



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

SEP 25 2007

THE ADMINISTRATOR

Marc D. Machlin, Esq.  
Pepper Hamilton, LLP  
Hamilton Square  
600 Fourteenth Street, N.W.  
Washington, D.C. 20005-2004

**Re: Petition for Reconsideration of EPA's PM<sub>2.5</sub> Non-Attainment Designation**

Dear Mr. Machlin:

This letter is in response to your March 21, 2006, letter to the Environmental Protection Agency (EPA) enclosing the above referenced petition for reconsideration on behalf of Oakland County, Michigan.

We have reviewed this second petition and the arguments presented therein, the additional technical analyses that accompanied the second petition and the supplemental arguments and materials that you submitted to EPA on June 2, 2006. The issues that you raised and the materials that you submitted prompted EPA to rethink carefully the inclusion of Oakland County in the Detroit – Ann Arbor nonattainment area.

After further evaluation, however, EPA has again concluded that Oakland County does properly belong in the Detroit - Ann Arbor nonattainment area. Reexamination of the facts and circumstances of the area reconfirms our initial view that Oakland County is contributing to the nonattainment problem in Southeast Michigan. Therefore, that inclusion of the county in the Detroit - Ann Arbor nonattainment area is appropriate so that the State of Michigan may develop a nonattainment area State Implementation Plan that will provide for attainment of the particulate matter (PM<sub>2.5</sub>) National Ambient Air Quality Standards (NAAQS). Given the county's level of contribution, exclusion of Oakland County from the nonattainment area could adversely impact the State's efforts to achieve the PM<sub>2.5</sub> NAAQS in Southeast Michigan and would potentially result in greater burdens on the remaining counties in the Detroit - Ann Arbor nonattainment area in order to achieve the NAAQS.

The enclosed document addresses the petition for reconsideration in more detail. EPA hopes that the responses will help to explain the Agency's conclusions more fully so that you will better understand the final decision.

EPA appreciates Oakland County's interest in these issues and the information that it has provided. Nevertheless, this additional information does not persuade EPA to reconsider its previous designation decision. Therefore, your petition for reconsideration is denied. EPA appreciates your commitment to continued improvement of air quality in Southeast Michigan, and looks forward to working with Oakland County along with the State of Michigan in order to achieve that goal.

Sincerely,

A handwritten signature in black ink, appearing to read 'S.L.J.', is written over the printed name 'Stephen L. Johnson'.

Stephen L. Johnson

Enclosure

cc: Vinson Hellwig, Chief, Division of Air Quality  
Michigan Department of Environmental Quality

## **EPA Response to Second Petition for Reconsideration from Oakland County, MI**

### **I. Background.**

On December 17, 2004, EPA promulgated the final designations for the PM<sub>2.5</sub> NAAQS for all areas across the country. These designations were effective on April 5, 2005. The designations were the culmination of extensive interactions between EPA and the various states, in accordance with section 107(d) of the Clean Air Act (CAA). The final designations reflected consideration by EPA and the states of monitoring data and other information for the years relevant to the designations process, *i.e.*, either 2001 – 2003, or 2002 – 2004.

The boundaries of the Detroit – Ann Arbor nonattainment area included seven of the ten counties that comprised the Detroit – Ann Arbor Consolidated Metropolitan Statistical Area. The counties EPA included were Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne. EPA included Oakland County, Michigan because of its contribution to fine particle levels which violated the PM<sub>2.5</sub> NAAQS in adjacent Wayne County.

On March 7, 2005, Oakland County (the Petitioner) submitted a petition for reconsideration to EPA requesting that EPA revise the designation for the nonattainment area to exclude Oakland County (the First Petition). On September 13, 2005, the Petitioner submitted additional materials to EPA to support arguments in the First Petition. EPA denied the First Petition on January 20, 2006.

On March 21, 2006, the Petitioner submitted a second petition for reconsideration to EPA again requesting that EPA revise the designation for the area to exclude Oakland County (the Second Petition).

On June 2, 2006, the Petitioner supplemented the Second Petition with additional materials pertaining to the area (the Supplemental Submission). The Supplemental Submission included: (i) various EPA documents including a source apportionment analysis conducted by EPA for a monitor located in Wayne County, Michigan; (ii) a study conducted by a member of the Southeast Michigan Ozone Study Work Group; and (iii) a briefing document reflecting air modeling conducted by the Michigan Department of Environmental Quality (MDEQ).

In this response, we address issues raised by the Petitioner in the Second Petition and the Supplemental Submission. For sake of clarity and to minimize repetition, this response follows the structure of the Second Petition and thereafter the structure of the Supplemental Submission. Where necessary, we make reference to EPA's response to the First Petition or to other documents. We have not attempted to address all of the Petitioner's arguments on a point by point basis, but only to respond to the most significant aspects of the Second Petition and the Supplemental Submission.

As with the First Petition, EPA is providing responses to new arguments and to new information submitted to the Agency for the first time by the Petitioner in the Second Petition and the Supplemental Submission. Where appropriate, we identify those specific arguments or documents that we believe do not properly form the basis for a petition for reconsideration for an Agency decision made on December 17, 2004. We emphasize, however, that it is not appropriate for the Agency to continue to respond to petitions for reconsideration that raise new arguments or include new information. A petition for reconsideration is not the appropriate mechanism to seek to challenge Agency decisions in perpetuity.

## **II. Second Petition.**

### Introduction and Summary Section.

In this section, the Petitioner summarized its arguments. EPA disagrees with these arguments. EPA has previously explained the basis for its disagreement with a number of these arguments in the response to the First Petition, and below explains the basis for its disagreement with the new arguments posed in the Second Petition.

### Procedural Background Section.

In this section, the Petitioner presented its recitation of the facts. It is not necessary for purposes of responding to the Second Petition for EPA to comment on the Petitioner's characterization of the process and facts on a point by point basis. However, this section contains several significant misconceptions that permeate the Second Petition.

First, the Petitioner asserted that the State of Michigan "conclusively established" that "PM<sub>2.5</sub> non-attainment was limited to a discrete area within Wayne County with identified boundaries." EPA disagrees with this assertion, as evidenced by the inclusion of other counties within the designated nonattainment area for the Detroit – Ann Arbor area. EPA has previously explained the grounds for its disagreement with the conclusions of the State of Michigan. In particular, the presence of a monitor registering attainment does not mean that the county in which it is located cannot contribute to a nearby county with a violating monitor.

Second, the Petitioner emphasized the fact that the State of Michigan has other legal authority under the CAA or state law to address emissions of pollutants outside the boundaries of designated nonattainment areas. The existence of such authorities does not negate the obligation of EPA to designate as nonattainment, not only those areas that are monitoring nonattainment, but also those areas that contribute to such nonattainment as contemplated in CAA section 107(d). To the extent that a state determines it is consistent with protection of public health and state law to impose emissions controls or other measures beyond the boundaries of designated nonattainment areas, a state retains discretion to do so consistent with the terms of the CAA.

Third, the Petitioner complained that in response to the First Petition, EPA “raised novel arguments about the completeness of 2002 monitoring data from Oakland County, a different approach to estimating rural background levels of PM-2.5 in SE Michigan, an analysis of incremental impacts of Saginaw, Genesee, and Oakland counties on PM-2.5 levels at nonattaining monitors in Wayne County, and an analysis of the frequencies in which Oakland County air parcels are transported to Wayne County.” The Petitioner did not acknowledge, however, that each of these arguments or analyses were in response to specific arguments made or elaborated upon for the first time by the Petitioner in the First Petition or in the technical support materials submitted later.

In CAA section 107(d), the statute provides a specific process for the promulgation of designations, and that process is between the Governor of a State and the Administrator of EPA, or implicitly, between their agents. The State of Michigan had not raised all of the specific arguments asserted by the Petitioner in the First Petition. Nor had the State submitted all of the new technical analysis submitted by the Petitioner in the First Petition and in the technical support materials submitted thereafter. In particular, the State of Michigan had not submitted detailed technical analysis purporting to show that wind blowing from the direction of Oakland County towards Detroit always improves air quality in the rest of the nonattainment area.<sup>1</sup> Nevertheless, EPA gave serious consideration to the specific arguments posed by, and information submitted by, the Petitioner and responded with explanations and analyses to address the substance of the First Petition. A thorough consideration of the First Petition required EPA to evaluate and respond to the specific new arguments and analyses submitted by the Petitioner.

#### Argument Section.

##### I. Designations of Non-Attainment Areas.

##### A. Contribution.

In this section, the Petitioner argued that the meaning of the term “contributes” in CAA section 107(d)(1)(A)(i) requires that contribution must be “material or significant,” and that the contribution be “causally linked” to the violations of the NAAQS in a nearby area.

In making these new points, the Petitioner erects a strawman argument that EPA would include a county in a designated nonattainment area if it contributes “a single molecule” of emissions to a nearby area with violations of the NAAQS. This is incorrect,

---

<sup>1</sup> EPA notes that the State’s letter of February 22, 2006, concerning the state’s initial designations relied predominantly on the argument that monitors in counties other than Wayne and Monroe were not registering violations of the NAAQS, and to a lesser extent on the argument that the “prevailing” winds in the area are from the south and southwest. EPA disagreed with the State’s conclusions. The Petitioner, however, sought to elaborate on the prevailing wind direction argument by submission of detailed analysis to support an argument that Oakland County was not contributing any emissions to Wayne County, and in fact improves air quality in Wayne County. See, First Petition at pg. 3, 18.

and not the situation at issue.<sup>2</sup> EPA included Oakland County in the Detroit – Ann Arbor area after consideration of various factors to evaluate the contribution of emissions from Oakland County to the violations of the NAAQS in the area. Both the magnitude of the direct PM<sub>2.5</sub> and PM<sub>2.5</sub> precursor emissions in Oakland County, and their relative role in contributing to the mix of emissions in the Detroit – Ann Arbor area, were taken into account by the Agency through the designations process. Those emissions are not comprised of a single molecule, and within the context of the total emissions inventory for sources throughout the Detroit metropolitan area, EPA concluded that these emissions were of a magnitude that supported inclusion of Oakland County within the designated nonattainment area.<sup>3</sup>

The Petitioner also posited that a hypothetical state would be unable to develop a nonattainment area SIP that could prevent a “single molecule” from migrating from “an outlying area” to an area with violations of the NAAQS. Again, this is not the factual situation faced by the State of Michigan with respect to Oakland County. The emissions activities within Oakland County are not *de minimis*, as implied by the Petitioner. Rather, the annual PM related emissions from Oakland County sources were substantial: more than 44,000 tons of NO<sub>x</sub>; more than 8,000 tons of SO<sub>2</sub>; more than 4,000 tons of primary PM<sub>2.5</sub>; more than 58,000 tons of VOCs; and more than 1,000 tons of ammonia. The area had a population of 1.2 million people, and significant VMT, also indicative of a large contribution of emissions from various activities within Oakland County to Wayne County.<sup>4</sup>

These emissions emanate from an area that is difficult to characterize as “outlying” in the context of the geography of metropolitan Detroit. Oakland County is directly adjacent to Wayne County. The southeast corner of Oakland County is approximately 4.3 miles from downtown Detroit and approximately 10.2 miles from a monitor showing nonattainment in Wayne County. The farthest corner of Oakland County is only 47 miles from that same monitor in Wayne County. All of Oakland County is within the distance across which PM<sub>2.5</sub> and PM<sub>2.5</sub> precursors can be transported or diffused.<sup>5</sup> Oakland County thus has emissions sources or activities that are well within the range that can contribute to violations of the NAAQS in Wayne County. For

---

<sup>2</sup> The Petitioner’s own “incremental” analysis indicated that there is a contribution from Oakland County to Wayne County. As discussed below, EPA disagrees with the Petitioner’s method for estimating incremental impacts, but these numbers demonstrate the factual error of this argument.

<sup>3</sup> EPA also reiterates that total emissions within each county was not the only relevant information considered by the Agency. The Petitioner focuses solely upon the purportedly small amount of emissions, thereby minimizing the extent to which other relevant considerations such as high population, high VMT, meteorology, monitored ambient levels, and geographic proximity played a role in the designation of Oakland County within the context of the Detroit – Ann Arbor area.

<sup>4</sup> See, “Technical Support for State and Tribal Air Quality Fine Particle (PM<sub>2.5</sub>) Designations,” December 2004 (the December 2004 TSD) at page 6 – 295. Docket items EPA-HQ-OAR-2003-0061-0612 to 0632.

<sup>5</sup> The NARSTO PM report states that fine particles can be transported hundreds or even thousands of kilometers. See NARSTO (2004) Particulate Matter Assessment for Policy Makers: A NARSTO Assessment. P. McMurry, M. Shepherd, and J. Vickery, eds. Cambridge University Press, Cambridge, England. ISBN 0 52 184287 5.) See <http://www.narsto.org/section.src?SID=6>

purposes of the PM<sub>2.5</sub> NAAQS, Oakland County is “nearby” as that term is meant in CAA section 107(d).

Finally, the Petitioner asserted that: “[a] non-attainment designation is rational under the Clean Air Act only if the application of remedial measures in the ‘contributing’ area would significantly remedy the PM<sub>2.5</sub> non-attainment problem.” This logic is circular. By this logic, if an area preemptively asserts that it does not have sources it believes should be evaluated for controls to limit contribution to nonattainment in a nearby area, then it should be excluded from the designated nonattainment area so that its sources will automatically be exempted from evaluation. In reality, if an area actually had no sources of emissions, then the evaluation of sources for control would be greatly simplified, and there would be no risk that the non-existent sources would be subject to any potential control. Given the significant emissions in Oakland County, this is also a hypothetical that is not relevant to process of developing the SIP for that Detroit – Ann Arbor area.

The Petitioner also argued that an area should be designated nonattainment because of contribution to nonattainment only if there were a “causal link” to the violation of the NAAQS, *i.e.*, the area must be shown to have “caused” the violation of the NAAQS. The explicit language of CAA section 107(d) does not support such a reading. The definition of “nonattainment” specifically includes any area that “contributes” to violations of the NAAQS in a nearby area, not only those that “cause” such violations of the NAAQS. Moreover, an interpretation that only included areas that literally “caused” the violation of the NAAQS would lead to debates about which area contributed the “last straw” that “caused” the exceedance of the NAAQS, mathematical disputes about how an area could “cause” the violation of an annual standard averaged over a three year period, and arguments that any area not itself contributing emissions actually in excess of the NAAQS could not be proven to be “causing” the violation. EPA believes that such an interpretation of “contributes” would frustrate the purpose of the statute, which is clearly to insure that any areas that are partially responsible for violations of the NAAQS in a nearby area should shoulder part of the burden to ensure that that NAAQS are attained. Identifying the areas that should share that burden is the point of the exercise that EPA undertook with the states in the designation process.

EPA’s designation process was reasonably designed to evaluate both the “materiality” and the “causal link” of contribution to nonattainment that the Petitioner advocates. EPA considered, among other things, the level of the emissions from sources within Oakland County, the fact that Oakland County is immediately adjacent to Wayne County, and the fact that many emissions activities within Oakland County are both geographically close to, and often upwind of, Wayne County.

EPA has already made a judgment that emissions from various activities in Oakland County do “contribute” to nonattainment in Wayne County, as that term is intended in CAA section 107(d). Therefore, it is appropriate to evaluate sources in Oakland County along with the rest of the designated area as part of the development of the PM<sub>2.5</sub> nonattainment SIP for the Detroit – Ann Arbor area. That is the proper context

in which the State of Michigan initially, and EPA thereafter, will evaluate what controls are appropriate for which sources and to what degree throughout the nonattainment area, in order to ensure that the PM<sub>2.5</sub> NAAQS are met as expeditiously as practicable at all points within the designated nonattainment area. The Petitioner's preferred approach would preemptively short-circuit this analysis by exclusion of Oakland County from the designated nonattainment area.

I. B. State's Proposed Designations.

In this section, the Petitioner repeated and recast arguments that EPA should not have modified the designation initially proposed by the State of Michigan.

EPA has previously addressed this issue in detail in the response to the First Petition, and it is unnecessary to repeat that full response here. However, that the Petitioner has now modified its previous arguments in order to eliminate references to states making "recommended" designations and to emphasize that states have "primary responsibility" to make designations and to develop nonattainment area SIPs. EPA notes that in the case of both the promulgation of designations and the approval of SIPs, however, the structure and explicit provisions of the CAA require EPA to make the ultimate determinations that the designations or SIPs meet the requirements of the statute. In the case of designations, section 107(d) explicitly provides for this review and "modification" of the state's initial designations, and EPA followed that process. In addition, the record reflects that the initial proposed designations of the state were not "lightly swept aside" by the Agency. Far from a "one size fits all" approach, EPA followed a process that allowed each state and the Agency to evaluate each nonattainment area on the facts and circumstances of such area.

The Petitioner also amplified its prior argument that EPA has "usurped the states' role" by recommending a presumption that states begin their evaluation using the Metropolitan Statistical Area (MSA) or Consolidated Metropolitan Statistical Area (CMSA) boundaries, and that by making this recommendation, EPA improperly "reverses the burden of proof" by forcing states to evaluate which areas do not contribute to nonattainment in a given area.

EPA has already explained that the presumption was based upon evidence that PM<sub>2.5</sub> at violating monitors is typically dominated by particles indicative of urban sources, thus suggesting that the urban area as a whole is a rational starting point for any evaluation of what areas contain sources or activities that may contribute to ambient PM<sub>2.5</sub> in each area. EPA has also already explained that the CMSA or MSA presumption was a rebuttable presumption, and this fact is demonstrated both by the designation for the Detroit – Ann Arbor area itself, and by designations for other metropolitan areas, in which the states and EPA ultimately decided upon boundaries that varied from the CMSA or MSA. EPA believes that under the CAA, states already have a "burden of proof" to assess what areas are contributing to violations of the NAAQS, and EPA's guidance provided recommendations about considerations relevant to such an assessment. Because EPA must make the final decisions about designations, it shares the burden of

proof with respect to evaluation of contribution and therefore sought to ensure that the assessment was as robust as possible in light of the facts and circumstances in each area.

Finally, the Petitioner repeated its arguments that the State of Michigan had “described and documented the localized nature of a PM<sub>2.5</sub> non-attainment problem using direct evidence.” This is incorrect. The State did not submit conclusive “direct evidence” establishing a purely localized problem, or the presence or absence of contribution from sources in other nearby areas such as Oakland County. Generally, inferences about the geographic origins of PM<sub>2.5</sub> particles must by necessity be based upon interpretation and analysis of indirect evidence such as, but not limited to, monitoring data, emissions data, and meteorological data. These are among the types of information EPA used to evaluate areas for inclusion in designated nonattainment areas. EPA disagreed with the technical and policy bases for the State’s final position that EPA should designate only Wayne County as nonattainment, and the reasons for that disagreement are reflected in the record.

#### I. C. EPA’s Approach.

##### 1. MSA Presumption.

In this section, the Petitioner took issue with EPA’s use of a presumption that the State should consider the boundary of the relevant MSA or CMSA as a starting place for analysis of a nonattainment area boundary.

EPA has previously explained the basis for, and the reasoning behind, the presumption and need not repeat that here. However, the Petitioner now argued that EPA was in error to recommend that states evaluate the full CMSA or MSA because CAA section 107(d)(6)(A), which pertains to designations for PM<sub>2.5</sub>, does not explicitly refer to “a metropolitan statistical area or consolidated metropolitan statistical area” unlike section 107(d)(4)(A), which pertains to ozone and carbon monoxide designations. The Petitioner construes this difference in statutory language as an absolute bar to EPA recommending MSA or CMSA boundaries to states for purposes of PM<sub>2.5</sub> designations, and one assumes, as a bar to EPA considering such MSA or CMSA boundaries itself.

EPA disagrees with the Petitioner’s narrow reading of the statute. Had Congress meant to forbid states or EPA from considering any facts relevant to the appropriate geographic scope for areas that contribute to violations of the NAAQS, or to forbid EPA from utilizing rebuttable presumptions of any kind in this context, it would have done so explicitly. On its face, it is clear that section 107(d)(4)(A) was only applicable to then existing designated areas for ozone and carbon monoxide, and Congress explicitly directed that those areas be automatically extended by operation of law to the full MSA or CMSA boundaries. Therefore, this statutory language does not directly apply to new designations for other NAAQS, but by analogy clearly does provide evidence of Congressional intent with respect to the size of nonattainment areas for pollutants that are generated by urban sources and subject to transport, and thus a basis for EPA to suggest a comparable presumption for nonattainment area boundaries for other NAAQS.

By directing that existing nonattainment areas automatically extend to the entire MSA or CMSA boundaries, Congress presumably recognized that artificially small nonattainment areas for ozone and carbon monoxide could exclude sources that should be subject to nonattainment area SIP requirements. Like ozone, a significant fraction of PM<sub>2.5</sub> particles results from secondary formation of particles in the atmosphere as a result of emissions of different precursor chemicals from a wide variety of sources, some of which are nearby and some of which more distant. The local sources of emissions that contribute to PM<sub>2.5</sub> nonattainment are thus an important and relevant concern in designating nonattainment area boundaries, in order to encompass those sources that are contributing to nonattainment in a given area. Because of the distances across which PM<sub>2.5</sub> and PM<sub>2.5</sub> precursors can transport, “local” sources do not necessarily mean those only within the immediate vicinity of a monitor.

EPA has also previously responded to the Petitioner’s argument repeated here that the Agency improperly relied upon guidance documents to make recommendations to states regarding the designations process. EPA notes that Congress has itself exempted the designations process from notice and comment rulemaking procedures by: (i) not listing designations among the Agency actions governed by the notice and comment requirements of CAA section 307(d); (ii) explicitly exempting the designations process from the comparable procedural requirements of the Administrative Procedures Act; and (iii) explicitly wording section 107(d) to create a specific process between only the Governor of a state and the Administrator of the Agency. In the face of this overwhelming evidence that Congress did not intend for designations to require notice and comment rulemaking, the Petitioner implied that EPA could under no circumstances provide guidance to the states regarding the section 107(d) designations process, because to do so would necessarily constitute a “substantive” rule requiring notice and comment rulemaking.

EPA believes that the language and timing of section 107(d) do not indicate that Congress intended to require EPA to undergo notice and comment rulemaking to communicate with states concerning details of the designations process, or to prohibit EPA from making recommendations to states through guidance. Given that section 107(d) creates a specific process between each state and EPA, the Agency believes that it was reasonable to provide guidance to states to ensure that the process resulted in a complete evaluation of all relevant facts and considerations. As previously explained in the response to the First Petition, EPA disagrees that the guidance it provided to states did not constitute guidance and was an inflexible fiat.

Finally, in this section the Petitioner conflated EPA’s views as to the role of local sources of emissions versus “long range transport” of emissions in the context of contribution to violations of the PM<sub>2.5</sub> NAAQS. There is undoubtedly long range transport of PM<sub>2.5</sub> and PM<sub>2.5</sub> precursors. Through the “Clean Air Interstate Rule” (CAIR), EPA has taken action to address long range (i.e., interstate) contribution to nonattainment areas through the mechanism of CAA section 110(a)(2)(D). That provision authorizes EPA to ensure that each state’s SIP contains provisions to prevent,

among other things, “significant contribution” to nonattainment of the NAAQS in another state.<sup>6</sup> That provision does not, however, obviate the need for states to be responsible for sources in areas within their own boundaries that also contribute to nonattainment of the NAAQS, as required by CAA sections 110(a) and 172(c).

Through the implementation rule for the 1997 PM<sub>2.5</sub> NAAQS, EPA has reiterated that states must develop nonattainment area SIPs that provide for attainment of the NAAQS as expeditiously as practicable within each designated nonattainment area, and this includes appropriate analysis of, and control of, emissions sources within each nonattainment area.<sup>7</sup> Because EPA has concluded that Oakland County contributes to violations of the NAAQS in the Detroit –Ann Arbor area, Oakland County sources will be included in that SIP development process.

## 2. Nine Factor Analysis.

In this section, the Petitioner argued that EPA did not provide “any rational standard” for states to establish that geographic areas smaller than the MSA should comprise the designated nonattainment area.

Again, the Petitioner recast or refined arguments it previously made in the First Petition. EPA has previously explained that it provided guidance to the states for the express purpose of helping states and the Agency to evaluate relevant information during the designations process. Because of the nature of PM<sub>2.5</sub> nonattainment that results from various types of emissions from numerous sources, and the inherently case by case nature of PM<sub>2.5</sub> designations decisions, EPA attempted via guidance to provide the “rational standard” which the Petitioner asserted was lacking. The Petitioner may disagree with the guidance, or with the way that a state chose to follow or not to follow the guidance, but that does not equate to EPA having failed to provide a rational standard for states.

In essence, the Petitioner argued that EPA’s guidance was not prescriptive enough. EPA disagrees that appropriate guidance for the designations process could or should provide the sort of rote mechanical approach suggested by the Petitioner here. EPA notes that elsewhere in the First Petition and the Second Petition, the Petitioner simultaneously argued that EPA’s guidance was: (i) too prescriptive and left no discretion to EPA and the states; and (ii) too vague and left too much discretion to EPA and the states in application of the guidance to the facts and circumstances of each area.

---

<sup>6</sup> EPA notes that section 110(a)(2)(D) directs EPA to take action to ensure that one state does not “significantly” contribute to nonattainment in another state. Section 107(d) is phrased simply in terms of “contribution” to violations of the NAAQS in a nearby area, so this is presumably a lower threshold of contribution.

<sup>7</sup> The Clean Air Fine Particle Implementation Rule requires states to evaluate sources within the nonattainment area for potential control measures and to adopt those control measures that will provide for attainment of the NAAQS as expeditiously as practicable. See, 72 FR 20,586 at 20,616 (April 25, 2007) (“Accordingly, the State in which a nonattainment area is located must evaluate the full range of source of PM<sub>2.5</sub> and its precursors throughout the designated nonattainment area during the development of the SIP.”) Contrary to the assertion of the Petitioner, this regulation governing SIPs for the PM<sub>2.5</sub> NAAQS does not exempt sources of crustal PM<sub>2.5</sub> particles.

EPA did not have the luxury of arguing this point in the alternative in the designations process, and issued guidance in order to ensure that the process resulted in a comprehensive evaluation of the available relevant information for each area.

EPA also provided states multiple opportunities to exchange views with the Agency as to the appropriate boundaries for designated nonattainment areas generally, or to provide information to support designations smaller, larger, or identical to, the MSA or CMSA, more specifically. In the case of the Detroit- Ann Arbor nonattainment area, the State of Michigan had formal opportunities to dispute EPA's modification of its initial recommendations and did so. For the reasons previously explained, EPA disagreed with the conclusions of the state. The Petitioner misconstrues EPA's disagreement with the state as evidence that the State was given no opportunity to understand EPA's basis for the final designation decision.

### 3. Use of Monitoring Data.

In this section, the Petitioner asserted that its First Petition did not argue that EPA can use no information other than monitoring data in order to make designations decisions. Thereafter, the Petitioner argued that EPA failed to use monitoring data in the designation process at all and that the forms of information EPA used other than monitoring data are "untested and unreliable" indicators of PM<sub>2.5</sub> contribution.

The arguments posed by the Petitioner concerning the exclusive use of monitoring data in the First Petition speak for themselves.<sup>8</sup> The arguments were incorrect for the reasons previously explained in EPA's response to the First Petition.

EPA and the Petitioner continue to disagree about the proper role of monitoring data with respect to areas that must be designated nonattainment due to contribution to other areas that violate the NAAQS. As explained in the response to the First Petition, EPA believes that a county with a monitor registering attainment of the NAAQS can nevertheless have emissions sources that contribute to a violating monitor in an adjacent county. In the Second Petition, the Petitioner described monitoring data not as the "only" basis, but as the "primary" basis for a designation of nonattainment for an area that contributes to violations in another area. EPA's concern with this revised argument is that the Petitioner has previously argued that attainment at the monitor in Oakland County is, in and of itself, indisputable grounds for a designation of attainment. Indeed, the Petitioner repeated this position in a more subtle form as part of the argument in this section that the monitor data is "direct" evidence that Oakland County must be designated attainment and that other "indirect" evidence should not be considered. Thus, the Petitioner changed terminology, but the incorrect argument is essentially the same.

EPA has used both monitoring data and other relevant information to inform the designations process. The Petitioner incorrectly asserted that EPA did not utilize

---

<sup>8</sup> See, e.g., First Petition, pg 14 - 16, and in particular the statement: "Only data from the monitoring network for PM<sub>2.5</sub> 'shall be considered' by the States in issuing such designations and by EPA in making any 'necessary' modifications to State designations."

monitoring data, or utilize monitoring data in conjunction with meteorological data, to assess contribution. Air quality monitored in each area was explicitly a part of one of the factors that EPA recommended to states through guidance.<sup>9</sup> Instead of concluding that monitored attainment in an area automatically equated to a designation of attainment for that area, EPA evaluated monitoring data information more critically and in light of other relevant information. The Petitioner also specifically mentioned “verifiable monitoring, meteorological, and speciation data” as the proper bases for a designation. In fact, EPA used each of these three types of information in the process of evaluating counties for inclusion in the Detroit – Ann Arbor nonattainment area.<sup>10</sup>

In addition, EPA used other types of information that it considers relevant to assessment of contribution to nonattainment in a given area, such as emissions inventories, population, and VMT within the areas under consideration. The Petitioner denigrated the various forms of other information that EPA considered as “indirect surrogates” for assessing contribution. Because of the specific nature of PM<sub>2.5</sub> nonattainment, however, evaluation of contribution to nonattainment must be made by “indirect surrogates.” Even the monitor, meteorological, and speciation data, advocated by the Petitioner are themselves forms of “indirect” evidence that EPA must evaluate in context in order to inform technical judgments about what geographic areas contribute to a violation of the NAAQS.

EPA believes that it adopted a reasonable approach to evaluate areas for contribution to violations of the NAAQS in other nearby areas using relevant information, consistent with the requirements of section 107(d). Section 107(d)(6)(A) indicates that designations should be “based on” air quality monitoring data, but does not define the meaning of the term “based on” or preclude the use of other relevant information in addition to monitor data.<sup>11</sup> As previously explained in EPA’s response to the First Petition, if monitor data were the sole permissible basis for designation decisions, that would contradict the statute’s directive to designate areas as nonattainment because they “contribute” to violations of the NAAQS in a nearby area.

---

<sup>9</sup> See, “Memorandum, Designations for the Fine Particle National Ambient Air Quality Standards,” from Jeffrey R. Holmstead, Assistant Administrator, to Regional Administrators, Region I – X, dated April 1, 2003; and “Memorandum, Additional Guidance On Defining Area Boundaries for PM<sub>2.5</sub> Designations,” from Lydia N. Wegman, Director, Air Quality Strategies and Standards Division, to Air Division Directors, Regions I – X, dated February 12, 2004. Docket Items EPA- HQ-OAR-2003-0061-0009 and 0016.

<sup>10</sup> EPA used monitoring data to evaluate the location of violating monitors and the ambient levels in other nearby areas that were potentially contributing to those violations. EPA used wind rose information to consider the likelihood that emissions in various counties would contribute to observed concentrations, and EPA also examined more processed meteorological data for similar purposes. EPA used speciation data to help judge the significance of emissions of different types of PM<sub>2.5</sub> and its precursors that the candidate nearby contributing areas were found to emit. A general description of these uses of these types of information is provided in the December 2004 TSD for the designations rulemaking.

<sup>11</sup> Had Congress meant to prevent EPA from considering any other relevant information in making designation decisions, EPA believes that the statute would have expressly provided that monitor data alone could be used for this purpose. Because the Petitioner’s own preferred approach is not based solely on monitor data, and instead relies on a combination of monitor data and meteorological data, EPA concludes that the Petitioner has conceded that EPA may take into account relevant information other than monitor data in isolation.

Finally, EPA did not prohibit states from using modeling or other more complex methods to evaluate ambient data and meteorology. States, including the State of Michigan, did not elect to do so. In the case of the PM<sub>2.5</sub> NAAQS, which involve a new pollutant with which states and EPA do not have a long history of regulatory experience as with other pollutants such as ozone, EPA believes that states would have had insufficient time and resources to submit designations to EPA based upon modeling or other more complex analyses within the statutory period prescribed.

Normally, section 107(d)(1)(A) would govern the timing for states to make recommendations as to designations for a new NAAQS. That provision indicates that states must submit their initial designations “by such date as the Administrator may reasonably require, but not later than 1 year” following the promulgation of a new or revised NAAQS.<sup>12</sup> In the case of the PM<sub>2.5</sub> NAAQS, however, Congress amended the CAA to provide specific dates for state and EPA action on designations in section 107(d)(6) in order to allow additional time for the deployment of monitors and the collection of data. In spite of that statutory extension, however, neither states nor EPA had the time that would be required to conduct modeling or other more complex analyses in order to make designation decisions. EPA believes that consideration of the relevant types of information recommended in its guidance allowed states and the Agency to make reasonable designation decisions, within the time period contemplated by the statute.

EPA believes that the alternative approaches suggested by the Petitioner for designations in the Second Petition and in the Supplemental Submission are neither required by section 107(d), nor contemplated by the timeframes provided by the statute for designations. By comparison, the statutory requirements of section 172(c) for nonattainment plan provisions explicitly require much more detailed information, including: (i) a “comprehensive, accurate, current inventory of actual emissions from all sources of the relevant pollutant or pollutants in such area;” (ii) provisions that provide for “the implementation of all reasonably available control measures as expeditiously as practicable” for sources within the area; and (iii) a modeled attainment demonstration that shows that the area will attain the NAAQS as expeditiously as practicable. This comparison suggests that Congress intended that EPA promulgate designations based upon the initially available information, and that EPA require much more detailed and definitive information in the context of the nonattainment area plans for those areas.

EPA believes that resources and time are more appropriately devoted to development of an approvable nonattainment area SIP, complete with appropriate evaluation of all emissions sources and activities within the designated nonattainment

---

<sup>12</sup> Elsewhere within the same provision, Congress provided that EPA may not require states to make designations recommendations “sooner than 120 days” after promulgating a new or revised NAAQS. That Congress contemplated EPA could require a state to act within 121 days, strongly suggests that Congress did not intend the designations process under section 107(d) to require the sort of time and resource intensive analysis implied by the Petitioner. This would especially be the case with a new NAAQS, such as that for PM<sub>2.5</sub>, where states did not already have previous information and regulatory experience that would permit such a quick process.

area, and a robust attainment demonstration that shows attainment of the NAAQS as expeditiously as practicable throughout the entire nonattainment area.

## II. MDEQ Determination.

In this section, the Petitioner argued that EPA attempted to “cast doubt” on whether the monitor in Oakland County was registering data showing attainment. As EPA explained in the response to the First Petition, EPA only addressed this issue because the Petitioner premised many of its arguments on the mistaken belief that the monitoring data conclusively showed attainment, when in fact the monitor had incomplete data for the relevant period and application of data substitution principles indicated that EPA could not conclusively determine attainment status based upon the available data at that monitor.

Also as explained in the response to the First Petition, EPA based the designation for Oakland County not on air quality at the monitor located in Oakland County, but rather upon evidence that demonstrated that Oakland County was contributing to violations of the NAAQS in adjacent Wayne County. Because EPA determined that Oakland County contributed to violations of the NAAQS in a nearby area, the Agency did not need to resolve definitively whether ambient air quality at the Oakland County monitor did or did not meet the NAAQS.

### A. Location Of the Oak Park Monitor

The Petitioner reiterated arguments that the monitor in Oakland County is placed in a “worst case scenario” location, and contended that EPA has conceded this point.<sup>13</sup> EPA has not conceded that the monitor is located in a “worst case scenario” location, but even if it were so, that would be of limited relevance and would not materially affect the designation of Oakland County on the basis of its contribution to violations of the NAAQS in adjacent Wayne County.

Moreover, the location of the monitor is the result of decisions by MDEQ to place a monitor in that location in Oakland County because the site was appropriate under applicable EPA regulations and guidance governing monitor siting for evaluation of the area for compliance with the NAAQS. MDEQ chose the site as one of the original “core” monitoring sites to evaluate the Detroit metropolitan area for compliance with the PM<sub>2.5</sub> NAAQS.

Monitoring locations are classified according to their location, spatial scale, and monitoring objective. According to monitoring site metadata submitted by MDEQ to EPA’s Air Quality System (AQS) database, MDEQ has identified the monitor in Oakland County as a monitoring site in a suburban area with residential land use, classified the

---

<sup>13</sup> The Petitioner evidently misconstrued EPA’s statement in the response to the First Petition that it looked at the “worst case monitoring site” in a given county (meaning the monitor with the highest design value in that county) as agreement that the Oak Park monitor is automatically in the geographic location with the worst ambient PM<sub>2.5</sub> in Oakland County.

monitor as representing “urban” scale PM<sub>2.5</sub> conditions, and has identified it as having the objective of measuring population exposure.

Review of the PM<sub>2.5</sub> Network Reviews filed by MDEQ with EPA on an annual basis also indicates that the state identified this as the location for a monitor that is representative of an “urban scale.”<sup>14</sup> Under applicable regulations for PM<sub>2.5</sub> monitors, an “urban scale” monitor is appropriate to “characterize the particulate matter concentrations over an entire metropolitan or rural area ranging in size from 4 to 50 km.”<sup>15</sup> The results of such an urban scale monitor would be “useful for assessing trends in area-wide air quality and, and hence the effectiveness of large scale pollution control strategies.”<sup>16</sup>

This description of the monitor site and the uses of data from this site are not consistent with the Petitioner’s theory that the monitor is not representative of any other part of Oakland County. To the contrary, the monitor location is presumed to be representative of the area in the vicinity (including some portion of Oakland County) so that it is appropriate for the location of a Federal Reference Method monitor. It does not necessarily follow that all other portions of Oakland County would have lower ambient concentrations of PM<sub>2.5</sub>, if there were a monitor located in every possible location in the county.

EPA believes that this argument is indicative of a continued belief on the part of the Petitioner that monitoring attainment of the NAAQS is outcome determinative for the designation of areas that contribute to violations in another nearby area. Even if there were a monitor at every possible location within Oakland County, and every monitor were showing ambient concentrations at or below the level of the NAAQS, that would not necessarily establish that Oakland County does not contribute to a violation of the NAAQS in Wayne County as contemplated in section 107(d).

#### B. Oakland County Monitoring Data.

The Petitioner in this section argued that the monitoring data for the Oakland Park monitor is not incomplete for the 2002- 2004 period using various theories. Given that EPA has included Oakland County within the nonattainment area because of its contribution, rather than because of monitored nonattainment, this argument is not relevant.

Nevertheless, EPA notes that the Petitioner has misapplied EPA’s data substitution principles. EPA’s PM<sub>2.5</sub> data substitution guidance provides for either of two methods: (i) replacing missing data from the primary monitor with data collected on the

---

<sup>14</sup> See, e.g., “2001 Annual PM<sub>2.5</sub> Network Review for Michigan,” dated June 27, 2001, submitted by MDEQ to EPA. Table 1 of this annual report identifies the monitor in Oak Park as an “urban scale” monitor, whereas other monitors in the Detroit area, including the Dearborn monitor, are identified as “neighborhood scale.” See also, “2006 Annual PM<sub>2.5</sub> Network Review for Michigan,” dated July 25, 2006, Table 4, that indicates the same scale for the Oak Park monitor. These items will be placed in the docket for this action in anticipation of the Petitioner’s request.

<sup>15</sup> See, 40 CFR Pt 58, Appendix D, section 2.8.0.7, for the definition of an “urban scale” monitor.

<sup>16</sup> Id.

same day by a secondary monitor located at the same monitoring site (*i.e.*, from a collocated monitor); or (ii) replacing missing data with the maximum data value across all three years for the same quarter from the same monitor.<sup>17</sup> The Petitioner argued that substituted data for this period from a separate monitor located in Southfield, Michigan, would result in the conclusion that the Oak Park monitor registered attainment. The Southfield monitor, however, is 5.3 miles away from the Oak Park and cannot be considered “collocated” with the Oak Park monitor.<sup>18</sup> Therefore, data from the Southfield monitor cannot substitute for missing data at the Oak Park monitor.

In addition, even if the Southfield monitor generally represented conditions at Oak Park, which could be debated, the monitor used to collect data at Southfield is not an approved Federal Reference Method (FRM) monitor for PM<sub>2.5</sub> or a Federal Equivalent Method (FEM) PM<sub>2.5</sub> sampler and as a result cannot be used for determining compliance with the NAAQS. EPA’s guidelines specifically provide that the collocated monitor must be a Federal Reference Method or Equivalent Method monitor.<sup>19</sup> For these reasons, the Petitioner’s argument that data substitution would automatically provide data indicating attainment at the Oak Park monitor for the 2002 – 2004 period is incorrect.

Finally, the Petitioner argued that because the monitor in Oakland County has now shown attainment of the PM<sub>2.5</sub> NAAQS during the 2003 – 2005 period, this necessarily confirms that Oakland County was in attainment during the 2001 – 2003, or 2002 – 2004, time period that was relevant for the purposes of EPA’s designations. EPA disputes the relevance of this information to the designation. First, this is not germane to the designation decision that EPA had to make by statute by December 31, 2004. Second, the fact that the monitor in Oakland County showed a three-year average concentration of 14.3 ug/m<sup>3</sup> for the period 2003 – 2005 is not proof that Oakland County does not contribute to violations of the NAAQS in the nonattainment area during the period of time that was relevant to the designation, or thereafter. To the contrary, the continued high level of ambient PM<sub>2.5</sub> at the Oakland County monitor, although below the level of the NAAQS, again suggests that air entering Wayne County from the direction of Oakland County already contains significant amounts of PM<sub>2.5</sub>, close to the level of the NAAQS. As evidenced by other forms of information, and by EPA’s review of the analysis submitted by the Petitioner in the First Petition, some portion of that amount of PM<sub>2.5</sub> can reasonably be attributed to emissions activity within Oakland County, even if it cannot be reliably quantified at this point.<sup>20</sup>

---

<sup>17</sup> Guideline on Data Handling Conventions for the PM NAAQS, EPA-454/R-99-008, April 1999, available at <http://www.epa.gov/ttncaaa1/t1/memoranda/pmfinal.pdf>.

<sup>18</sup> In the EPA Quality Assurance Handbook for Air Pollution Measurement Systems, EPA defines collocation to mean “the simultaneous operation of two identical samplers placed side by side” (see page 361), or more specifically for PM<sub>2.5</sub> monitoring purposes, “a 1-4 meter separation distance between collocated samplers must be met” (see page 59, footnote i). EPA-454/R-98-004, August 1998, available at <http://www.epa.gov/ttn/amtic/files/ambient/qaqc/redbook.pdf>

<sup>19</sup> See, 40 CFR Pt 50, Appendix N, section 3.0(a).

<sup>20</sup> EPA notes that the air quality monitoring data for 2004-2006 for this monitor has a design value of 39 ug/m<sup>3</sup> for the new 2006 24 hour PM<sub>2.5</sub> NAAQS. Thus, available data indicate that this area is violating that NAAQS. This information is also not relevant to the Agency’s December 2004 designation decision for the 1997 annual and 24 hour PM<sub>2.5</sub> NAAQS, but is further evidence that this area has ambient levels of PM<sub>2.5</sub> that continue to be unhealthy.

### III. Contribution to Wayne County

In this section, the Petitioner asserted that EPA attempted to “justify” its inclusion of Oakland County within the Detroit – Ann Arbor nonattainment area with a new evaluation of contribution from Oakland County. Elsewhere in the Second Petition, the Petitioner characterized this as a “novel” analysis, asserted that EPA “injected new analyses based on information not previously included in the administrative record,” and criticized EPA because it responded to new arguments and technical support submitted by the Petitioner in the First Petition and not previously seen by the Agency.

The Petitioner itself challenged EPA’s assessment of contribution in its First Petition, and first made the novel argument that wind blowing from the direction of Oakland County towards Wayne County actually improves air quality in Wayne County. It supported the latter assertion with detailed technical analysis not previously submitted to EPA. In its response, EPA identified deficiencies in the technical analysis provided by the Petitioner, and reached its own conclusions based upon the Petitioner’s theory but using more appropriate monitoring data that EPA believed to be more probative of the specific theory in question. Thus, it is the Petitioner that raised this issue and necessitated EPA’s evaluation of the Petitioner’s technical analysis.

In the Second Petition, the Petitioner has now recast its previous arguments, and submitted additional new technical analysis, under the guise of critiquing EPA’s response to the First Petition. At the outset, it must be emphasized that the Petitioner incorrectly described and construed EPA’s response to the First Petition as an evaluation of the “incremental contribution” of PM<sub>2.5</sub> contributed by Oakland County to Wayne County. EPA conducted its corrected version of the Petitioner’s own analysis specifically to evaluate the Petitioner’s theory that wind blowing from the direction of Oakland County towards Wayne County reduces the concentration of ambient PM<sub>2.5</sub> in Wayne County. EPA’s response to the argument raised in the First Petition demonstrated that the Petitioner’s assertion was not supported by the available facts.

Specifically, the Petitioner argued in the First Petition that monitoring data proved that ambient air in Oakland County was “below background” and therefore that wind blowing towards Wayne County from the direction of Oakland County not only did not contribute to ambient PM<sub>2.5</sub> in Wayne County, but actually reduced it. To support this theory, the Petitioner supplied an analysis that compared the data from a monitoring site in Oakland County to other monitoring sites representative of background levels. EPA examined the Petitioner’s theory and concluded that in order to evaluate this theory correctly, it was not appropriate to make the comparison between the monitor in Oakland County and the background sites in Illinois and Pennsylvania. Instead, to test the Petitioner’s theory, EPA examined the available monitoring data from monitors that are located much closer to Oakland County in Michigan, and that are located more directly upwind from Oakland County than the Illinois and Pennsylvania monitors.<sup>21</sup>

---

<sup>21</sup> EPA notes that this data was readily publicly available, most notably in EPA’s AIRS database. As discussed in its response to the First Petition, EPA believes that use of a more appropriately chosen set of

Moreover, the analysis conducted by the Petitioner compared Oakland County monitor concentrations under north wind conditions against the Illinois and Pennsylvania monitor concentrations averaged from all wind directions. EPA concluded that a more valid test of the Petitioner's theory would be to derive and compare concentrations at the Oakland County site against a background monitor using the same range of wind directions (*i.e.*, concentrations at the Oakland County monitor under north wind conditions should be compared to concentrations at a background monitor under north wind conditions). In addition, EPA also differentiated between and evaluated the data for eight wind directions, rather than the simplified north - south wind approach of the Petitioners, because this provided a more informative means to test the Petitioner's theory (*i.e.*, to test whether wind from the direction of Oakland County improves air quality in Wayne County, one should evaluate winds that blow from that general direction).

In short, the theory tested in this exercise was that of the Petitioner, and EPA merely attempted to verify that theory by using more appropriate monitoring and meteorological data. EPA did not believe that the Petitioner's theory was persuasive with respect to evaluation of contribution under section 107(d) in any event, but correction of the Petitioner's analysis with more appropriate data demonstrated that Oakland County's ambient PM<sub>2.5</sub> level was not "below background" and did not "reduce" the ambient PM<sub>2.5</sub> level in Wayne County. EPA did not subscribe to the Petitioner's theory; it merely disproved it by testing it with the correct data.

EPA's qualitative conclusions using more appropriate data were sufficient to refute the Petitioner's theory. After review of the available data, EPA concluded that there was a "clear, progressive increase in concentration as one proceeds from Saginaw County to Wayne County." Thus, available evidence did not support the argument that Oakland County reduced the concentration of PM<sub>2.5</sub> from air passing through the area. To the contrary, available evidence indicates, albeit only qualitatively, that Oakland County in fact adds pollutants to air coming from the direction of Oakland County towards Wayne County. EPA considers this result unremarkable, given the various emissions sources and activities located within Oakland County, but the Agency confirmed what is intuitively obvious by using the Petitioner's own theory with the appropriate data.<sup>22</sup>

In the Second Petition, the Petitioner mischaracterized EPA's corrected version of the Petitioner's analysis as a "flawed" attempt to quantify the specific amount of ambient PM<sub>2.5</sub> that sources in Oakland County contribute to Wayne County. This was not the intended purpose of EPA's response to the Petitioner, and the response was not designed to answer such a question quantitatively. The Petitioner also criticized specific aspects of

---

monitoring data would have led to the conclusion that Oakland County contributes to violations in Wayne County using the Petitioner's own approach.

<sup>22</sup> The Second Petition does not contest EPA's points regarding the inappropriateness of comparing Oakland County concentrations under selected conditions of wind direction against Pennsylvania concentrations averaged over all conditions. EPA infers that the Petitioner conceded these points.

EPA's response in order to reduce further the purported increment of contribution from Oakland County. EPA disagrees with the specific points raised by the Petitioner, as described more fully below.

The Petitioner attempted to expand upon EPA's qualitative conclusions in EPA's response by calculating the precise quantitative difference between monitor averages and defining it as an "increment" of ambient  $PM_{2.5}$  attributable to Oakland County sources. The Petitioner's attempt at quantitative analysis relies upon incorrect assumptions.

First, and most importantly, the Petitioner's incremental contribution analysis assumes that all of the air pollution entering and exiting Oakland County is capable of quantification by the available monitoring data. Although the monitors are sited within the acceptable guidelines for comparison of the data with the NAAQS, and generally represent a widespread area, the monitors do not capture or characterize the total  $PM_{2.5}$  entering and exiting across the entire expanse of Oakland County with the degree of accuracy suggested by the Petitioner. This would require a much higher density air quality monitoring network far beyond the resources of states or EPA; this is one reason EPA has determined that it is appropriate to consider other forms of relevant information in addition to monitoring data in the designation process in order to evaluate contribution from one area to another.

Second, the Petitioner's incremental analysis relies upon 24-hour average  $PM_{2.5}$  concentrations, which due to highly variable wind speeds and directions throughout a 24-hour period, introduces substantial uncertainty about the emission and transport of  $PM_{2.5}$  and  $PM_{2.5}$  precursors. Changes in wind speed and wind direction can have considerable effect on the dispersion and dilution effects of emissions. Realizing the variability in wind characteristics, EPA did review hourly components of the 24-hour average meteorological data and determined that some of the elevated  $PM_{2.5}$  concentration days (measured at Allen Park) have hourly components of the 24-hour average wind direction from the North and Northwest. This further supports EPA's conclusion that Oakland County was correctly included in the Detroit-Ann Arbor non-attainment area. It does not follow, however, that these same data points provide precisely quantifiable "increments" of pollution that can reliably be ascribed to an area, especially over the span of time relevant to an annual standard. Moreover, for an annual standard, impacts on any day, including a day that may itself be below the level of the NAAQS, can nevertheless be relevant to whether the area attains the NAAQS.

Third, this analysis presupposes that no other information is relevant for the designation of areas that contribute to nonattainment in a nearby area that violates the NAAQS. For example, in this instance the Petitioner's analysis of the presumed incremental addition of pollutants from Oakland County to Wayne County would bear no relationship to contribution of emissions that might result in other ways, such as mobile source emissions contributed not just by vehicles traveling within Oakland County itself, but mobile source emissions from vehicles commuting between Oakland County and other areas throughout the designated nonattainment area.

EPA believes that the “incremental contribution analysis” conducted by the Petitioner, and wrongly ascribed to EPA, does not provide a reliable quantitative assessment of the total contribution of sources in particular areas such as Oakland County to a downwind monitor. This analysis most likely significantly underestimates the actual impact of sources in Oakland County on other nearby areas with violating monitors. Thus, the arguments and analysis submitted by the Petitioner on this new point do not negate EPA’s previous conclusion that Oakland County contributes to violations of the NAAQS in Wayne County, in accordance with section 107(d).

Notwithstanding the imprecision and uncertainties that make the Petitioner’s incremental analysis less reliable for the purpose of quantifying contribution, the analysis generally confirms that emissions from Oakland County can contribute to ambient levels in Wayne County given the geography and meteorology of the area. Setting aside debate about the magnitude of the impact, EPA concludes that this should dispel previous arguments that Oakland County “reduces” ambient PM<sub>2.5</sub> levels in Wayne County, or that Oakland County could not under any circumstances contribute to ambient PM<sub>2.5</sub> levels in Wayne County.

A. Incremental Contribution Analysis.

1. Aggregated North Analysis .

In this section, the Petitioner argued that EPA used the incorrect wind direction in its “incremental contribution analysis.” As noted above, EPA did not conduct an incremental contribution analysis. EPA only examined the Petitioner’s own argument that wind from the direction of Oakland County reduced ambient PM<sub>2.5</sub> concentrations in Wayne County. EPA does not agree that comparison of concentrations at any series of existing monitors could quantify the precise increment of contribution emanating from sources within Oakland County to a monitor in Wayne County for the reasons explained above. Therefore, the Petitioner’s argument about which specific wind direction should be used for an incremental contribution analysis is not persuasive.

EPA believes that its evaluation of the relevant wind directions for its review of the First Petition was sufficient for the purpose intended. In order to respond to the technical support provided by the Petitioner in the First Petition, EPA considered results of the 2-directional wind analysis used by the Petitioner as well as a more refined 8-sector wind direction analysis. EPA performed these analyses applying the methods used by the Petitioner itself, with necessary modifications to allow EPA to assess the Petitioner’s theory and technical support properly.

Using the results of the aggregated north analysis and applying it to other nearby monitoring sites, EPA demonstrated that the Petitioner’s basic rationale (*i.e.*, that concentrations are lower when wind is blowing from the North versus higher when winds are coming from the South) for claiming that “Oakland County is lowering PM<sub>2.5</sub> in Wayne County” applies to all monitoring sites in the area, including the non-attaining monitors in Wayne County. This analysis also enabled a valid comparison of the results

across monitoring sites leading to the general conclusion of the existence of concentration gradients across Southeastern Michigan. Realizing that there could be shortcomings in this simplified analytical approach, EPA further segregated the analysis into eight wind direction categories to confirm the results evident in the simple north-south directional analysis. As with the two-directional analysis, EPA found a clear, progressive increase in concentration as one proceeds from Saginaw County to Wayne County. EPA cited the results from the NW wind direction because this was the most pertinent category in the results given the location of the available monitors, and given the nature of the Petitioner's own theory.

EPA acknowledges that the Petitioner's suggested NNW wind sector would also have been appropriate, and that this approach would provide a more direct path from the monitor in Saginaw County to the non-attaining monitors in Wayne County. As previously explained, however, the Oak Park monitoring site is classified by MDEQ as an "urban scale" monitor for PM<sub>2.5</sub>, which is defined to mean representative of an area from 4 to 50 kilometers in diameter. Given this urban scale of representation and the fact that winds vary in direction throughout the course of a typical day, EPA believes that an analysis examining winds from either the NW or NNW provides valid results for purposes of testing the Petitioner's theory. Additionally, half of EPA's NW sector (defined as winds blowing in the direction from 292.5 to 337.5 degrees) is contained in the Petitioner's NNW (defined as 315 to 360 degrees) sector<sup>23</sup>

Using either the NW or the NNW wind direction, or both, EPA believes that the data confirm the qualitative conclusion that wind blowing from the direction of Oakland County towards Wayne County includes pollutants that contribute to the ambient PM<sub>2.5</sub> in Wayne County, and that viewing the progression of monitored concentrations from that direction indicates that some portion of that added ambient PM<sub>2.5</sub> is contributed by emissions sources in Oakland County. Because the Detroit – Ann Arbor area violates the annual PM<sub>2.5</sub> NAAQS, this contribution to ambient PM<sub>2.5</sub> levels matters even on those days that air entering Wayne County is below the level of the NAAQS. EPA believes that this is sufficient to disprove the Petitioner's prior claim that Oakland County improves air quality in Wayne County.

## 2. Region 5's Wind Analysis.

In this section, the Petitioner argued that "Region 5's analysis" suggested that only winds emanating from the northwest are appropriate for consideration in an incremental analysis.

As described above, EPA did not conduct an incremental analysis of contribution from Oakland County. EPA only examined the available evidence to assess the

---

<sup>23</sup> The Petitioner's arguments regarding the most relevant wind direction suggest that the Petitioner now believes that its First Petition, providing an assessment of Oakland County concentrations averaged for all times with any northerly wind component, does not properly assess Oakland County concentrations when Oakland County is upwind of the relevant Wayne County monitors.

Petitioner's theory that Oakland County reduced the concentration of PM<sub>2.5</sub> in air passing through the area, thereby improving air quality in Wayne County. Because of Oakland County's geographic location with respect to the violating monitor in Wayne County, one way to assess the Petitioner's argument using available information was to estimate what constitutes the "background" concentration upwind of Oakland County, and then to use data from a series of monitors in order to assess qualitatively whether there is an identifiable progression of concentrations at those monitors on the days during which the wind blows predominantly from that general direction.

EPA disagrees with the Petitioner's assertion that such an analysis must look exclusively at winds from the NNW wind direction to evaluate the contribution from Oakland County to Wayne County. Simply put, meteorological data for the area indicates that winds blow from various directions throughout the year, and that even in the course of a single day, not exclusively from one specific direction. In addition, even if the wind only blew in a straight line at all times, the monitoring network was not designed to assess, and can only provide qualitative evidence of, the gradient of ambient concentrations from any specific monitor in a straight line in any specific compass direction. Therefore, it was appropriate to look at a broader spectrum of compass directions reflective of general wind patterns in the area in order to assess qualitatively whether Oakland County is in fact reducing ambient PM<sub>2.5</sub> in Wayne County.

EPA disagrees with the Petitioner about the specific points on the compass that are "the most appropriate and scientifically defensible." More importantly, however, EPA does not think that debating the prevailing wind direction alters the conclusions based upon the available monitor data and other forms of information that: (i) Oakland County is not "improving" air quality in Wayne County; and (ii) Oakland County is contributing to violations of the NAAQS in Wayne County.

### 3. Wind Vector Analysis.

In this section, the Petitioner elaborated upon its arguments with respect to the specific wind direction that should be used in an incremental impact analysis.

EPA believes that parsing the points of the compass in an effort to minimize the purported incremental impacts of Oakland County is not appropriate. As explained above, EPA has concluded that emissions from Oakland County contribute to violations of the NAAQS in Wayne County. The wind often blows from different directions, changes direction, stagnates, or otherwise mixes in this area, with the result that PM<sub>2.5</sub> or PM<sub>2.5</sub> precursor emissions from sources in Oakland County contribute to the existing mix of ambient PM<sub>2.5</sub> and PM<sub>2.5</sub> precursors in the Detroit – Ann Arbor nonattainment area. Using the NW or NNW wind direction, or both, for this evaluation does not alter this fundamental fact.

### 4. NNW Contribution.

In this section, the Petitioner contended that the frequency of time that winds blow in the NNW direction must be addressed to obtain an accurate estimate of the Oakland County's impact on Wayne County.

EPA does not disagree with this generic statement, but the methodology used by the Petitioner to determine the purported "realistic annual incremental contribution" is incomplete. The Petitioner can estimate the contribution when the wind is from a specific and narrowly defined sector (i.e., NNW), but cannot properly conclude that this is the sum total of contribution in absence of data demonstrating contribution from other areas along the entire breadth of the Oakland-Wayne County border that may have contributions when the wind is from other directions. Not all of the emissions in Oakland County impact the Oakland County monitor only when the wind (relative to the Oakland County monitor) is blowing from the narrowly defined range (315-360) suggested by the Petitioner. The density of the monitoring network is not sufficient to estimate additional incremental contributions from Oakland County on days with wind from other directions that transport air mass across portions of Oakland County without a monitor into Wayne County.

The wind frequency analysis conducted by EPA used the hourly wind data, rather than the 24-hour resultant wind. These data demonstrate that there are hourly components of wind on high concentration days that come from Oakland County. The Petitioner alleged that EPA focused only on NW wind conditions, and objects that Oakland County is not 'directly' NW of the Allen Park monitor. However, EPA presented results for several compass directions, showing similar results for all of the relevant directions. Furthermore, given the effects of atmospheric dispersion, a source will have an impact on a monitor from many more wind directions and not just from the wind direction involving a straight line path from source to monitor. The fact that wind directions vary from hour to hour yields an additional reason that a source can influence concentrations at a monitor even when some of the day's wind directions do not go directly from the source to the monitor.

In addition, the complex influences on PM<sub>2.5</sub> concentrations at any particular location, including photochemical formation of PM<sub>2.5</sub> from precursor emission sources at intermediate distances, add to the unreliability of any effort to use comparisons of concentrations to quantify incremental contributions. Comparison of concentrations in Wayne County versus Oakland County cannot clearly indicate the extent to which Wayne County concentrations result from photochemically formed products of Oakland County precursor emissions. For example, EPA believes that the substantial emissions of NO<sub>x</sub> from Oakland County sources play a role in ambient concentrations of PM<sub>2.5</sub> throughout the Detroit – Ann Arbor area in the form of secondarily formed fine particles, but it is unlikely that the Petitioner's incremental contribution analysis correctly represents the extent of this impact.<sup>24</sup> By comparison, EPA's examination of the emissions inventories

---

<sup>24</sup> A similar response applies to the statements regarding attaining monitors that are between Oakland County and the violating monitors in Wayne County. In addition to the fact that the presence of nearby attaining monitors does not speak to whether Oakland County contributes to the violating monitors, the nature of photochemical formation of particles (i.e. the time and distance required for formation) is such

of all counties in this area, and comparison of their relative amounts, provided a reasonable way to reflect the likely relative impacts of emissions from sources in counties throughout the urban area.

Because of these limitations, and others mentioned above, EPA does not believe that the Petitioner's new arguments and calculations concerning the presumed "incremental" contribution of Oakland County to Wayne County are a reliable quantification of such contribution, or that they provide a basis for EPA to reconsider the designation of Oakland County.

5. Speciation Data From Wayne County.

In this section, the Petitioner argued that speciation data from monitors in the area demonstrate that "local" sources of "elemental carbon and crustal material are driving the PM<sub>2.5</sub> non-attainment in Wayne County." The Petitioner evidently defined "local" sources as those in the near vicinity of a monitor in Wayne County, and characterized any sources in Oakland County as "non-local."

EPA does not agree with the Petitioner's fundamental premise. Non-attainment is caused by the sum of the particles at violating monitors, whether elemental carbon, crustal material, organic carbon, sulfates or nitrates. Enough reduction of any combination of these constituents would bring an area into attainment. Some of these particles may result from emissions in the near vicinity, some from within the urban area as a whole, and some from long range transport. EPA agrees with the general proposition that the Dearborn monitor site is impacted by some sources relatively near to the monitor, but these impacts are in addition to an urban baseline concentration that results from area-wide emission contributions from other stationary, area, and mobile sources. Reductions of emission throughout the nonattainment area would also serve to reduce ambient PM<sub>2.5</sub> at the monitor in question, and throughout the rest of the nonattainment area. A combination of emissions reductions from areas that contribute to the ambient mix would also potentially serve to bring the entire area into attainment more quickly, in accordance with the statutory requirement that the area attain the NAAQS expeditiously.

EPA also disagrees with the Petitioner's characterization of "local" sources as those within some artificially short radius of the monitor, and "non-local" sources as anything beyond the circle drawn at that radius. Because PM<sub>2.5</sub> and PM<sub>2.5</sub> precursors can be transported longer distances, it is not appropriate to ignore the impact of contributing sources at greater distances from the monitor. Unless intended for a special purpose, monitors are presumed to be representative of ambient concentrations throughout a larger portion of the area, and thus control of sources only within the near vicinity of a given monitor as a means of ignoring the ambient levels elsewhere is not appropriate.

---

that precursors emitted in Oakland County may have a greater impact at the violating monitors than at other more nearby monitors. Thus, the violating monitors may reflect a contribution of photochemically formed particles attributable to Oakland County precursor emissions that would not necessarily be evident at the closer monitors.

The Petitioner's focus upon speciated data from one monitor in Wayne County also overlooks the speciated data from other monitors in the area, and ignores the implications of that data for the types of sources that should be evaluated to bring the entire Detroit – Ann Arbor area into attainment. While the data from the Dearborn site suggest an important industrial source contribution (in combination with long range contributions and contributions from other typical urban area sources), data collected at the monitors at the Southfield site in Oakland County and the Allen Park site in Wayne County suggest a more typical combination of long range contributions and typical urban source contributions.<sup>25</sup> At all of the monitors, the urban area source contributions reflect pollutants emitted in substantial quantities in Oakland County. The similarities in the speciated data between these monitoring sites suggests that urban area sources have a more widespread impact throughout the designated nonattainment area, and that such sources are appropriate candidates for evaluation for control measures to bring the entire Detroit – Ann Arbor area into attainment.

EPA believes that emissions activities throughout the designated nonattainment area contribute to the total PM<sub>2.5</sub> mass in Wayne County. In accordance with the CAA and applicable regulations, the state will develop a nonattainment area SIP that provides for attainment of the PM<sub>2.5</sub> NAAQS throughout the Detroit – Ann Arbor area as expeditiously as practicable. As part of this process, the state will evaluate all sources throughout the designated nonattainment area, including Oakland County. The state may ultimately conclude and adequately demonstrate that sources in Oakland County can be controlled to a lesser degree than sources in other locations, and still result in expeditious attainment of the NAAQS in the entire area, if the facts support such an approach. It would be premature and inappropriate to assess that question at this point.

#### B. Weighted Emissions Score.

In this section, the Petitioner extended its “incremental” analysis method to various counties, compared the incremental values it derived to the “weighted emissions scores” that EPA evaluated as part of the designations process, and then argued that the “actual PM<sub>2.5</sub> ‘increment’ for areas such as Oakland County has no relationship whatsoever to the ‘composite emissions score’ computed by EPA.” The Petitioner argued that the new increments it has calculated are more reliable than the weighted emissions score because they are “based upon actual monitoring data, not on crude estimates of emissions for precursor chemicals.” EPA disagrees with these completely new arguments from the Petitioner for a number of substantive reasons, in addition to the fact that this argument was never raised during the designations process by the State of Michigan or any other party.

---

<sup>25</sup> The Petitioner's analysis in support of the Second Petition itself contains speciated data that demonstrate this point. Figure 10 provides a bar graph that illustrates the very similar speciated data from a range of monitors throughout the area. The Dearborn monitor data shows a somewhat larger level of carbon and a more significant increased level of crustal particles than the surrounding monitors, but in other respects, the data suggest that a similar mix of urban area sources is contributing to the ambient PM<sub>2.5</sub> levels throughout the nonattainment area.

First, as discussed above, EPA does not believe that the Petitioner's "incremental contribution analysis" results in reliable quantitative estimates of contributions of a county's emissions to ambient concentrations at monitors in Wayne County. Given that the estimates of contributions from individual counties cannot be reliably quantified by this approach, a comparison of the estimates for two counties (e.g., Oakland and Genesee as suggested by the Petitioner) likewise does not reliably indicate whether one or the other county contributes more to concentrations in a third county, much less what the ratio of these contributions might be.

Second, EPA disagrees with the Petitioner's characterization of emissions data used by the Agency as "crude estimates." Emissions estimates relied upon by EPA reflected the best and most up to date information available concerning emissions on a county by county basis. These estimates were the result of information initially submitted by the state to EPA, and improved by EPA following a comprehensive review process. Given the wide range of sources of direct PM<sub>2.5</sub> and PM<sub>2.5</sub> precursor emissions, including stationary, mobile, and area sources of various sizes, these numbers are by necessity only estimates. EPA notes that in the context of developing an appropriate nonattainment area plan for this area, the state will have the opportunity to develop more refined estimates of emissions in all areas including Oakland County, and that these estimates will be relevant for the purpose of evaluating potential control measures to bring the entire area into attainment.

Finally, the Petitioner asserted that in the context of the designation decisions EPA "typically has attributed the greatest weight to factor 1, the 'composite emissions score' for an area." The Petitioner made this argument as a means of minimizing the role that other considerations played in the designation process. As a general matter, EPA believes that high amounts of emissions should be an important factor in designation decisions. Weighting these emissions in order to take into consideration their relative impacts on ambient PM<sub>2.5</sub> is also a reasonable approach to address the different impacts of different emissions, e.g., to distinguish between the impacts of direct PM<sub>2.5</sub> emissions versus NO<sub>x</sub> emissions in a given area. In many cases, certain factors recommended by EPA did not play as important a role. For example, in the case of Oakland County, the lack of a significant topographical feature such as a mountain range between Wayne County and Oakland County rendered that less factor relevant. Other considerations, however, were much more significant. In particular, the high population and high VMT for Oakland County, in addition to its geographic location immediately adjacent to, and frequently upwind of, Wayne County were important considerations. In the case of Oakland County, EPA carefully evaluated the inclusion of the area in the Detroit – Ann Arbor nonattainment area based on a range of relevant considerations, and the Petitioner has impelled the Agency to confirm the appropriateness of the designation through two petitions.

EPA notes that the Petitioner also used its incremental analysis to argue the differential treatment it perceived between EPA's inclusion of Oakland County and exclusion of Genesee County from the Detroit – Ann Arbor nonattainment area in the

designation process. By the Petitioner's calculations, Genesee County has an "increment" that is four times higher than that of Oakland County. In addition to the fundamental limitations of the approach now advocated by the Petitioner explained above, this approach also ignores the other forms of relevant information that EPA did have before it and did take into account during the designation process.

Thus, the Petitioner's incorrect comparison of Oakland County to Genesee County in part reflects a failure to consider other factors, in addition to the weighted emission scores. Particularly relevant factors here were the frequency of winds from each county to the violating monitoring sites, the proximity of each county to the violating monitors (a factor which alone makes Oakland County prone to have more impact on Wayne County monitors than Genesee County), and the volume of commuting from the each county to the county where the violations occurred. The relevant emissions information at the time of EPA's designation decision indicated that Oakland County likely has significantly greater impact on Wayne County ambient PM<sub>2.5</sub> concentrations than does Genesee County, and this and other information support EPA's conclusion that Oakland County contributed to violations in Wayne County and that Genesee County did not.

### **III. Supplemental Submission.**

On June 2, 2006, the Petitioner submitted additional materials to support the Second Petition in the Supplemental Submission. These materials consisted of a cover letter making additional arguments and three attachments to support the arguments. The arguments and the attachments are discussed below, along with EPA's response to the newly submitted materials.

As requested by the Petitioner, we have placed the additional materials in the administrative record for the designation. By placing the additional materials in the docket, however, EPA does not concede that the additional materials are relevant for the designation process. These materials are relevant to EPA's response to the Second Petition.

Most of the items submitted by the Petitioner both post-date the designation decision and had not previously been submitted to EPA by the State of Michigan or any other party in connection with the PM<sub>2.5</sub> designations process. EPA responds to these materials at the behest of the Petitioner. These documents do not provide a proper basis for EPA to reconsider the nonattainment designation of Oakland County for the reasons discussed below.

#### **1. EPA Documents.**

In this section, the Petitioner asserted that certain EPA documents indicate "that EPA either accepted many of Oakland County's contentions or independently reached many of the same conclusions." The documents include a memo entitled "A Source

Apportionment Analysis of the Dearborn Speciation Trends Network Site,” dated March 28, 2005, prepared by Michael Rizzo, USEPA, OAQPS (the Rizzo Report), and a group of “bubble pollution roses,” “contribution roses,” and “sector pollution roses” portraying data from various monitors throughout the state of Michigan attached as “Appendix A” to the Supplemental Submission.

According to the Petitioner, the information in the documents “strongly supports” the claim that Oakland County does not contribute to violations of the NAAQS in Wayne County because “Wayne County’s failure to meet the PM<sub>2.5</sub> standards is due to a combination of emissions from distant sources outside the Detroit CMSA and local industrial sources within central Wayne County.” The Petitioner’s interpretation of the content and conclusions of the documents is incorrect for a number of reasons.

The Petitioner discussed the “contribution roses” and characterized them as confirming information about the prevailing winds and the time that winds blow from various directions. EPA has never suggested that winds in the area do not blow from various points of the compass for different amounts of time. EPA’s position is that the winds can and do blow periodically from the direction of Oakland County, thereby indicating that emissions activities in Oakland County contribute to nonattainment in the Detroit – Ann Arbor area.

The Petitioner discussed the “pollution roses” and pointed out that higher concentrations at the various monitors result on days when winds blow from the south and southwest than on days when the winds blow from the north or northwest. Again, EPA has never suggested that winds that blow from the south or southwest do not typically have higher concentrations than winds blowing from other directions. The point is that winds do blow from the direction of Oakland County a portion of the time, and that during that time emissions activities in Oakland County do contribute to ambient levels of PM<sub>2.5</sub> in Wayne County. The Petitioner again repeated its argument that when winds blow from the direction of Oakland County, the monitored levels in Wayne County are lower, but that is not the correct test for whether Oakland County is contributing to ambient PM<sub>2.5</sub> in Wayne County. The area violates the annual standard, and thus the addition of PM<sub>2.5</sub> or PM<sub>2.5</sub> precursors from Oakland County add to the ambient mix in Wayne County, and the impacts of that addition are significant for an annual standard.

The Petitioner expressed concern that the documents comprising Appendix A are not contained in the administrative record for the designation decision. With respect to the various “rose” diagrams, EPA notes that all three forms of pollution roses are different means of visually portraying monitoring data for a site in conjunction with meteorological data. EPA concluded that the “bubble pollution roses” were the most useful way to present that data, and therefore EPA considered those diagrams during the decision making process and placed those diagrams in the administrative record.<sup>26</sup> EPA did not rely on the “contribution roses” and “sector pollution roses” because they were both a duplicative and a less useful means of presenting the same information. Therefore, the “contribution roses” and “sector pollution roses” are not in the administrative record.

---

<sup>26</sup> See, Docket Item EPA- HQ-OAR-2003-0061-0527.

The bubble pollution roses were among the information relevant to the designation decisions. For example, the diagram for the 2001 – 2003 period for the Dearborn monitor in Wayne County is among the forms of information that EPA examined in order to evaluate contribution in the Detroit – Ann Arbor nonattainment area (page A-052 in Petitioner’s Appendix A). The diagram depicts 2001 – 2003 monitoring and meteorological data for the violating monitor at the Dearborn location in Wayne County. Each dot represents a 24 – hour PM<sub>2.5</sub> monitoring sample, and the color of the dot indicates the concentration on that day (in micrograms per cubic meter). The location of the dot in reference to the center of the diagram (representing the monitor location) indicates the overall direction from which the wind was blowing on that day, and the distance of the dot from the center indicates the average wind speed on that day. The dots portray samples over the three year period, thus providing a method to evaluate contribution both as to individual days and as to the longer period relevant to the annual PM<sub>2.5</sub> NAAQS.

This specific diagram for the Dearborn monitor in the 2001-2003 period indicates that elevated levels of PM<sub>2.5</sub> in Wayne County originate from all wind directions, including those from the northwest quadrant in the general direction of Oakland County. Although the diagram also shows contribution from other directions, and the contribution from those directions is significant, that does not negate that there is contribution from the direction of Oakland County.<sup>27</sup> The data portrayed on the diagram indicate that there were numerous days during the course of this three year period when the winds blew from the general direction of Oakland County, and that on a number of those days the values were at or above the level of the NAAQS. The data from this monitor show a similar pattern for the 2002 – 2004 period (page A- 027 in Petitioner’s Appendix A). In the case of an annual NAAQS standard, however, the cumulative impacts of pollution over the course of the year are additive, and they play a role even on those days that may be at or below the level of the NAAQS. The bubble pollution roses for this monitor thus supported the conclusion that there is contribution from the direction of Oakland County, and this was confirmed by other information considered by EPA for the designation.<sup>28</sup>

In addition to the single monitor example discussed above, EPA believes that the other bubble pollution roses for the monitors located in Oakland County and the surrounding monitor sites confirmed the same basic conclusions. Diagrams for the violating Allen Park monitor site, for example, also indicate contribution from Oakland County. Although the diagrams for violating monitors are most relevant and were given

---

<sup>27</sup> EPA notes that in the context of the Detroit – Ann Arbor PM<sub>2.5</sub> designation, EPA also did not exclude all counties to the south and south west from Wayne County. To the contrary, EPA included a number of other counties, including several that were geographically farther from Wayne County and that had lower total emissions than Oakland County.

<sup>28</sup> See, “Technical Support for State and Tribal Air Quality Fine Particle (PM<sub>2.5</sub>) Designations,” December 2004 TSD, page 6-297. The table for “Factor 6. Meteorology” reflects the percentage of time that wind blew from various directions in each county under consideration, including both Oakland County and Wayne County. In the narrative discussion, EPA also noted that all days contribute to annual average PM<sub>2.5</sub> levels and the winds in Wayne County originated from all directions at various times, including from the direction of Oakland County.

most weight in EPA's deliberations, diagrams for the other monitors in the surrounding area help to confirm that there are winds from various directions, on days with monitored concentrations at various levels, suggesting that there is a general pattern of contribution to violations of the NAAQS in Wayne County as a result of winds from various directions. Obviously, the degree of contribution varies, and is most pronounced from the south and southwest, but that does not negate the fact that there is also evidence of contribution when the winds blow from the direction of Oakland County. That fact, in conjunction with other evidence considered by EPA, such as the emissions inventory, high population, high VMT and immediate proximity to Wayne County, provided a reasonable basis for EPA to conclude that Oakland County contributes to violations in accordance with section 107(d).

The Petitioner contended that the various pollution rose diagrams support an argument that Oakland County does not contribute to violations of the NAAQS in Wayne County. EPA disagrees with that contention for the reasons explained above. EPA also notes, however, that over reliance on these diagrams as hard and fast proof of contribution, or the lack thereof, also suffers from the same limitations as other forms of information and analyses discussed in this response. The bubble pollution roses are but one useful information tool to depict data that can help to inform a decision, but they cannot be viewed as definitive proof. For example, winds in this area can vary in direction or strength over the course of a single day or can stagnate and mix emissions from a series of days and from various directions. Thus, the dot on the diagram representing a monitor reading on a given day does not necessarily convey the full story, even for that one day. EPA believes that the limitations of individual information tools such as monitor data, meteorological data, emissions data, or other considerations, provided a strong reason for the Agency to consider a range of relevant information in order to evaluate contribution more effectively.

EPA also disagrees with the Petitioner's reliance on the Rizzo Report. The points that the Petitioner asserted are proven by the Rizzo Report are points that have never been in dispute. It is not disputed that the monitor in Wayne County is located in an industrial area, or that sources in the near vicinity of the monitor have an impact on that monitor. Those facts do not, however, answer the question of what other nearby areas also contribute to violations of the NAAQS in Wayne County. As discussed in more detail below, there is ongoing debate and analysis to ascertain how much the nearby sources add to the ambient mix of PM<sub>2.5</sub>, and how much improvement can be achieved by controlling those sources. In this respect, the Petitioner erroneously assumes that the mere fact that there is contribution from sources in the near vicinity of the Wayne County monitor necessarily means that there could be no contribution from anywhere else. EPA believes that this is an incorrect reading of section 107(d).

The Petitioner also drew other incorrect inferences from the contents of the Rizzo Report to support a theory that the report was neither designed nor intended to address. Among these fallacies, the most important is the assumption that because the source apportionment analysis identified some impacts from long range transport and some impacts from sources in the near vicinity, that it disproved the existence of impacts from

any other sources located elsewhere. Obvious evidence of these fallacies within the four corners of the document includes the following.

First, the report was not intended to constitute a full and definitive analysis of all sources that impact the monitor in Wayne County; it was an attempt to identify the types of sources that impact the monitor. Among those types were several categories of emissions that EPA identified as both significant and not indicative of emissions from the nearby stationary sources. Thus, EPA indicated that the types of sources contributing to the ambient  $PM_{2.5}$  in the area included motor vehicle emissions, vegetative burning, and secondary sulfates and nitrates. Based on comparison to speciated data from other monitors in the area, EPA did not identify these emissions categories, more typical of urban area sources, among the emissions likely to result from the nearby stationary sources. In particular, the 25% of ambient  $PM_{2.5}$  at the monitor attributable to motor vehicles does not result from nearby stationary sources. In fact, the impacts from motor vehicles and wood burning, are very likely to include components that result from emissions activities in Oakland County, as are some portion of the emissions from other source categories.

Second, the report noted that there are industrial sources of emissions “within a 50 mile radius” of the monitor, thereby clearly indicating that the Agency does not think that only those emissions within a limited radius of the monitor are the only ones that may contribute to nonattainment in the area. Those industrial sources would emit various types of emissions, both direct  $PM_{2.5}$  and  $PM_{2.5}$  precursors that form sulfates and nitrates. Oakland County, which lies within “a 50 mile radius” of this monitor, has sources of  $SO_2$ ,  $NO_x$ , and direct  $PM_{2.5}$  emissions that play a role in the level of ambient  $PM_{2.5}$  in Wayne County.

Third, figures within the document reflect the degree of impact that EPA estimated results from emissions that are unlikely to emanate from “industrial” sources in the near vicinity of the monitor. For example, Figure 2 shows annual contribution from various source categories, including substantial contributions to  $PM_{2.5}$  concentrations from motor vehicles and vegetative burning that are more likely to be emissions from sources located throughout the area EPA has designated nonattainment. Table 1 indicates that the annual average impact from mobile sources alone is above  $5 \mu g/m^3$ , i.e., a full one third of the annual standard. By comparison, EPA estimated that the “metal processing” category added only  $1.1 \mu g/m^3$  in total.

Fourth, the pollution trajectory maps in Figures 9, 10, 11, and 12, do not purport to show the contribution of all sources in all directions. For example, Figure 9 only relates to certain categories of sources such as “steel processes.” These maps were not intended to represent the contributions of all sources that contribute to violations of the NAAQS in the area. Such a map that portrayed the trajectories from all contributing sources, such as mobile sources, vegetative burning, or smaller stationary or area sources that permeate the Detroit metropolitan area would result in an impenetrable and unreadable knot of trajectory lines.

Finally, in using the Rizzo Report to support its contentions, the Petitioner is both misinterpreting the purpose and results of this analysis and obscuring the distinction between the PM<sub>2.5</sub> designations process and the PM<sub>2.5</sub> attainment planning process. Under section 107(d), EPA must designate as nonattainment those areas that contribute to violations of the NAAQS in a nearby area. After designation of the area, the state and EPA can use analyses such as the Rizzo Report to help inform the development of an appropriate nonattainment plan for the designated nonattainment area. In the latter context, the state and EPA can construct analyses to test different scenarios involving control of some or all sources in certain ways to evaluate what approach will result in expeditious attainment of the NAAQS. The starting premise of the development of an approvable nonattainment plan, however, is that the state will develop an emissions inventory for the entire nonattainment area, analyze all sources in the nonattainment area for potential control strategies that may constitute RACT/RACM level controls, and conduct attainment demonstration modeling that properly shows attainment of the NAAQS as expeditiously as practicable throughout the designated nonattainment area. It is not appropriate to look through the telescope backwards and use a possible control strategy scenario as a basis for the initial designation.

The Petitioner also expressed concern that the Rizzo Report is not contained in the administrative record for the designation decision. For the reasons explained above, the Rizzo Report was not intended to evaluate, and thus does not address, the issue of what areas contribute to violations of the NAAQS in accordance with CAA section 107(d). It is not relevant to the designation decision for the Detroit – Ann Arbor area, and EPA did not rely on it in the designation decision for such area, and therefore the Rizzo Report is not in the administrative record. Nevertheless, we have placed the Rizzo Report in the administrative record at the request of the Petitioner.

## 2. SEMOS Analysis.

In this section, the Petitioner argued that the results of an analysis prepared after EPA's response to the First Petition supports the argument that Oakland County does not contribute to violations of the NAAQS in Wayne County. In support of this argument, the Petitioner submitted a document dated March 23, 2006, entitled "Data Analysis to Determine Possible PM<sub>2.5</sub> Contributions from Nonattainment Counties North of Wayne County Michigan using 2001 – 2005 Data," attached as "Appendix B" to the Supplemental Submission. The Petitioner indicated that this analysis was prepared by Michael Lebeis of DTE Energy for presentation to a group called the "Southeast Michigan Ozone Study Work Group" (SEMOS), and that this analysis was intended to evaluate on a "quantitative" basis whether Oakland County is contributing to PM<sub>2.5</sub> nonattainment in Wayne County.

EPA does not believe that the document or the analysis it presents provides a basis for reconsideration of the designation of Oakland County as part of the Detroit – Ann Arbor nonattainment area. First, the State of Michigan did not present this document to EPA during the designation process. The Petitioner submitted this document to EPA on June 2, 2006, long after the Agency completed the designation

process in December of 2004. Based on the date of the presentation, EPA presumes that the analysis described in the presentation also postdated the designation process. Thus, EPA did not have an opportunity to consider the document during the designation process. We therefore question the relevance of this document to EPA's decision.

Even if this document were relevant to the designation decision, EPA notes that the analysis is an "incremental" analysis that is not germane to the designation process, and is not a reliable method to quantify impacts from emissions sources within Oakland County for the reasons explained above. The Petitioner misconstrued EPA's evaluation of the Petitioner's own previous argument that Oakland County improves ambient air in Wayne County as an attempt to prove that a specific quantifiable amount of ambient PM<sub>2.5</sub> should be attributed to Oakland County. EPA does not consider the "incremental" approach advocated by the Petitioner and supported by the analysis in Appendix B to be a valid way to quantify the amount of PM<sub>2.5</sub> that results from emissions in Oakland County.

Finally, EPA notes that the Petitioner's arguments with respect to the relative impacts of Oakland County versus Genesee County suffer from the same limitations, only magnified by the attempt to compare two inappropriately derived numbers for the incremental impacts of the respective counties. EPA's evaluation of the various counties in the Detroit area for inclusion in the nonattainment area were not premised upon this type of incorrect incremental analysis. The Agency's evaluation was based upon consideration of the various forms of relevant information suggested in its guidance. By this process, EPA determined that inclusion of Oakland County was necessary and that inclusion of Genesee County was not. EPA considers this result reasonable, given that Oakland County had larger amounts of total emissions, a higher population, more VMT, and is immediately adjacent to, and often upwind of, Wayne County.

### 3. MDEQ Modeling.

In this section, the Petitioner argued that EPA underestimated the beneficial impacts of CAIR on PM<sub>2.5</sub> nonattainment in Wayne County. To support this contention, the Petitioner referred to EPA's modeling of the effect of CAIR on Wayne County as presented in the TSD for the CAIR rule. In the TSD, EPA had predicted ambient concentrations in 2010 as 19.14 ug/m<sup>3</sup> without CAIR, and as 18.23 ug/m<sup>3</sup> with CAIR. The Petitioner noted that the most recent monitored concentrations for Wayne County have turned out to be less than the projected level, *i.e.*, 19.5 ug/m<sup>3</sup> in 2001 – 2003; 18.6 ug/m<sup>3</sup> in 2002 – 2004; and 18.2 ug/m<sup>3</sup> in 2003 – 2005. The Petitioner asserted that additional reductions of ambient PM<sub>2.5</sub> in advance of CAIR (in conjunction with other analysis conducted by MDEQ discussed below) is evidence that "EPA should focus on sources within the problematic portions of Wayne County, not on unnecessarily enlarging the PM<sub>2.5</sub> nonattainment area to include Oakland County."

EPA is pleased that ambient PM<sub>2.5</sub> levels in Wayne County have already been reduced because of the significant beneficial effects this will have for public health throughout the area. However, the extent to which meteorological changes, regional emissions reductions, or metropolitan area emissions reductions, have played a role in

these reduced concentrations is not clear at this point. In any case, even with these improvements, the monitored ambient PM<sub>2.5</sub> level in this nonattainment area is still a matter for great concern and will still require substantial efforts to resolve.

Moreover, these reductions are not relevant for purposes of EPA's designation decision in December 2004. In the context of the designation for this area, EPA did not use projected future ambient PM<sub>2.5</sub> levels either with or without implementation of CAIR as the basis for the determination of what areas were violating, or contributing to violations of, the NAAQS. The Agency used the actual monitored values for the period of 2001 – 2003 to designate Wayne County as nonattainment. EPA made designation decisions based upon the relevant three years of data at the time of the decisions. The fact that ambient PM<sub>2.5</sub> levels have been reduced will be relevant to the development of an appropriate nonattainment plan for the Detroit – Ann Arbor area, but is not a basis to reconsider the inclusion of any area within the designated nonattainment area.<sup>29</sup>

In support of its general argument that EPA erred by inclusion of Oakland County in the designated nonattainment area, the Petitioner also submitted a briefing document that the Petitioner identified as summarizing the results of “hot spot” modeling analysis presented at a May 12, 2006, SEMOS meeting, attached as “Appendix C” to the Supplemental Submission. The Petitioner indicated that modeling conducted by MDEQ described within this document evaluated the impacts of control measures that will be implemented in the vicinity of the monitor located in Wayne County. The Petitioner argued that this modeling indicates that permitting and enforcement at three major stationary sources within Wayne County could reduce ambient PM<sub>2.5</sub> at the monitor in question by 2.3 ug/m<sup>3</sup>. The Petitioner contended that this is further evidence that Oakland County should not be included within the designated nonattainment area.

EPA does not believe that the document or the analysis it presents provides a basis for reconsideration of the designation of Oakland County as part of the Detroit nonattainment area. First, the State of Michigan did not present this document to EPA during the designation process. The Petitioner submitted this document to EPA on June 2, 2006, long after the Agency completed the designation process in December of 2004. Based on the date of the presentation, EPA presumes that the modeling described in the presentation also postdated the designation process. Thus, EPA did not have an opportunity to consider the document during the designation process. We therefore question the relevance of this document to EPA's decision.

EPA also questions the relevance of the document to the designation process because the modeling analysis it describes was neither designed to, nor intended to, constitute an analysis of the full geographic scope of areas that potentially “contribute” to violations of the NAAQS in Wayne County, as contemplated in section 107(d). In fact, this modeling is more properly viewed as the type of analysis that a state might conduct

---

<sup>29</sup> EPA notes that the Petitioner's acknowledgment that interstate transport of PM<sub>2.5</sub> from other states affects Wayne County, implicitly concedes that sources located in Oakland County are well within the range for transport of PM<sub>2.5</sub> and PM<sub>2.5</sub> precursors.

during the development of a nonattainment area SIP for an area after the designation. Even if it were correct that better “permitting and enforcement” at selected sources in the vicinity of the monitor would reduce the ambient PM<sub>2.5</sub> in this area by a material amount, it does not follow that other areas such as Oakland County are not also contributing to violations of the NAAQS. It likewise does not follow that emissions reductions elsewhere throughout the designated nonattainment area, in conjunction with emissions reductions in Wayne County, would not also bring the area into attainment, or bring the area into attainment more quickly.

The Petitioner also asserted that the MDEQ modeling reflects the projected benefits of additional control measures at selected sources within Wayne County that will be implemented by 2008. Setting aside questions about the nature of these controls and their projected impacts, we note that the fact that controls will be implemented “by 2008” is not relevant in the context of the PM<sub>2.5</sub> designations. As EPA has previously indicated, the statute required a designation of nonattainment for those areas that were violating the NAAQS during the years that the Agency considered, *i.e.*, either 2001 – 2003, or 2002 – 2004. Thus, reductions in ambient PM<sub>2.5</sub> levels in Wayne County in 2008 are not germane to the designation of Wayne County. Where appropriate, EPA has taken into account certain near term emissions reductions in areas under consideration for designation as nonattainment on the basis of their contribution to nonattainment in other areas. The controls in question would not themselves meet those criteria, because they were not before the Agency at the time of the designation and, to date, are not federally enforceable limits. More importantly, these emissions reductions are not occurring in Oakland County, and therefore have no bearing upon whether Oakland County was contributing to violations of the NAAQS in Wayne County during the period relevant to designations.

EPA also disagrees with the Petitioner’s characterization of the significance of the contents of the briefing document submitted as Appendix C. We emphasize that the document and the modeling it discusses are clearly preliminary, are not definitive, and do not reflect more recent analysis that MDEQ and EPA have undertaken. MDEQ and EPA are continuing to conduct modeling to gain a better understanding of the sources and solutions to PM<sub>2.5</sub> nonattainment in the area. Nevertheless, the document submitted by the Petitioner reflects a number of fundamental points with which EPA disagrees.

The page reflecting “2009 CAMx Modeling Results” refers to future projected ambient concentrations not relevant for purposes of designations. We presume these numbers were derived by the Lake Michigan Air Directors Consortium (LADCO) at some point after the date by which EPA was required to make designation decisions in December of 2004. Regardless of the vintage of the analysis, however, designations are to be based upon monitored ambient conditions during the relevant years, and thus modeled future ambient conditions in 2009 are not germane.

The pages discussing “Hot Spot Modeling” likewise refer to future projected ambient concentrations not relevant for purposes of the designation decisions. In addition, EPA has already informed the State of Michigan that these calculations are not

consistent with the Agency's own analysis. For example, MDEQ's AERMOD hot spot modeling results reflected in this document suggest that a 166 tpy reduction of emissions at the Severstal plant would result in a 2.234 ug/m<sup>3</sup> reduction at the nearby monitor. EPA's own analysis, using the modeling assumptions it believes are more appropriate, suggests that the total contribution of all steel manufacturers in the Detroit metropolitan area to ambient PM<sub>2.5</sub> in the area is on the order of 0.5 ug/m<sup>3</sup>. Thus, the 2.234 ug/m<sup>3</sup> reduction in ambient PM<sub>2.5</sub> projected at the monitor by a reduction of a mere 166 tpy from only one such source is likely overstated. All of the other projected ambient reductions discussed in the document suffer from the same problem. EPA's disagreement with the AERMOD modeling results is evident within the four corners of the document, as reflected in the statement: "EPA's initial reaction is that the MDEQ values are too high and that additional 'ground-truthing' analysis should be done." In other words, EPA believes that the analysis incorrectly allocates too much ambient PM<sub>2.5</sub> to the individual sources identified, and therefore other sources farther a field must be evaluated to determine the actual sources of the emissions.<sup>30</sup>

EPA also disagrees with the MDEQ approach to projecting the 2009 ambient concentration of PM<sub>2.5</sub> at the Dearborn monitor by subtracting the ambient PM<sub>2.5</sub> concentration derived from the AERMOD model from the ambient PM<sub>2.5</sub> concentrations derived from the CAMx model. This is not a scientifically valid way to derive this number.

EPA believes that the pages describing "Sources Included per Direction" and "Sources Included per Circular Distance" are indicative of the fatal limitations of the modeling with respect to any designations purpose. As is evident from the chart, MDEQ has evidently considered at least some sources from all directions of the compass, but has limited that consideration only to sources with a maximum 2 – 3 mile distance from the monitor. Given the long distances across which PM<sub>2.5</sub> and PM<sub>2.5</sub> precursors can be transported, limiting the analysis only to those sources within a 3 mile radius of the monitor is not appropriate for purposes of assessing contribution for designations. This is an outcome determinative assumption that makes the results of the modeling unreliable. The incorrectly high attribution of ambient PM<sub>2.5</sub> to individual sources discussed above strongly suggests that sources outside the circle drawn by MDEQ are in fact contributing to the monitor. The entire area EPA designated as nonattainment, including Oakland County, has a mixture of stationary, mobile, and area sources that must be included in the

---

<sup>30</sup> EPA's own more recent calculation of the total impacts of the steel mills near the monitor in question appears in Appendix B of the Regulatory Impact Analysis for the 2006 PM NAAQS. EPA estimated that such sources cumulatively contribute 0.48 ug/m<sup>3</sup> to that monitor. See, "Regulatory Impact Analysis (RIA) for the Proposed National Ambient Air Quality Standards for Particulate Matter," dated October 6, 2006, "Appendix B, Local-Scale Assessment of Primary PM<sub>2.5</sub> for Five Urban Areas," page B-29, Table 17. As with the Petitioner's post decision data and analyses, we do not consider this document relevant for the designation decision made by the Agency on December 17, 2004. This item will be placed in the docket for this action in anticipation of the Petitioner's request.

This document is also available at <http://epa.gov/air/particles/actions.html>

evaluation to derive a more accurate assessment of impacts at the monitor from nearby sources, and to develop an appropriate nonattainment area SIP.

Finally, EPA notes that the document submitted by the Petitioner as Appendix C on June 2, 2006, does not address other analysis or modeling also conducted in 2005 and 2006. Significantly, receptor modeling studies that examined the issue of the degree of impact from stationary sources in the vicinity of the Dearborn monitor suggested that those sources have much lower impacts than those indicated in the materials submitted by the Petitioner.<sup>31</sup> EPA believes that none of this information is relevant to the designation decision because it postdates the decision, was not submitted by the State to EPA during the designations process, and does not address the question of what areas “contribute” to nonattainment in Wayne County. Nevertheless, if any post decision materials were relevant, then those that contradict the Petitioner’s argument about the purely localized nature of nonattainment in Wayne County should not be ignored.

#### **IV. Conclusion.**

EPA concludes that the Second Petition and Supplemental Submission do not provide a basis for reconsideration of the inclusion of Oakland County within the designated nonattainment area for the Detroit – Ann Arbor area.

EPA previously addressed new arguments and new technical analysis submitted for the first time in the Petitioner’s First Petition. The Petitioner’s revised arguments and technical support in the Second Petition challenging EPA’s response to the First Petition do not alter the underlying legal and factual basis for the inclusion of Oakland County in the designated nonattainment area.

The Petitioner casts the debate solely in terms of the purportedly small amount of impact from Oakland County to Wayne County, thereby disregarding the extent to which other relevant considerations such as emission levels, high population, high VMT, meteorology, monitored ambient levels, and geographic proximity played a role in the designation of Oakland County within the context of the Detroit – Ann Arbor area.

EPA believes that a reasonable application of CAA section 107(d) to the relevant information available at the time of the designation decision indicates that Oakland County contributes to violations of the PM<sub>2.5</sub> NAAQS in adjacent Wayne County.

---

<sup>31</sup> See, e.g., “Integration of Results for the Upper Midwest Urban Organics Study, prepared by the University of Wisconsin and Sonoma Technology, Inc., for LADCO, dated March 31, 2006. Table 3-4 of this study indicates that the total impact at the Dearborn monitor from the entire “steel industry” source category in the Detroit area is estimated to be 0.81 ug/m<sup>3</sup>, not the substantially higher impacts asserted by the Petitioner. As with the Petitioner’s post decision data and analyses, we do not consider this document relevant for the designation decision made by the Agency on December 17, 2004. This item will be placed in the docket for this action in anticipation of the Petitioner’s request. It is also available at: [http://www.ladco.org/reports/rpo/MWRPOprojects/Monitoring/Integration\\_FinalReport.pdf](http://www.ladco.org/reports/rpo/MWRPOprojects/Monitoring/Integration_FinalReport.pdf).