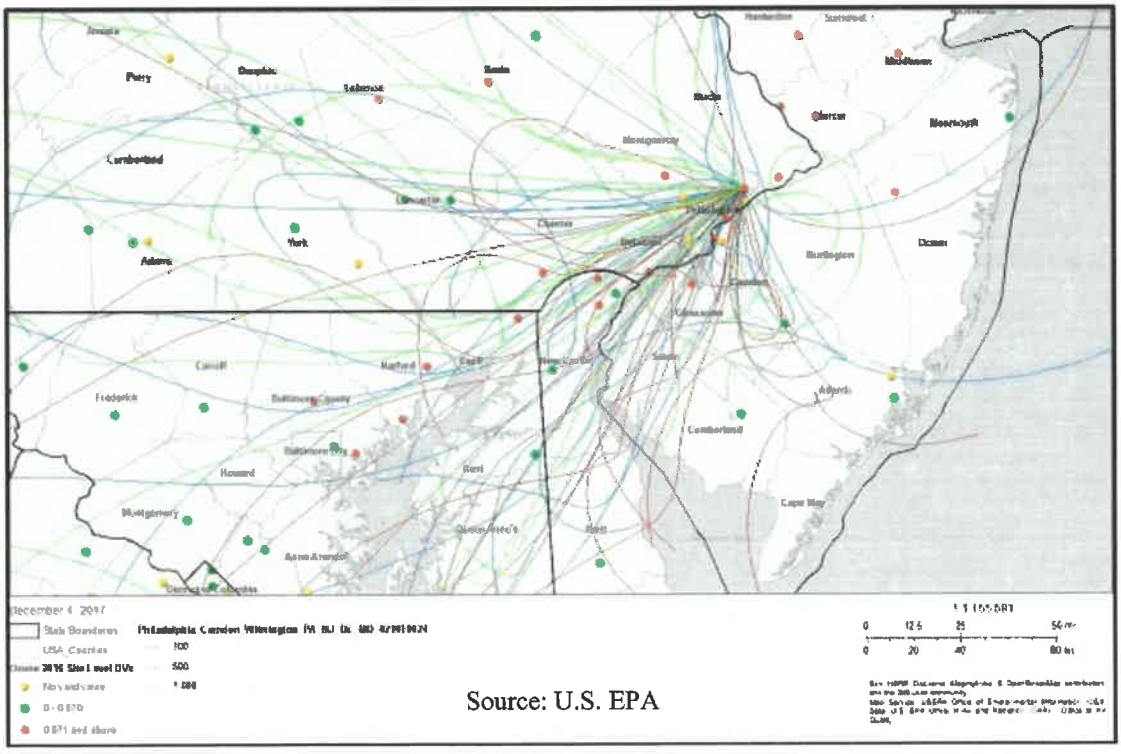


Figure F-15: HYSPLIT Back Trajectories for Monitor 42-101-0048 Philadelphia County, PA
(in the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE Non-Attainment Area)

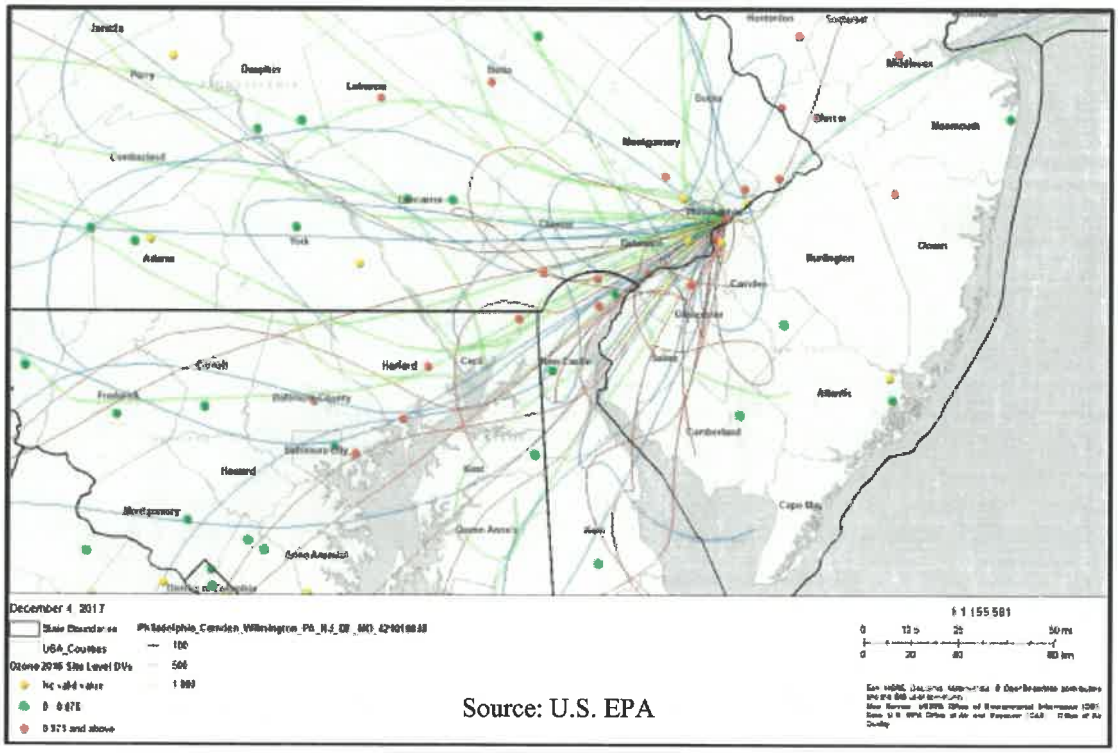
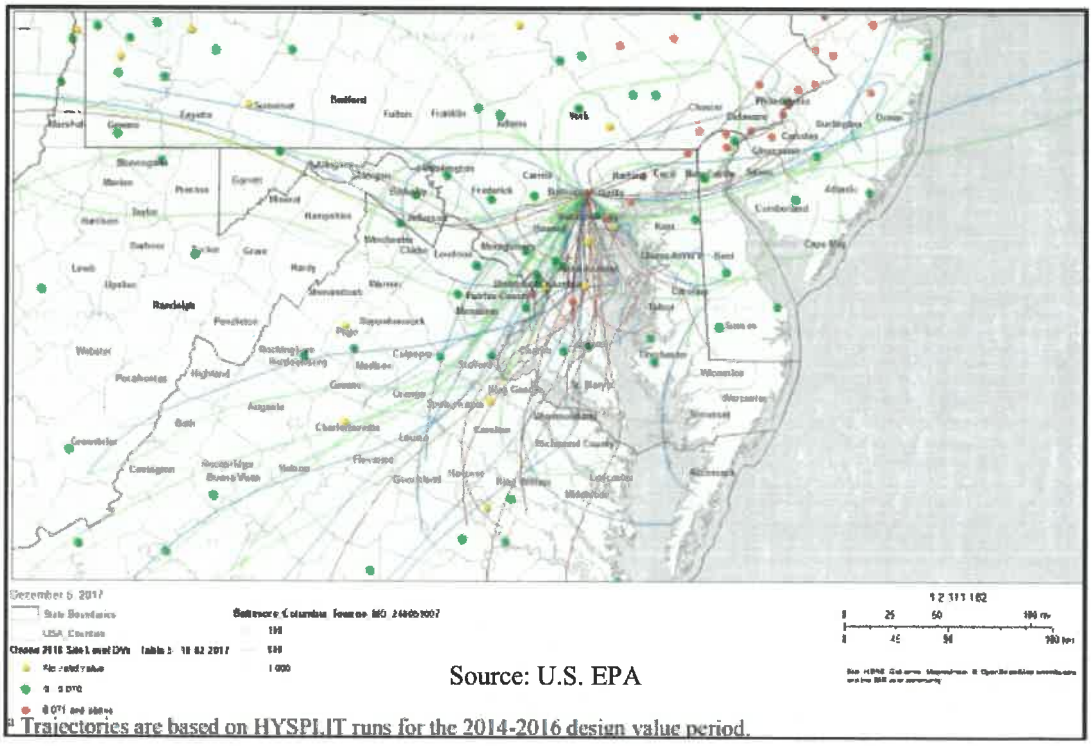
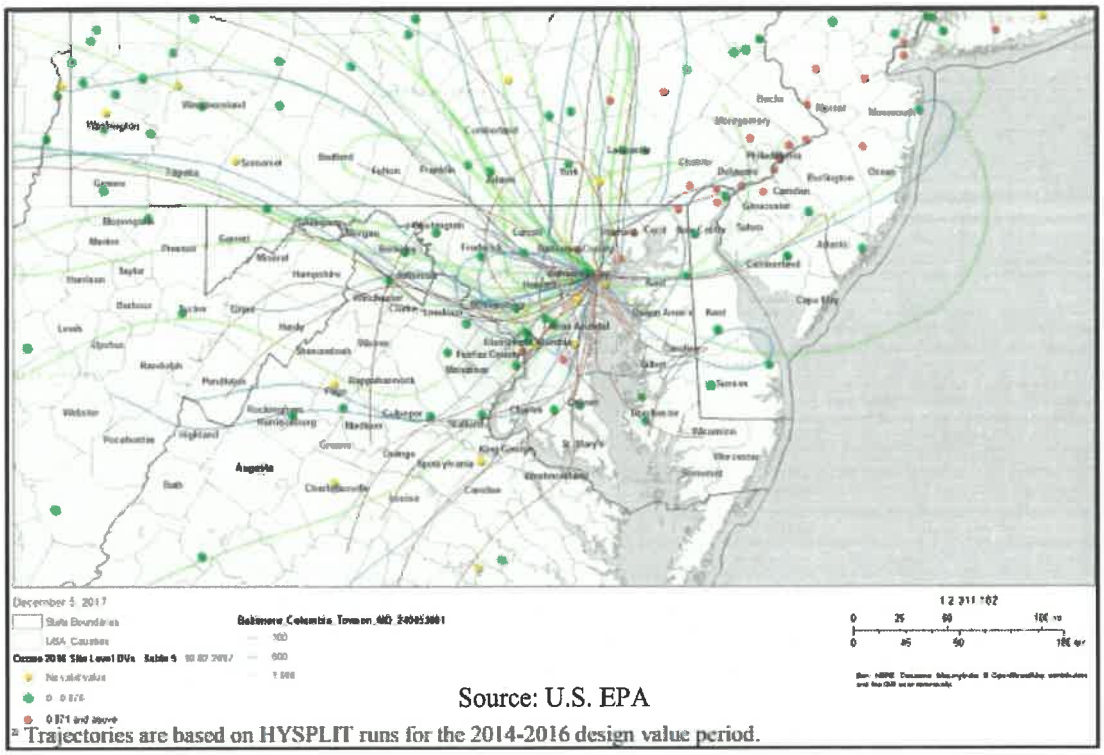


Figure F-16: HYSPLIT Back Trajectories for Monitor 24-005-1007 Baltimore County, MD
(in the Baltimore, MD Non-Attainment Area)



[1] Trajectories are based on HYSPLIT runs for the 2014-2016 design value period.

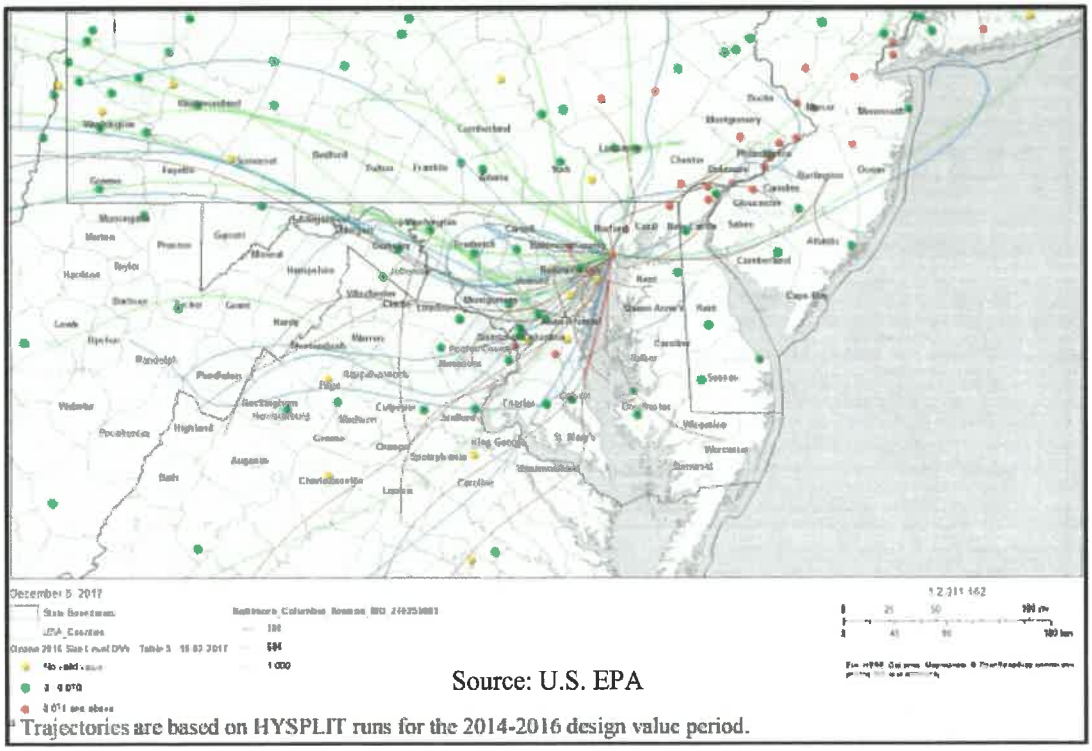
Figure F-17: HYSPLIT Back Trajectories for Monitor 24-005-3001 Baltimore County, MD (in the Baltimore, MD Non-Attainment Area)



Source: U.S. EPA

Trajectories are based on HYSPLIT runs for the 2014-2016 design value period.

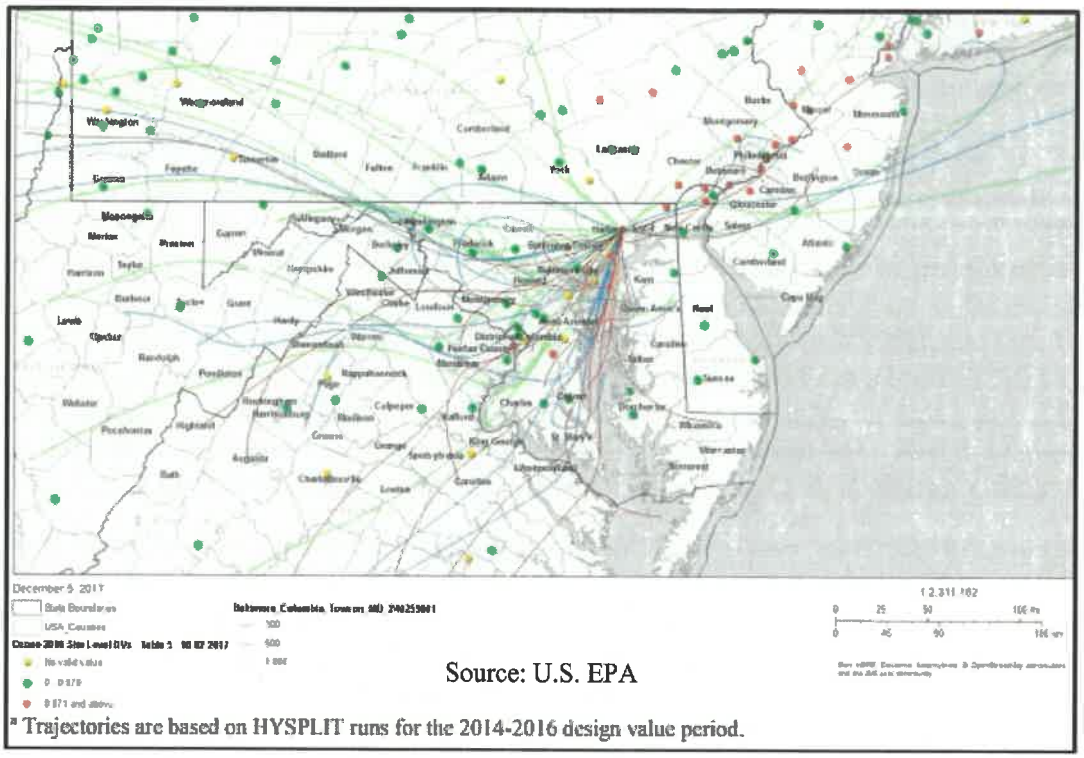
Figure F-18: HYSPLIT Back Trajectories for Monitor 24-025-1001 Harford County, MD (in the Baltimore, MD Non-Attainment Area)



Source: U.S. EPA

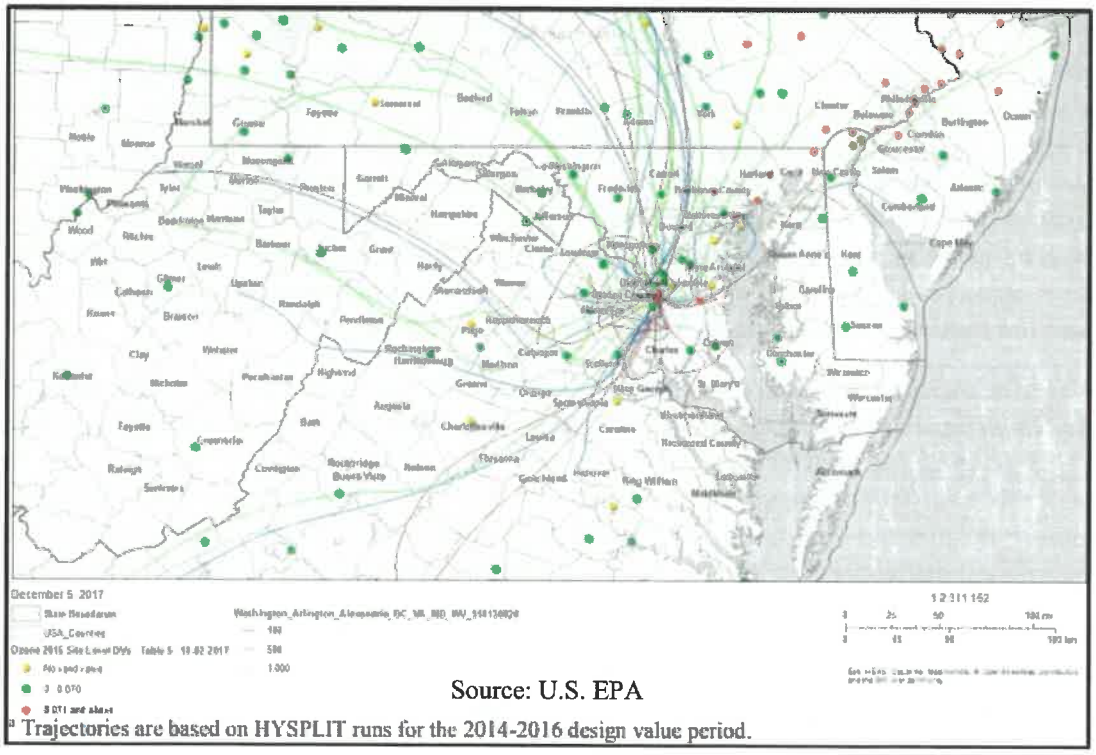
Trajectories are based on HYSPLIT runs for the 2014-2016 design value period.

Figure F-19: HYSPLIT Back Trajectories for Monitor 24-025-9001 Harford County, MD
(in the Baltimore, MD Non-Attainment Area)



[a] Trajectories are based on HYSPLIT runs for the 2014-2016 design value period.

Figure F-20: HYSPLIT Back Trajectories for Monitor 51-013-0020 Arlington County, VA
(in the Washington, DC Non-Attainment Area)



[a] Trajectories are based on HYSPLIT runs for the 2014-2016 design value period.

Appendix G: Trajectory Analyses, 2008 Ozone NAAQS as found in EPA's Air Quality Modeling Technical Support Document for the CSAPR Update, August 2016

Appendix E of the *Air Quality Modeling Technical Support Document for the Cross-State Air Pollution Update Rule* states the following:

> *For the back trajectory, EPA used a technique involving independent meteorological inputs to examine the general plausibility of these linkages. Using the HYSPLIT (HYbrid Single-Particle Lagrangian Integrated Trajectory) model along with observation-based meteorological wind fields, EPA created air flow back trajectories for each of the 19 non-attainment or maintenance-only receptors on days with a measured exceedance in 2011 and on exceedance days in several other recent high ozone years (i.e., 2005, 2007, 2010, and 2012). One focus of this analysis was on trajectories for exceedance days occurring in 2011, since this was the year of meteorology that was used for air quality modeling to support this rule. The trajectories during the four additional years were compared to the transport patterns in 2011 to examine whether common transport patterns are present.*
>
> *Air-parcel trajectories were calculated based on meteorological fields obtained from the Eta Data Assimilation System (EDAS). EDAS is an intermittent data assimilation system that uses successive three-hour model forecasts to generate gridded meteorological fields that reflect observations. The three-hour analysis updates allow for the assimilation of high-frequency observations, such as wind profiler data, Next Generation Weather Radar (NEXRAD) data, and aircraft-measured meteorological data. In this manner, the forecast wind fields are aligned to measured wind data.*
>
> *For this analysis, site-specific backward air-parcel trajectories were calculated with the HYSPLIT model from heights at 250-m, 500-m, 750-m, 1000-m, and 1500 m above ground level on days with measured exceedances at the given receptor site. The trajectories were initialized at multiple elevations aloft in order to consider the effects of vertical variations in wind flows on transport patterns. Trajectories were tracked backward in time for 96 hours (i.e., 4 days) for each of several time periods (i.e., initialization times) on each day an exceedance was monitored. Back trajectories were initialized at 0800, 1200, and 1500 local Standard Time (LST). The morning initialization time roughly corresponds to the time when the morning boundary layer is rising and pollutants that were transported aloft overnight begin to mix down to the surface. The afternoon initialization times roughly span the time of the day with highest ozone concentrations.*
>
> *Once the trajectories were created, they were converted to geographic files that can be read by programs such as Google Earth or ArcGIS. These files enable the characterization of the geographic location of each trajectory for every hour that was run. The point locations along the trajectory paths were used to create line densities that correlate to the number of times a trajectory passed through a geographic area. These line densities provide a general sense of the frequency at which an air parcel passed over given areas.*

For further information regarding EPA's analysis, see Appendix E of the *Air Quality Modeling Technical Support Document for the Cross-State Air Pollution Update Rule*, August 2016, which has been listed in the references Section of this document.

Figure G-1 to G-8 in the following pages contain EPA's trajectory analysis results for sites in the OTR that have been identified as 'non-attainment' or 'maintenance'. In each figure's title, the site is specified, along with the states identified as significantly contributing to the monitor. Maine was not identified as contributing significantly to any of these events.

Figure G-1: Upwind States Linked to Fairfield Co., CT Site 090019003: IN, MD, MI, NJ, NY, OH, PA, VA, and WV

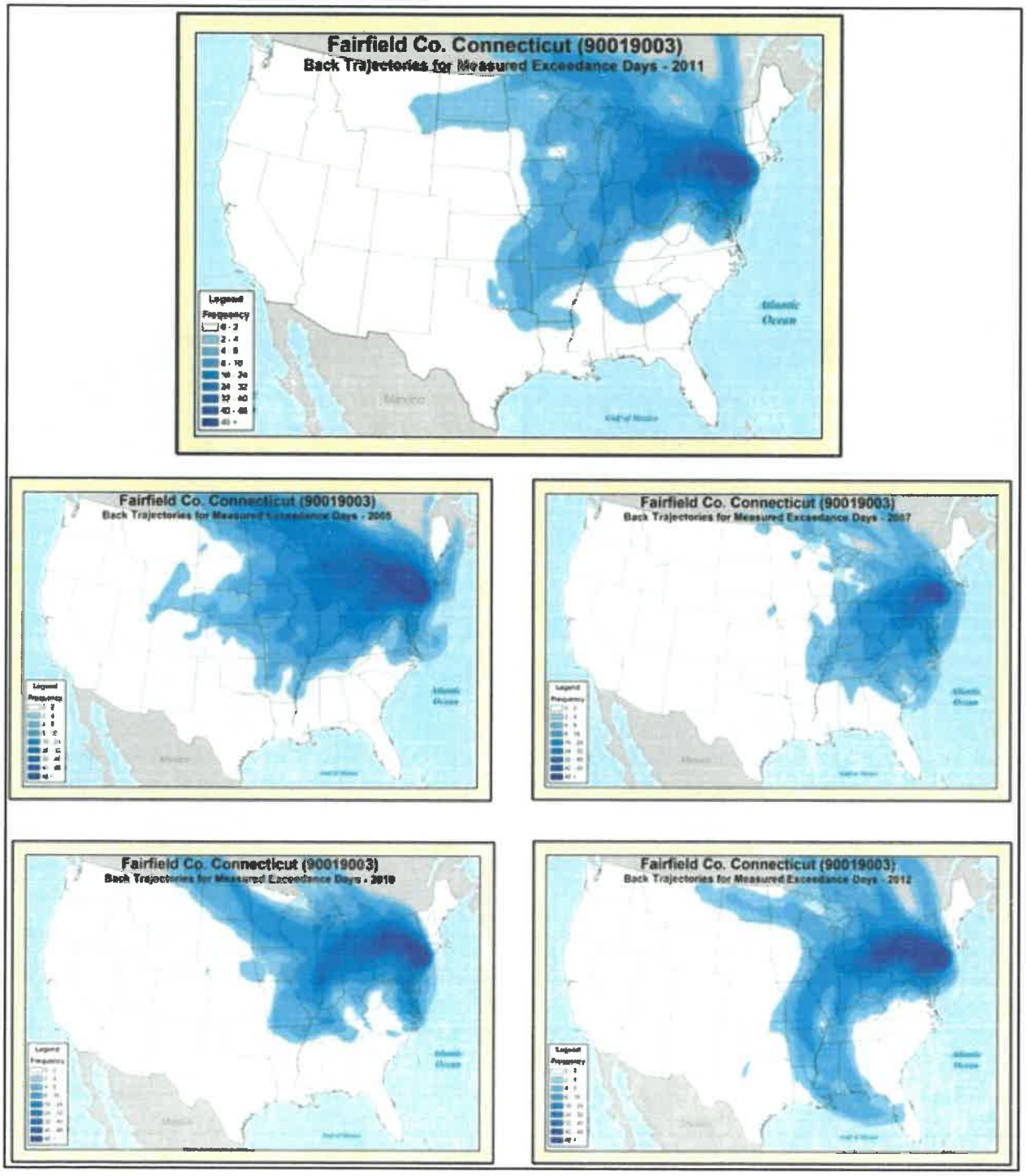


Figure G-2: Upwind States Linked to Fairfield Co., CT Site 090013007: IN, MD, MI, NJ, NY, OH, PA, VA, and WV

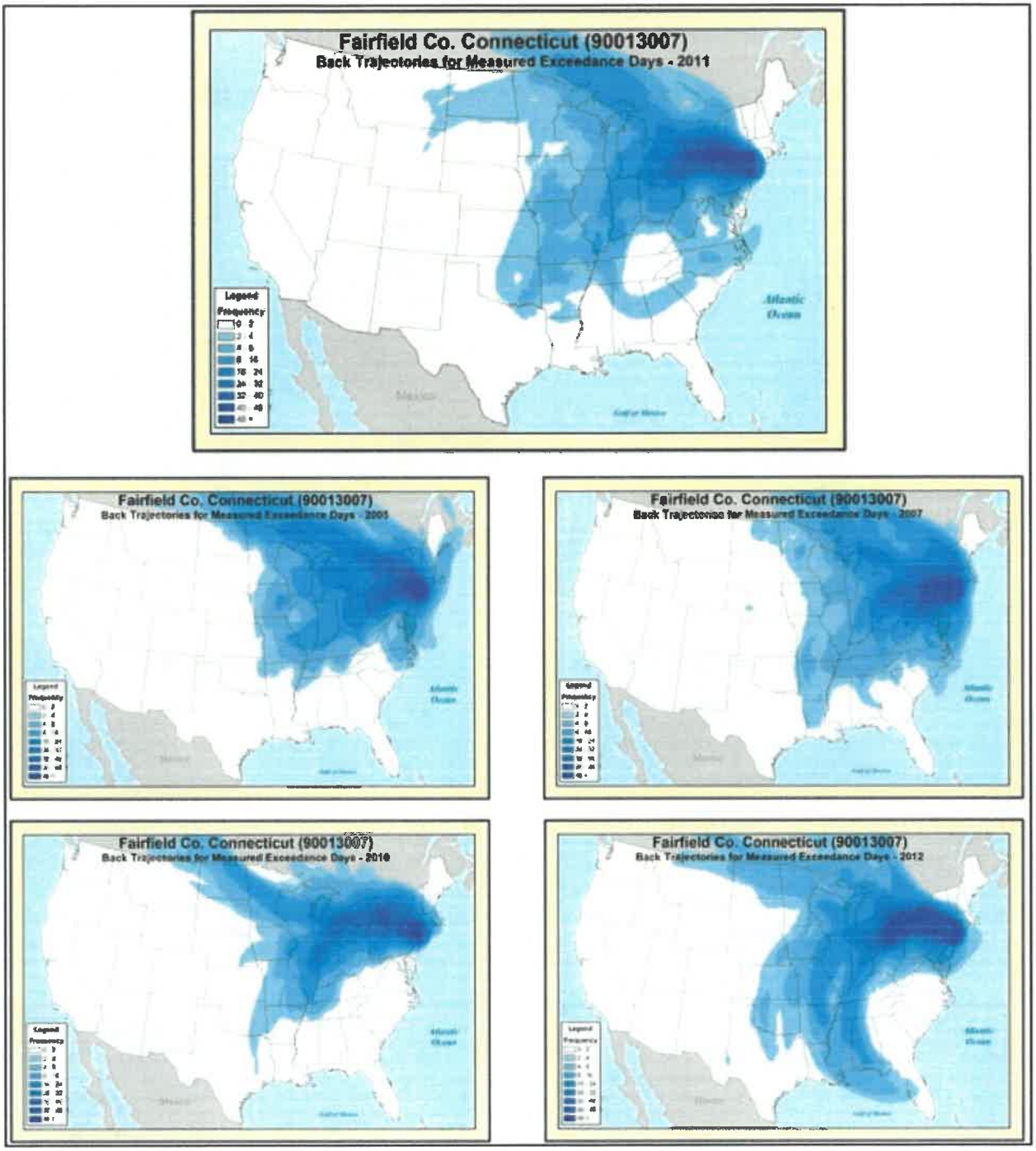


Figure G-3: Upwind States Linked to Fairfield Co., CT Site 090010017: MD, NJ, NY, OH, PA, VA, and WV

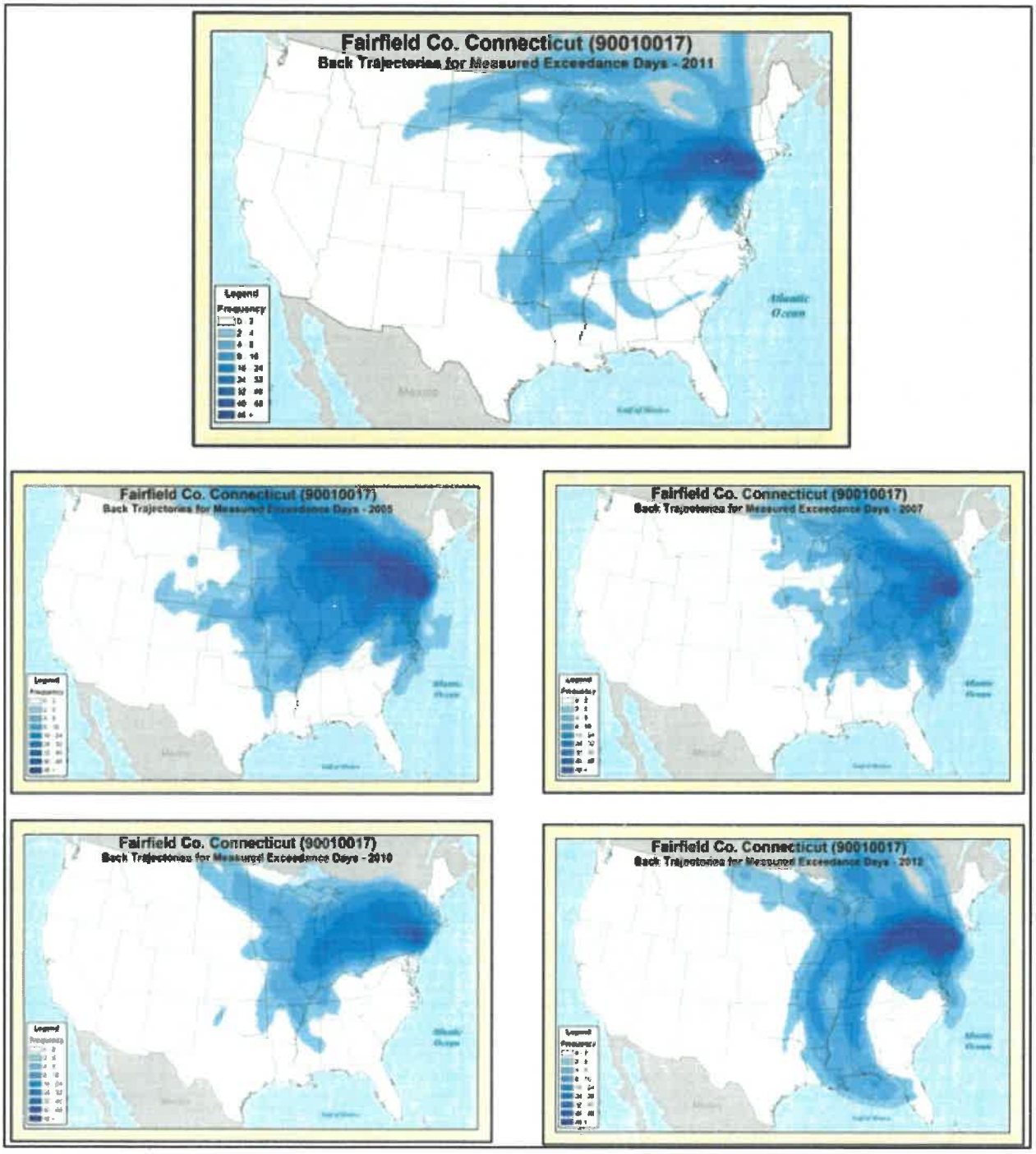


Figure G-4: Upwind States Linked to New Haven Co., CT Site 090099002: MD, NJ, NY, OH, PA, and VA

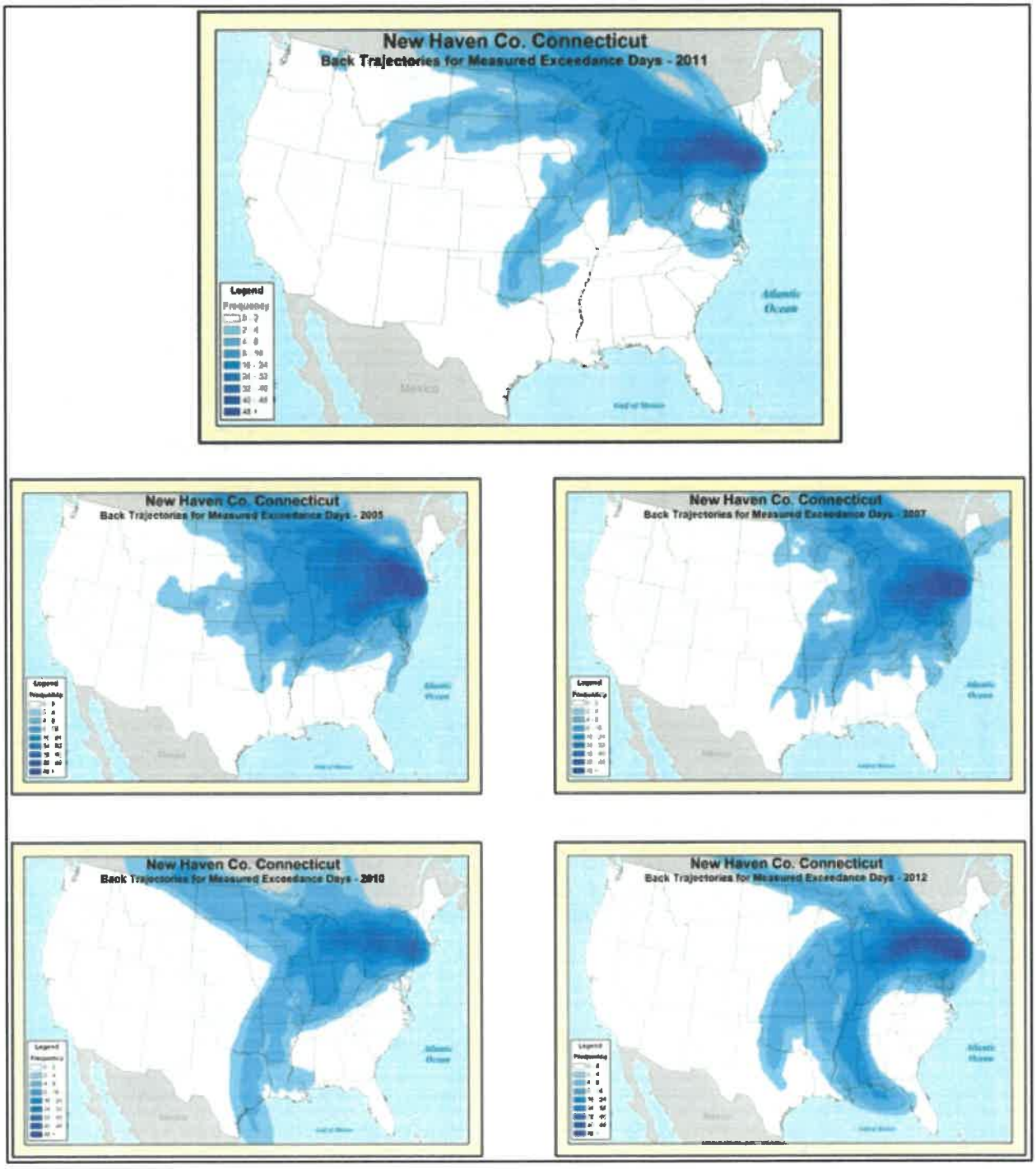


Figure G-5: Upwind States Linked to Richmond Co., NY Site 360850067: IN, KY, MD, NJ, OH, PA, VA, and W

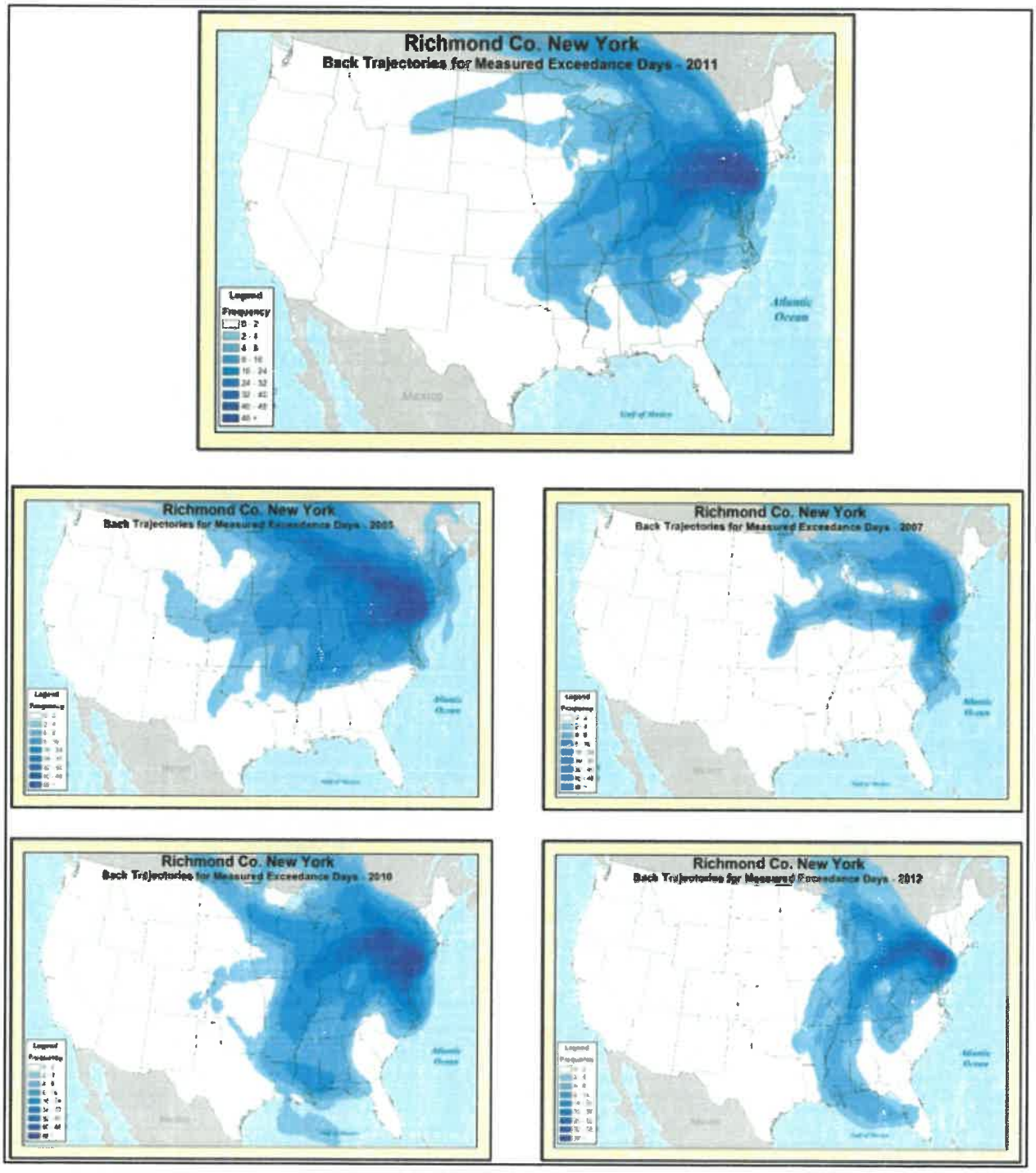


Figure G-6: Upwind States Linked to Suffolk Co., NY Site 36030002: IL, IN, MD, MI, NJ, OH, PA, VA, and WV

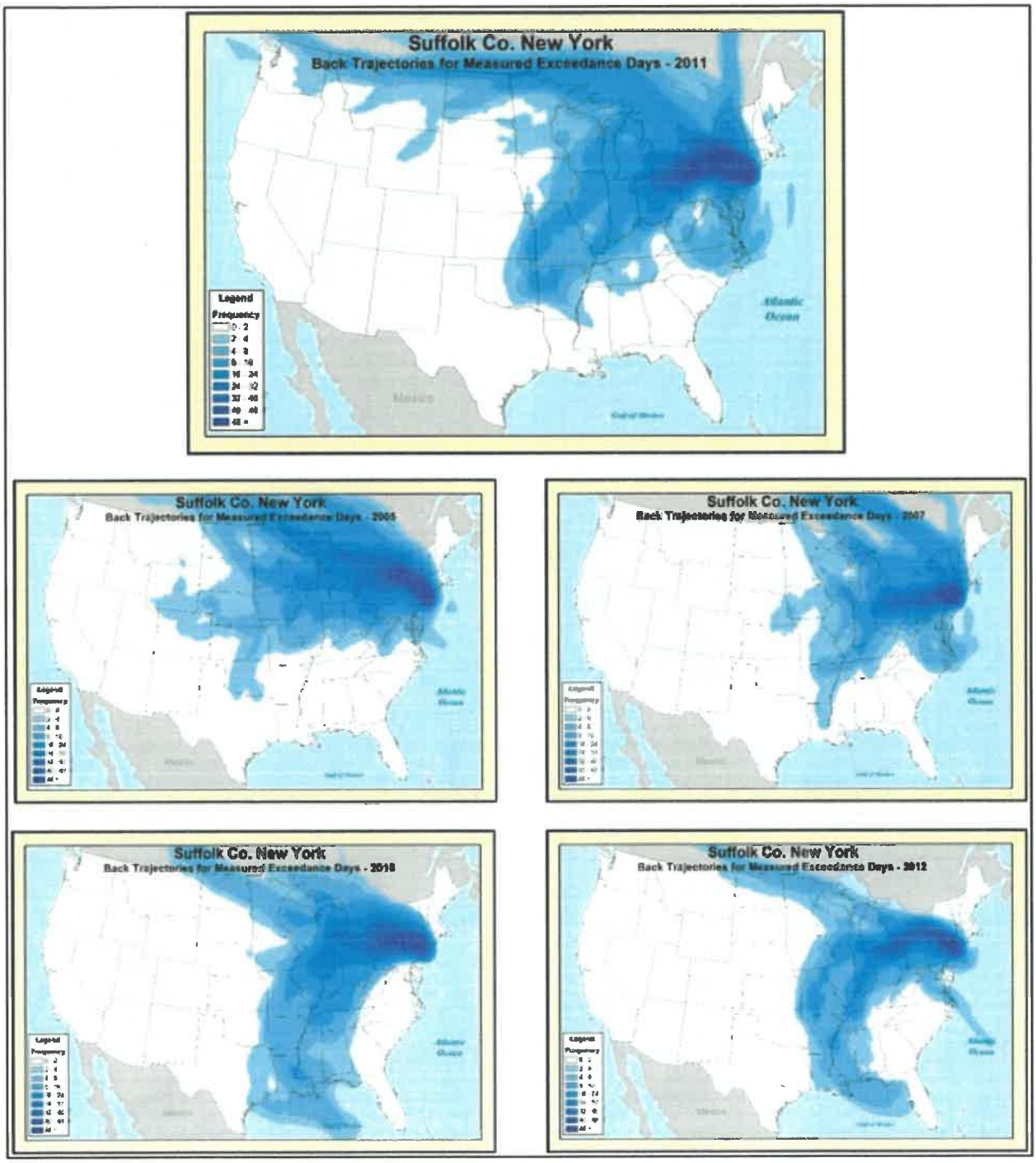


Figure G-7: Upwind States Linked to Philadelphia Co., PA Site 421010024: DE, IL, IN, KY, MD, NJ, OH, TN, TX, VA, and WV

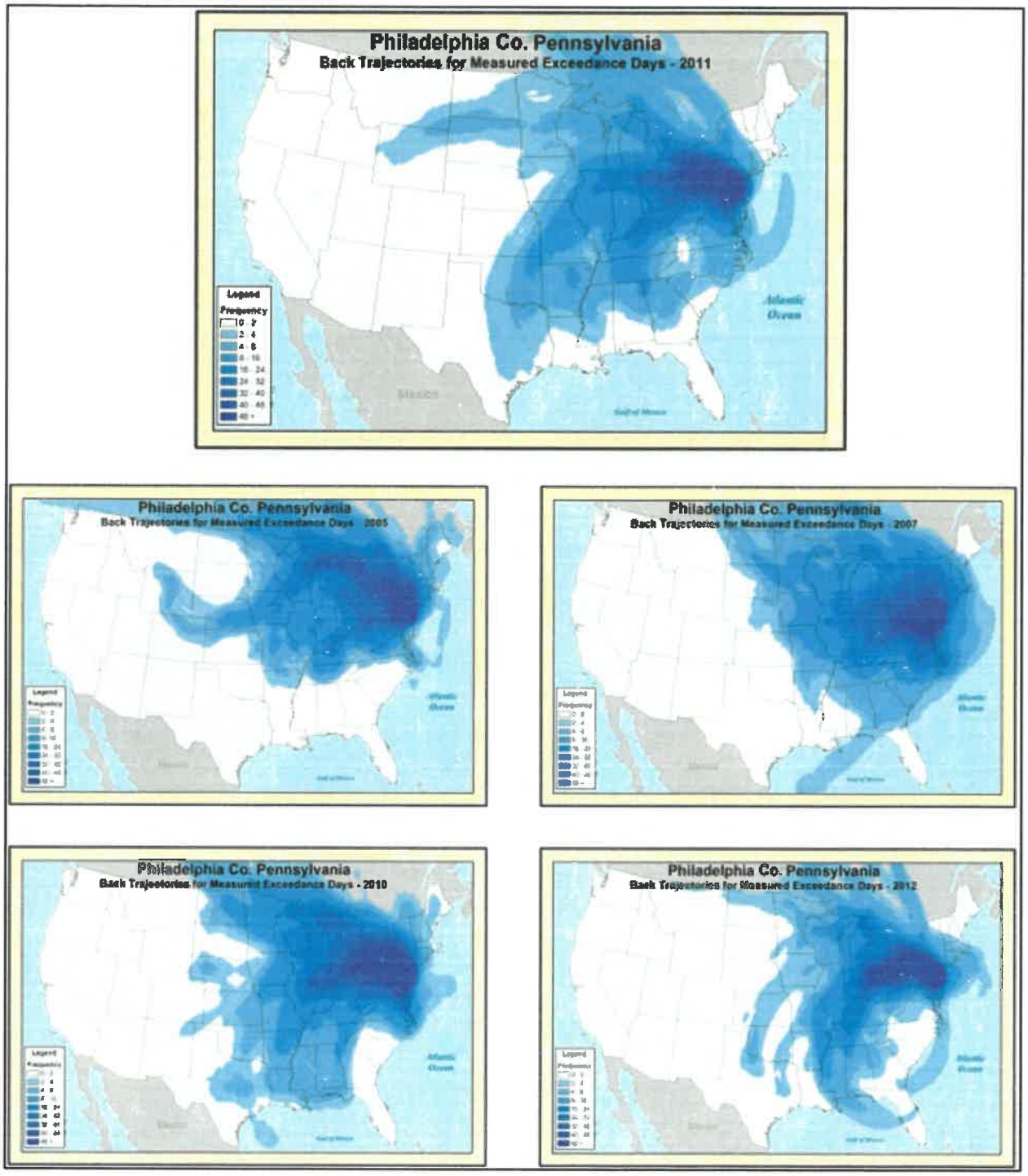
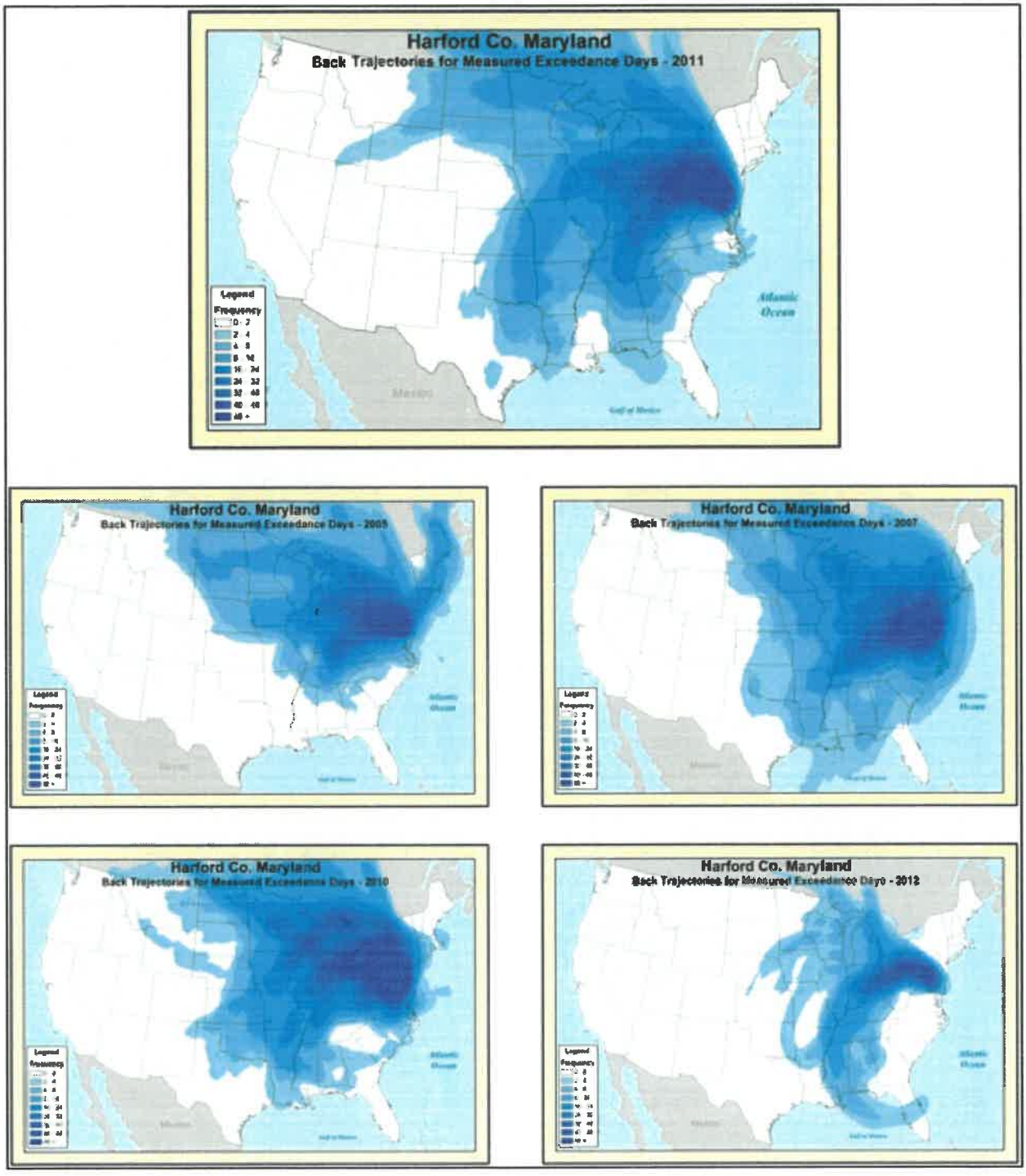


Figure G-8: Upwind States Linked to Harford Co., MD Site 240251001: IL, IN, KY, MI, OH, PA, TX, VA, and WV Washington, D.C. is also linked to this receptor.



10/25/19
Draft

Revisions to the State Implementation Plan (SIP) for the Control of Ozone Air Pollution
Limited Maintenance Plan for the Portland Maine Ozone Maintenance Area

1. Background

Under the 1990 Clean Air Act Amendments (CAA) nine Maine counties were designated as nonattainment for the 1979 1-hour National Ambient Air Quality Standard (NAAQS) for ozone: York, Cumberland and Sagadahoc counties (Planning Area 1); Androscoggin and Kennebec counties (Planning Area 2); and Knox and Lincoln counties (Planning Area 3) were designated as "moderate" nonattainment, while Waldo and Hancock counties (Planning Area 4) were designated as "marginal" nonattainment for ozone.

On July 16, 1997, the U.S. Environmental Protection Agency (EPA) issued updated final air quality 8-hour standards for ozone. After an extensive scientific review, EPA concluded that the 1-hour ozone standard did not provide sufficient health protection against extended periods of moderately elevated ozone. The 1997 8-hour ozone NAAQS (set at a level of 0.084 parts per million (ppm)) was based on an 8-hour average of ozone concentrations and more directly related to ozone concentrations associated with health effects.

Maine had two nonattainment areas under the 1997 ozone standard. The Portland Ozone Maintenance Area consists of 57 cities and towns in York, Cumberland and Sagadahoc Counties along with Durham, Maine in Androscoggin County, and was designated as "marginal" nonattainment for the 1997 8-hour ozone standard (see Figure 1)[1]. Based on 2003-2005 monitoring data, this area was meeting the 1997 ozone NAAQS. In 2006, the Maine Department of Environmental Protection (Department) submitted a request to redesignate this area to attainment, and approved a 10-year maintenance plan pursuant to section 175A of the CAA demonstrating that the area will maintain compliance with the NAAQS for at least 10 years after EPA approval of the redesignation request. The Department's redesignation request was approved on December 11, 2006.[2]

Section 175A(b) of the Clean Air Act also requires that areas designated non-attainment submit a second 10-year maintenance plan demonstrating continued compliance with the NAAQS during the 10-year period following the expiration of the first maintenance plan. The second 10-year maintenance plan for the Portland Ozone Maintenance Area is required to address the period from 2016 through 2026.

Maine did not previously address the requirement for a second 10-year maintenance plan due to EPA's 2015 promulgation of a final rule[3] implementing the 2008 ozone NAAQS. Under EPA's 2015 implementation rule, states were no longer responsible for developing and submitting maintenance plans for former nonattainment areas under the 1997 ozone NAAQS (subject to conditions).

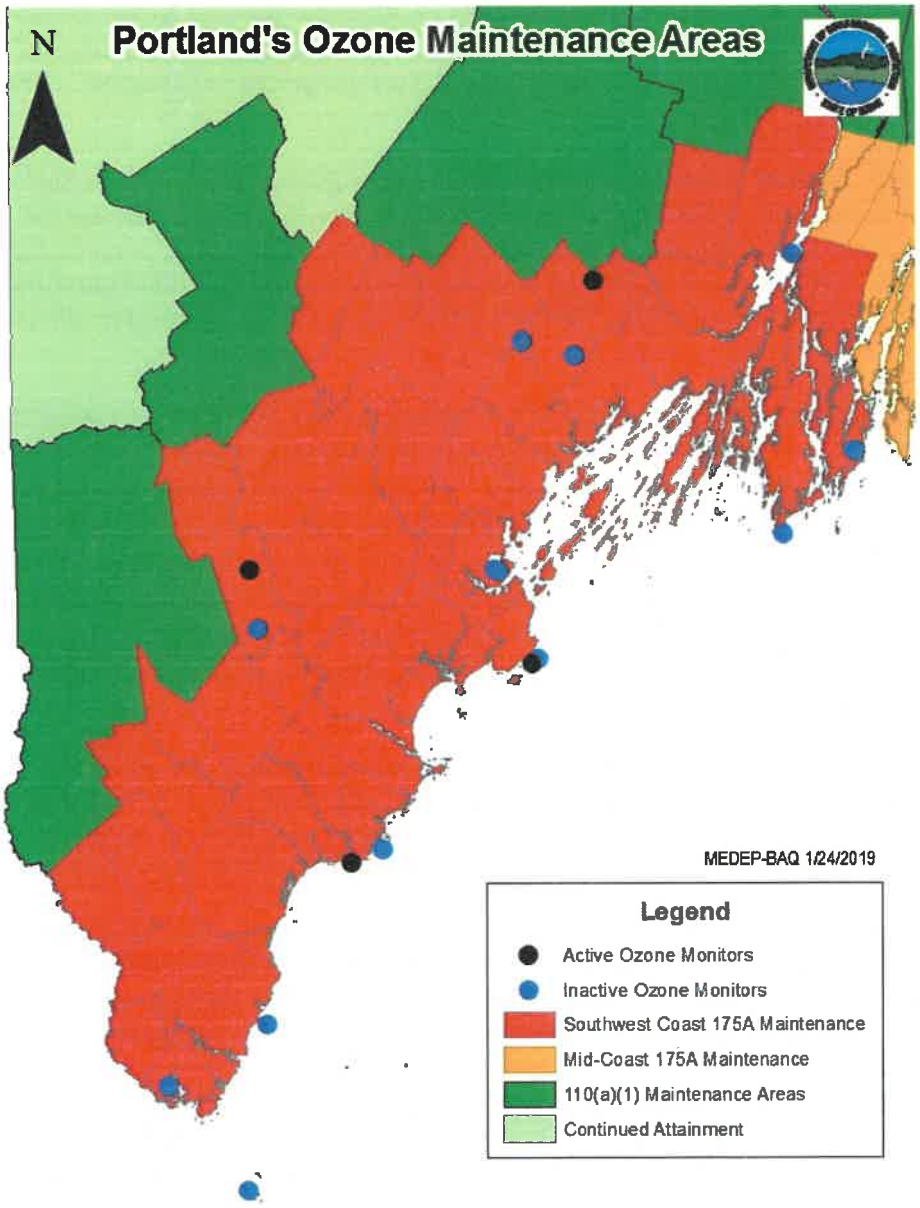
Environmental groups subsequently challenged parts of this rule and filed a petition for judicial review of several aspects of EPA's implementation rule. Included in the challenge was EPA's excusal of former 1997 ozone nonattainment areas (i.e., redesignated areas) that were designated as attainment for the 2008 ozone standard, from requirements to submit a second maintenance plan for the 1997 ozone standard[4].

---

[1] The other 8-hour ozone nonattainment area is the Hancock, Knox, Lincoln and Waldo Counties "Subpart 1, Basic" nonattainment area consisting of coastal towns and islands in these counties.
[2] 71 FR 71489
[3] "Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements 80 FR 12264
[4] The 2008 ozone NAAQS was established at 75 ppb for an 8-hour average.

On February 16, 2018. The D.C. Circuit Court issued a decision in *South Coast Air Quality Management District v. EPA* that granted this and other parts of the petitioner's challenge.[5] The Court held that

Figure 1
The Portland Ozone Maintenance Area and Monitoring Sites



"orphan maintenance areas", such as the Portland Ozone Maintenance Area are required to submit second maintenance plans under section 175A(b) of the CAA.

[5] 882 F.3d 1138

2. The Limited Maintenance Plan Option for Second 10-Year Plans

Section 175A of the CAA establishes the general framework for maintenance plans, including a requirement that the maintenance plan must provide for maintenance of the NAAQS for at least 10 years after redesignation[6], including any additional control measures necessary for continued maintenance. Maintenance plans must also contain contingency measures that can be promptly implemented if a violation of the NAAQS occurs after redesignation.

Beyond basic requirements however, Section 175A of the CAA does not define the contents of a maintenance plan. As a result, EPA possesses the authority to exercise reasonable discretion when determining these requirements, and in November 1994, issued guidance on a limited maintenance plan option for a subset of ozone nonattainment areas.[7] The EPA guidance memo states that to qualify for the limited maintenance plan option, an area's air quality design value must no more than 85% of the NAAQS, or 0.071 ppm for the 1997 ozone standard.[8]

EPA's Limited Maintenance Plan (LMP) guidance specifies that such plans should include the following components:

1) **Maintenance Demonstration.** For the LMP option, the maintenance demonstration requirement will be satisfied if the area meets the air quality criteria necessary to qualify. (There is no need to project emissions over the maintenance period).

2) **Emissions Inventory.** A current emissions inventory (attainment/maintenance inventory), which can be used to demonstrate attainment of the NAAQS;

3) **Monitoring Network Verification of Continued Attainment.** To verify the attainment status of an area over the maintenance period, the maintenance plan should contain provisions for the continued operation of an appropriate, EPA-approved air quality monitoring network in accordance with 40 CFR part 68.

4) **Contingency Plan.** Contingency provisions, to make prompt correction of any violation of the NAAQS that may occur after the redesignation of the area to attainment. The contingency plan is an enforceable part of the SIP, and the contingency measures will be adopted as soon as possible if such measures are triggered by a specific event.

Unlike full maintenance plans, limited maintenance plans are not required to include a projection of emissions over the maintenance period. In addition, emissions budgets for transportation and general conformity are not constraining where there is an approved limited maintenance plan in accordance with EPA's guidance. Approval of this limited maintenance plan will satisfy the "budget test" under both conformity rules during the maintenance period "*because it is unreasonable to expect that such an area will experience so much growth in that period that a violation of the ozone NAAQS would result.*"

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[6] Section 175A also requires the submittal of an additional plan to provide for maintenance for a second follow-on 10-year period.

[7] Memorandum from Sally L. Shaver, Director, Air Quality Standards and Strategies Division, "*Limited Maintenance Plan for Non-Classifiable Ozone Nonattainment Areas.*" November 16, 1994.

[8] While the 1994 guidance addressed the 1990 1-hour ozone standard, extending its 85% applicability threshold to the 1997 8-hour ozone standard yields provides a new design value threshold of 0.071 ppm.

3. Maintenance Demonstration

EPA's 1994 guidance states that meeting the criteria for a limited maintenance plan (a design value no greater than 85% of the NAAQS), also satisfies the requirement for a maintenance demonstration. The guidance states:

> *The EPA believes if the area begins the maintenance period at or below 85 percent of the exceedance levels, the air quality along with the continued applicability of PSD requirements, any control measures already in the SIP, and Federal measures, should provide adequate assurance of maintenance over the initial 10-year maintenance period.*

A summary of the 2018 ozone data for the Portland Ozone Maintenance Area is shown in Table 1. Maine operated 10 ozone monitoring sites in the area during this year. All sites achieved the required 75% or greater data capture for the year and are significantly below both the 0.084 ppm 1997 ozone NAAQS and the 2003-2005 redesignation design values.

Table 1
Summary of Design Values (ppm) for the Portland Ozone Maintenance Area

Site Name	AQS Code	POC	2003-05 Design Value	2016-18 Design Value
Durham	230010014	2	-	0.059
Cape Elizabeth	230052003	1	0.071	0.065
Georgetown-Reid SP	230230004	1	0.070	-
Hollis/West Buxton	230310038	1	0.073	0.059
Kennebunkport	230312002	1	0.074	0.066
Kittery	230313002	1	0.077	-
MAXIMUM Portland Ozone Maintenance Area			0.077	0.066

Ozone values in Maine have been trending downward for years. Figure 2 shows the ozone design values for monitors in the Portland Ozone Maintenance Area. Since the early 2000s, design values in this area have declined from nearly 90 ppb to less than 70 ppb due to local, regional and national controls on emissions of volatile organic compounds and nitrogen oxides.

Figure 2

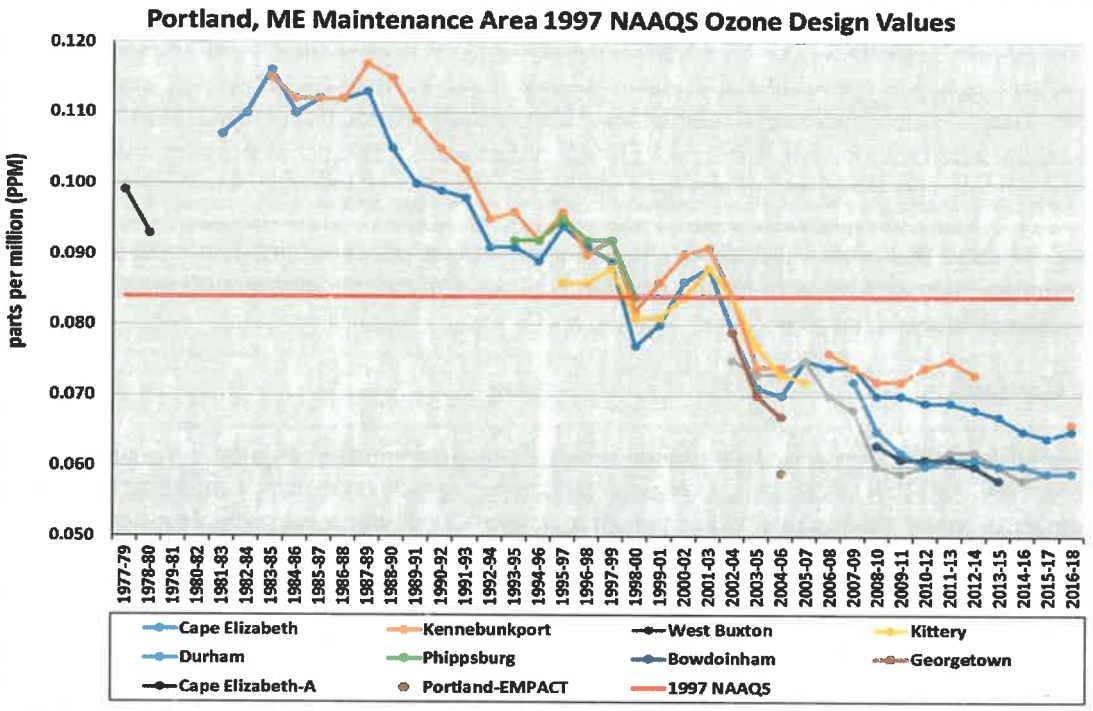


Table 2 presents the ozone design values for the Portland Ozone Maintenance Area since 2009 in tabular form. Again, ozone concentrations continue to decrease throughout this region and are well below the 85% threshold (71 ppb) established in EPA's 1994 Limited Maintenance Plan guidance.[9]

Table 2
Portland Ozone Maintenance Area Ozone Design Values (ppm) Since 2009

AQS Code	Site Name	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
230052003	Cape Elizabeth	0.074	0.070	0.070	0.069	0.069	0.068	0.067	0.065	0.064	0.065
230312002	Kennebunkport	0.074	0.072	0.072	0.074	0.075	0.073				0.066
230310038	West Buxton	0.068	0.060	0.059	0.060	0.062	0.062	0.060	0.058	0.059	0.059
230010014	Durham	0.072	0.065	0.062	0.060	0.061	0.061	0.060	0.060	0.059	0.059
230230006	Bowdoinham		0.063	0.061	0.061	0.061	0.060	0.058			
	1997 NAAQS	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**
	MAXIMUM DV	**0.074**	**0.072**	**0.072**	**0.074**	**0.075**	**0.073**	**0.067**	**0.065**	**0.064**	**0.066**

[9] Appendix A presents the 8-hour ozone 4th high values and design values from monitored ozone data and calculations for all sites in the Portland Maintenance Area since 1977.

4. Attainment and Maintenance Emissions Inventories

EPA's redesignation guidance provides that maintenance plans must include an attainment emissions inventory that identifies a level of emissions in the area that is sufficient to attain and maintain the NAAQS. That is, redesignation and maintenance plans should affirmatively demonstrate that nonattainment area emissions of NOx and VOC are projected to remain at or below a level that is consistent with demonstrated attainment throughout the 10-year maintenance plan period. Although EPA's 1994 "*Limited Maintenance Plan Option for Nonclassifiable Ozone Nonattainment Areas*" guidance indicated that areas eligible for a limited maintenance plan need not demonstrate maintenance using emission inventory projections, the Department has included this information in support of its limited maintenance plan request.

Source Categories

The inventories for the Portland Ozone Maintenance Area are composed of point, area, and mobile sources of NOx and VOC emissions, expressed as tons per summer weekday. Emissions data are based on a number of factors including level of industrial activity, population, and vehicle miles traveled for a typical summer weekday, and have been prepared according to EPA guidance and requirements. The ozone attainment and maintenance emission inventories consist of the following source categories:

1. Point Sources. Point sources include industrial, electric generation, commercial/institutional and large residential facilities. Facilities licensed to emit above certain threshold values submit annual activity and emissions data to the Department's point source database, which is then verified by the Department for each facility, using continuous emissions monitoring systems (CEMS) data, stack test data, or AP-42 or other appropriate emission factors.

2. Area Sources. The area source emission inventory consists of gasoline distribution sources, stationary fuel use, stationary solvent use, bioprocess sources, catastrophic/accidental releases, solid waste incineration, and other stationary area sources. Emissions are calculated using EPA emission factors applied to activity level data obtained through a variety of means.

3. Mobile Sources. The mobile source emission inventory contains two sub-categories: onroad and nonroad. Onroad mobile sources include cars, trucks and buses. Nonroad mobile sources include aircraft, rail locomotives, boats, residential lawn/garden equipment and industrial/commercial construction off-road engines. Mobile source emissions were estimated with EPA's MOBILE6 model for the Department's 2006 redesignation request and the MOVES2014 for 2014 and projected 2028 emission inventories.

Comparison of the 2005, 2014 and 2028 Inventories

Table 3 provides a comparison of the 2005 (redesignation), 2014, and 2028 (projected) NOx and VOC inventories for the Portland Ozone Maintenance Area and demonstrates that emissions in this area have and will continue to decline for the duration of the second 10-year maintenance period.[10]

[10] 2005 emission were obtained from the Department's 2006 redesignation request as approved on December 11, 2006 (71 FR 71489). The 2014 emissions inventory information is from the EPA 2014 version 7.0 modeling platform. The inventory documentation for this platform can be found at: https://www.epa.gov/air-emissions-modeling/2014-version-70-platform. The 2028 emissions inventory is projected from the EPA 2011 version 6.3 modeling platform. The inventory documentation for this platform can be found at: https://www.epa.gov/air-emissions-modeling/2011-version-63-platform.

Table 3

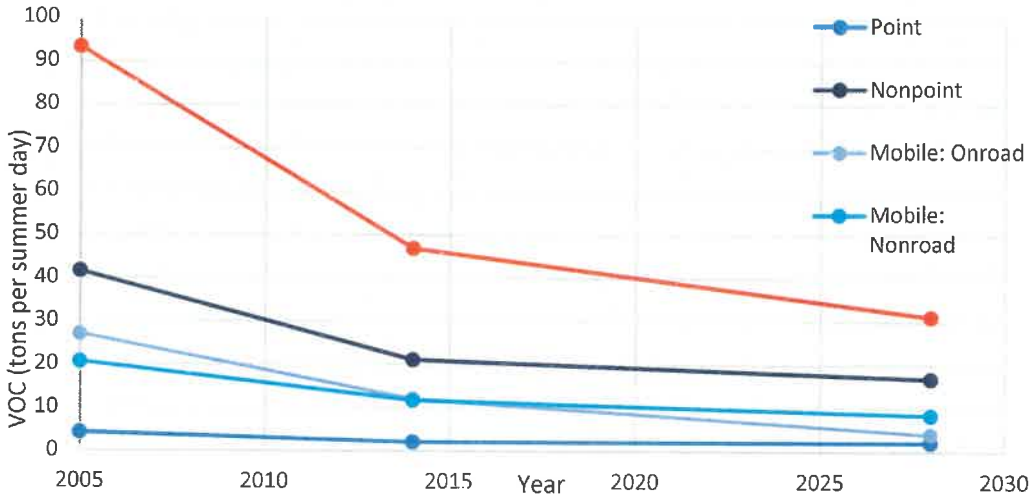
VOC and NOx Emissions in Tons per Summer Day for the Portland Ozone Maintenance Area (York, Cumberland, Sagadahoc, and Androscoggin Counties)[11]

	2005		2014		2028	
Category	VOC	NOx	VOC	NOx	VOC	NOx
Point	4.22	10.48	2.04	4.52	2.04	4.33
Nonpoint	41.56	6.30	21.09	11.01	16.83	7.25
Mobile: Onroad	27.03	55.33	12.04	28.92	3.96	7.52
Mobile: Nonroad	20.60	12.02	11.70	6.86	8.36	4.11
Total	93.41	84.13	51.87	51.31	31.22	23.21

Figures 4 and 5 and illustrate the decline in VOC and NOx emissions in graphical form. By 2028, total VOC emissions for York, Cumberland, Sagadahoc, and Androscoggin Counties are forecast to decline by more than 65 percent. NOx emissions are forecast to decline even further, with the four-county area seeing a more than 72 percent decrease between 2005 and 2028.

Figure 4

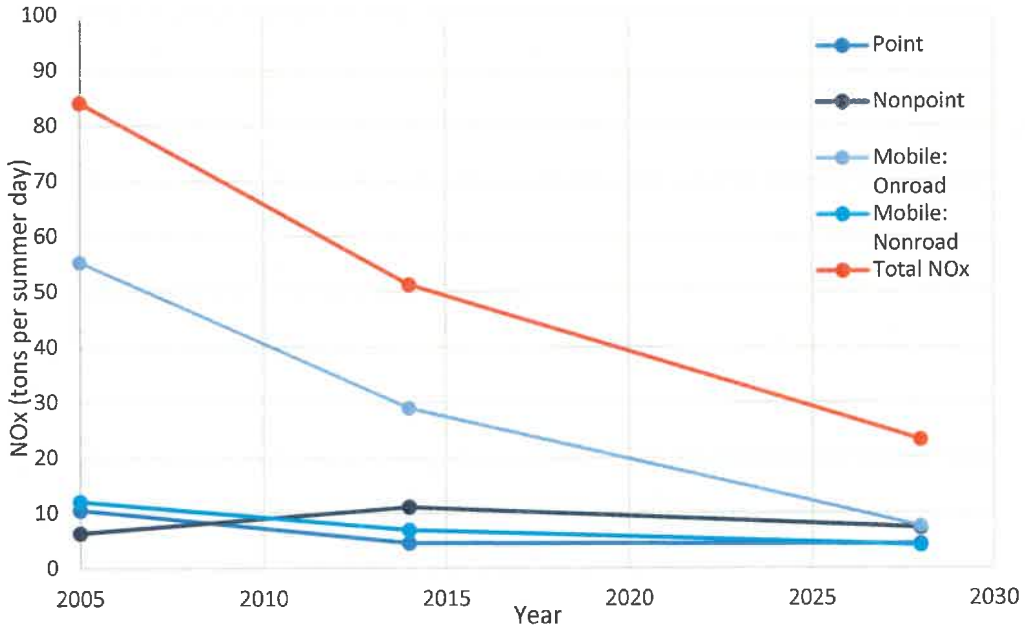
Portland Ozone Maintenance Area
VOC (tons per summer day)



[11] The 2005 (attainment), 2014 and 2028 inventories are based on county-wide emissions.

Figure 5

Portland Ozone Maintenance Area
NOx (tons per summer day)



5. Modeling

Although EPA's guidance does not require modeling for ozone nonattainment areas seeking redesignation, under the limited maintenance plan option, extensive modeling has been performed to determine the effect of national and regional emission control strategies on ozone air quality in Maine and throughout the eastern United States. In June 2018, EPA released updated air quality modeling for the 2008 and 2015 ozone NAAQS utilizing the Comprehensive Air Quality Model with extensions (CAMx). CAMx is a three-dimensional grid-based Eulerian air quality model designed to simulate the formation and fate of oxidant precursors, primary and secondary particulate matter concentrations, and deposition over regional and urban scales.[12] Using a 2011 base year, EPA forecast ozone concentrations for 2023 under alternative scenarios that included a modified version of the "3x3" grid approach for those monitors located in coastal areas. In the modified approach, forecasted ozone levels are adjusted to exclude those grid cells dominated by water (i.e. more than 50 percent of the area within the grid cell is water) and that do not contain a monitoring site. The modeling analyses demonstrate that 2023 predicted ozone concentrations at all sites in Maine, including the Portland Maintenance Area, are well below the 84 ppb 1997 ozone NAAQS under all modeling scenarios. Table 4 provides a summary of EPA's projected ozone design values in Maine.

[12] *Air Quality Modeling Technical Support Document for the Updated 2023 Projected Ozone Design Values,* Office of Air Quality Planning and Standards, USEPA, June 2018.

Table 4

Projected Ozone Design Values (ppb) at Individual Monitoring Sites in Maine Based on the EPA's Updated 2023 Transport Modeling

Site	County	2009-2013 Avg[1]	2009-2013 Max[1]	2023en "3x3" Avg[3]	2023en "3x3" Max[3]	2023en"No Water" Avg[3]	2023en"No Water" Max[3]	2016-2018[4]
230010014	Androscoggin	61.0	62	49.4	50.2	49.3	50.1	59
230052003	Cumberland	69.3	70	56.2	56.8	56.7	57.3	65
230090102	Hancock	71.7	74	61.3	63.2	59.9	61.8	70
230090103	Hancock	66.3	69	55.0	57.3	55.3	57.5	63
230112005	Kennebec	62.7	64	50.5	51.5	50.5	51.5	62
230130004	Knox	67.7	69	54.7	55.7	54.8	55.8	63
230173001	Oxford	54.3	55	43.7	44.3	43.7	44.3	N/A
230194008	Penobscot	57.7	59	46.6	47.6	46.6	47.6	57
230230006	Sagadahoc	61.0	61	48.7	48.7	48.7	48.7	N/A
230310038	York	60.3	62	48.2	49.6	48.2	49.6	59
230310040	York	64.3	65	51.5	52.0	51.5	52.0	61
230312002	York	73.7	75	60.1	61.2	59.6	60.7	66

1) Base period 2009-2013 average and maximum design values based on 2009-2013 measured data.
2) Projected 2023 average and maximum design values based on the "3x3" approach recommended in EPA's photochemical modeling guidance.
3) Projected 2023 average and maximum design values based on a modified "3x3' approach in which model predictions in grid cells without monitors that are primarily water are excluded from the projection calculations ("No Water").
4) 2018 ozone design values based on 2016-2018 measured data (N/A indicates that a 2018 design value is not available) .

6. Contingency Plan

The maintenance plan must include contingency provisions, as necessary, to promptly correct any NAAQS violation that occurs after redesignation of an area. It should include measures to be adopted, a schedule and procedures for adoption and implementation, and a specific time limit for action. Specific triggers that would put the plan into motion must also be identified. This plan is an enforceable part of the SIP and should ensure that the contingency measures are adopted explicitly once they are triggered.

Although it is highly unlikely that the Portland Ozone Maintenance Area will be unable to demonstrate continued compliance with the 1997 ozone NAAQS, Maine has listed possible contingency measures in the event of a future ozone air quality problem as required by section 175A of the CAA. At the conclusion of each ozone season, the Department will evaluate whether the design value for the Portland ozone Maintenance Area is above or below the 8-hour ozone standard. If the design value is above the standard, the Department will evaluate the potential causes of this design value increase. The Department will examine whether this increase is due to an increase in local in-state emissions or an increase in upwind out-of-state emissions. If an increase in in-state emissions is determined to be a contributing factor to the design value increase, Maine will evaluate the projected in-state emissions for the ozone season in the following year. If in-state emissions are not expected to satisfactorily decrease in the following ozone season in order to mitigate the violation, Maine will implement one or more of the contingency measures listed in this section, or substitute new VOC or NOx control measures to achieve additional in-state emissions reductions. The contingency measures(s) will be selected by the Governor or the Governor's designee

within six months of the end of the ozone season for which contingency measures have been determined necessary. Possible contingency measures include the following:

Asphalt Paving

Reduce the VOC content limit for cutback asphalt from 5% to 4%, and lower current VOC content limits for emulsified asphalt by 20%.

Motor Vehicle and Mobile Equipment Non- Assembly Line Coating Operations

Adopt and implement the Ozone Transport Commission 2011 Model Rule for Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations.

Consumer Products

Adopt and implement the Ozone Transport Commission 2012 Model Rule for Consumer Products.

Architectural and Industrial Maintenance Coatings

Adopt and implement the 2014 OTC Model Rule for Architectural Coatings.

Rule Effectiveness Improvement

Increase enforcement of existing rules in order to increase rule effectiveness.

7. **Transportation Conformity**

Transportation conformity is required by section 176(c) of the CAA. Conformity to a SIP means that transportation activities will not produce new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS (CAA 176(c)(1)(B)). EPA's conformity rule at 40 CFR part 93 requires that transportation plans, programs and projects conform to SIPs and establish the criteria and procedures for determining whether they conform. The conformity rule generally requires a demonstration that emissions from the Regional Transportation Plan (RTP) and the Transportation Improvement Program (TIP) are consistent with the motor vehicle emissions budget (MVEB) contained in the control strategy SIP revision or maintenance plan (40 CFR 93.101, 93.118, and 93.124). A MVEB is defined as "that portion of the total allowable emissions defined in the submitted or approved control strategy implementation plan revision or maintenance plan for a certain date for the purpose of meeting reasonable further progress milestones or demonstrating attainment or maintenance of the NAAQS, for any criteria pollutant or its precursors, allocated to highway and transit vehicle use and emissions (40 CFR 93.101).

Under the conformity rule, limited maintenance plan areas may demonstrate conformity without a regional emission analysis (40 CFR 93.109(e)). All actions that would require transportation conformity determinations for the Portland Ozone Maintenance Area under EPA's transportation conformity rule provisions are considered to have already satisfied the regional emissions analysis and "budget test" requirements in 40 CFR 93.

However, because limited maintenance plan areas are still maintenance areas, certain aspects of transportation conformity determinations still will be required for transportation plans, programs and projects. Specifically, for such determinations, RTPs, TIPs and transportation projects still will have to demonstrate that they are fiscally constrained (40 CFR 93.108), meet the criteria for consultation (40 CFR 93.105) and Transportation Control Measure (TCM) implementation in the conformity rule provisions (40

CFR 93.112 and 40 CFR 93.113, respectively). Additionally, conformity determinations for RTPs and TIPs must be determined no less frequently than every four years, and conformity of plan and TIP amendments and transportation projects is demonstrated in accordance with the timing requirements specified in 40 CFR 93.104. In addition, for projects to be approved they must come from a currently conforming RTP and TIP (40 CFR 93.114 and 93.115).

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Appendix A

Monitored Data

This appendix presents the 8-hour ozone 4th high values and design values from monitored ozone data and calculations for all sites in the Portland Ozone Maintenance Area.

All data and calculations meet the criteria for data handling contained in 40 CFR Part 50. Design values are calculated by taking the average of 3 consecutive years' 4th high values (which meet the data handling conventions sited above). The year cited for the design value is the final year of the 3-year average.

Table A-1 contains the 4th high value for each year in the Portland Ozone Maintenance Area since 1977, while Table A-2 contains the design value for each 3-year average. The data clearly demonstrates that ozone concentration in this maintenance area have continued to decline since its 2006 redesignation.

Table A-1

4th High Values (ppm) for Each Site in the Portland Maintenance Area

Portland, ME AREA	4th	4th	4th	4th	4th	4th	4th	4th	4th	4th	4th	4th	4th	4th
Site Name	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
	1977	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**
Cape Elizabeth					0.101	0.105	0.117	0.108	0.123	0.099	0.116	0.122	0.101	0.092
Kennebunkport							0.107	0.114	0.126	0.098	0.112	0.127	0.112	0.106
West Buxton														
Kittery														
Durham														
Phippsburg														
Bowdoinham														
Georgetown														
Cape Elizabeth-A	0.139	0.060	0.100	0.120										
Portland-EMPACT														
Hollis														
Portland-PEOPLE														
Pownal						0.082	0.088							
Appledore Island														
Nubble Point											0.088			
Goat Island Light						0.089								
1997 NAAQS	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**
MAXIMUM 4th High	**0.139**	**0.060**	**0.100**	**0.120**	**0.101**	**0.105**	**0.117**	**0.114**	**0.126**	**0.099**	**0.116**	**0.127**	**0.112**	**0.106**

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Site Name	4th HIGH 1991	4th HIGH 1992	4th HIGH 1993	4th HIGH 1994	4th HIGH 1995	4th HIGH 1996	4th HIGH 1997	4th HIGH 1998	4th HIGH 1999	4th HIGH 2000	4th HIGH 2001	4th HIGH 2002	4th HIGH 2003	4th HIGH 2004
Cape Elizabeth	0.109	0.097	0.089	0.088	0.096	0.083	0.103	0.089	0.076	0.067	0.097	0.096	0.096	0.073
Kennebunkport	0.111	0.100	0.095	0.091	0.103	0.084	0.101	0.086	0.089	0.073	0.096	0.101	0.101	0.076
West Buxton									0.080	0.066		0.083	0.083	0.069
Kittery					0.088	0.079	0.092	0.089	0.085	0.070	0.090	0.094	0.094	0.080
Durham														
Phippsburg			0.089	0.090	0.099	0.089	0.098	0.091	0.087	0.075				
Bowdoinham														
Georgetown												0.096	0.096	0.074
Cape Elizabeth-A														
Portland-EMPACT														
Hollis							0.077	0.072						
Portland-PEOPLE					0.076									
Pownal														
Appledore Island	0.088	0.087												
Nubble Point														
Goat Island Light														
1997 NAAQS	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**
MAXIMUM 4th High	**0.111**	**0.100**	**0.095**	**0.091**	**0.103**	**0.089**	**0.103**	**0.091**	**0.089**	**0.075**	**0.097**	**0.101**	**0.101**	**0.080**

Site Name	4th HIGH 2005	4th HIGH 2006	4th HIGH 2007	4th HIGH 2008	4th HIGH 2009	4th HIGH 2010	4th HIGH 2011	4th HIGH 2012	4th HIGH 2013	4th HIGH 2014	4th HIGH 2015	4th HIGH 2016	4th HIGH 2017	4th HIGH 2018
Cape Elizabeth	0.073	0.070	0.083	0.069	0.070	0.072	0.070	0.066	0.072	0.066	0.064	0.065	0.064	0.067
Kennebunkport	0.071	0.077	0.078	0.073	0.072	0.072	0.073	0.077	0.076	0.066	0.067	0.068	0.062	0.068
West Buxton	0.076	0.069	0.081	0.061	0.062	0.058	0.059	0.065	0.063	0.059	0.058	0.058	0.063	0.056
Kittery	0.072	0.069	0.077											
Durham			0.081	0.070	0.067	0.058	0.063	0.061	0.059	0.065	0.058	0.057	0.062	0.059
Phippsburg														
Bowdoinham				0.065	0.063	0.061	0.061	0.062	0.061	0.058	0.057			
Georgetown	0.068	0.065												
Cape Elizabeth-A														
Portland-EMPACT	0.061	0.061												
Hollis														
Portland-PEOPLE														
Pownal														
Appledore Island														
Nubble Point														
Goat Island Light														
1997 NAAQS	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**
MAXIMUM 4th High	**0.076**	**0.077**	**0.083**	**0.073**	**0.072**	**0.072**	**0.073**	**0.077**	**0.076**	**0.066**	**0.067**	**0.068**	**0.064**	**0.068**

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Table A-2

Design Values (ppm) for Each Site in the Portland Maintenance Area

Site	1977-79	1978-80	1979-81	1980-82	1981-83	1982-84	1983-85	1984-86	1985-87	1986-88	1987-89	1988-90	1989-91	1990-92
Cape Elizabeth					0.107	0.110	0.116	0.110	0.112	0.112	0.113	0.105	0.100	0.099
Kennebunkport							0.115	0.112	0.112	0.112	0.117	0.115	0.109	0.105
West Buxton														
Kittery														
Durham														
Phippsburg														
Bowdoinham														
Georgetown														
Cape Elizabeth-A	0.099	0.093												
Portland-EMPACT														
1997 NAAQS	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**
MAXIMUM DV	**0.099**	**0.093**			**0.107**	**0.110**	**0.116**	**0.112**	**0.112**	**0.112**	**0.117**	**0.115**	**0.109**	**0.105**

Site	1991-93	1992-94	1993-95	1994-96	1995-97	1996-98	1997-99	1998-00	1999-01	2000-02	2001-03	2002-04	2003-05	2004-06
Cape Elizabeth	0.098	0.091	0.091	0.089	0.094	0.091	0.089	0.077	0.080	0.086	0.088	0.079	0.071	0.070
Kennebunkport	0.102	0.095	0.096	0.092	0.096	0.090	0.092	0.082	0.086	0.090	0.091	0.084	0.074	0.074
West Buxton												0.075	0.073	0.073
Kittery					0.086	0.086	0.088	0.081	0.081	0.084	0.088	0.084	0.077	0.073
Durham														
Phippsburg			0.092	0.092	0.095	0.092	0.092	0.084						
Bowdoinham														
Georgetown												0.079	0.070	0.067
Cape Elizabeth-A														
Portland-EMPACT														0.059
1997 NAAQS	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**
MAXIMUM DV	**0.102**	**0.095**	**0.096**	**0.092**	**0.096**	**0.092**	**0.092**	**0.084**	**0.086**	**0.090**	**0.091**	**0.084**	**0.077**	**0.074**

Site	2005-07	2006-08	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Cape Elizabeth	0.075	0.074	0.074	0.070	0.070	0.069	0.069	0.068	0.067	0.065	0.064	0.065
Kennebunkport		0.076	0.074	0.072	0.072	0.074	0.075	0.073				0.066
West Buxton	0.075	0.070	0.068	0.060	0.059	0.060	0.062	0.062	0.060	0.058	0.059	0.059
Kittery	0.072											
Durham			0.072	0.065	0.062	0.060	0.061	0.061	0.060	0.060	0.059	0.059
Phippsburg												
Bowdoinham				0.063	0.061	0.061	0.061	0.060	0.058			
Georgetown												
Cape Elizabeth-A												
Portland-EMPACT												
1997 NAAQS	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**
MAXIMUM DV	**0.075**	**0.076**	**0.074**	**0.072**	**0.072**	**0.074**	**0.075**	**0.073**	**0.067**	**0.065**	**0.064**	**0.066**

10/25/19
Draft

Revisions to the State Implementation Plan (SIP) for the Control of Ozone Air Pollution
Limited Maintenance Plan for the Midcoast Maine Ozone Maintenance Area

1. Background

Under the 1990 Clean Air Act Amendments (CAA) nine Maine counties were designated as nonattainment for the 1979 1-hour National Ambient Air Quality Standard (NAAQS) for ozone: York, Cumberland and Sagadahoc counties (Planning Area 1); Androscoggin and Kennebec counties (Planning Area 2); and Knox and Lincoln counties (Planning Area 3) were designated as "moderate" nonattainment, while Waldo and Hancock counties (Planning Area 4) were designated as "marginal" nonattainment for ozone.

On July 16, 1997, the U.S. Environmental Protection Agency (EPA) issued updated final air quality 8-hour standards for ozone. After an extensive scientific review, EPA concluded that the 1-hour ozone standard did not provide sufficient health protection against extended periods of moderately elevated ozone. The 1997 8-hour ozone NAAQS (set at a level of 0.084 parts per million (ppm)) was based on an 8-hour average of ozone concentrations and more directly related to ozone concentrations associated with health effects.

Maine had two nonattainment areas under the 1997 ozone standard. The Midcoast Ozone Maintenance Area consists of 55 coastal towns and islands in Hancock, Knox, Lincoln and Waldo counties, and was designated as a "Basic/General" nonattainment area for the 8-hour ozone standard (see Figure 1)[1]. Based on 2003-2005 monitoring data, this area was meeting the 1997 ozone NAAQS. In 2006, the Maine Department of Environmental Protection (Department) submitted a request to redesignate this area to attainment and approve a 10-year maintenance plan pursuant to section 175A of the CAA demonstrating that the area will maintain compliance with the NAAQS for at least 10 years after EPA approval of the redesignation request. The Department's redesignation request was approved on December 11, 2006.[2]

Section 175A(b) of the Clean Air Act also requires that areas designated non-attainment submit a second 10-year maintenance plan demonstrating continued compliance with the NAAQS during the 10-year period following the expiration of the first maintenance plan. The second 10-year maintenance plan for the Midcoast Ozone Maintenance Area is required to address the period from 2016 through 2026.

Maine did not previously address the requirement for a second 10-year maintenance plan due to EPA's 2015 promulgation of a final rule[3] implementing the 2008 ozone NAAQS. Under EPA's 2015 implementation rule, states were no longer responsible for developing and submitting maintenance plans for former nonattainment areas under the 1997 ozone NAAQS (subject to conditions).

Environmental groups subsequently challenged parts of this rule and filed a petition for judicial review of several aspects of EPA's implementation rule. Included in the challenge was EPA's excusal of former 1997 ozone nonattainment areas (i.e., redesignated areas) that were designated as attainment for the 2008 ozone standard, from requirements to submit a second maintenance plan for the 1997 ozone standard[4].

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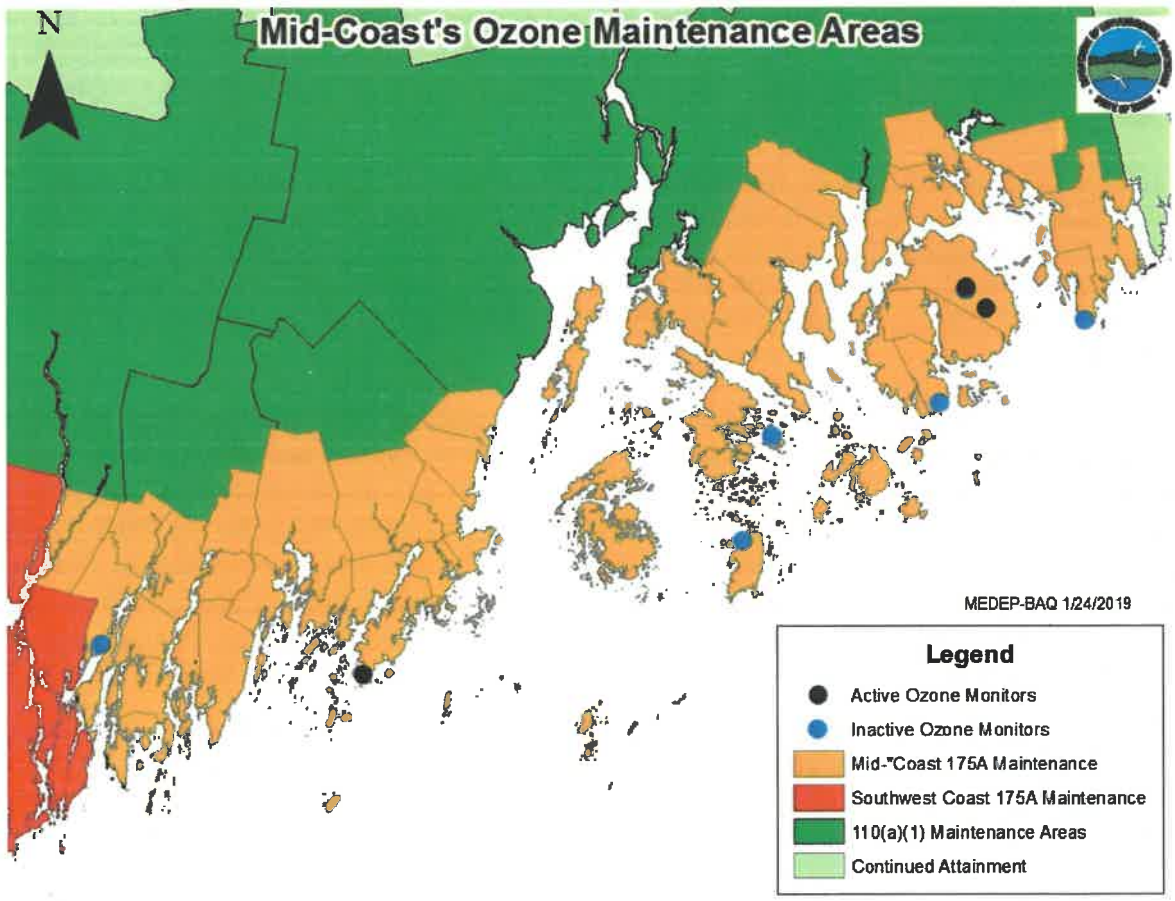
[1] The other 8-hour ozone nonattainment area is the York, Cumberland, Androscoggin and Sagadahoc "Marginal" nonattainment area consisting of 57 coastal towns and islands in these counties.
[2] 71 FR 71489
[3] "Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements 80 FR 12264
[4] The 2008 ozone NAAQS was established at 75 ppb for an 8-hour average.

On February 16, 2018. The D.C. Circuit Court issued a decision in *South Coast Air Quality Management District v. EPA* that granted this and other parts of the petitioner's challenge.[5] The Court held that

Figure 1
The Midcoast Ozone Maintenance Area and Monitoring Sites



"orphan maintenance areas", such as the Midcoast Ozone Maintenance Area are required to submit second maintenance plans under section 175A(b) of the CAA.

2. The Limited Maintenance Plan Option for Second 10-Year Plans

Section 175A of the CAA establishes the general framework for maintenance plans, including a requirement that the maintenance plan must provide for maintenance of the NAAQS for at least 10 years after redesignation[6], including any additional control measures necessary for continued maintenance.

[5] 882 F.3d 1138
[6] Section 175A also requires the submittal of an additional plan to provide for maintenance for a second follow-on 10-year period.

Maintenance plans must also contain contingency measures that can be promptly implemented if a violation of the NAAQS occurs after redesignation.

Beyond basic requirements however, Section 175A of the CAA does not define the contents of a maintenance plan. As a result, EPA possesses the authority to exercise reasonable discretion when determining these requirements, and in November 1994, issued guidance on a limited maintenance plan option for a subset of ozone nonattainment areas.[7] The EPA guidance memo states that to qualify for the limited maintenance plan option, an area's air quality design value must no more than 85% of the NAAQS, or 0.071 ppm for the 1997 ozone standard.[8]

EPA's Limited Maintenance Plan (LMP) guidance specifies that such plans should include the following components:

1) **Maintenance Demonstration.** For the LMP option, the maintenance demonstration requirement will be satisfied if the area meets the air quality criteria necessary to qualify. (There is no need to project emissions over the maintenance period).

2) **Emissions Inventory.** A current emissions inventory (attainment/maintenance inventory), which can be used to demonstrate attainment of the NAAQS;

3) **Monitoring Network Verification of Continued Attainment.** To verify the attainment status of an area over the maintenance period, the maintenance plan should contain provisions for the continued operation of an appropriate, EPA-approved air quality monitoring network in accordance with 40 CFR part 68.

4) **Contingency Plan.** Contingency provisions, to make prompt correction of any violation of the NAAQS that may occur after the redesignation of the area to attainment. The contingency plan is an enforceable part of the SIP, and the contingency measures will be adopted as soon as possible if such measures are triggered by a specific event.

Unlike full maintenance plans, limited maintenance plans are not required to include a projection of emissions over the maintenance period. In addition, emissions budgets for transportation and general conformity are not constraining where there is an approved limited maintenance plan in accordance with EPA's guidance. Approval of this limited maintenance plan will satisfy the "budget test" under both conformity rules during the maintenance period "*because it is unreasonable to expect that such an area will experience so much growth in that period that a violation of the ozone NAAQS would result.*"

3. Maintenance Demonstration

EPA's 1994 guidance states that meeting the criteria for a limited maintenance plan (a design value no greater than 85% of the NAAQS), also satisfies the requirement for a maintenance demonstration. The guidance states:

> *The EPA believes if the area begins the maintenance period at or below 85 percent of the exceedance levels, the air quality along with the continued applicability of PSD requirements,*

[7] Memorandum from Sally L. Shaver, Director, Air Quality Standards and Strategies Division, "*Limited Maintenance Plan for Non-Classifiable Ozone Nonattainment Areas.*" November 16, 1994.
[8] While the 1994 guidance addressed the 1990 1-hour ozone standard, extending its 85% applicability threshold to the 1997 8-hour ozone standard yields provides a new design value threshold of 0.071 ppm.

any control measures already in the SIP, and Federal measures, should provide adequate assurance of maintenance over the initial 10-year maintenance period.

A summary of the 2018 ozone data for the Midcoast Ozone Maintenance Area is shown in Table 1. Maine operated 10 ozone monitoring sites in the area during this year. All sites achieved the required 75% or greater data capture for the year and are significantly below both the 0.084 ppm 1997 ozone NAAQS and the 2003-2005 redesignation design values.

Table 1
Summary of Design Values (ppm) for the Midcoast Ozone Maintenance Area

Site Name	AQS Code	POC	2003-05 Design Value	2016-18 Design Value
Port Clyde	230130004	2	0.069	0.063
Cadillac Mt Summit	230090102	1	0.074	0.070
McFarland Hill	230090103	1	0.069	0.063
MAXIMUM Midcoast Ozone Maintenance Area			0.077	0.066

Ozone values in Maine have been trending downward for years. Figure 2 shows the ozone design values for monitors in the Midcoast Ozone Maintenance Area. Since the early 2000s, design values in this area have declined from nearly 90 ppb to less than 70 ppb due to local, regional and national controls on emissions of volatile organic compounds and nitrogen oxides.

Figure 2

Midcoast Maintenance Area 1997 NAAQS Ozone Design Values

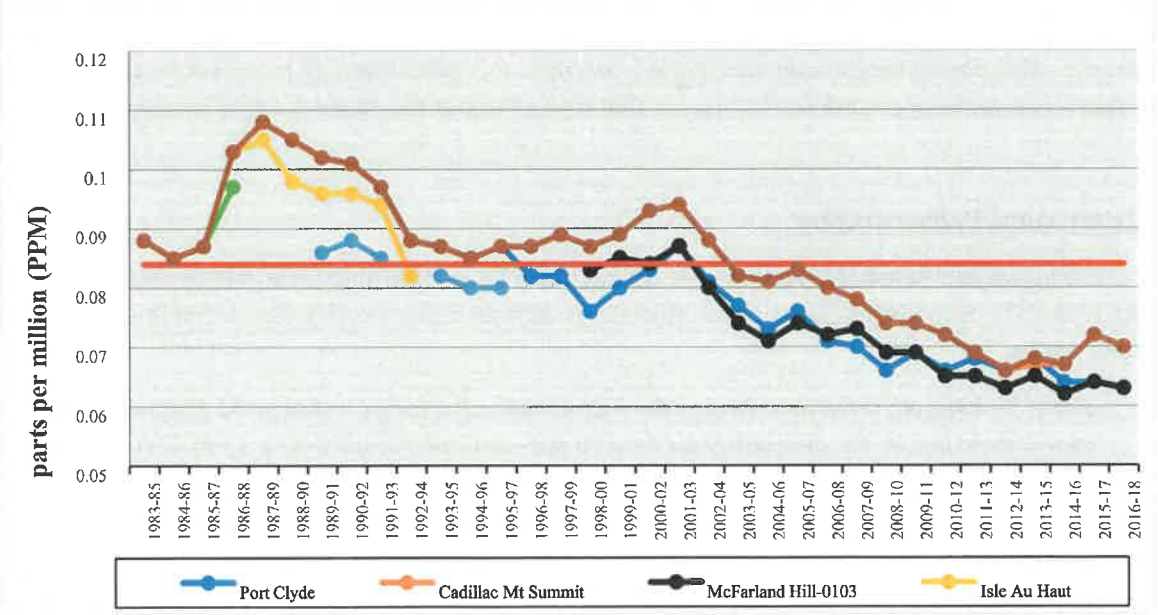


Table 2 presents the ozone design values for the Midcoast Ozone Maintenance Area since 2009 in tabular form. Again, ozone concentrations continue to decrease throughout this region and are well below the 85% threshold (71 ppb) established in EPA's 1994 Limited Maintenance Plan guidance.[9]

Table 2
Midcoast Ozone Maintenance Area Ozone Design Values (ppm) Since 2009

AQS Code	Site Name	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
230130004	Port Clyde	0.070	0.066	0.069	0.066	0.068	0.066	0.068	0.064	0.064	0.063
230090102	Cadillac Mt Summit	0.078	0.074	0.074	0.072	0.069	0.066	0.067	0.067	0.072	0.070
230090103	McFarland Hill-0103	0.073	0.069	0.069	0.065	0.065	0.063	0.065	0.062	0.064	0.063
	1997 NAAQS	0.084	0.084	0.084	0.084	0.084	0.084	0.084	0.084	0.084	0.084
	MAXIMUM DV	0.078	0.074	0.074	0.072	0.069	0.066	0.068	0.067	0.072	0.070

4. Attainment and Maintenance Emissions Inventories

EPA's redesignation guidance provides that maintenance plans must include an attainment emissions inventory that identifies a level of emissions in the area that is sufficient to attain and maintain the NAAQS. That is, redesignation and maintenance plans should affirmatively demonstrate that nonattainment area emissions of NOx and VOC are projected to remain at or below a level that is consistent with demonstrated attainment throughout the 10-year maintenance plan period. Although EPA's 1994 "*Limited Maintenance Plan Option for Nonclassifiable Ozone Nonattainment Areas*" guidance indicated that areas eligible for a limited maintenance plan need not demonstrate maintenance using emission inventory projections, the Department has included this information in support of its limited maintenance plan request.

Source Categories

The inventories for the Midcoast Ozone Maintenance Area are composed of point, area, and mobile sources of NOx and VOC emissions, expressed as tons per summer weekday. Emissions data are based on a number of factors including level of industrial activity, population, and vehicle miles traveled for a typical summer weekday, and have been prepared according to EPA guidance and requirements. The ozone attainment and maintenance emission inventories consist of the following source categories:

1. Point Sources. Point sources include industrial, electric generation, commercial/institutional and large residential facilities. Facilities licensed to emit above certain threshold values submit annual activity and emissions data to the Department's point source database, which is then verified by the Department for each facility, using continuous emissions monitoring systems (CEMS) data, stack test data, or AP-42 or other appropriate emission factors.

2. Area Sources. The area source emission inventory consists of gasoline distribution sources, stationary fuel use, stationary solvent use, bioprocess sources, catastrophic/accidental releases,

[9] Appendix A presents the 8-hour ozone 4th high values and design values from monitored ozone data and calculations for all sites in the Midcoast Ozone Maintenance Area since 1977.

solid waste incineration, and other stationary area sources. Emissions are calculated using EPA emission factors applied to activity level data obtained through a variety of means.

3. Mobile Sources. The mobile source emission inventory contains two sub-categories: onroad and nonroad. Onroad mobile sources include cars, trucks and buses. Nonroad mobile sources include aircraft, rail locomotives, boats, residential lawn/garden equipment and industrial/commercial construction off-road engines. Mobile source emissions were estimated with EPA's MOBILE6 model for the Department's 2006 redesignation request and the MOVES2014 for 2014 and projected 2028 emission inventories.

Comparison of the 2005, 2014 and 2028 Inventories

Table 3 provides a comparison of the 2005 (redesignation), 2014, and 2028 (projected) NOx and VOC inventories for the Midcoast Ozone Maintenance Area and demonstrates that emissions in this area have and will continue to decline for the duration of the second 10-year maintenance period.[10]

Table 3

VOC and NOx Emissions in Tons per Summer Day for the Midcoast Ozone Maintenance Area (Lincoln, Knox, Waldo and Hancock Counties)[11]

	2005		2014		2028	
Category	VOC	NOx	VOC	NOx	VOC	NOx
Point	1.52	4.53	1.96	5.05	1.98	3.19
Nonpoint	14.21	3.66	5.12	4.22	4.78	3.97
Mobile: Onroad	8.66	15.30	4.41	8.82	1.17	1.60
Mobile: Nonroad	13.73	4.71	8.20	4.18	4.61	2.79
Total	38.12	28.20	19.69	22.27	12.54	11.55

Figures 4 and 5 illustrate the decline in VOC and NOx emissions in graphical form. By 2028, total VOC emissions for Lincoln, Knox, Waldo and Hancock Counties are forecast to decline by more than 59 percent. NOx emissions are forecast to decline even further, with the four-county area seeing a more than 67 percent decrease between 2005 and 2028.

[10] 2005 emission were obtained from the Department's 2006 redesignation request as approved on December 11, 2006 (71 FR 71489). The 2014 emissions inventory information is from the EPA 2014 version 7.0 modeling platform. The inventory documentation for this platform can be found at: https://www.epa.gov/air-emissions-modeling/2014-version-70-platform. The 2028 emissions inventory is projected from the EPA 2011 version 6.3 modeling platform. The inventory documentation for this platform can be found at: https://www.epa.gov/air-emissions-modeling/2011-version-63-platform.

[11] The 2005 (attainment), 2014 and 2028 inventories are based on county-wide emissions.

Figure 4

Midcoast Ozone Maintenance Area
VOC (tons per summer day)

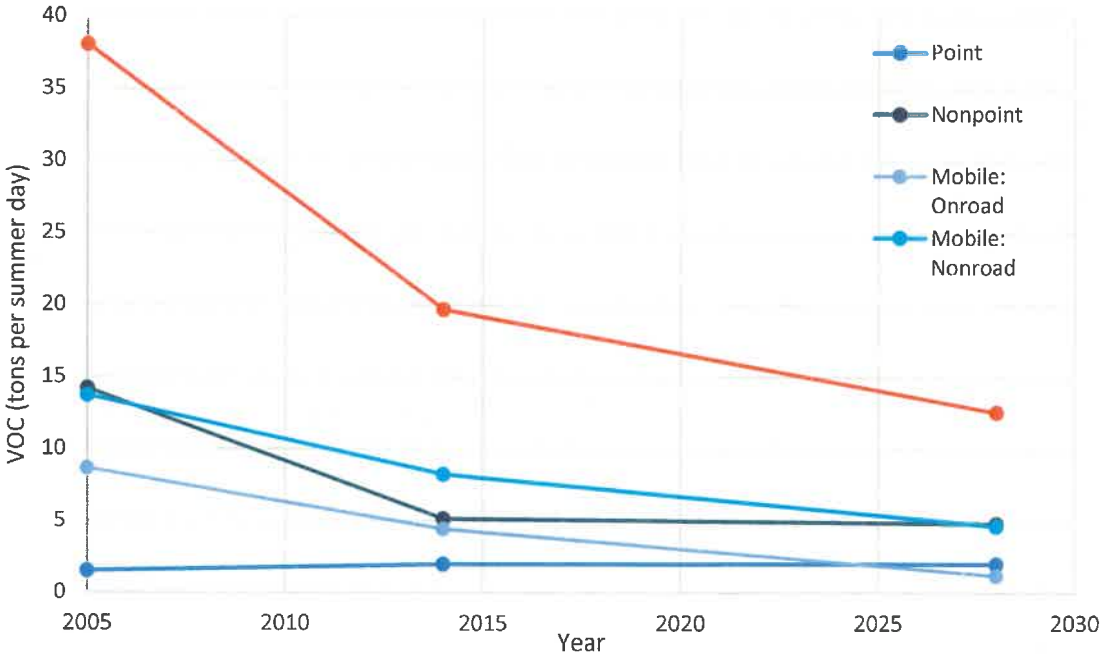
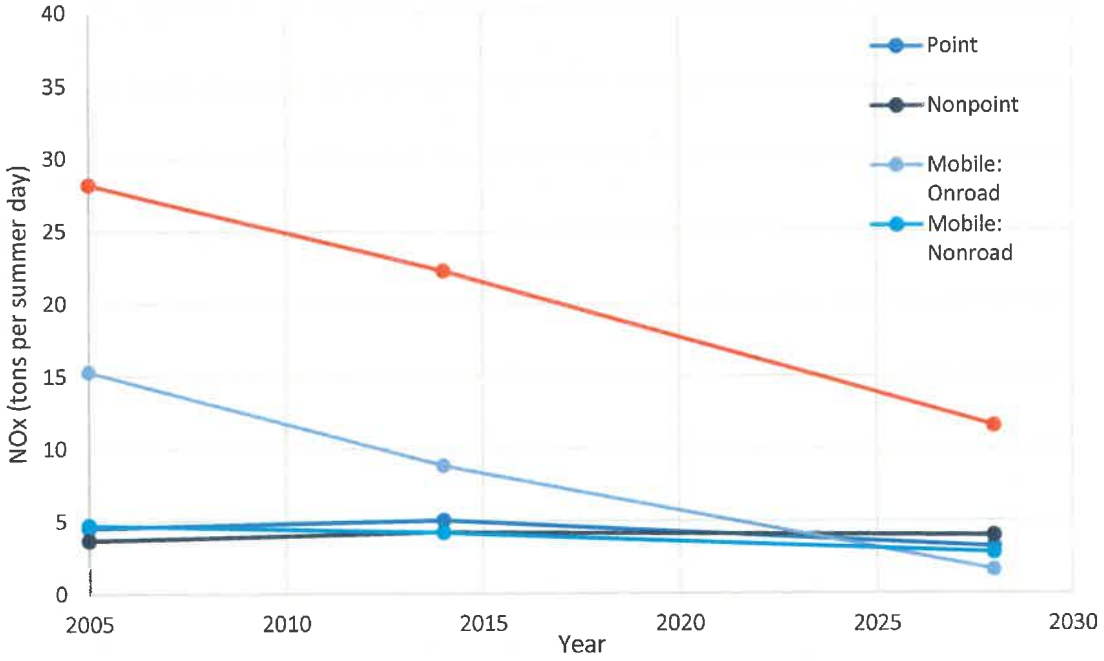


Figure 5

Midcoast Ozone Maintenance Area
NOx (tons per summer day)



5. Modeling

Although EPA's guidance does not require modeling for ozone nonattainment areas seeking redesignation, under the limited maintenance plan option, extensive modeling has been performed to determine the effect of national and regional emission control strategies on ozone air quality in Maine and throughout the eastern United States. In June 2018, EPA released updated air quality modeling for the 2008 and 2015 ozone NAAQS utilizing the Comprehensive Air Quality Model with extensions (CAMx). CAMx is a three-dimensional grid-based Eulerian air quality model designed to simulate the formation and fate of oxidant precursors, primary and secondary particulate matter concentrations, and deposition over regional and urban scales.[12] Using a 2011 base year, EPA forecast ozone concentrations for 2023 under alternative scenarios that included a modified version of the "3x3" grid approach for those monitors located in coastal areas. In the modified approach, forecasted ozone levels are adjusted to exclude those grid cells dominated by water (i.e. more than 50 percent of the area within the grid cell is water) and that do not contain a monitoring site. The modeling analyses demonstrate that 2023 predicted ozone concentrations at all sites in Maine, including the Midcoast Maintenance Area, are well below the 84 ppb 1997 ozone NAAQS under all modeling scenarios. Table 4 provides a summary of EPA's projected ozone design values in Maine.

Table 4

Projected Ozone Design Values (ppb) at Individual Monitoring Sites in Maine Based on the EPA's Updated 2023 Transport Modeling

[12] *Air Quality Modeling Technical Support Document for the Updated 2023 Projected Ozone Design Values,* Office of Air Quality Planning and Standards, USEPA, June 2018.

Site	County	2009-2013 Avg[1]	2009-2013 Max[1]	2023en "3x3" Avg[3]	2023en "3x3" Max[3]	2023en"No Water" Avg[3]	2023en"No Water" Max[3]	2016-2018[4]
230010014	Androscoggin	61.0	62	49.4	50.2	49.3	50.1	59
230052003	Cumberland	69.3	70	56.2	56.8	56.7	57.3	65
230090102	Hancock	71.7	74	61.3	63.2	59.9	61.8	70
230090103	Hancock	66.3	69	55.0	57.3	55.3	57.5	63
230112005	Kennebec	62.7	64	50.5	51.5	50.5	51.5	62
230130004	Knox	67.7	69	54.7	55.7	54.8	55.8	63
230173001	Oxford	54.3	55	43.7	44.3	43.7	44.3	N/A
230194008	Penobscot	57.7	59	46.6	47.6	46.6	47.6	57
230230006	Sagadahoc	61.0	61	48.7	48.7	48.7	48.7	N/A
230310038	York	60.3	62	48.2	49.6	48.2	49.6	59
230310040	York	64.3	65	51.5	52.0	51.5	52.0	61
230312002	York	73.7	75	60.1	61.2	59.6	60.7	66

1) Base period 2009-2013 average and maximum design values based on 2009-2013 measured data.
2) Projected 2023 average and maximum design values based on the "3x3" approach recommended in EPA's photochemical modeling guidance.
3) Projected 2023 average and maximum design values based on a modified "3x3' approach in which model predictions in grid cells without monitors that are primarily water are excluded from the projection calculations ("No Water").
4) 2018 ozone design values based on 2016-2018 measured data (N/A indicates that a 2018 design value is not available).

6. Contingency Plan

The maintenance plan must include contingency provisions, as necessary, to promptly correct any NAAQS violation that occurs after redesignation of an area. It should include measures to be adopted, a schedule and procedures for adoption and implementation, and a specific time limit for action. Specific triggers that would put the plan into motion must also be identified. This plan is an enforceable part of the SIP and should ensure that the contingency measures are adopted explicitly once they are triggered.

Although it is highly unlikely that the Midcoast Ozone Maintenance Area will be unable to demonstrate continued compliance with the 1997 ozone NAAQS, Maine has listed possible contingency measures in the event of a future ozone air quality problem as required by section 175A of the CAA. At the end of each ozone season, the Department will evaluate whether the design value for the Midcoast ozone Maintenance Area is above or below the 8-hour ozone standard. If the design value is above the standard, the Department will evaluate the potential causes of this design value increase. The Department will examine whether this increase is due to an increase in local in-state emissions or an increase in upwind out-of-state emissions. If an increase in in-state emissions is determined to be a contributing factor to the design value increase, Maine will evaluate the projected in-state emissions for the ozone season in the following year. If in-state emissions are not expected to satisfactorily decrease in the following ozone season in order to mitigate the violation, Maine will implement one or more of the contingency measures listed in this section or substitute new VOC or NOx control measures to achieve additional in-state emissions reductions. The contingency measures(s) will be selected by the Governor or the Governor's designee within six months of the end of the ozone season for which contingency measures have been determined necessary. Possible contingency measures include the following:

Asphalt Paving

Reduce the VOC content limit for cutback asphalt from 5% to 4%, and lower current VOC content limits for emulsified asphalt by 20%.

Motor Vehicle and Mobile Equipment Non- Assembly Line Coating Operations

Adopt and implement the Ozone Transport Commission 2011 Model Rule for Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations.

Consumer Products

Adopt and implement the Ozone Transport Commission 2012 Model Rule for Consumer Products.

Architectural and Industrial Maintenance Coatings

Adopt and implement the 2014 OTC Model Rule for Architectural Coatings.

Rule Effectiveness Improvement

Increase enforcement of existing rules to increase rule effectiveness.

7. Transportation Conformity

Transportation conformity is required by section 176(c) of the CAA. Conformity to a SIP means that transportation activities will not produce new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS (CAA 176(c)(1)(B)). EPA's conformity rule at 40 CFR part 93 requires that transportation plans, programs and projects conform to SIPs and establish the criteria and procedures for determining whether they conform. The conformity rule generally requires a demonstration that emissions from the Regional Transportation Plan (RTP) and the Transportation Improvement Program (TIP) are consistent with the motor vehicle emissions budget (MVEB) contained in the control strategy SIP revision or maintenance plan (40 CFR 93.101, 93.118, and 93.124). A MVEB is defined as "that portion of the total allowable emissions defined in the submitted or approved control strategy implementation plan revision or maintenance plan for a certain date for the purpose of meeting reasonable further progress milestones or demonstrating attainment or maintenance of the NAAQS, for any criteria pollutant or its precursors, allocated to highway and transit vehicle use and emissions (40 CFR 93.101).

Under the conformity rule, limited maintenance plan areas may demonstrate conformity without a regional emission analysis (40 CFR 93.109(e)). All actions that would require transportation conformity determinations for the Midcoast Ozone Maintenance Area under EPA's transportation conformity rule provisions are considered to have already satisfied the regional emissions analysis and "budget test" requirements in 40 CFR 93.

However, because limited maintenance plan areas are still maintenance areas, certain aspects of transportation conformity determinations still will be required for transportation plans, programs and projects. Specifically, for such determinations, RTPs, TIPs and transportation projects still will have to demonstrate that they are fiscally constrained (40 CFR 93.108), meet the criteria for consultation (40 CFR 93.105) and Transportation Control Measure (TCM) implementation in the conformity rule provisions (40 CFR 93.112 and 40 CFR 93.113, respectively). Additionally, conformity determinations for RTPs and TIPs must be determined no less frequently than every four years, and conformity of plan and TIP amendments and transportation projects is demonstrated in accordance with the timing requirements specified in 40 CFR 93.104. In addition, for projects to be approved they must come from a currently conforming RTP and TIP (40 CFR 93.114 and 93.115).

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Appendix A

Monitored Data

This appendix presents the 8-hour ozone 4th high values and design values from monitored ozone data and calculations for all sites in the Midcoast Ozone Maintenance Area.

All data and calculations meet the criteria for data handling contained in 40 CFR Part 50. Design values are calculated by taking the average of 3 consecutive years' 4th high values (which meet the data handling conventions sited above). The year cited for the design value is the final year of the 3-year average.

Table A-1 contains the 4th high value for each year in the Midcoast Ozone Maintenance Area since 1977, while Table A-2 contains the design value for each 3-year average. The data clearly demonstrates that ozone concentration in this maintenance area have continued to decline since its 2006 redesignation.

Table A-1

4th High Values (ppm) for Each Site in the Midcoast Ozone Maintenance Area

Midcoast, ME AREA	4th	4th	4th	4th	4th	4th	4th	4th	4th	4th	4th	4th	4th
Site Name	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
	1982	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**
Port Clyde						0.116	0.122	0.101	0.092	0.113	0.093	0.086	0.085
Cadillac Mt Summit													
McFarland Hill-0103													
Ilse Au Haut						0.109	0.120	0.088	0.087	0.115	0.086	0.081	0.081
McFarland Hill-0101								0.076	0.089	0.095		0.080	0.075
McFarland Hill-HDQR		0.091	0.089	0.084	0.083	0.094	0.114						
Seawall													
Schoodic Point													
Deer Isle	0.087	0.098											
Westport Island			0.094	0.098									
1997 NAAQS	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**				
MAXIMUM 4th High	**0.87**	**0.098**	**0.094**	**0.098**	**0.083**	**0.109**	**0.122**	**0.096**	**0.099**	**0.115**	**0.093**	**0.086**	**0.085**

	4th	4th	4th	4th	4th	4th	4th	4th	4th	4th	4th	4th	4th
Site Name	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Port Clyde	.090	0.081	0.090	0.077	0.081	0.070	0.091	0.088	0.082	0.074	0.075	0.072	0.082
Cadillac Mt Summit		0.082	0.085	0.094	0.090	0.078	0.101	0.100	0.083	0.082	0.083	0.080	0.086
McFarland Hill-0103				0.088	0.092	0.070	0.094	0.089	0.080	0.073	0.071	0.070	0.083
Isle Au Haut													
McFarland Hill-0101	0.092	0.073	0.077										
McFarland Hill-HDQR													
Seawall						0.062	0.085						
Schoodic Point									0.077	0.070			
Deer Isle													

Westport Island													
1997 NAAQS	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**
MAXIMUM 4th High	**0.092**	**0.082**	**0.090**	**0.094**	**0.092**	**0.078**	**0.101**	**0.100**	**0.083**	**0.082**	**0.083**	**0.080**	**0.086**

Site Name	4th HIGH **2008**	4th HIGH **2009**	4th HIGH **2010**	4th HIGH **2011**	4th HIGH **2012**	4th HIGH **2013**	4th HIGH **2014**	4th HIGH **2015**	4th HIGH **2016**	4th HIGH **2017**	4th HIGH **2018**
Port Clyde	0.061	0.069	0.070	0.068	0.062	0.076	0.062	0.067	0.063	0.062	0.064
Cadillac Mt Summit	0.074	0.074	0.076	0.074	0.066	0.068	0.065	0.070	0.066	0.080	0.064
McFarland Hill-0103	0.064	0.073	0.070	0.066	0.060	0.069	0.062	.065	0.060	0.067	0.064
Isle Au Haut											
McFarland Hill-0101											
McFarland Hill-HDQR											
Seawall											
Schoodic Point											
Deer Isle											
Westport Island											
1997 NAAQS	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**
MAXIMUM 4th High	**0.074**	**0.074**	**0.076**	**0.074**	**0.066**	**0.076**	**0.065**	**0.070**	**0.066**	**0.080**	**0.064**

Table A-2

Design Values (ppm) for Each Site in the Midcoast Ozone Maintenance Area

Site	**1983-85**	**1984-86**	**1985-87**	**1986-88**	**1987-89**	**1988-90**	**1989-91**	**1990-92**	**1991-93**	**1992-94**	**1993-95**	**1994-96**	**1995-97**	**1996-98**
Port Clyde					0.108	0.105	0.102	0.101	0.097	0.088	0.087	0.085	0.087	0.082
Cadillac Mt Summit														0.087
McFarland Hill-0103														
Isle Au Haut				0.103	0.105	0.098	0.096	0.094	0.082					
McFarland Hill-0101							0.086	0.088	0.085		0.082	0.080	0.080	
McFarland Hill HDQR	0.088	0.086	0.087	0.097										
Seawall														
Schoodic Point														
Deer Isle														
Westport Island														
1997 NAAQS	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**
MAXIMUM DV	**0.088**	**0.086**	**0.087**	**0.103**	**0.108**	**0.105**	**0.102**	**0.101**	**0.097**	**0.088**	**0.087**	**0.085**	**0.087**	**0.087**

Site	**1997-99**	**1998-00**	**1999-01**	**2000-02**	**2001-03**	**2002-04**	**2003-05**	**2004-06**	**2005-07**	**2006-08**	**2007-09**	**2008-10**	**2009-11**	**2010-12**
Port Clyde	0.082	0.076	0.080	0.083	0.087	0.081	0.077	0.073	0.076	0.071	0.070	0.066	0.066	0.066
Cadillac Mt Summit	0.089	0.087	0.089	0.093	0.094	0.088	0.082	0.081	0.083	0.080	0.078	0.074	0.072	0.066
McFarland Hill-0103		0.083	0.085	0.084	0.087	0.080	0.074	0.071	0.074	0.072	0.073	0.069	0.065	0.063
Isle Au Haut														
McFarland Hill-0101														
McFarland Hill HDQR														
Seawall														

Schoodic Point												0.079	0.070	0.067
Deer Isle														
Westport Island														0.059
1997 NAAQS	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**
MAXIMUM DV	**0.089**	**0.087**	**0.089**	**0.093**	**0.096**	**0.094**	**0.082**	**0.081**	**0.083**	**0.080**	**0.078**	**0.074**	**0.072**	**0.066**

Site	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Port Clyde	0.068	0.066	0.068	0.064	0.064	0.063
Cadillac Mt Summit	0.069	0.066	0.067	0.067	0.072	0.070
McFarland Hill-0103	0.065	0.063	0.065	0.062	0.064	0.063
Isle Au Haut						
McFarland Hill-0101						
McFarland Hill HDQR						
Seawall						
Schoodic Point						
Deer Isle						
Westport Island						
1997 NAAQS	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**	**0.084**
MAXIMUM DV	**0.069**	**0.066**	**0.068**	**0.067**	**0.072**	**0.070**

DRAFT
10/25/19

Implementation, Maintenance and Enforcement of the 2015 Ozone National Ambient Air Quality Standard in Maine
-Certification-

1.0 Preamble, Introduction and Background

On October 1, 2015, the Environmental Protection Agency (EPA revised the National Ambient Air Quality Standard (NAAQS) for ground-level ozone at a level of 0.70 parts per million[1][2]. Pursuant to the 1990 Clean Air Act Amendments (CAA) sections 110(a)(1) and (2), each state is required to submit to the EPA, a State Implementation Plan (SIP) to provide for the implementation, maintenance and enforcement of a newly promulgated or revised NAAQS[3]. This SIP revision fulfills this requirement for the 2015 ozone NAAQS.

Section 110(a)(1) contains the general requirements for submitting a SIP to address new or revised primary NAAQS within three years of their promulgation. Section 110(a)(2) contains specific elements to be included in these plans. Pursuant to EPA guidance dated September 2013, this submission addresses each of the required elements of section 110(a)(2) and affirms that Maine's SIP meets the requirements of CAA sections 110(a)(1) and (2).

SIPs must include the following elements of CAA section 110(a)(2):

- Enforceable Emission Limitations and Other Control Measures (§110(a)(2)(A))
- Ambient Air Quality Monitoring, Compilation, Analysis and Reporting (§110(a)(2)(B))
- Enforcement and Stationary Source Permitting (§110(a)(2)(C))
- Interstate Transport (§110(a)(2)(D))
- Assurance of Adequate Resources (§110(a)(2)(E))
- Stationary Source Monitoring System and Reporting (§110(a)(2)(F))
- Emergency Powers and Contingency Plans (§110(a)(2)(G))
- Authority for SIP Revisions for the Revised NAAQS (§110(a)(2)(H))

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[1] 80 FR 65292; October 26, 2015.

[2] All references to ambient air quality standards in Maine regulations (and statute) refer to the federal NAAQS. Maine Statute at 38 M.R.S. § 584-A states:

> ***§584-A. AMBIENT AIR QUALITY STANDARDS***
> *For purposes of statutory interpretation, rules, licensing determinations, policy guidance and all other actions by the department or the board, any reference to an ambient air quality standard is interpreted to refer to the national ambient air quality standard established pursuant to Section 109 of the federal Clean Air Act, 42 United States Code, Section 7409, as amended. The department shall implement ambient air quality standards as required by the federal Clean Air Act, 42 United States Code, Section 7409 and regulations promulgated under that section by the United States Environmental Protection Agency. Nothing in this section may be construed to limit the authority of the department to adopt emission standards designed to achieve and maintain ambient air quality standards.*

[3] SIPs fulfilling CAA §110(a)(1) and (2) are also known as infrastructure SIPs.

- Authority for SIP Revisions for New Nonattainment Areas (§110(a)(2)(I))
- Consultation, Public Notification and Prevention of Significant Deterioration ((PSD/Visibility) (§110(a)(2)(J))
- Air Quality Monitoring and Reporting (§110(a)(2)k))
- Permitting Fees (§110(a)(2)(L))
- Consultation/Participation with Affected Local Entities (§110(a)(2)(M))

This submittal addresses the infrastructure requirements of Section 110(a)(2)(A)-(M) of the CAA for the implementation of the 2015 O_3 NAAQS in Maine. Each of the requirements of section 110(a)(2) of the CAA (Subparagraphs A–M) and Maine's satisfaction of these requirements is presented in tabular form below.

State of Maine
Certification of State Implementation Plan Adequacy
Required Section 110(a)(1) and (2) SIP Elements for the
2015 Ozone National Ambient Air Quality Standard

CAA Section	Requirement	Maine Program
110(a)(2)(A)-Emission limits and other control measures	Enforceable emission limits and other control measures, means or techniques, schedules for compliance and other related measures	38 MRSA §581. Declaration of findings and intent 38 MRSA §581 states in relevant part: *The Legislature finds and declares that air pollution exists with varying degrees of severity within this State; that such air pollution is potentially and in some cases actually dangerous to the health of the citizenry, often causes physical discomfort, injury to property and property values, discourages recreational and other uses of the state's resources and is aesthetically unappealing.* *The Legislature by this chapter intends to exercise the police power of the State in a coordinated state-wide program to control present and future sources of emission of air contaminants to the end that air polluting activities of every type shall be regulated in a manner that reasonably insures the continued health, safety and general welfare of all of the citizens of the State; protects property values and protects plant and animal life.* 38 MRSA §585. Establishment of emission standards 38 MRSA §585 states, in relevant part: *The board may establish and may amend standards, herein called "emission standards", limiting and regulating in a just and equitable manner the amount and type of air contaminants which may be emitted to the ambient air within a region. Such emission standards shall be designed to prevent air pollution and to achieve and maintain the ambient air quality standards within the region in which applicable.* 38 MRSA §585-A. Establishment of standards 38 MRSA §585-A states, in relevant part: *The board may establish and amend regulations to implement ambient air quality standards and emission standards. These regulations shall be designed to achieve and maintain ambient air quality standards and emission standards within any region and prevent air pollution.* 38 MRSA §590. Licensing

		38 MRSA §590 states, in relevant part: *1. License required. After ambient air quality standards and emission standards have been established within a region, the board may by rule provide that a person may not operate, maintain or modify in that region any air contamination source or emit any air contaminants in that region without an air emission license from the department.* 06-096 CMR Chapters 100 through 163 include a number of rules addressing the control of ozone precursors. These rules include: 06-096 CMR Chapter 100 Definitions Regulation 06-096 CMR Chapter 110 Ambient Air Quality Standards 06-096 CMR Chapter 111Petroleum Liquid Storage Vapor Control 06-096 CMR Chapter 112Petroleum Liquids Transfer Vapor Recovery 06-096 CMR Chapter 113 Growth Offset Regulation 06-096 CMR Chapter 114 Classification of Air Quality Control Regions 06-096 CMR Chapter 115 Major and Minor Source Air Emission License Regulations 06-096 CMR Chapter 116 Prohibited Dispersion Techniques 06-096 CMR Chapter 117 Source Surveillance 06-096 CMR Chapter 118 Gasoline Dispensing Facilities Vapor Control 06-096 CMR Chapter 119 Motor Vehicle Fuel Volatility Limit 06-096 CMR Chapter 120 Gasoline Tank Truck Tightness Self-Certification 06-096 CMR Chapter 123 Paper Coating Regulation 06-096 CMR Chapter 126 Capture Efficiency Test Procedures 06-096 CMR Chapter 127 New Motor Vehicle Emission Standards 06-096 CMR Chapter 129 Surface Coating facilities 06-096 CMR Chapter 130 Solvent Degreasers 06-096 CMR Chapter 131 Cutback Asphalt and Emulsified Asphalt 06-096 CMR Chapter 132 Graphic Arts-Rotogravure and Flexography 06-096 CMR Chapter 133 Petroleum Liquids Transfer Vapor Recovery at Bulk Gasoline Plants 06-096 CMR Chapter 134 Reasonably Available Control Technology for Facilities that Emit Volatile Organic Compounds 06-096 CMR Chapter 137 Emission Statements 06-096 CMR Chapter 138 Reasonably Available Control Technology for Facilities that Emit Nitrogen Oxides 06-096 CMR Chapter 139 Transportation Conformity 06-096 CMR Chapter 140 Part 70 Air Emission License Regulations 06-096 CMR Chapter 143 New Source Performance Standards (NSPS) 06-096 CMR Chapter 145 NOx Control Program

		06-096 CMR Chapter 148 Emissions from Smaller-Scale Electric Generating Resources 06-096 CMR Chapter 151 Architectural and Industrial Maintenance (AIM) Coatings 06-096 CMR Chapter 152 Control of Emissions of Volatile Organic Compounds from Consumer Products 06-096 CMR Chapter 153 Mobile Equipment Repair and Refinishing 06-096 CMR Chapter 154 Control of Volatile Organic Compounds from Flexible Package Printing 06-096 CMR Chapter 159 Control of Volatile Organic Compounds from Adhesives and Sealants 06-096 CMR Chapter 161 Graphic Arts- Offset Lithography and Letterpress Printing 06-096 CMR Chapter 162 Control for Fiberglass Boat Manufacturing Materials 06-096 CMR Chapter 166 Industrial Cleaning Solvents
110(a)(2)(B)- Ambient air quality monitoring/data system	Provisions to provide for establishment and operation of ambient air quality monitors, collecting and analyzing ambient air quality data, and making these data available to EPA upon request	Maine's initial SIP, containing provisions for an ambient air quality monitoring and data analysis system was approved on October 28, 1972. The air monitoring network plan has been updated on numerous occasions, with the most recent monitoring plan approved by EPA on September 11, 2020. Monitoring Authority. Maine's general authority for ambient air quality monitoring pursuant to CAA Section 110(a)(2)(B) is provided by 38 MRS § 341-A(1), which states: *1. Purpose. The department shall prevent, abate and control pollution of the air, water and preserve, improve and prevent diminution of the natural environment of the State. The department shall protect and enhance the public's right to use and enjoy the State's natural resources and may educate the public on natural resource use, requirements, and issues.* More specific authority is provided by 38 MRS § 584-A, which states: *For the purposes of statutory interpretation, rules, licensing determinations policy guidance and all other actions by the department or the board, any reference to an ambient air quality standard is interpreted to refer to the national ambient air quality standard established pursuant to Section 109 of the federal Clean Air Act, 42 United States Code, Section 7409, as amended. The department shall implement ambient air quality standards as required by the federal Clean Air Act, 42 United States Code, Section 7409 and regulations promulgated under that section by the United States Environmental Protection Agency. Nothing in this section may be construed to limit the authority of the department to adopt emission standards designed to achieve and maintain ambient air quality standards.* Maine DEP operates a comprehensive ambient air quality monitoring and data analysis program for all required NAAQS through a statewide network of air quality monitors, and maintains a database on these pollutants that are released from new and existing area, point and mobile sources. These data are reviewed in accordance with the Quality

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		Assurance Project Plans (QAPPS) and submitted to AQS within 90 days of the end of each quarter.
110(a)(2)(C)-Program for enforcement of control measures	Program for enforcement of all SIP measures and the regulation of construction of new or modified stationary sources to meet PSD and NSR requirements	38 MRS § 347-A. Violations 38 MRS § 347-A states, in relevant part: *1. General procedures. This subsection sets forth procedures for enforcement actions.* *A. Whenever it appears to the commissioner, after investigation, that there is or has been a violation of this Title, of rules adopted under this Title or of the terms or conditions of a license, permit or order issued by the board or the commissioner, the commissioner may initiate an enforcement action by taking one or more of the following steps:* *(1) Resolving the violation through an administrative consent agreement pursuant to subsection 4, signed by the violator and approved by the commissioner and the Attorney General;* *(2) Referring the violation to the Attorney General for civil or criminal prosecution;* *(3) Scheduling and holding an enforcement hearing on the alleged violation pursuant to subsection 2; or* *(4) With the prior approval of the Attorney General, commencing a civil action pursuant to section 342, subsection 7 and the Maine Rules of Civil Procedure, Rule 3.* *B. Before initiating a civil enforcement action pursuant to paragraph A, the commissioner shall issue a notice of violation to the person or persons the commissioner considers likely to be responsible for the alleged violation or violations. The notice of violation must describe the alleged violation or violations, to the extent then known by the commissioner; cite the applicable law, rule and term or condition of the license, permit or order alleged to have been violated; and provide time periods for the alleged violator to take necessary corrective action and to respond to the notice. For violations the commissioner finds to be minor, the notice may state that further enforcement action will not be pursued if compliance is achieved within the time period specified in the notice or under other appropriate circumstances. The commissioner is not required to issue a notice of violation before issuing an emergency order pursuant to subsection 3 or other applicable provision of this Title; nor is the commissioner required to issue a notice of violation before referring an alleged violation to the Attorney General for criminal prosecution or in a matter requiring immediate enforcement action.* *2. Hearings. The commissioner shall give at least 30 days' written notice to the alleged violator of the date, time and place of any hearing held pursuant to subsection 1, paragraph A, subparagraph (3). The notice must specify the act or omission which is claimed to be in violation of law or regulation.* *Any hearing conducted under the authority of this subsection must be in accordance with the provisions of Title 5, chapter 375, subchapter IV. At the hearing, the alleged violator may appear in person or by attorney and answer the allegations of violation and file a statement of the facts, including the methods,*

		practices and procedures, if any, adopted or used by that person to comply with this chapter and present such evidence as may be pertinent and relevant to the alleged violation. *After hearing, or in the event of a failure of the alleged violator to appear on the date set for a hearing, the commissioner shall, as soon as practicable, make findings of fact based on the record and, if the commissioner finds that a violation exists, shall issue an order aimed at ending the violation. The person to whom an order is directed shall immediately comply with the terms of that order.* *3. Emergency orders. Whenever it appears to the commissioner, after investigation, that there is a violation of the laws or regulations the department administers or of the terms or conditions of any of the department's orders that is creating or is likely to create a substantial and immediate danger to public health or safety or to the environment, the commissioner may order the person or persons causing or contributing to the hazard to immediately take such actions as are necessary to reduce or alleviate the danger. Service of a copy of the commissioner's findings and order must be made by the sheriff or deputy sheriff or by hand delivery by an authorized representative of the department in accordance with the Maine Rules of Civil Procedure. In the event that the persons are so numerous that the specified method of service is a practical impossibility or the commissioner is unable to identify the person or persons causing or contributing to the hazard, the commissioner shall make the order known through prominent publication or announcement in news media serving the affected area.* *The person to whom the order is directed shall comply with the order immediately. The order may not be appealed to the Superior Court in the manner provided in section 346, but within 48 hours after receipt of the order the person may apply to the board for a hearing on the order. Within 7 working days after receipt of the application, the board shall hold a hearing, make findings of fact and vote on a decision that continues, revokes or modifies the order. That decision must be in writing and signed by the board chair using any means for signature authorized in the department's rules and published within 2 working days after the hearing and vote. The nature of the hearing is an appeal. At the hearing, all witnesses must be sworn and the commissioner shall first establish the basis for the order and for naming the person to whom the order was directed. The decision of the board may be appealed to the Superior Court in the manner provided by section 346.* *4. Administrative consent agreements. Following issuance of a notice of violation pursuant to subsection 1 and after receipt of the alleged violator's response to that notice or expiration of the time period specified in the notice for a response, in situations determined by the commissioner appropriate for further enforcement action, the commissioner may send a proposed administrative consent agreement to the alleged violator or violators.* *A. Except as otherwise expressly agreed to by the Attorney General, all proposed administrative consent agreements must be reviewed and approved by the Department of the Attorney General before being sent to the alleged violator.*

		B. All proposed administrative consent agreements sent to the alleged violator must be accompanied by written correspondence from the department, in language reasonably understandable to a citizen, explaining the alleged violator's rights and responsibilities with respect to the proposed administrative consent agreement. The correspondence must include an explanation of the factors considered by the commissioner in determining the proposed civil penalty, a statement indicating that the administrative consent agreement process is a voluntary mechanism for resolving enforcement matters without the need for litigation and an explanation of the department's procedures for handling administrative consent agreements. The correspondence must also specify a reasonable time period for the alleged violator to respond to the proposed administrative consent agreement and offer the opportunity for a meeting with department staff to discuss the proposed agreement. Consent agreements shall, to the greatest extent possible, clearly set forth all the specific requirements or conditions with which the alleged violator must comply. *C. After a proposed administrative consent agreement has been sent to the alleged violator, the commissioner may revise and resubmit the agreement if further circumstances become known to the commissioner, including information provided by the alleged violator, that justify a revision.* *D. The public may make written comments to the commissioner at the commissioner's discretion on an administrative consent agreement entered into by the commissioner.* *E. When the department and the alleged violator can not agree to the terms of a consent agreement and the department elects to bring an enforcement action in District Court pursuant to section 342, subsection 7, the District Court shall refer the parties to mediation if either party requests mediation at or before the time the alleged violator appears to answer the department's complaint. The parties must meet with a mediator appointed by the Court Alternative Dispute Resolution Service created in Title 4, section 18-B at least once and try in good faith to reach an agreement. After the first meeting, mediation must end at the request of either party. If the parties have been referred to mediation, the action may not be removed to Superior Court until after mediation has occurred.* ***5. Enforcement.*** *All orders of the department and administrative consent agreements entered into by the department may be enforced by the Attorney General or the department. If any order of the department is not complied with, the commissioner shall immediately notify the Attorney General.* 38 MRS § 347-C. Right of inspection and entry 38 MRS § 347-C states: *Employees and agents of the department may:* *1. Property. Enter any property at reasonable hours in order to inspect the property to take samples, inspect records relevant to any regulated activity or conduct tests as appropriate to determine compliance with any laws administered by the department or the terms and conditions of any order,*

		regulation, license, permit, approval or decision of the commissioner or of the board; and *2. Buildings. Enter any building with the consent of the property owner, occupant or agent, or pursuant to an administrative search warrant, in order to inspect the property or structure, including the premises of an industrial user of a publicly owned treatment works, and to take samples, inspect records relevant to any regulated activity or conduct tests as appropriate to determine compliance with any laws administered by the department or the terms and conditions of any order, regulation, license, permit, approval or decision of the commissioner or of the board.* 38 MRS § 348. Judicial Enforcement 38 MRS § 348 states, in relevant part: *1. General. In the event of a violation of any provision of the laws administered by the department or of any order, regulation, license, permit, approval, administrative consent agreement or decision of the board or commissioner or decree of the court, as the case may be, the Attorney General or the department may institute injunction proceedings to enjoin any further violation thereof, a civil or criminal action or any appropriate combination thereof without recourse to any other provision of law administered by the department.* *2. Restoration. The court may order restoration of any area affected by any action or inaction found to be in violation of any provision of law administered by the department or of any order, rule, regulation, license, permit, approval or decision of the board or commissioner or decree of the court, as the case may be, to its condition prior to the violation or as near thereto as may be possible. Where the court finds that the violation was willful, the court shall order restoration under this subsection unless the restoration will:* *A. Result in a threat or hazard to public health or safety;* *B. Result in substantial environmental damage; or* *C. Result in a substantial injustice.* *3. Injunction proceedings. If the department finds that the discharge, emission or deposit of any materials into any waters, air or land of this State constitutes a substantial and immediate danger to the health, safety or general welfare of any person, persons or property, the department shall forthwith request the Attorney General to initiate immediate injunction proceedings to prevent such discharge or the commissioner may authorize pursuit of such an action in District Court. The injunction proceedings may be instituted without recourse to the issuance of an order, as provided for in section 347-B.* *4. Settlement. A person who has resolved that person's liability to the State in an administrative or judicially approved settlement and is implementing or has fully implemented that settlement pursuant to its terms is not liable for claims by other potentially liable persons regarding response actions, response*

		costs or damages, including without limitation natural resource damages, addressed in the settlement. The settlement does not discharge any other potentially liable persons unless its terms so provide. The protection afforded by this subsection includes protection against contribution claims and all other types of claims under state law that may be asserted against the settling party for recovery of response costs or damages incurred or paid by another potentially liable person, if those actions, costs or damages are addressed in the settlement, but does not include protection against claims based on contractual indemnification or other express contractual agreements to pay the costs or damages. A potentially liable person who commences an action against a person who is protected from suits under this subsection is liable to the person against whom the claim is brought for all reasonable costs of defending against the claim, including all reasonable attorney's and expert witness fees. This section is not intended to create a right to contribution or other cause of action or to make a person liable to pay a portion of another person's response costs, damages or civil penalties. 38 MRS § 349. Penalties 38 MRS § 349 establishes criteria governing civil and criminal penalties for violations of environmental laws and regulations. 38 MRS § 349 states, in part: *1. Criminal penalties. Except as otherwise specifically provided, a person who intentionally, knowingly, recklessly or with criminal negligence violates a law administered by the department, including, without limitation, a violation of the terms or conditions of an order, rule, license, permit, approval or decision of the board or commissioner, or who disposes of more than 500 pounds or more than 100 cubic feet of litter for a commercial purpose, in violation of Title 17, section 2264-A, commits a Class E crime. Notwithstanding Title 17-A, section 1301, the fine for a violation of this subsection may not be less than $2,500 and not more than $25,000 for each day of the violation, except that the minimum amount for knowing violations is $5,000 for each day of violation. This subsection does not apply to actions subject to the criminal penalties set forth in section 1319-T.* *2. Civil penalties. Except as otherwise specifically provided, a person who violates a law administered by the department, including, without limitation, a violation of the terms or conditions of an order, rule, license, permit, approval or decision of the board or commissioner, or who disposes of more than 500 pounds or more than 100 cubic feet of litter for a commercial purpose, in violation of Title 17, section 2265-A, is subject to a civil penalty, payable to the State, of not less than $100 and not more than $10,000 for each day of that violation or, if the violation relates to hazardous waste, of not more than $25,000 for each day of the violation. This penalty is recoverable in a civil action.* *6. Maximum penalties. The maximum civil penalty may exceed $10,000 for each day of that violation, but may not exceed $25,000 for each day of the violation, when it can be shown that there has been a*

		previous violation of the same law by the same party within the 5 preceding years, and the maximum criminal penalty may exceed $25,000 for each day of violation, but may not exceed twice the amounts in subsection 1, when it can be shown that there has been a previous violation of the same law by the same party. 06-096 CMR Chapter 115 Major and Minor Source Air Emission License Regulations This regulation specifies who must obtain an air emission license, what standards and criteria must be complied with and what information an applicant must submit. The rule implements New Source Review (NSR) requirements of the CAA and Section 590 of 38 MRS for those minor sources and those major sources that are undergoing changes subject to NSR under the CAA. For minor sources this rule serves both as an operating licensing program as well as the pre-construction New Source Review Program. For major sources the rule serves as a pre-construction NSR program while Chapter 140 implements the operating licensing requirements of 40 CFR Part 70.
110(a)(2)(D) Interstate transport provisions	*..."contain adequate provisions - (i) prohibiting, consistent with the provisions of this title, any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will- (I) contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national*	The Maine SIP currently contains adequate provisions prohibiting sources from emitting air pollutants in amounts which will contribute significantly to nonattainment, or interfere with maintenance, of any NAAQS, including the 2015 ozone NAAQS in Maine or in any other state.[4] Maine's SIP also contains adequate provisions to prevent interference with measures by any other state to prevent significant deterioration of air quality or to protect visibility. Maine may make changes that it believes in its discretion are appropriate, while continuing to fulfil this obligation. At present, Maine's legal authority is contained in 38 M.R.S. §585-A Establishment of Standards, which states: *585-A. Establishment of Standards* *The board may establish and amend regulations to implement ambient air quality standards and emission standards. These regulations shall be designed to achieve and maintain ambient air quality standards and emission standards within any region and prevent air pollution.* *Prior to the establishment or amendment of rules, the board shall offer an opportunity for a public hearing thereon in accordance with the Maine Administrative Procedure Act, Title 5, chapter 375. The board shall solicit and consider all available information concerning applicable ambient air quality and*

[4] The Department has prepared a separate SIP revision addressing the CAA §110(a)(2)(D)(i)(I) ("good neighbor") requirements to demonstrate that emissions from sources in Maine do not significantly contribute to nonattainment in, or interfere with maintenance by, any other state with respect to the 2015 ozone NAAQS. DEP's analysis of recent EPA's and Ozone Transport Commission's (OTC) 2023 modeling demonstrates that Maine meets its good neighbor requirements for the 2015 NAAQS.

	primary or secondary ambient air quality standard, or (II) interfere with measures required to be included in the applicable implementation plan for any other State under part C to prevent significant deterioration of air quality or to protect visibility, (ii) insuring compliance with the applicable requirements of sections 126 and115 (relating to interstate and international pollution abatement); "	*emission standards; the availability, effectiveness and cost of any air pollution control apparatus designed to prevent or control air pollution or violations of ambient air quality or emission standards which would be required by any proposed rules; and such other evidence as in the board's judgment will enable it to determine and establish rules adequate to maintain applicable ambient air quality and emission standards.* *The board shall establish or amend rules to achieve the purposes set forth in this section. The board may delay the effective date of the rules.* *The department shall confer with the joint standing committee of the Legislature having jurisdiction over natural resource matters before it proposes any revisions to the state implementation plan, required in the federal Clean Air Act, Section 110, 42 United States Code, Section 7410, that would require the State to implement new emissions reduction strategies or programs or substantially revise or terminate existing emissions reduction strategies or programs. Notwithstanding any other parts of this section, rules adopted pursuant to this section relating to motor vehicle fuel standards are major substantive rules as defined in Title 5, chapter 375, subchapter II-A.* Nothing in Maine's statutory or regulatory authority prohibits or otherwise interferes with Maine's ability to exercise Sections 126 and 155 of the CAA. No source or sources within Maine are the subject of an active finding under Section 126 of the CAA, nor are there any findings under Section115 of the CAA against Maine.

110(a)(2)(D)(i)(II) Interstate transport provisions – PSD and visibility	Provisions prohibiting any source or other type of emissions activity in one state from contributing significantly to nonattainment, or interfering with PSD measures or measures to protect visibility in another state.	06-096 CMR Chapter 115 Major and Minor Source Air Emission License Regulation The Maine Regional Haze SIP addressing visibility was approved by EPA on April 24, 2012. See 77 FR 24385. The Maine Regional Haze 5-Year Progress Report was submitted to EPA on February 23, 2016 and approved on September 19, 2017 (82 FR 42699).
110(a)(2)(D)(ii) Interstate and international transport provisions	Adequate provisions to prevent endangerment of public health due to interstate and international transport of pollutants.	Maine's Chapter 115 Section IX (E)(3) (which is in the SIP), requires the state to provide a "copy of the public notification and a copy of the draft order to the U.S. Environmental Protection Agency, Region I, the chief executives of the municipality and county where the source proposes to locate, any comprehensive land use planning agency, and any State, Federal Land Manager, or Indian Governing Body whose lands may be affected by emissions from the source or modification." Also, note that Maine has no pending obligations under section 115 or 126(b) of the Act. The Department recognizes that Maine's public and affected states draft notification procedures as established in Section 2(k)(2) of 06-096 CMR ch. 140, provide that affected states must be given at least 30-days' notice and are inconsistent with section 110(a)(2)(D)(ii) of the CAA, which requires all nearby states that may be affected by the construction of a new or modified major source of air pollution be given notice at least 60 days prior to the date on which the commencement of construction is to be permitted. Since these notification procedures do not meet the requirements of CAA Section 126(a)(1), the Department is committing to revise and submit its new source review program regulations to EPA no later than one year after the effective date of EPA's final action on this I-SIP.
110(a)(2)(E)-Adequate Resources	Provisions for adequate personnel, funding, and legal authority under State Law to carry out SIP and related issues	38 MRS § 341-A. Department of Environmental Protection *38 MRS § 341-A states, in relevant part:* *There is established a Department of Environmental Protection, in this Title called the "department."* *1. Purpose. The department shall prevent, abate and control the pollution of the air, water and land and*

		preserve, improve and prevent diminution of the natural environment of the State. The department shall protect and enhance the public's right to use and enjoy the State's natural resources and may educate the public on natural resource use, requirements and issues. *2. Composition. The department shall consist of the Board of Environmental Protection, in the laws administered by the department called "board," and of a Commissioner of Environmental Protection, in the laws administered by the department called "commissioner."* *3. Commissioner. The commissioner is appointed by the Governor, subject to review by the joint standing committee of the Legislature having jurisdiction over natural resource matters and to confirmation by the Legislature.* *A. The commissioner serves at the pleasure of the Governor.* *B. The commissioner may not participate in the review of or act on an application for a National Pollutant Discharge Elimination System permit or the modification, renewal or appeal of a permit under Section 402 of the Federal Water Pollution Control Act, 33 United States Code, Section 1342 if the commissioner receives, or during the previous 2 years has received, a significant portion of income directly or indirectly from National Pollutant Discharge Elimination System permit holders or applicants. If the commissioner's authority is restricted under this paragraph, the commissioner shall delegate duties related to the restricted matter to employees of the department who do not hold major policy-influencing positions pursuant to Title 5, section 938 and who do not receive or have not received during the previous 2 years a significant portion of income directly or indirectly from National Pollutant Discharge Elimination System permit holders or applicants. For the purposes of this section, "a significant portion of income" means 10% or more of gross personal income for a calendar year, except that it means 50% or more if the recipient is over 60 years of age and is receiving that portion under retirement, pension or similar arrangement. Duties that must be delegated include National Pollutant Discharge Elimination System permitting, enforcement, establishment of waste load allocations and total maximum daily loads and establishment and implementation of water quality standards but not other Federal Water Pollution Control Act matters such as water quality certification. The restriction imposed by this paragraph may not be interpreted to be more restrictive than federal law or the regulations of the United States Environmental Protection Agency. If a person with a conflict under this paragraph is nominated for the position of commissioner, the Governor shall submit to the President of the Senate and Speaker of the House of Representatives a plan for delegating the duties required to be delegated under this paragraph. The plan must be submitted with the information packet required to be provided by the Governor to the President of the Senate and Speaker of the House of Representatives under Title 3, section 154.* *C. The commissioner may delegate duties assigned to the commissioner under this Title to staff of the department.*

		D. The commissioner is subject to the conflict-of-interest provisions of Title 5, section 18.[5] *4. Licenses and permits. For purposes of this Title, licenses or permits issued by the department may be issued by either the commissioner or the board subject to the provisions of section 341-D, subsection 2."* State Boards and Conflict of Interest. Section 110(a)(2)(E)(ii) of the CAA requires SIPs to contain provisions that: (1) any board or body which approves permits or enforcement orders under the Clean Air Act has at least a majority of members who represent the public interest, and do not derive any significant portion of their income from persons subject to permits or enforcement orders under this Act, and (2) any potential conflicts of interest by members of such board or body or the head of an executive agency with similar powers be adequately disclosed.[6] 38 MRS § 341-C. Board membership. 38 MRS § 341-C(2) states: ***2. Qualifications and requirements.*** *Members of the board must be chosen to represent the broadest possible public interest and experience that can be brought to bear on the administration and implementation of this Title and all other laws the board is charged with administering. At least 3 members must have technical or scientific backgrounds in environmental issues and no more than 4 members may be residents of the same congressional district. The boundaries of the congressional districts are defined in Title 21-A, chapter 15. A county commissioner, county employee, municipal official or municipal employee is not considered to hold an incompatible office for purposes of simultaneous service on the board. If a county or municipality is a participant in an adjudicatory proceeding before the board, a commissioner, official or employee from that county or municipality may not participate in that proceeding.* 38 MRSA §341-C(8) states, in relevant part: *8. Federal standards. In accordance with federal standards, board member participation is limited by*

[5] 38 M.R.S. § 341-A(3)(D) was submitted to EPA on September 4, 2019 for incorporation into the Maine SIP.

[6] Maine law was recently amended to address these federal requirements, and on September 4, 2019, the Department submitted the Maine Board of Environmental Protection membership requirements and conflict of interest provisions found in 38 M.R.S. Sections 341-C(2) and 341-C(8) (Public Law 2019, Chapter 180) for incorporation into the Maine SIP.

		this subsection. For the purposes of this subsection, "a significant portion of income" means 10% or more of gross personal income for a calendar year, except that it means 50% or more if the recipient is over 60 years of age and is receiving that portion under retirement, pension or similar arrangement. *B. A board member may not participate in the review of or act on any permitting decision or enforcement order under the federal Clean Air Act, 42 United States Code, Section 7401, et seq. if the board member receives or derives a significant portion of that board member's income from persons subject to permits or enforcement orders under the federal Clean Air Act. Board members whose participation is restricted under this paragraph shall recuse themselves from all permitting and enforcement matters under the federal Clean Air Act. The restriction imposed by this paragraph may not be interpreted to be more restrictive than federal law or the regulations of the United States Environmental Protection Agency.* 38 MRS § 341-D. Board responsibilities and duties 38 MRS § 341-D. states, in relevant part: *The board is charged with the following duties and responsibilities.* *1-C. Rulemaking. The board shall adopt, amend or repeal rules in accordance with section 341-H.* Conflict of interest provisions for the Commissioner and the Board of Environmental Protection In Maine, licenses and permits may be issued by either the Commissioner or the Board (see 38 M.R.S. § 341-A(4), with Board jurisdiction for licensing decisions limited to projects of statewide significance in accordance with 38 M.R.S. § 341-D(2). Final license decisions and enforcement orders made by the Commissioner may be appealed to the Board of Environmental Protection pursuant to 38 M.R.S. § 341-D(4), and Board decisions may be appealed to the Maine Superior Court. Maine statute currently satisfies the requirements of CAA § 128(a)(2), since both the Commissioner (see 38 M.R.S. § 341-A(3)(D)) and the members of the Board (see 38 M.R.S. § 341-C(7)) are subject to the conflict of interest provisions contained in Maine statute at 5 M.R.S. § 18. 38 MRS § 342. Commissioner, duties 38 MRS § 342 states, in relevant part: *The Commissioner of Environmental Protection shall have the following duties:* *1-A. Administration of department. The commissioner is the chief administrative officer of the department and responsible for all administrative matters of the department, except as otherwise specified. The commissioner shall assure that all determinations made by the staff of the department are*

		promptly rendered. The commissioner shall resolve disputes between department staff and applicants with respect to any questions regarding requirements, interpretation or application of the laws, rules or department policy. In resolving disputes, the commissioner shall attempt to reach a fair and appropriate result given all of the circumstances of the issue and may utilize the services of such consultants or experts as the commissioner determines would be helpful to resolve any disputed issue. For purposes of this subsection and section 341-A, subsection 3, paragraph C, staff of the department does not include staff of the board. 38 MRS § 341-H. Departmental rulemaking 38 MRS § 341-H states, in relevant part: *The department may adopt, amend or repeal rules and emergency rules necessary for the interpretation, implementation and enforcement of any provision of law that the department is charged with administering as provided in this section.* *1. Rule-making authority of the board. Notwithstanding any other provision of this Title, and except as provided in this subsection, the board shall adopt, amend or repeal only those rules of the department designated as major substantive rules pursuant to Title 5, chapter 375, subchapter 2-A. The board shall also adopt, amend and repeal routine technical rules as necessary for the conduct of the board's business, including the processing of applications, the conduct of hearings and other administrative matters.* *2. Rule-making authority of the commissioner. Notwithstanding any other provision of this Title, the commissioner shall adopt, amend or repeal only those rules of the department that are not designated as major substantive rules pursuant to Title 5, chapter 375, subchapter 2-A.* *3. Duties of department. The department shall:* *A. Identify in its regulatory agenda under Title 5, section 8060, when feasible, a proposed rule or provision of a proposed rule that is anticipated to be more stringent than a federal standard, if an applicable federal standard exists;* *B. During the consideration of any proposed rule, when feasible, and using information available to it, identify provisions of the proposed rule that the department believes would impose a regulatory burden more stringent than the burden imposed by the federal standard, if such a federal standard exists, and shall explain in a separate section of the basis statement the justification for the difference between the agency rule and the federal standard; and* *C. Notwithstanding Title 5, chapter 375, subchapter 2 or 2-A, the department shall accept and consider additional public comment on a proposed rule following the close of the formal rule-making comment period at a meeting that is not a public hearing only if the additional public comment is directly related*

		to comments received during the formal rule-making comment period or is in response to changes to the proposed rule. Public notice of the meeting must comply with Title 1, section 406 and must state that the department will accept additional public comment on the proposed rule at that meeting. *4. Legislative review of a rule. If a rule adopted by the department is the subject of a request for legislative review of a rule under Title 5, chapter 377-A, the Executive Director of the Legislative Council shall immediately notify the department of that request and of the legislative committee's decision under that chapter on whether or not to review the rule.* 38 MRS § 581. Declaration of findings and intent 38 MRS § 581 states in relevant part: *The Legislature finds and declares that air pollution exists with varying degrees of severity within this State; that such air pollution is potentially and in some cases actually dangerous to the health of the citizenry, often causes physical discomfort, injury to property and property values, discourages recreational and other uses of the state's resources and is aesthetically unappealing.* *The Legislature by this chapter intends to exercise the police power of the State in a coordinated state-wide program to control present and future sources of emission of air contaminants to the end that air polluting activities of every type shall be regulated in a manner that reasonably insures the continued health, safety and general welfare of all of the citizens of the State; protects property values and protects plant and animal life.* *Nothing in this chapter is intended, nor shall be construed, to limit, impair, abridge, create, enlarge or otherwise affect, substantively or procedurally, the right of any person to damage or other relief on account of injury to persons or property due to violation of air quality standards or emission standards and to maintain any action or other appropriate procedure therefore; nor to so affect the powers of the State to initiate, prosecute and maintain actions to abate public nuisances.* Chapter 8 of Maine's initial SIP, documenting the existence of adequate resources October 28, 1972. For FY 2016, the Bureau of Air Quality had a staff of 53, and a budget of $4.8 million.
110(a)(2)(F)- Stationary Source Monitoring System	Programs to establish a system to monitor emissions from stationary sources and to submit periodic emission reports	Stationary Source Monitoring. Section 110(a)(2)(F) of the CAA requires programs to establish a system to monitor emissions from stationary sources and submit periodic emission reports. This system must ensure that emissions data will not receive any confidential treatment, be correlated by the Department and not preclude the use of any credible evidence:

		In Maine, there are over 300 statutory exceptions to the Freedom of Access Act's (1 M.R.S. Chapter 13, subchapter 1) definition of a public record. Many of these exceptions specifically designate a certain type of record, or a class of information within a record, as confidential or otherwise not subject to the Freedom of Access laws. Although hazardous air pollutant emission data was formerly deemed confidential pursuant to 38 M.R.S. § 585-C(2)(D), these provisions were repealed in 2015. Maine's Freedom of Access Act does not include any exceptions that apply to stationary source emissions. A copy of 38 M.R.S. § 585-C is attached herein. The Maine SIP provides for correlation by the Department of emissions reports by sources with applicable emission limitations or standards, as required by CAA § 110(a)(2)(F)(ii). Maine's emissions reporting requirements are established by its 06-096 CMR 137 Emission Statements rule, which requires all stationary sources that are licensed to emit volatile organic compounds (VOCs) and nitrogen oxides (NOx)[7] exceeding 25 tons per year (TPY) report emissions on an annual basis. The Department utilizes a web-based electronic reporting system, the Maine Air Emissions Inventory Reporting System (MAIRIS), that allows us to package and electronically submit reported emissions data to EPA. The MAIRIS system is structured to electronically correlate reported emissions with permit conditions and other applicable standards, and identify all inconsistencies and potential compliance concerns. There are no provisions in Maine law preventing the use of any credible evidence as required pursuant to 40 CFR § 51.212. In fact, section 3(E)(7)(a)(v) of Maine's 06-096 CMR 140 Part 70 Air Emission License Regulation states: Notwithstanding any other provision in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement. 38 MRS § 590 Licensing 06-096 CMR Chapter 115 Major and Minor Source Air Emission License Regulations

[7] In NO_2 equivalent

		This regulation contains compliance assurance requirements for licensed sources and stipulates that licenses shall include the following compliance assurance elements: (a) A description of all required monitoring and analysis procedures or test methods required under the requirements applicable to the source. (b) A description of all recordkeeping requirements. (c) A description of all reporting requirements. 06-096 CMR Chapter 117 Source Surveillance This regulation specifies which air emission sources are required to operate continuous emission monitoring systems (CEMS), and details the performance specifications, quality assurance requirements and procedures for such systems, and subsequent record keeping and reporting requirements. 06-096 CMR Chapter 140 Part 70 Air Emission License Regulations This regulation identifies the sources of air emissions that require a Part 70 air emission license and incorporates the requirements of Title IV and Title V of the Clean Air Act, as amended, 42 U.S.C. 7401, et seq.; and 38 MRS, Section 344 and Section 590. This regulation contains compliance assurance requirements for licensed sources requiring a Part 70 air emission license.
110(a)(2)(G)- Emergency Power	Authority to address activities causing imminent and substantial endangerment to public health, including contingency plans to implement the emergency episode provisions in their SIPs	Section 110(a)(2)(G) of the CAA requires authority to address activities causing imminent and substantial endangerment of public health, including contingency plans to implement the emergency episode provisions of the SIP. Existing Maine law provides authority to meet the requirements of Section 303 of the 1990 Clean Air Amendments (42. U.S.C. § 7603) through a combination of statutes governing the Maine Department of Environmental Protection and the Maine Emergency Management Agency. Title 38 M.R.S. §§ 347-A(3) and 591 together authorize the Commissioner to issue an emergency order upon finding an apparent violation of DEP laws or regulations to address emissions of criteria pollutants, air contaminants governed by standards promulgated under section 585, and hazardous air pollutants governed by standards promulgated under section 585-B. In the unlikely event that air emissions were creating a substantial or immediate threat to the public health, safety or to the environment without violating any DEP law or regulation, the DEP Commissioner can notify the Governor of an imminent threat, and the Governor can then exercise his emergency authority under 37-B M.R.S. § 742 to issue an

		order to terminate the cause of the emergency. Title 37-B M.R.S. § 742 states (in relevant part): ***742. EMERGENCY PROCLAMATION*** ***1. Emergency proclamation.*** *Emergency proclamations must be issued as follows.* *A. Whenever a disaster[8] or civil emergency exists or appears imminent, the Governor shall, by oral proclamation, declare a state of emergency in the State or any section of the State. If the Governor is temporarily absent from the State or is otherwise unavailable, the next person in the State who would act as Governor if the office of the Governor were vacant may, by oral proclamation, declare the fact that a civil emergency exists or appears sufficiently imminent to activate emergency plans in any or all areas of the State. A written copy of the proclamation must be filed with the Secretary of State within 24 hours of the oral proclamation* *B. Subject at all times to the further direction and order of the Governor, an executive proclamation of emergency activates the emergency plans applicable to the affected areas and is the authority for the deployment and use of any forces or resources to which the plan or plans apply.* *C. After the filing of the emergency proclamation and in addition to any other powers conferred by law, the Governor may:* *(11) Order the termination, temporary or permanent, of any process, operation, machine or device which may be causing or is understood to be the cause of the state of emergency for which this proclamation was made; and* Maine also has explicit authority to issue an emergency order upon finding an apparent violation of air quality laws. 38 MRS § 347-A(3) Emergency Orders

[8] It is important to note that air contamination is explicitly recognized as a potential disaster under 37-B MRS § 703(2), which states: "Disaster" means the occurrence or imminent threat of widespread or severe damage, injury or loss of life or property resulting from any natural or man-made cause, including, but not limited to, fire, flood, earthquake, wind, storm, wave action, oil spill or other water contamination requiring emergency action to avert danger or damage, epidemic, extreme public health emergency pursuant to Title 22, section 802, subsection 2-A, **air contamination** (*emphasis added*), blight, drought, critical material shortage, infestation, explosion, riot or hostile military or paramilitary action.

		38 MRS § 347-A states: *3. Emergency orders. Whenever it appears to the commissioner, after investigation, that there is a violation of the laws or regulations the department administers or of the terms or conditions of any of the department's orders that is creating or is likely to create a substantial and immediate danger to public health or safety or to the environment, the commissioner may order the person or persons causing or contributing to the hazard to immediately take such actions as are necessary to reduce or alleviate the danger. Service of a copy of the commissioner's findings and order must be made by the sheriff or deputy sheriff or by hand delivery by an authorized representative of the department in accordance with the Maine Rules of Civil Procedure. In the event that the persons are so numerous that the specified method of service is a practical impossibility or the commissioner is unable to identify the person or persons causing or contributing to the hazard, the commissioner shall make the order known through prominent publication or announcement in news media serving the affected area.* *The person to whom the order is directed shall comply with the order immediately. The order may not be appealed to the Superior Court in the manner provided in section 346, but within 48 hours after receipt of the order the person may apply to the board for a hearing on the order. Within 7 working days after receipt of the application, the board shall hold a hearing, make findings of fact and vote on a decision that continues, revokes or modifies the order. That decision must be in writing and signed by the board chair using any means for signature authorized in the department's rules and published within 2 working days after the hearing and vote. The nature of the hearing is an appeal. At the hearing, all witnesses must be sworn and the commissioner shall first establish the basis for the order and for naming the person to whom the order was directed. The decision of the board may be appealed to the Superior Court in the manner provided by section 346.* 06-096 CMR Chapter 109 Emergency Regulations This rule is intended to prevent air pollution from reaching levels that would cause imminent and substantial harm to the health of persons, by restricting emissions during periods of air pollution emergencies. Maine therefore has authority to issue an emergency order not only upon finding an apparent violation of air quality laws, but also when there is the imminent threat of substantial harm to the environment or public health.
110(a)(2)(H)- Future SIP Revisions	Authority to revise SIPs in response to changes in the NAAQS, availability	38 MRS § 581. Declaration of findings and intent 38 MRS § 581 states:

	of improved methods for attaining the NAAQS, or in response to an EPA finding that the SIP is substantially inadequate	*The Legislature finds and declares that air pollution exists with varying degrees of severity within this State; that such air pollution is potentially and in some cases actually dangerous to the health of the citizenry, often causes physical discomfort, injury to property and property values, discourages recreational and other uses of the state's resources and is aesthetically unappealing.* *The Legislature by this chapter intends to exercise the police power of the State in a coordinated state-wide program to control present and future sources of emission of air contaminants to the end that air polluting activities of every type shall be regulated in a manner that reasonably insures the continued health, safety and general welfare of all of the citizens of the State; protects property values and protects plant and animal life.* *Nothing in this chapter is intended, nor shall be construed, to limit, impair, abridge, create, enlarge or otherwise affect, substantively or procedurally, the right of any person to damage or other relief on account of injury to persons or property due to violation of air quality standards or emission standards and to maintain any action or other appropriate procedure therefore; nor to so affect the powers of the State to initiate, prosecute and maintain actions to abate public nuisances.* 38 MRS § 341-D. Board responsibilities and duties 38 MRS § 341-D. states, in relevant part: *The board is charged with the following duties and responsibilities.* *1-C. Rulemaking. The board shall adopt, amend or repeal rules in accordance with section 341-H.* 38 MRS § 342. Commissioner, duties 38 MRS § 342 states, in relevant part: *The Commissioner of Environmental Protection shall have the following duties:* *1-A. Administration of department. The commissioner is the chief administrative officer of the department and responsible for all administrative matters of the department, except as otherwise specified. The commissioner shall assure that all determinations made by the staff of the department are promptly rendered. The commissioner shall resolve disputes between department staff and applicants with respect to any questions regarding requirements, interpretation or application of the laws, rules or department policy. In resolving disputes, the commissioner shall attempt to reach a fair and appropriate result given all of the circumstances of the issue and may utilize the services of such consultants or experts as the commissioner determines would be helpful to resolve any disputed issue. For purposes of this subsection and section 341-A, subsection 3, paragraph C, staff of the department does not include*

		staff of the board. 38 MRS § 341-H. Departmental rulemaking 38 MRS § 341-H states, in relevant part: *The department may adopt, amend or repeal rules and emergency rules necessary for the interpretation, implementation and enforcement of any provision of law that the department is charged with administering as provided in this section.* *1. Rule-making authority of the board. Notwithstanding any other provision of this Title, and except as provided in this subsection, the board shall adopt, amend or repeal only those rules of the department designated as major substantive rules pursuant to Title 5, chapter 375, subchapter 2-A. The board shall also adopt, amend and repeal routine technical rules as necessary for the conduct of the board's business, including the processing of applications, the conduct of hearings and other administrative matters.* *2. Rule-making authority of the commissioner. Notwithstanding any other provision of this Title, the commissioner shall adopt, amend or repeal only those rules of the department that are not designated as major substantive rules pursuant to Title 5, chapter 375, subchapter 2-A.* *3. Duties of department. The department shall:* *A. Identify in its regulatory agenda under Title 5, section 8060, when feasible, a proposed rule or provision of a proposed rule that is anticipated to be more stringent than a federal standard, if an applicable federal standard exists;* *B. During the consideration of any proposed rule, when feasible, and using information available to it, identify provisions of the proposed rule that the department believes would impose a regulatory burden more stringent than the burden imposed by the federal standard, if such a federal standard exists, and shall explain in a separate section of the basis statement the justification for the difference between the agency rule and the federal standard; and* *C. Notwithstanding Title 5, chapter 375, subchapter 2 or 2-A, the department shall accept and consider additional public comment on a proposed rule following the close of the formal rule-making comment period at a meeting that is not a public hearing only if the additional public comment is directly related to comments received during the formal rule-making comment period or is in response to changes to the proposed rule. Public notice of the meeting must comply with Title 1, section 406 and must state that the department will accept additional public comment on the proposed rule at that meeting.*

		4. Legislative review of a rule. If a rule adopted by the department is the subject of a request for legislative review of a rule under Title 5, chapter 377-A, the Executive Director of the Legislative Council shall immediately notify the department of that request and of the legislative committee's decision under that chapter on whether or not to review the rule. Maine will review and revise its SIP from time to time as may be necessary in response to changes in the NAAQS, availability of improved methods for attaining the NAAQS, or in response to an EPA finding that the SIP is substantially inadequate.
110(a)(2)(J)- Public Notification	States must meet the requirements of section 121 regarding consultation with government officials, and must notify the public pursuant section 127 if NAAQS are exceeded in an area and to enhance public awareness of measures that can be taken to prevent exceedences	Consultation with Government Officials 38 MRS § 342. Commissioner, Duties 38 MRS § 342 (1-A). Administration of Department 38 MRS § 342 (3-A). Negotiating Agreements 06-096 CMR Chapter 114 Classification of Air Quality Control Regions Section 1(E) of this rule states, in relevant part: *E. Prior to proposing the redesignation of any area for Prevention of Significant Deterioration purposes, the Board shall hold a public hearing which shall be conducted in the area proposed to be redesignated. Prior to the public hearing a report shall be made available with a description and analysis of health, environmental, economic, social and energy impacts of the proposed redesignation. Should the area proposed for redesignation include or be deemed to affect federally owned lands, the Board shall consult with the appropriate federal land manager prior to such redesignation. For the purpose of redesignating any areas other than those recognized mandatory Class I areas identified in Section 1(C), the procedural requirements or 40 CFR 51.24 (g) shall be followed.* 06-096 CMR Chapter 115 Major and Minor Source Air Emission License Regulations 06-096 CMR Chapter 115 Section 9(E)(3) applies to major stationary sources and major modifications, and states: *"Submittal of a copy of the public notification and a copy of the draft order to the U.S. Environmental Protection Agency, Region I, the chief executives of the municipality and county where the source proposes to locate, any comprehensive land use planning agency, and any State, Federal Land Manager, or Indian*

		Governing Body whose lands may be affected by emissions from the source or modification. Such submittal shall be at least 30 calendar days prior to the date upon which the public comment period ends;" 06-096 CMR Chapter 139 Transportation Conformity 06-096 CMR Chapter 139 establishes a consultation process between federal state and local entities for the purpose of implementing section 176(c)(4)(E) of the CAA with respect to the conformity of transportation plans, programs, and projects which are developed, funded, or approved by the United States Department of Transportation (DOT), and by Metropolitan Planning Organizations (MPOs) or other recipients of funds under Title 23 U.S.C. or the Federal Transit Laws (Title 49 U.S.C. Chapter 53). **Public Notification** AQI Forecasting and Reporting. Pursuant to 40 CFR 58.50, the Department provides daily air quality forecasts to the public via EPA's Air Now and Enviroflash programs, as well as via the Department's website and air quality information telephone Maine continues to issue daily air quality forecasts and advisories pursuant to its Performance Partnership Agreement Chapter 4 of Maine's initial SIP, approved on October 18, 1972, contains for public notification in the event an NAAQS exceedence. Chapter 9 of this SIP contains provisions for intergovernmental cooperation with federal and state government entities. The Department recognizes that Maine's public and affected states draft notification procedures as established in Section 2(k)(2) of 06-096 CMR ch. 140, provide that affected states must be given at least 30-days' notice and are inconsistent with section 110(a)(2)(D)(ii) of the CAA, which requires all nearby states that may be affected by the construction of a new or modified major source of air pollution be given notice at least 60 days prior to the date on which the commencement of construction is to be permitted.
100(a)(2)(J)- PSD and Visibility Protection	States must meet applicable requirements of part C related to prevention of significant	38 MRS § 584-B. Establishment of ambient increments - Class I regions 06-096 CMR Chapter 114 Classification of Air Quality Control Regions

	deterioration and visibility protection	This regulation determines those areas that have been officially found to be exceeding the ambient air quality standards and are therefore nonattainment areas. It also designates which class of increment that will apply in each area. 06-096 CMR Chapter 115 Major and Minor Source Air Emission License Regulations Maine's PSD regulations require the owner of any proposed new major source or major modification to demonstrate that any increased emissions from a proposed facility or expansion would not significantly deteriorate air quality, regardless of where these emissions may travel. Proposed facilities subject to Maine's PSD licensing requirements must therefore assess PSD increment consumption in Maine as well as adjacent or downwind states. The federal visibility regulations promulgated in December 1980[9] require consideration of the effects of new sources on the visibility values of Federal Class I areas. Chapter 115 of the Department's regulations requires owners and operators of all new major stationary sources or major modifications to perform an additional impact analysis to assess impacts on visibility in federal Class I areas. In practice, this provision requires a modeling demonstration that may consist of a Level I or Level II visibility screening analysis, or a more refined visibility modeling review that would involve the use of tools such as the CALPUFF model. These analyses require the source owner or operator to demonstrate that operation of the source will have an insignificant visibility impact on the applicable Class I area. The Department works closely with the appropriate federal land manager when reviewing these analyses. This provision of Maine's NSR regulations essentially prohibits the permitting of a major stationary source or major modification that may significantly degrade visibility in a federal Class I area. The NSR program in Maine is implemented through the Chapter 100 Definitions Regulation which was approved into the SIP on October 15, 1996[10], the Chapter 113 Growth Offset Regulation which was approved into the SIP on February 14, 1996[11], and the Chapter 115 Major and Minor Source Air Emission License Regulations which were approved into the SIP by EPA on February 14, 1996.[12]. Although these rules have been amended several times since being incorporated into the SIP, these revisions did not change any of the major source permitting requirements, and the current state regulations are consistent with the SIP-approved versions for the purposes of

[9] 45 FR 8009
[10] 61 FR 53639
[11] 61 FR 5694
[12] 61 FR 5694

		implementing the New Source Review program.
110(a)(2)(K)- Air Quality Modeling/Data	SIPs must provide for performing air quality modeling for predicted effects on air quality of emissions from any NAAQS pollutant and submission of such data to EPA upon request	06-096 CMR Chapter 115 Major and Minor Source Air Emission License Regulations Both the SIP-approved 06-096 C.M.R. Chapter 115 Major and Minor Source Air Emissions License Regulations and the Title V approved 06-096 C.M.R Chapter 140 Part 70 Air Emission License Regulations require the submission of a wide range of data as part of the air quality modeling protocols (e.g., Section VII of the SIP-approved Chapter 115). This data is available to U.S. EPA for review upon request. Section 7 of Chapter 115 states: 7. *Ambient Air Quality Analysis* A. *General. It shall be the burden of any applicant to provide an affirmative demonstration that its emissions, in conjunction with all other sources, will not violate ambient air quality standards, established pursuant to Chapter 110 of the Department's Regulations, except that sources in nonattainment areas or which significantly impact a nonattainment area shall be required to demonstrate that the source's emissions are consistent with Reasonable Further Progress provisions of the State Implementation Plan. An applicant may use ambient air monitoring, modeling, or other assessment techniques as approved by the Department. New Source Review modeling required pursuant to Subsection 7(C and D) of this Chapter shall be consistent with EPA regulations and guidelines or other requirements under the CAA. The analyses shall include relevant emissions units at the source, meteorological and topographical data necessary to estimate such impacts, and shall consider the impact of fugitive emissions, to the extent quantifiable, secondary emissions, and emissions from other existing sources including increases in mobile and area source emissions impacting the same area.* *The level of analysis shall depend upon the size of the source, the regulated air pollutants emitted, existing air quality, proximity to Class I or nonattainment areas, or areas where increment has been substantially consumed. (For the purposes of this Subsection, the Class I area shall include any conservation easements under the jurisdiction of an appropriate Federal Land Manager as of August 7, 1977.) The air quality impact analysis, in general, will not be required of the applicant for those regulated pollutants that are not listed under "significant emissions increase" in Chapter 100 of the Department's regulations. The analysis shall be conducted in accordance with the provisions of Subsection 7(E) of this Chapter, Chapter 116 of the Department's regulations and Appendix W to 40 CFR Part 51 – Guideline on Air Quality Models.*

		Air quality modeling conducted as part of the licensing of a new source or modification in the United States is substantially governed by the Appendix W to 40 CFR Part 51 – Guideline on Air Quality Models. That modeling guidance was first promulgated in 1978 and by law, must be routinely updated by EPA. Thus, federal regulatory guidance on modeling and the list of acceptable models do change. The Department recognizes that air dispersion modeling guidance will be periodically updated, to reflect the latest federal guidance. To maintain an orderly licensing process in the State, applicants will be required to conform with those procedures and guidelines in effect at the time of Department approval of a written modeling protocol that meets all applicable requirements, and to complete modeling, as approved, and submit results within six (6) months of the date of approval of the protocol. If the protocol calls for collection of on-site meteorological data, then the starting date for the on-site data collection must be no later than 6 months after approval of the protocol and modeling results must be submitted within six (6) months of obtaining acceptable on-site meteorological monitoring data. Requests by the applicant to modify the modeling protocol will require conformance with current applicable air dispersion modeling guidance. 06-096 Chapter 116 Prohibited Dispersion Techniques This Chapter adopts regulations consistent with federal requirement concerning stack height and other dispersion techniques, such as merging of plumes. These regulations also define the area surrounding the source where ambient air quality standards do not have to be met. 06-096 CMR Chapter 140 Part 70 Air Emission License Regulations This regulation contains air quality modeling requirements for Part 70 sources that are analogous to those contained within Chapter 115.
110(a)(2)(L)- Permitting Fees	Each major stationary source shall pay permitting fees to cover the cost of reviewing,	38 MRS § 353-A. Annual air emissions license fees. 38 MRS §§ 353-A(1) states: *Fees assessed. After the effective date of this section, a licensee must pay an annual fee assessed on the sum of all licensed allowable air pollutants, except for carbon monoxide, as follows[13]:*

[13] Current fees are:

Annual licensed emissions in tons	Current per ton fee
from 1 - 1,000	$9.36
from 1,001 - 4,000	$18.79
additional emissions over 4,001	$28.11

	approving, implementing and enforcing a permit	*Annual licensed emissions in tons* — *Per ton fee* *1 - 1,000* — *$5* *1,001 - 4,000* — *$10* *over 4,001* — *$15* 38 MRS §§ 353-A(1A) states: *Annual fee surcharge. Beginning November 1, 2008, a licensee shall pay an annual fee surcharge of $2 per every 1,000 air quality units as defined in section 582, subsection 11-E. The minimum revenue threshold for the annual fee surcharge is established at $1,250,000 per year. The commissioner may increase the annual fee surcharge to up to $4 per every 1,000 air quality units if the annual revenue derived from this annual fee surcharge is less than $1,250,000 per year. The commissioner shall report to the joint standing committee of the Legislature having jurisdiction over natural resources matters by January 15, 2010 and every 2 years thereafter on any fee adjustment and the justification for the fee adjustment and the adequacy of the minimum revenue threshold and its ability to support the long-term sustainability of state air quality protection and improvement activities.* 38 MRS §§ 353-A (2) states: *Fee adjustment. The commissioner may adjust the per ton fees, the annual fee surcharge set forth in subsection 1-A and the maximum and minimum fees set forth in subsection 4 on an annual basis according to the United States Consumer Price Index established by the federal Department of Labor, Bureau of Labor Statistics.*
110(a)(2)(M)-Consultation/Participation By Affected Local Entities	States shall provide for consultation and participation in SIP development by local political subdivisions affected by the SIP	5 MRS Chapter 375, Subchapter 2 establishes rulemaking requirements for state agencies, including public notification procedures. 38 MRS § 597 Municipal air pollution control. 38 MRS § 597 states: *Nothing in this chapter shall be construed as a preemption of the field of air pollution study and control on the part of the State. Municipalities may study air pollution and adopt and enforce air pollution control*

		and abatement ordinances, to the extent that these ordinances are not less stringent than this chapter or than any standard, order or other action promulgated pursuant to this chapter. Local ordinance provisions which touch on matters not dealt with by this chapter or which are more stringent than this chapter shall bind persons residing in the municipality. Chapter 9 of Maine's initial SIP, which was approved on October 28, 1972, contains intergovernmental cooperation provisions.

Demonstration that Maine Complies with the Good Neighbor Requirements of Clean Air Act Section 110(a)(2)(D)(i)(I) for the 2015 Ozone National Ambient Air Quality Standard

Summary

Sections 110(a)(l) and (2) of the Clean Air Act (CAA) require all states to summarize any necessary revisions to their State Implementation Plans (SIP) to implement, maintain and enforce any revised or new national ambient air quality standard (NAAQS). These SIP revisions are commonly referred to as "infrastructure SIPs." In March 2015, the U.S. Environmental Protection Agency (EPA) revised the ozone NAAQS, and in July 2018, completed the designation process for nonattainment areas.

This SIP revision addresses the CAA §110(a)(2)(D)(i)(I) ("good neighbor") requirements to demonstrate that emissions from sources in Maine do not significantly contribute to nonattainment in, or interfere with maintenance by, any other state with respect to the 2015 ozone NAAQS. DEP's analysis of recent EPA's and Ozone Transport Commission's (OTC) 2023 modeling demonstrates that Maine meets its good neighbor requirements for the 2015 NAAQS.

Background and Introduction

On October 1, 2015, EPA revised the primary and secondary ozone NAAQS.[1] Specifically, EPA established both the primary and secondary 8-hour standards at 70 parts per billion, based on the 3-year average of the fourth-highest value of the yearly distribution of 8-hour daily maximum concentrations. EPA promulgated initial 'Round 1' designations of only attainment/unclassifiable areas on November 6, 2017 including designating Maine as unclassifiable/attainment.[2] EPA promulgated initial 'Round 2' designations on April 30, 2018 including most of the nonattainment areas[3] and promulgated the initial 'final Round 3' designations on July 17, 2018 for the San Antonio, Texas metropolitan area.[4]

Pursuant to CAA §110(a)(l) and (2), all states must submit necessary revisions to their SIP to provide for the implementation, maintenance and enforcement of revised or new NAAQS. States must maintain a comprehensive air quality management program, including enforceable emission limitations, an ambient monitoring program, an enforcement program, air quality modeling, and adequate personnel, resources, and legal authority. The "good neighbor" provisions of the CAA require each SIP to prohibit its emissions from significantly contributing to nonattainment or maintenance of the ozone NAAQS in other states or interfering with programs to prevent significant deterioration of air quality or to achieve reasonable progress toward the national visibility goal for Federal class I areas (national parks and wilderness areas). Based on timing requirements in the CAA, states were required to submit ozone infrastructure SIP revisions by October 2018.

In March 2018, EPA issued guidance[5] to assist states in preparing SIP revisions to address compliance with CAA §110(a)(2)(D)(i)(I) for the 2015 ozone NAAQS. EPA also issued supplemental guidance

[1] The NAAQS revisions were published in the 10/26/15 Federal Register and became effective on 12/28/2015.
[2] Round 1 area designations rulemaking was published in the 11/26/17 Federal Register and became effective on 1/16/2018.
[3] 'Round 2' area designations rulemaking was published in the 6/4/2018 Federal Register and became effective on 8/3/2018.
[4] 'Final Round 3' area designations rulemaking was published in the 7/25/2018 Federal Register and became effective on 9/24/2018.
[5] https://www.epa.gov/sites/production/files/2018-03/documents/transport_memo_03_27_18_1.pdf

memos in August 2018[6] and October 2018[7]. Guidance included EPA's 2023 ozone modeling results identifying 2023 potential nonattainment and maintenance sites and contributions from each state to those sites. The guidance also discusses the following four-step process to address interstate transport:

1) Identify downwind air quality problems;
2) Identify upwind states that contribute enough to those downwind air quality problems to warrant further review and analysis;
3) Identify air quality, cost, and emission reduction factors to be evaluated in a multifactor test to identify emissions that significantly contribute to nonattainment or interfere with maintenance of the NAAQS downwind, if any; and
4) Adoption of permanent and enforceable measures needed to achieve those emission reductions (translating the control levels identified in Step 3 into enforceable emissions limits).

Maine's good neighbor SIP revision is consistent with this four-step process.

Through this SIP submittal, DEP analyzed both EPA modeling results and OTC modeling results to demonstrate that Maine's existing control programs ensure that emissions from Maine do not significantly contribute to nonattainment or maintenance issues in any other state with respect to the 2015 ozone NAAQS. Therefore, Maine complies with the requirements of CAA §110(a)(2)(D)(i)(I).

Methodology

The "good neighbor" provisions of CAA §110(a)(2)(D)(i)(I) require each state's SIP to prohibit emissions that significantly contribute to nonattainment in, or interfere with maintenance by, any other state with respect to any NAAQS. DEP used the following methodology to implement the four-step process outlined in EPA's guidance to identify and address Maine's good neighbor obligation.

DEP examined the results of OTC's modeling and EPA's modeling set out in the guidance to:

- Identify monitors outside of Maine that are projected to have nonattainment or maintenance issues in 2023; and
- Determine if the modeled impacts associated with emissions from Maine sources are projected to exceed the screening threshold at any of the nonattainment/maintenance monitors in 2023.

EPA's and OTC's modeling did not identify any significant impacts (1% threshold) by Maine emissions to downwind air quality problems in 2023. Therefore, DEP determined it was unnecessary to undertake further analysis regarding the effectiveness of current control techniques.

The following sections will document the application of the above methodology with the four-step process and DEP's findings regarding Maine's compliance with CAA §110(a)(2)(D)(i)(I) for the 2015 ozone NAAQS.

Step 1: Identify downwind air quality problems

In the March 2018 guidance, EPA identified potential 2023 nonattainment (an average design value greater than or equal to 71 ppb) and maintenance sites (an average design value less than 71 ppb but with a maximum design value greater than or equal to 71 ppb) with respect to the 2015 NAAQS using the

[6] https://www.epa.gov/airmarkets/analysis-contribution-thresholds-memo
[7] https://www.epa.gov/airmarkets/considerations-identifying-maintenance-receptors-memo#Consideration-for-Identifying-Maintenance-Receptors-Memo

Comprehensive Air Quality Model with Extensions (CAMx v6.40) to model emissions in 2011 and 2023 (case name 2023en) based on updates provided to EPA from states and other stakeholders. Design values were calculated using the "3 x 3" approach used for previous NAAQS and a modified approach for coastal monitoring sites in which "overwater" modeling data were not included in the calculation of 2023 design values. Table 1 lists the 14 potential nonattainment monitoring sites outside of California and 12 potential maintenance monitoring sites outside of California conservatively using both approaches where impacts from Maine's emissions were evaluated.

Table 1: Maine Contributions to Monitors Projected by EPA Modeling to Have 2023 Nonattainment or Maintenance Issues

			"3x3 approach		"No Water" approach		
Monitoring Site	State	County	2023 Avg. Design Value (ppb)	2023 Max Design Value (ppb)	2023 Avg. Design Value (ppb)	2023 Max Design Value (ppb)	2023 Status
04-013-0019	AZ	Maricopa	69.3	71.4	69.3	71.4	Maintenance
04-013-1004	AZ	Maricopa	69.8	71.0	69.8	71.0	Maintenance
08-005-0002	CO	Arapahoe	69.3	71.3	69.3	71.3	Maintenance
08-035-0004	CO	Douglas	71.1	73.2	71.1	73.2	Nonattainment
08-059-0006	CO	Jefferson	71.3	73.7	71.3	73.7	Nonattainment
08-059-0011	CO	Jefferson	70.9	73.9	70.9	73.9	Maintenance
08-069-0011	CO	Larimer	71.2	73.0	71.2	73.0	Nonattainment
08-123-0009	CO	Weld	70.2	71.4	70.2	71.4	Maintenance
09-001-0017	CT	Fairfield	69.8	72.1	69.8	71.2	Maintenance
09-001-3007	CT	Fairfield	71.2	75.2	71.0	75.0	Nonattainment
09-001-9003	CT	Fairfield	72.7	75.6	73.0	75.9	Nonattainment
09-009-9002	CT	New Haven	71.2	73.9	69.9	72.6	Nonattainment
24-025-1001	MD	Harford	71.4	73.8	70.9	73.3	Nonattainment
26-005-0003	MI	Allegan	69.0	71.8	69.0	71.7	Maintenance
26-163-0019	MI	Wayne	69.0	71.0	69.0	71.0	Maintenance
36-081-0124	NY	Queens	70.1	71.9	70.2	72.0	Maintenance
36-085-0067	NY	Richmond	71.9	73.4	67.1	68.5	Nonattainment
36-103-0002	NY	Suffolk	72.5	74.0	74.0	75.5	Nonattainment
48-039-1004	TX	Brazoria	74.0	74.9	74.0	74.9	Nonattainment
48-121-0034	TX	Denton	69.7	72.0	69.7	72.0	Maintenance
48-201-0024	TX	Harris	70.4	72.8	70.4	72.8	Maintenance
48-201-1034	TX	Harris	70.8	71.6	70.8	71.6	Maintenance
48-201-1039	TX	Harris	71.8	73.6	71.8	73.5	Nonattainment
48-439-2003	TX	Tarrent	72.5	74.8	72.5	74.8	Nonattainment
55-079-0085	WI	Milwaukee	65.4	67.0	71.2	73.0	Nonattainment
55-117-0006	WI	Sheboygan	70.8	73.1	72.8	75.1	Nonattainment

Recent OTC CAMx modeling using the OTC Gamma modeling emissions platform[8] also identified potential 2023 nonattainment and maintenance monitor locations in the Eastern U.S. (all OTC states including the entire state of Virginia). Table 2 lists the 3 potential nonattainment monitoring sites and 4 potential maintenance monitoring sites where impacts from Maine's emissions were evaluated.

Table 2: Maine Contributions to Monitors Projected by OTC Modeling to Have 2023 Nonattainment or Maintenance Issues

Monitoring Site	State	County	2023 Avg. Design Value (ppb)	2023 Max Design Value (ppb)	2023 Status
09-001-0017	CT	Fairfield	68.9	71.2	Maintenance
09-001-3007	CT	Fairfield	71.0	75.0	Nonattainment
09-001-9003	CT	Fairfield	73.0	75.9	Nonattainment
09-009-9002	CT	New Haven	69.9	72.6	Maintenance
24-025-1001	MD	Harford	70.9	73.3	Maintenance
36-081-0124	NY	Queens	70.2	72.0	Maintenance
36-103-0002	NY	Suffolk	74.0	75.5	Nonattainment

Step 2: Identify Upwind States contributing

Since there are not Maine monitoring sites identified in Tables 1 and 2, only contributions from Maine will be further analyzed. To determine Maine's 2023 contribution impacts at the identified monitoring sites in Tables 1 and 2, EPA and OTC performed source apportionment modeling using the CAMx Anthropogenic Precursor Culpability Analysis (APCA) technique where ozone formed from reactions between biogenic and anthropogenic VOC and NO_x are assigned to the anthropogenic emissions. Maine used the threshold of 1% of the NAAQS (0.7 ppb) to gauge if emissions from Maine were projected to contribute significantly to nonattainment or interfere with maintenance.

Table 3 summarizes EPA's 2023 contribution modeling results, showing Maine's impacts specifically at projected out-of-state nonattainment/maintenance monitors outside of California and at all monitoring sites modeling sites used in the modeling. Emissions from Maine are projected to have a maximum impact in 2018 of 0.01 ppb at projected nonattainment/maintenance monitors and a maximum impact of 0.13 ppb at any monitor outside of Maine, well below the 1% screening threshold of 0.7 ppb for the 2015 NAAQS. Therefore, in accordance with EPA's January 2015 guidance, Maine complies with the CAA §110(a)(2)(D)(i)(I) good neighbor provisions for the 2008 ozone NAAQS.

Based on the EPA's modeling described above, Maine's emissions are not projected to have significant impacts at any monitor located at potential 2020 nonattainment or maintenance areas in other states.

[8] Jeff Underhill, "Modeling Committee Update" (OTC Spring Meeting, June 8, 2018).

Table 3: Maine Contributions to Monitors Projected by EPA Modeling to Have 2023 Nonattainment or Maintenance Issues

Monitoring Site	State	County	2023 Status	Maine's 2023 Contribution (ppb (%)
04-013-0019	AZ	Maricopa	Maintenance	0
04-013-1004	AZ	Maricopa	Maintenance	0
08-005-0002	CO	Arapahoe	Maintenance	0
08-035-0004	CO	Douglas	Nonattainment	0
08-059-0006	CO	Jefferson	Nonattainment	0
08-059-0011	CO	Jefferson	Maintenance	0
08-069-0011	CO	Larimer	Nonattainment	0
08-123-0009	CO	Weld	Maintenance	0
09-001-0017	CT	Fairfield	Maintenance	0.01 (0.01%)
09-001-3007	CT	Fairfield	Nonattainment	0.01 (0.01%)
09-001-9003	CT	Fairfield	Nonattainment	0
09-009-9002	CT	New Haven	Nonattainment	0.01 (0.01%)
24-025-1001	MD	Harford	Nonattainment	0
26-005-0003	MI	Allegan	Maintenance	0
26-163-0019	MI	Wayne	Maintenance	0
36-081-0124	NY	Queens	Maintenance	0
36-085-0067	NY	Richmond	Nonattainment	0
36-103-0002	NY	Suffolk	Nonattainment	0.01 (0.01%)
48-039-1004	TX	Brazoria	Nonattainment	0
48-121-0034	TX	Denton	Maintenance	0
48-201-0024	TX	Harris	Maintenance	0
48-201-1034	TX	Harris	Maintenance	0
48-201-1039	TX	Harris	Nonattainment	0
48-439-2003	TX	Tarrent	Nonattainment	0
55-079-0085	WI	Milwaukee	Nonattainment	0
55-117-0006	WI	Sheboygan	Nonattainment	0
All modeled monitoring sites				0.13 (0.19%)

Table 4 summarizes OTC's 2023 contribution modeling results, showing Maine's impacts specifically at projected out-of-state nonattainment/maintenance monitors in the modeling domain and at all monitoring sites used in the modeling. Emissions from Maine are projected to have a maximum impact in 2018 of 0.01 ppb at projected nonattainment/maintenance monitors and a maximum impact of 0.10 ppb at any monitor outside of Maine, well below the 1% screening threshold of 0.7 ppb for the 2015 NAAQS.

Based on the OTC's and EPA's modeling described above, Maine's emissions are not projected to have significant impacts at any monitors located at potential 2023 nonattainment or maintenance areas in other states or at any other monitoring site outside of Maine in the U.S.

Table 4: Maine Contributions to Monitors Projected by OTC Modeling to Have 2023 Nonattainment or Maintenance Issues

Monitoring Site	State	County	2023 Status	Maine's 2023 Contribution (ppb (%))
09-001-0017	CT	Fairfield	Maintenance	0.01 (0.01%)
09-001-3007	CT	Fairfield	Nonattainment	0.01 (0.01%)
09-001-9003	CT	Fairfield	Nonattainment	0
09-009-9002	CT	New Haven	Maintenance	0.01 (0.01%)
24-025-1001	MD	Harford	Maintenance	0
36-081-0124	NY	Queens	Maintenance	0
36-103-0002	NY	Suffolk	Nonattainment	0.01 (0.01%)
All modeled monitoring sites				0.10 (0.14%)

Step 3: Identify Necessary Emission Reductions

No emissions reductions are necessary in Maine under CAA §110(a)(2)(D)(i)(I) because the modeling analyses in Step 2 did not show that Maine's emissions significantly contribute to nonattainment or interfere with maintenance at any monitoring site in the U.S outside of Maine. In addition, no emission reductions are necessary in Maine as the entire state of Maine has been designated attainment/unclassifiable and current monitoring design values in Maine (maximum 2016-18 design value in Maine is 70 ppb[9]) are all below the 2015 NAAQS.

Step 4: Adoption of Needed Permanent and Enforceable Measures

Step 3 found that Maine does not need to reduce emissions to satisfy the requirements under CAA §110(a)(2)(D)(i)(I). This indicates that it is not necessary for Maine to adopt any permanent and enforceable emission reductions in order to remedy a significant contribution to nonattainment or interfere with maintenance at any monitoring location outside of Maine.

Therefore, in accordance with EPA's March, August and October 2018 guidance, Maine complies with the CAA §110(a)(2)(D)(i)(I) good neighbor provisions for the 2008 ozone NAAQS.

Summary and Conclusions

This SIP revision addresses Maine's "good neighbor" obligations under CAA §110(a)(2)(D)(i)(I), evaluating whether Maine emissions contribute significantly to nonattainment in, or interfere with maintenance by, any other state regarding the 2015 ozone NAAQS. DEP's analyses included a review of EPA's March, August and October 2018 guidance memorandums including modeling results and a review of recent OTC modeling results.

As described earlier, DEP's analyses resulted in the following findings: The entire state of Maine is currently designated attainment/unclassifiable for the 2015 NAAQS, monitoring levels in Maine are currently attaining the 2015 NAAQS and EPA's plus OTC's transport modeling for 2023 show ozone contributions from Maine emissions are below the significant level at all out-of-state monitors modeled as having either potential nonattainment or maintenance concerns in 2023.

Based on the analyses described in this SIP revision, DEP concludes Maine complies, and will remain in compliance with the good neighbor provisions of CAA §110(a)(2)(D)(i)(I) for the 2015 ozone NAAQS.

[9] https://www.epa.gov/air-trends/air-quality-design-values

DRAFT
10/25/19

Demonstration that Maine Complies with the Good Neighbor Requirements of Clean Air Act Section 110(a)(2)(D)(i)(I) for the 2015 Ozone National Ambient Air Quality Standard

Summary

Sections 110(a)(l) and (2) of the Clean Air Act (CAA) require all states to summarize any necessary revisions to their State Implementation Plans (SIP) to implement, maintain and enforce any revised or new national ambient air quality standard (NAAQS). These SIP revisions are commonly referred to as "infrastructure SIPs." In March 2015, the U.S. Environmental Protection Agency (EPA) revised the ozone NAAQS, and in July 2018, completed the designation process for nonattainment areas.

This SIP revision addresses the CAA §110(a)(2)(D)(i)(I) ("good neighbor") requirements to demonstrate that emissions from sources in Maine do not significantly contribute to nonattainment in, or interfere with maintenance by, any other state with respect to the 2015 ozone NAAQS. DEP's analysis of recent EPA's and Ozone Transport Commission's (OTC) 2023 modeling demonstrates that Maine meets its good neighbor requirements for the 2015 NAAQS.

Background and Introduction

On October 1, 2015, EPA revised the primary and secondary ozone NAAQS.[1] Specifically, EPA established both the primary and secondary 8-hour standards at 70 parts per billion, based on the 3-year average of the fourth-highest value of the yearly distribution of 8-hour daily maximum concentrations. EPA promulgated initial 'Round 1' designations of only attainment/unclassifiable areas on November 6, 2017 including designating Maine as unclassifiable/attainment.[2] EPA promulgated initial 'Round 2' designations on April 30, 2018 including most of the nonattainment areas[3] and promulgated the initial 'final Round 3' designations on July 17, 2018 for the San Antonio, Texas metropolitan area.[4]

Pursuant to CAA §110(a)(l) and (2), all states must submit necessary revisions to their SIP to provide for the implementation, maintenance and enforcement of revised or new NAAQS. States must maintain a comprehensive air quality management program, including enforceable emission limitations, an ambient monitoring program, an enforcement program, air quality modeling, and adequate personnel, resources, and legal authority. The "good neighbor" provisions of the CAA require each SIP to prohibit its emissions from significantly contributing to nonattainment or maintenance of the ozone NAAQS in other states or interfering with programs to prevent significant deterioration of air quality or to achieve reasonable progress toward the national visibility goal for Federal class I areas (national parks and wilderness areas). Based on timing requirements in the CAA, states were required to submit ozone infrastructure SIP revisions by October 2018.

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memos in August 2018[6] and October 2018[7]. Guidance included EPA's 2023 ozone modeling results identifying 2023 potential nonattainment and maintenance sites and contributions from each state to those sites. The guidance also discusses the following four-step process to address interstate transport:

1) Identify downwind air quality problems;
2) Identify upwind states that contribute enough to those downwind air quality problems to warrant further review and analysis;
3) Identify air quality, cost, and emission reduction factors to be evaluated in a multifactor test to identify emissions that significantly contribute to nonattainment or interfere with maintenance of the NAAQS downwind, if any; and
4) Adoption of permanent and enforceable measures needed to achieve those emission reductions (translating the control levels identified in Step 3 into enforceable emissions limits).

Maine's good neighbor SIP revision is consistent with this four-step process.

Through this SIP submittal, DEP analyzed both EPA modeling results and OTC modeling results to demonstrate that Maine's existing control programs ensure that emissions from Maine do not significantly contribute to nonattainment or maintenance issues in any other state with respect to the 2015 ozone NAAQS. Therefore, Maine complies with the requirements of CAA §110(a)(2)(D)(i)(I).

Methodology

The "good neighbor" provisions of CAA §110(a)(2)(D)(i)(I) require each state's SIP to prohibit emissions that significantly contribute to nonattainment in, or interfere with maintenance by, any other state with respect to any NAAQS. DEP used the following methodology to implement the four-step process outlined in EPA's guidance to identify and address Maine's good neighbor obligation.

DEP examined the results of OTC's modeling and EPA's modeling set out in the guidance to:

- Identify monitors outside of Maine that are projected to have nonattainment or maintenance issues in 2023; and
- Determine if the modeled impacts associated with emissions from Maine sources are projected to exceed the screening threshold at any of the nonattainment/maintenance monitors in 2023.

EPA's and OTC's modeling did not identify any significant impacts (1% threshold) by Maine emissions to downwind air quality problems in 2023. Therefore, DEP determined it was unnecessary to undertake further analysis regarding the effectiveness of current control techniques.

The following sections will document the application of the above methodology with the four-step process and DEP's findings regarding Maine's compliance with CAA §110(a)(2)(D)(i)(I) for the 2015 ozone NAAQS.

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In the March 2018 guidance, EPA identified potential 2023 nonattainment (an average design value greater than or equal to 71 ppb) and maintenance sites (an average design value less than 71 ppb but with a maximum design value greater than or equal to 71 ppb) with respect to the 2015 NAAQS using the

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[7] https://www.epa.gov/airmarkets/considerations-identifying-maintenance-receptors-memo#Consideration-for-Identifying-Maintenance-Receptors-Memo

Comprehensive Air Quality Model with Extensions (CAMx v6.40) to model emissions in 2011 and 2023 (case name 2023en) based on updates provided to EPA from states and other stakeholders. Design values were calculated using the "3 x 3" approach used for previous NAAQS and a modified approach for coastal monitoring sites in which "overwater" modeling data were not included in the calculation of 2023 design values. Table 1 lists the 14 potential nonattainment monitoring sites outside of California and 12 potential maintenance monitoring sites outside of California conservatively using both approaches where impacts from Maine's emissions were evaluated.

Table 1: Maine Contributions to Monitors Projected by EPA Modeling to Have 2023 Nonattainment or Maintenance Issues

			"3x3 approach		"No Water" approach		
Monitoring Site	State	County	2023 Avg. Design Value (ppb)	2023 Max Design Value (ppb)	2023 Avg. Design Value (ppb)	2023 Max Design Value (ppb)	2023 Status
04-013-0019	AZ	Maricopa	69.3	71.4	69.3	71.4	Maintenance
04-013-1004	AZ	Maricopa	69.8	71.0	69.8	71.0	Maintenance
08-005-0002	CO	Arapahoe	69.3	71.3	69.3	71.3	Maintenance
08-035-0004	CO	Douglas	71.1	73.2	71.1	73.2	Nonattainment
08-059-0006	CO	Jefferson	71.3	73.7	71.3	73.7	Nonattainment
08-059-0011	CO	Jefferson	70.9	73.9	70.9	73.9	Maintenance
08-069-0011	CO	Larimer	71.2	73.0	71.2	73.0	Nonattainment
08-123-0009	CO	Weld	70.2	71.4	70.2	71.4	Maintenance
09-001-0017	CT	Fairfield	69.8	72.1	69.8	71.2	Maintenance
09-001-3007	CT	Fairfield	71.2	75.2	71.0	75.0	Nonattainment
09-001-9003	CT	Fairfield	72.7	75.6	73.0	75.9	Nonattainment
09-009-9002	CT	New Haven	71.2	73.9	69.9	72.6	Nonattainment
24-025-1001	MD	Harford	71.4	73.8	70.9	73.3	Nonattainment
26-005-0003	MI	Allegan	69.0	71.8	69.0	71.7	Maintenance
26-163-0019	MI	Wayne	69.0	71.0	69.0	71.0	Maintenance
36-081-0124	NY	Queens	70.1	71.9	70.2	72.0	Maintenance
36-085-0067	NY	Richmond	71.9	73.4	67.1	68.5	Nonattainment
36-103-0002	NY	Suffolk	72.5	74.0	74.0	75.5	Nonattainment
48-039-1004	TX	Brazoria	74.0	74.9	74.0	74.9	Nonattainment
48-121-0034	TX	Denton	69.7	72.0	69.7	72.0	Maintenance
48-201-0024	TX	Harris	70.4	72.8	70.4	72.8	Maintenance
48-201-1034	TX	Harris	70.8	71.6	70.8	71.6	Maintenance
48-201-1039	TX	Harris	71.8	73.6	71.8	73.5	Nonattainment
48-439-2003	TX	Tarrent	72.5	74.8	72.5	74.8	Nonattainment
55-079-0085	WI	Milwaukee	65.4	67.0	71.2	73.0	Nonattainment
55-117-0006	WI	Sheboygan	70.8	73.1	72.8	75.1	Nonattainment

Recent OTC CAMx modeling using the OTC Gamma modeling emissions platform[8] also identified potential 2023 nonattainment and maintenance monitor locations in the Eastern U.S. (all OTC states including the entire state of Virginia). Table 2 lists the 3 potential nonattainment monitoring sites and 4 potential maintenance monitoring sites where impacts from Maine's emissions were evaluated.

Table 2: Maine Contributions to Monitors Projected by OTC Modeling to Have 2023 Nonattainment or Maintenance Issues

Monitoring Site	State	County	2023 Avg. Design Value (ppb)	2023 Max Design Value (ppb)	2023 Status
09-001-0017	CT	Fairfield	68.9	71.2	Maintenance
09-001-3007	CT	Fairfield	71.0	75.0	Nonattainment
09-001-9003	CT	Fairfield	73.0	75.9	Nonattainment
09-009-9002	CT	New Haven	69.9	72.6	Maintenance
24-025-1001	MD	Harford	70.9	73.3	Maintenance
36-081-0124	NY	Queens	70.2	72.0	Maintenance
36-103-0002	NY	Suffolk	74.0	75.5	Nonattainment

Step 2: Identify Upwind States contributing

Since there are not Maine monitoring sites identified in Tables 1 and 2, only contributions from Maine will be further analyzed. To determine Maine's 2023 contribution impacts at the identified monitoring sites in Tables 1 and 2, EPA and OTC performed source apportionment modeling using the CAMx Anthropogenic Precursor Culpability Analysis (APCA) technique where ozone formed from reactions between biogenic and anthropogenic VOC and NO_x are assigned to the anthropogenic emissions. Maine used the threshold of 1% of the NAAQS (0.7 ppb) to gauge if emissions from Maine were projected to contribute significantly to nonattainment or interfere with maintenance.

Table 3 summarizes EPA's 2023 contribution modeling results, showing Maine's impacts specifically at projected out-of-state nonattainment/maintenance monitors outside of California and at all monitoring sites modeling sites used in the modeling. Emissions from Maine are projected to have a maximum impact in 2018 of 0.01 ppb at projected nonattainment/maintenance monitors and a maximum impact of 0.13 ppb at any monitor outside of Maine, well below the 1% screening threshold of 0.7 ppb for the 2015 NAAQS. Therefore, in accordance with EPA's January 2015 guidance, Maine complies with the CAA §110(a)(2)(D)(i)(I) good neighbor provisions for the 2008 ozone NAAQS.

Based on the EPA's modeling described above, Maine's emissions are not projected to have significant impacts at any monitor located at potential 2020 nonattainment or maintenance areas in other states.

[8] Jeff Underhill, "Modeling Committee Update" (OTC Spring Meeting, June 8, 2018).

Table 3: Maine Contributions to Monitors Projected by EPA Modeling to Have 2023 Nonattainment or Maintenance Issues

Monitoring Site	State	County	2023 Status	Maine's 2023 Contribution (ppb (%)
04-013-0019	AZ	Maricopa	Maintenance	0
04-013-1004	AZ	Maricopa	Maintenance	0
08-005-0002	CO	Arapahoe	Maintenance	0
08-035-0004	CO	Douglas	Nonattainment	0
08-059-0006	CO	Jefferson	Nonattainment	0
08-059-0011	CO	Jefferson	Maintenance	0
08-069-0011	CO	Larimer	Nonattainment	0
08-123-0009	CO	Weld	Maintenance	0
09-001-0017	CT	Fairfield	Maintenance	0.01 (0.01%)
09-001-3007	CT	Fairfield	Nonattainment	0.01 (0.01%)
09-001-9003	CT	Fairfield	Nonattainment	0
09-009-9002	CT	New Haven	Nonattainment	0.01 (0.01%)
24-025-1001	MD	Harford	Nonattainment	0
26-005-0003	MI	Allegan	Maintenance	0
26-163-0019	MI	Wayne	Maintenance	0
36-081-0124	NY	Queens	Maintenance	0
36-085-0067	NY	Richmond	Nonattainment	0
36-103-0002	NY	Suffolk	Nonattainment	0.01 (0.01%)
48-039-1004	TX	Brazoria	Nonattainment	0
48-121-0034	TX	Denton	Maintenance	0
48-201-0024	TX	Harris	Maintenance	0
48-201-1034	TX	Harris	Maintenance	0
48-201-1039	TX	Harris	Nonattainment	0
48-439-2003	TX	Tarrent	Nonattainment	0
55-079-0085	WI	Milwaukee	Nonattainment	0
55-117-0006	WI	Sheboygan	Nonattainment	0
All modeled monitoring sites				0.13 (0.19%)

Table 4 summarizes OTC's 2023 contribution modeling results, showing Maine's impacts specifically at projected out-of-state nonattainment/maintenance monitors in the modeling domain and at all monitoring sites used in the modeling. Emissions from Maine are projected to have a maximum impact in 2018 of 0.01 ppb at projected nonattainment/maintenance monitors and a maximum impact of 0.10 ppb at any monitor outside of Maine, well below the 1% screening threshold of 0.7 ppb for the 2015 NAAQS.

Based on the OTC's and EPA's modeling described above, Maine's emissions are not projected to have significant impacts at any monitors located at potential 2023 nonattainment or maintenance areas in other states or at any other monitoring site outside of Maine in the U.S.

Table 4: Maine Contributions to Monitors Projected by OTC Modeling to Have 2023 Nonattainment or Maintenance Issues

Monitoring Site	State	County	2023 Status	Maine's 2023 Contribution (ppb (%))
09-001-0017	CT	Fairfield	Maintenance	0.01 (0.01%)
09-001-3007	CT	Fairfield	Nonattainment	0.01 (0.01%)
09-001-9003	CT	Fairfield	Nonattainment	0
09-009-9002	CT	New Haven	Maintenance	0.01 (0.01%)
24-025-1001	MD	Harford	Maintenance	0
36-081-0124	NY	Queens	Maintenance	0
36-103-0002	NY	Suffolk	Nonattainment	0.01 (0.01%)
All modeled monitoring sites				0.10 (0.14%)

Step 3: Identify Necessary Emission Reductions

No emissions reductions are necessary in Maine under CAA §110(a)(2)(D)(i)(I) because the modeling analyses in Step 2 did not show that Maine's emissions significantly contribute to nonattainment or interfere with maintenance at any monitoring site in the U.S outside of Maine. In addition, no emission reductions are necessary in Maine as the entire state of Maine has been designated attainment/unclassifiable and current monitoring design values in Maine (maximum 2016-18 design value in Maine is 70 ppb[9]) are all below the 2015 NAAQS.

Step 4: Adoption of Needed Permanent and Enforceable Measures

Step 3 found that Maine does not need to reduce emissions to satisfy the requirements under CAA §110(a)(2)(D)(i)(I). This indicates that it is not necessary for Maine to adopt any permanent and enforceable emission reductions in order to remedy a significant contribution to nonattainment or interfere with maintenance at any monitoring location outside of Maine.

Therefore, in accordance with EPA's March, August and October 2018 guidance, Maine complies with the CAA §110(a)(2)(D)(i)(I) good neighbor provisions for the 2008 ozone NAAQS.

Summary and Conclusions

This SIP revision addresses Maine's "good neighbor" obligations under CAA §110(a)(2)(D)(i)(I), evaluating whether Maine emissions contribute significantly to nonattainment in, or interfere with maintenance by, any other state regarding the 2015 ozone NAAQS. DEP's analyses included a review of EPA's March, August and October 2018 guidance memorandums including modeling results and a review of recent OTC modeling results.

As described earlier, DEP's analyses resulted in the following findings: The entire state of Maine is currently designated attainment/unclassifiable for the 2015 NAAQS, monitoring levels in Maine are currently attaining the 2015 NAAQS and EPA's plus OTC's transport modeling for 2023 show ozone contributions from Maine emissions are below the significant level at all out-of-state monitors modeled as having either potential nonattainment or maintenance concerns in 2023.

Based on the analyses described in this SIP revision, DEP concludes Maine complies, and will remain in compliance with the good neighbor provisions of CAA §110(a)(2)(D)(i)(I) for the 2015 ozone NAAQS.

[9] https://www.epa.gov/air-trends/air-quality-design-values