

MIDWEST OZONE GROUP OUTLOOK FOR FUTURE OZONE TRANSPORT PROGRAM DESIGN

February 21, 2018

<http://www.midwestozonegroup.com/Outlookforfutureozone.html>

By following EPA's 4 step process, MOG believes that interstate transport in the East may be solved without any new controls on upwind sources. This Outlook contains technical and legal information and ideas on how EPA and States could use the information for policy decisions and guidance under existing regulations. This Outlook will be updated periodically as new information becomes available.

Step 1 – Identify Problem Monitors (measured and modeled):

a. Modeled non-attainment / attainment in 2023:

- 2008 Ozone NAAQS – EPA and MOG modeling confirm that none of the nonattainment or maintenance monitors identified in CSAPR Update remain. (Ex: 1)
- 2015 Ozone NAAQS:
 - 12 km (2011 Base Case) modeling by EPA and MOG show only 6 monitors in the East that are predicted to be nonattainment. (Ex: 1)
 - 4 km (2011 Base Case) modeling by MOG (to address land/water interface) shows only 1 of 6 non-attainment monitors remain (Harford MD 240251001 which exceeds to 2015 ozone NAAQS by only 0.2 ppb). (Ex: 2)
 - In connection with either Steps 1 or 3, EPA could direct states to remove international contribution from data used to develop Good Neighbor SIPs related to an upwind state's obligation to address downwind problem monitors. (Ex: 3)
 - EPA could request states with non-attainment monitors to determine what emission reduction can be expected from legally mandated local controls required to be implemented by 2023 so that those reductions can be included in the 2023 modeling to be conducted in 2018. (Ex: 4)

b. In connection with either Steps 1 or 3, EPA could issue guidance to states allowing measured ozone concentrations to exclude all Exceptional Events. EPA could extend its approval to exclude monitoring data collected during the Exceptional Events in May and July 2016 related to Canadian Wildfire, as well as any other additional exceptional events, to all affected monitors in all states, including CT, MA, RI, NJ, OH, MD, WI, MI, IL, IN and NY, regardless of submission of an Exceptional Event Analysis. (Ex: 5)

c. Updated Base Case modeling is likely to demonstrate continued improvement at Harford. (Ex: 6)

Step 2 – Significant Contribution:

- In addition to allowing states to rely on APCA in the modeling of apportionment to determine whether there is “significant contribution” or “interference”, EPA could also allow states to use OSAT (which does not add biogenics to anthropogenic contribution) which examines both state and source category impacts. (Ex: 7)

Step 3 – Need for New Controls:

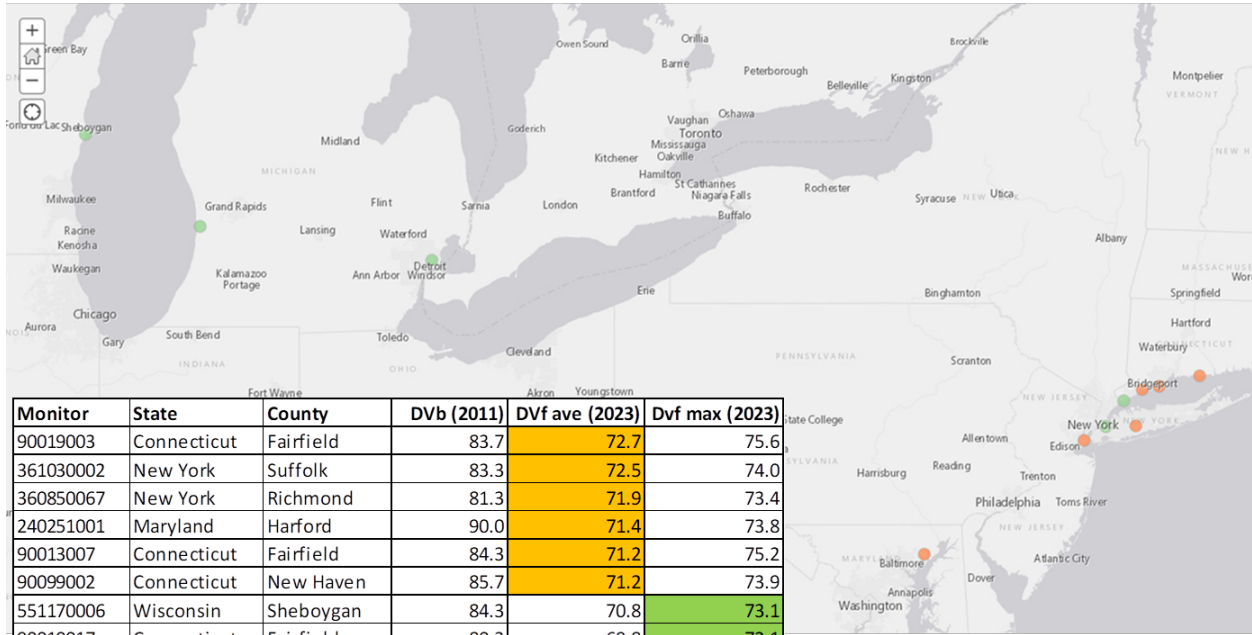
- Where a state contribution / interference is greater than the level at which a monitor exceeds the NAAQS, EPA could provide guidance to states regarding how to prorate the reduction needed to achieve attainment over all states that contribute/interfere with that monitor. (Ex: 8)
- EPA could also provide GNS guidance on what is meant by “cost effective” controls (i.e. \$/ppb).
- EPA could issue guidance for the 2008 and 2015 ozone NAAQS GNS, that interference with maintenance need not treat maintenance areas the same as nonattainment areas. (Ex: 9)

Step 4 – Enforceable Measures by EPA and States:

- Adoption of CSAPR Update budgets, other on-the-books controls (implemented, or required but not implemented), and future local controls.

Exhibit 1
2008 GNS Modeling Results

No “Problem” Monitors Exist in the East for 2008 Ozone NAAQS



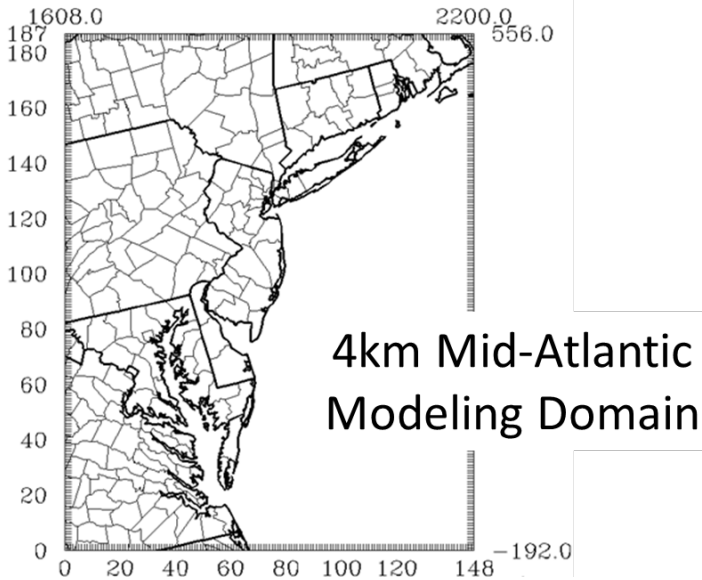
For additional information see:

““Good Neighbor” Modeling for the 2008 8-Hour Ozone State Implementation Plans, Final Modeling Report”, prepared by Alpine Geophysics, December 2017

http://midwestozonegroup.com/files/Ozone_Modeling_Results_Supporting_GN_SIP_Obligations_Final_Dec_2017_.pdf

Stephen Page memorandum, October 27, 2017: https://www.epa.gov/sites/production/files/2017-10/documents/final_2008_o3_naqs_transport_memo_10-27-17b.pdf

Exhibit 2
2015 GNS Modeling Results
12km v 4 km



EPA ozone attainment modeling guidance¹ states that "The use of grid resolution finer than 12 km would generally be more appropriate for areas with a combination of complex meteorology, strong gradients in emissions sources, and/or land-water interfaces in or near the nonattainment area(s)."

Residual Nonattainment Monitors MDA8 Ozone Design Values (ppb)

Monitor	State	County	DVb (2011)	12km Modeling		4km Modeling	
				DVf ave (2023)	DVf max (2023)	DVf ave (2023)	DVf max (2023)
90019003	Connecticut	Fairfield	83.7	72.7	75.6	69.9	72.7
361030002	New York	Suffolk	83.3	72.5	74.0	70.7	72.1
360850067	New York	Richmond	81.3	71.9	73.4	69.6	71.0
240251001	Maryland	Harford	90.0	71.4	73.8	71.1	73.5
90013007	Connecticut	Fairfield	84.3	71.2	75.2	69.7	73.6
90099002	Connecticut	New Haven	85.7	71.2	73.9	70.3	73.0

Of all residual CSAPR 2023 eastern U.S. 70 ppb nonattainment monitors, only Edgewood monitor in Harford, Maryland remains in nonattainment with 4km simulation @ 71.1 ppb

¹ http://www3.epa.gov/scram001/guidance/guide/Draft_O3-PM-RH_Modeling_Guidance-2014.pdf

Exhibit 3
International Emissions²

“But For” Contribution Calculation No Monitor > 56.6 ppb

2023en Final
CSAPR MDA8
DVs (ppb)
without APCA
calculated
“Boundary”
Contributions
[BC/IC/Can/Mex]



- International contribution, wildfires, and natural background emissions play an ever increasing role in modeled ozone
- We need a better understanding and quantification of the impact of these sources on regional air quality and better tools and policies to account for their presence

Monitor	State	County	2009-2013 Base Period Average Design Value (ppb)	2023 Average MDA8 Ozone Design Value (ppb)				
				Average Base Case	Canada & Mexico Contribution	Initial & Boundary Contribution	w/o Can/Mex	w/o Can/Mex /IC/BC
90019003	Connecticut	Fairfield	83.7	72.7	1.34	16.71	71.4	54.7
361030002	New York	Suffolk	83.3	72.5	1.35	16.03	71.2	55.1
360850067	New York	Richmond	81.3	71.9	1.33	16.04	70.6	54.5
240251001	Maryland	Harford	90.0	71.4	0.72	15.15	70.7	55.5
90099002	Connecticut	New Haven	85.7	71.2	1.17	15.54	70.0	54.5
90013007	Connecticut	Fairfield	84.3	71.2	1.33	15.98	69.9	53.9

² CAA section 179B(a) EPA must approve a SIP if it meets all “requirements applicable to it under the [CAA] other than a requirement that [it] demonstrate attainment and maintenance of the relevant [NAAQS] by the [applicable] attainment date ... and ... the submitting State establishes ... that [its] implementation plan ... would be adequate to attain and maintain the relevant [NAAQS] by the attainment date ... *but for emissions emanating from outside of the United States.*”

CAA section 110(a)(2)(D)(i)(I) – this section “gives EPA no authority to force an upwind state to share the burden of reducing other upwind states’ emissions.” *North Carolina v. EPA*, 531 F 2d at 921.

Local Control Programs

- With 2023 design values so close to the level of 70 ppb NAAQS, the inclusion of missing local control programs from a modeling platform could bring many monitors into attainment. Many existing, promulgated programs still have not been quantified and included in recent modeling efforts. These include:³
 - New NY rules on small generators
 - New OTC initiative on idle reduction
 - Electric and other zero emission vehicles
 - Maryland Municipal Waste Combustors RACT rule
 - OTC aftermarket catalyst initiative
 - Idle Free Maryland Initiative
- Additional control programs are legally mandated in downwind nonattainment areas that must be addressed as part of Good Neighbor SIP's to avoid over-control. As EPA stated⁴:

However, if an area is designated “nonattainment,” additional planning requirements become applicable. In the case of ozone, areas are classified by operation of law at the time of designation based on the seriousness of ozone pollution. The nonattainment areas have progressively more stringent control requirements and longer attainment dates for higher levels of noncompliance with the NAAQS under CAA sections 181 and 182. 42 U.S.C. §§ 7511, 7511a. In addition, upon designation as “nonattainment,” stricter new source review permitting requirements are triggered, replacing the less stringent prevention of significant deterioration permitting provisions applicable in undesignated, “attainment,” and “unclassifiable” areas. *Id.* §§ 7502(c)(5), 7503.

³ “A Path Forward for Reducing Ozone in Maryland and the Mid-Atlantic States, Driving Policy with Science”, Tad Aburn, December 11, 2017; sides 60 and 61 (http://midwestozonegroup.com/files/Final_Path_Forward_2017_AQCAC_121117.pptx)

⁴ EPA Opposition to Motion for Summary Judgment etc., American Lung Assn. et al. v. Pruitt etc., Case No. 4:17-cv-06900, USDC Northern District of CA, 1.19.18.

Exhibit 5

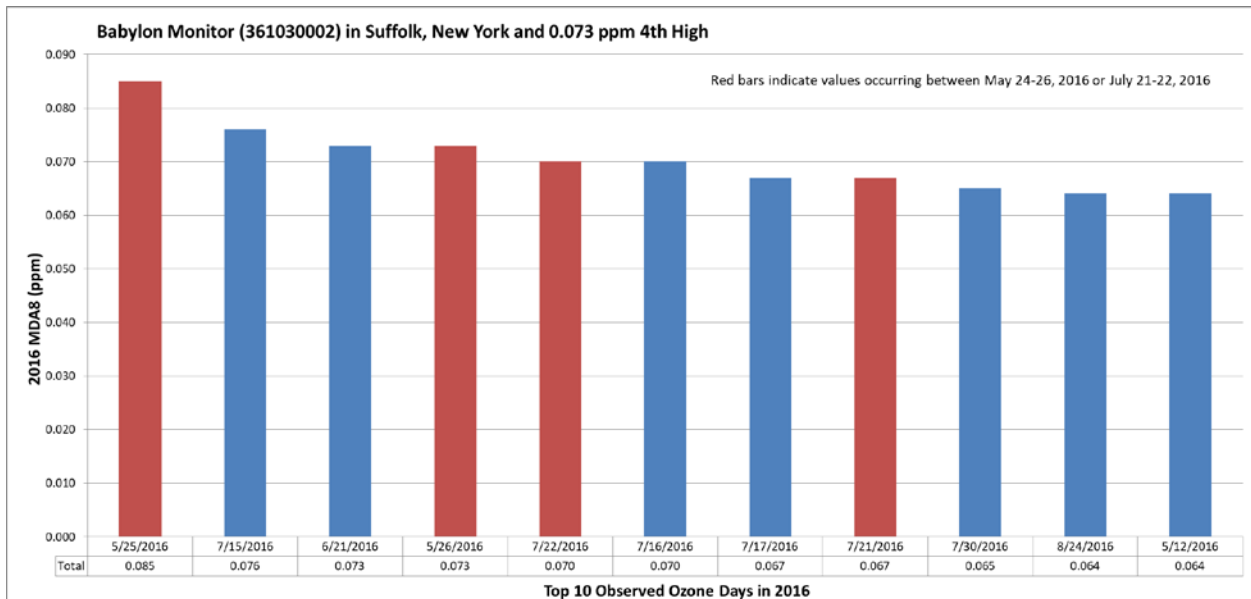
Excerpt from 1.31.18 MOG Comments on EPA Designation Response

[http://midwestozonegroup.com/files/MOG LETTER TO PRUITT - EXHIBITS.pdf](http://midwestozonegroup.com/files/MOG_LETTER_TO_PRUITT_-_EXHIBITS.pdf)

Calculation Example for Babylon Monitor, Suffolk, New York
Full Results for Remaining 2015 Ozone NAAQS Nonattainment / Maintenance Monitors

AQS_SITE_ID 361030002	
Date	Sum of Daily MDA8 (ppm)
5/25/2016	0.085
7/15/2016	0.076
6/21/2016	0.073
5/26/2016	0.073
7/22/2016	0.070
7/16/2016	0.070
7/17/2016	0.067
7/21/2016	0.067
7/30/2016	0.065
8/24/2016	0.064
5/12/2016	0.064

Value	Ozone MDA8 (ppb)
2016 4th (fire)	73
2016 4th (no fire)	67
2014-16 DV (fire)	72
2014-16 DV (no fire)	70



AQS Site ID	State	County	2014-2016 Design Value (ppb)	No Fire 2014-2016 Design Value (ppb)
90010017	Connecticut	Fairfield	80	79
90013007	Connecticut	Fairfield	81	79
90019003	Connecticut	Fairfield	85	82
90099002	Connecticut	New Haven	76	75
240251001	Maryland	Harford	73	72
260050003	Michigan	Allegan	75	75
261630019	Michigan	Wayne	72	72
360810124	New York	Queens	69	67
360850067	New York	Richmond	76	74
361030002	New York	Suffolk	72	70
551170006	Wisconsin	Sheboygan	79	78

Update Base Year Modeling Platform

- Utilize EPA's 2014 modeling platform
 - Incorporate 2016 EGUs, onroad, fires, etc.
- Use 2011 or 2016 MET to support “ozone conducive year” conditions.
- Allows use of most current design value data (2014-16) that incorporates significant improvement in controls and impact of exceptional event modifications.
- Use of this updated base case is likely to show improved 2023 modeled projections at many locations.

Exhibit 7
Source Apportionment Technique

APCA v OSAT

- Sometimes multiple, equally acceptable tools and tests are available – choosing the most appropriate one is important.
- MOG findings indicate the selection of an appropriate model for contribution of anthropogenic source calculation can mean the difference between significant or not.
 - Selection of APCA v OSAT can significantly alter the modeled contribution of upwind anthropogenic emissions on downwind monitors.
 - MOG is prepared to provide a complete monitor-level comparison of APCA v OSAT as soon as EPA releases its APCA results of the 2023en platform.

Monitor 361030002 Suffolk, New York

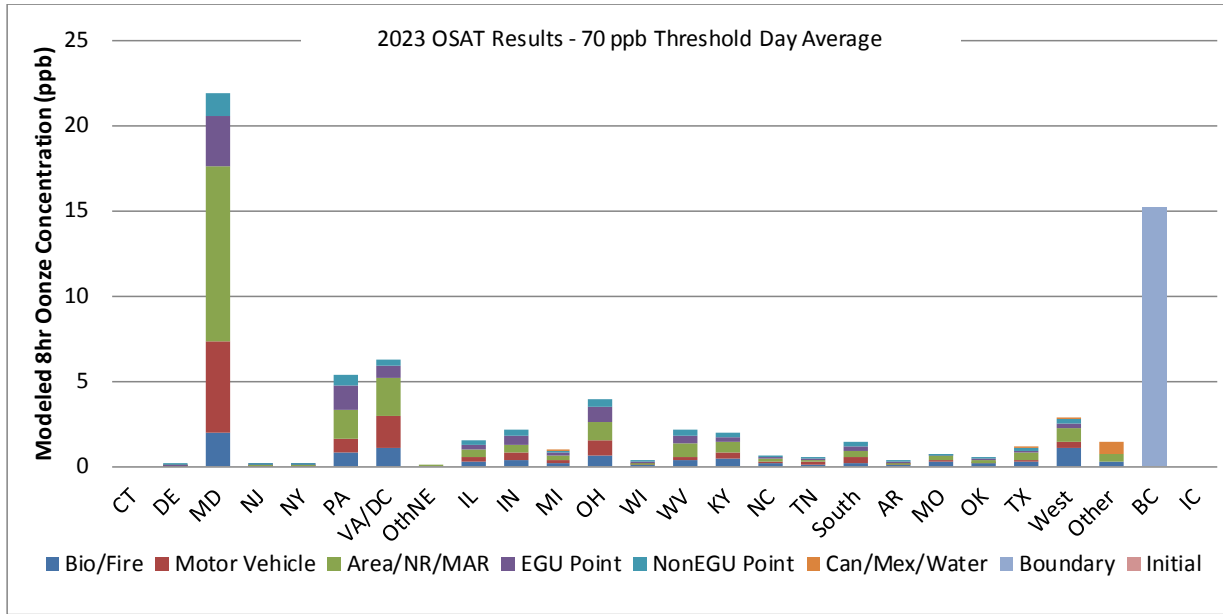
APCA Technique (EPA Method)

Category	Bio/Fire	Total Anthro	Motor Vehicle	Area/NR/MAR	EGU Point	NonEGU Point	Can/Mex /Water	Boundary	Total
DVf Contribution (ppb)	4.78	50.23	13.68	25.03	7.54	3.97	1.4	16.09	72.5
% Contribution	7%	69%	19%	35%	10%	5%	2%	22%	

OSAT Method (Alternate Method)

Category	Bio/Fire	Total Anthro	Motor Vehicle	Area/NR/MAR	EGU Point	NonEGU Point	Can/Mex /Water	Boundary	Total
DVf Contribution (ppb)	13.91	41.22	10.74	21.09	5.94	3.45	1.35	16.03	72.5
% Contribution	19%	57%	15%	29%	8%	5%	2%	22%	

Exhibit 8⁵
 Required Emission Reductions⁶
 Monitor 240251001, Harford, Maryland (Edgewood)



Anthropogenic Contribution (ppb) from 2023 Base Case

CT	0.00	IL	1.23	TN	0.42	BC	15.15
DE	0.07	IN	1.76	South	1.17	IC	0.00
MD	19.90	MI	0.78	AR	0.20	Can/Mex	0.72
NJ	0.09	OH	3.29	MO	0.41	Bio/Fire	9.03
NY	0.13	WI	0.23	OK	0.41		
PA	4.52	WV	1.76	TX	0.80	Total	71.40
VA/DC	5.18	KY	1.54	West	1.66		
OthNE	0.01	NC	0.47	Other	0.48		

Redlines Reduction Contribution Calculation

Upwind State must achieve less than 0.70 ppb significant contribution or monitor much achieve attainment (70.9 ppb)

Reduction Necessary for Attainment = 0.50 ppb from 71.40 ppb

	Relative Contribution of Significant Upwind States (ppb and %)		Proportional Reduction Requirement (ppb)		Resulting Concentration After Reduction (ppb)	
	Contribution (ppb)	%	Requirement (ppb)	Concentration (ppb)	Concentration (ppb)	
VA/DC	5.18	25%	0.12	5.06		
PA	4.52	22%	0.11	4.42		
OH	3.29	16%	0.08	3.21		
IN	1.76	8%	0.04	1.72		
WV	1.76	8%	0.04	1.72		
KY	1.54	7%	0.04	1.50		
IL	1.23	6%	0.03	1.20		
TX	0.80	4%	0.02	0.78		
MI	0.78	4%	0.02	0.76		
Total	20.86	100%	0.50			

⁵ Results presented are based on 12km modeling. Additional 4 km results are being developed.

⁶ *EME Homer City, etc. v. EPA* (Case No. 11-1302 et. al.) August 21, 2012 offered “several red lines than cabin EPA’s authority.” One such redline provides that the extent to which upwind States are obligated to reduce emissions must be allocated “in proportion to the size of their contributions to downwind non-attainment.”

Exhibit 9 Maintenance Areas

EPA's January 17, 2018 brief in the CSAPR Update litigation (Wisconsin et al. v EPA, Case No. 16-1406) states on pages 77 and 78:

"Ultimately, Petitioners' complaint that maintenance-linked states are unreasonably subject to the "same degree of emission reductions" as nonattainment linked states must fail. Indus. Br. 25. There is no legal or practical prohibition on the Rule's use of a single level of control stringency for both kinds of receptors, provided that the level of control is demonstrated to result in meaningful air quality improvements without triggering either facet of the Supreme Court's test for over-control. So while concerns at maintenance receptors can potentially be eliminated at a lesser level of control in some cases given the smaller problem being addressed, this is a practical possibility, not a legal requirement. See 81 Fed. Reg. at 74,520. Here, EPA's use of the same level of control for both maintenance-linked states and nonattainment-linked states is attributable to the fact that the Rule considered only emission reduction measures available in time for the 2017 ozone season. Id. at 74,520. Under this constraint, both sets of states reduced significant emissions, without over-control, at the same level of control. Id. at 74,551-52. Accordingly, EPA's selection of a uniform level of control for both types of receptors was reasonable." Emphasis added.

Alternatives for consideration:

1. Section 175A of the Clean Air Act provides:

“(a) Plan revision

Each State which submits a request under section 7407 (d) of this title for redesignation of a nonattainment area for any air pollutant as an area which has attained the national primary ambient air quality standard for that air pollutant shall also submit a revision of the applicable State implementation plan to provide for the maintenance of the national primary ambient air quality standard for such air pollutant in the area concerned for at least 10 years after the redesignation. The plan shall contain such additional measures, if any, as may be necessary to ensure such maintenance.”

2. “Procedures for Processing Requests to Redesignate Areas to Attainment”, John Calcagni memorandum, 4 September 1992, which contains the following statement on page 9:

“A State may generally demonstrate maintenance of the NAAQS by either showing that future emissions of a pollutant or its precursors will not exceed the level of the attainment inventory, or by modeling to show that the future mix of source and emission rates will not cause a violation of the NAAQS. Under the Clean Air Act, many areas are required to submit modeled attainment demonstrations to show that proposed reductions in emissions will be sufficient to attain the applicable NAAQS. For these areas, the maintenance demonstration should be based upon the same level of modeling. In areas where no such modeling was required, the State should be able to rely on the attainment inventory approach. In both instances, the demonstration should be for a period of 10 years following the redesignation.”

3. Such other approaches as EPA may be considering.

Exhibit 9 (Continued)
Maintenance Areas

Linear trends of observed and modeled ozone maximum daily 8-hr (MDA8) design values demonstrate attainment of 2015 ozone NAAQS by 2028.

Monitor **240251001** Harford, MD

