

PM Designations Mapping Tool Questions and Answers

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General Questions

1. **Question:** Are the data used in the mapping tool available for all counties across the country or just those counties with monitors?

Answer: Most of the data used in the EPA's PM Designations Mapping Tool are available for all counties in the United States and come from publicly-available datasets. Exceptions are for Alaska and Hawaii. The EPA does not have gridded emissions for these states, but they could use gridded emissions if such emissions are available and appropriate to use.

2. **Question:** Can tribes/states revise the underlying data in the mapping tool?

Answer: The data used in the EPA's PM Designations Mapping Tool come from publicly-available data sets that were quality-assured prior to being made publicly-available. The EPA expects that states and tribes may have independently developed data sets, that are not available to the EPA, that further inform the analyses associated with the PM designations process. States and tribes wishing to incorporate these data into the PM Designations Mapping Tool should discuss the alternative data with the appropriate the EPA regional office and with Doug Solomon in the EPA's Office of Air Quality Planning and Standards (solomon.douglas@epa.gov, 919-541-4132). States and tribes would be responsible for providing additional data in the format appropriate to incorporate into the PM Designations Mapping Tool. Any data incorporated into the f the PM Designations Mapping Tool will be available to all users.

3. **Question:** What is the grid resolution?

Answer: The gridded emissions in the current version of the tool are based on a 12 x 12 km grid for the year 2010, which is based on a Lambert Conformal grid projection centered in the middle of the United States.

4. **Question:** Can the Excel spreadsheets containing the emissions data be opened using the mapping tool? Can the graphs created with the mapping tool be exported to Excel or Word?

Answer: The subset of data used to generate charts and graphs within the PM Designations Mapping Tool cannot be directly downloaded from the Mapping Tool, but they can be downloaded or exported to Word or Excel from the EPA's PM Designations website at <http://www.epa.gov/pmdesignations/2012standards/techinfo.htm>. Screen shots of charts and graphs generated by the Mapping Tool can, however, be downloaded and customized using the "print" function within the Tool.

5. **Question:** Can the PM Designations Mapping Tool be expanded to a multi-pollutant tool for public use? For example, could the EPA add the Class I areas to this tool for evaluating impacts for regional haze planning? Does the EPA plan to expand the usefulness of this mapping tool?

Answer: The EPA has developed the PM Designations Mapping Tool for use in the initial area designations process for the 2012 annual PM_{2.5} national ambient air quality standard. Through this pilot effort, the EPA will work with state/local/and tribal co-regulators and other interested parties to test the functionality of the Tool in anticipation of expanding its use to other regulatory efforts.

Factor 1: Air Quality Data

6. **Question:** Which monitors (e.g., State and Local Air Monitoring Stations (SLAMS), Special Purpose Monitors (SPM), Federal Reference Method (FRM), Federal Equivalent Method (FEM), Approved Regional Method (ARM)) are displayed on the map? Are the visible monitors linked to the Design Value (DV) spreadsheet?

Answer: The monitors in the mapping tool ("PM25 DV Annual 2009-2011" layer) are directly linked to the spreadsheet. These data are available at <http://www.epa.gov/pmdesignations/2012standards/techinfo.htm>. Design values are defined to be consistent with the individual NAAQS and subsequent monitoring requirements as described in CFR Part 50. Only qualifying monitors, generally FRM/FEM and/or ARM monitors, are displayed as part of the design value layer. The speciation layer contains data from the IMPROVE and STN networks.

7. **Question:** Will the EPA's datasets and mapping tool be updated to incorporate 2012 air monitoring data, such as 2010-2012 DVs, CSN speciation data and 2011 NEI version 1 emissions?

Answer: Yes, the EPA will incorporate more recent data as these data sets become available. The EPA will also post these data sets to its website at <http://www.epa.gov/pmdesignations/2012standards/techinfo.htm>.

8. **Question:** The EPA guidance outlines methods that can be used to calculate urban increments for PM_{2.5} monitors that have speciation data. Where can I find examples of how to calculate urban increments?

Answer: The EPA provides links to clarifying and supporting technical documentation on its website at <http://www.epa.gov/pmdesignations/2012standards/techinfo.htm>. Additionally, the following two EPA documents describe the urban increment calculations:

- “Chemical Speciation of PM_{2.5} in Urban and Rural Areas” by Rao et al (2003) http://www.epa.gov/airtrends/aqtrnd03/pdfs/2_chemspecofpm25.pdf. This was the EPA’s first description of and example approach to calculating urban increments.
- Derivation of the Contributing Emissions Score by Rizzo and Frank, 2008 (http://www.epa.gov/pmdesignations/2012standards/docs/tsd_ces_methodology.pdf), which is referenced in the PM designation guidance. Page 22-24 of Section 5.5 of the CES document provides a nice step by step summary of how urban increments are developed using a more advanced method and one that takes into account newer knowledge about how best to characterize the chemical composition of PM_{2.5} mass that did not exist in 2003. This description describes the use of SANDWICHed speciation data which is also discussed in the PM designation guidance. Although the CES method describes calculations using the highest concentration days, the general method is also applicable to quarterly or annual average values.

Factor 2: Emissions and Emissions-Related Data

9. **Question:** How did you choose which point sources to show on the map? Were there emission thresholds for different pollutants?

Answer: Point sources are shown when the sum of their PM precursor emissions (PM_{2.5} + NO_x + SO₂ + VOC + NH₃) are greater than 500 tons per year based on NEI 2008v3.

10. **Question:** Are biogenic emissions included in VOC emissions totals (either county or gridded)? (It is hard to differentiate relative amounts in the Southeast for gridded VOC—a big swath of states is all the same dark blue. Is this caused by overwhelming biogenic emissions or something else?)

Answer: No biogenic emissions are included in either the gridded or the county emissions estimates. When biogenic VOCs are excluded, mobile sources (non-road and on-road), fires, and solvent operations are the major source categories for VOC emissions in the Southeast United States.

11. **Question:** What is the base year of the CBSA? Are the CBSA boundaries updated to the new delineation released in February 2013?

Answer: The federal Office of Management and Budget (OMB) adopted standards for defining metropolitan and micropolitan statistical areas on December 27, 2000 (65 FR 82229). These standards established the terms CBSAs and CSAs. In 2010, OMB adopted

revised standards for delineating metropolitan and micropolitan statistical areas (75 FR 37246; June 28, 2010). OMB will use the 2010 standards when it updates the list of CBSAs and CSAs, anticipated in June 2013. The current list of CBSAs and CSAs and their geographic components is provided in a December 1, 2009 update available at <http://www.census.gov/population/metro/files/lists/2009/List1.txt> and <http://www.census.gov/population/metro/files/lists/2009/List6.txt>. The EPA intends to use the December 1, 2009 update in this designations process.

12. **Question:** Is it possible to show the name of pollutant at the bottom of the histogram bar for a point source histogram?

Answer: We intend to incorporate this suggestion in a subsequent update to the Mapping Tool.

13. **Question:** Are states required to use the emissions and other data from the mapping tool in their designation recommendations, or can we use state data if we document how the data were developed?

Answer: States and tribes may use any appropriate and relevant data as they develop their recommendations for initial area designations and nonattainment area boundaries. The EPA prepared and issued the April 16, 2013 guidance for the *Initial Area Designations for the 2012 Revised Primary Annual Fine Particle National Ambient Air Quality Standard* (the 2012 PM_{2.5} Designations Guidance), which identifies important factors that the EPA intends to evaluate in making final nonattainment area boundary decisions for the 2012 annual PM_{2.5} standard. The EPA recommends that states and tribes also consider these factors in making their recommendations for initial area designations and nonattainment area boundaries. The EPA developed the PM Designations Mapping Tool, which incorporates the factor-related data, to assist states and tribes in assimilating data used in the area designations process. The EPA hopes that this tool will be useful in the designations process and will facilitate communication between states and tribes and the EPA regional offices with whom they work.

14. **Question:** Do you have total emissions by county (all emission sectors)?

Answer: Yes. To display total emissions by county using the PM Designations Mapping Tool, enter the tool and select the layers "Counties" and "County Emissions 2008v3" from the layer list. (Note that within the "County Emissions 2008v3" layer, the user can select desired directly-emitted and precursor pollutants. If desired pollutants are not selected, the mapping tool will automatically incorporate NO_x, SO₂, VOC, NH₃, PM_{2.5}, OC, EC, Sulfates, Nitrates, and Other Species.) Display the mapping Legend and the click on the County of interest to display the emissions by pollutant. For each pollutant, the pop-up screen will include total emissions, point emissions, non-point emissions, on-road emissions, non-road emissions, fire emissions, and a bar chart displaying pollutant-related emissions by category.

15. **Question:** Why only 5 emission source categories? What about area source emissions? Does the fire data include only prescribed fires or does it also include wildfire?

Answer: As identified in Question 14, the PM Designations Mapping Tool uses data contained in the 2008 National Emissions Inventory (NEI) version 3 and, consistent with NEI terminology, displays pollutant emissions in the following categories: point emissions, non-point emissions, on-road emissions, non-road emissions, and fire emissions. "Area source" emissions (including oil and gas emissions) are included in the "non-point" category. The fire-related data include all fire-related emissions (both wildfire and prescribed fire) as reported to the NEI by states and tribes and may differ from reporting agency to reporting agency. Agricultural and other smaller burn categories are in the non-point category.

16. **Question:** Are marine, aircraft, and railroad (MAR) emissions included in the non-point or non-road category?

Answer: Per the NEI, aircraft emissions are in the point source category; marine emissions are in the non-point category; and railroad emissions are split into point and non-point depending upon their classification (i.e., rail yards are treated as point sources, underway locomotive emissions are treated as non-point.)

17. **Question:** Would the EPA consider using certified 2012 CAMD SO₂/NO_x data for EGUs in lieu of 2011 NEI EGU emissions? For instance, some significant EGU-emitters have recently switched from coal to natural gas. If not, are states able to modify their emissions in the Mapping Tool or only from downloaded Map Tool data?

Answer: The EPA will consider making those data available as a separate data layer in the future. As noted in question 2, the EPA expects that states and tribes may have alternate data sets that further inform the designations process. States and tribes wishing to incorporate these data in the PM Designations Mapping Tool should discuss the desired data with the appropriate EPA regional office and with Doug Solomon in the EPA's Office of Air Quality Planning and Standards (solomon.douglas@epa.gov, 919-541-4132).

18. **Question:** Are you planning to update Vehicle Miles Traveled (VMT) data with 2011 data when you update other EIs? Are the VMT data provided by States, the Department of Transportation (DOT), the Federal Highway Administration (FHWA), or MPOs?

Answer: NEI county-level VMT estimates are developed in a top down approach from Federal Highway Administration estimates of statewide VMT by road class that are allocated to counties based on surrogates. Accordingly, the NEI estimates do not always compare well to detailed area-specific studies that are developed in a more robust way (e.g., travel demand model data). The EPA intends to update VMT data as additional

information becomes available. The EPA's planned 2011 VMT data will combine federal highway data allocated to counties with state-provided data.

Factor 3: Meteorology

19. **Question:** Can we provide a sample wind rose in a definition page so the user knows that grid is percentage? It is not immediately obvious when seeing them in the visual.

Answer: In a subsequent update to the Mapping Tool we will provide a sample wind rose graphic that more thoroughly explains its composition.

20. **Question:** What is the vintage of the wind rose data? How many bins are you using to generate the wind roses? We're noticing a plus-shaped artifact that is likely caused by using less than 36 bins.

Answer: The wind roses in the mapping tool are based on daily observations from 2009 to 2012. Each wind rose is composed of 16 directional bins. Because the raw wind direction data only has information to the "tens" digit (e.g., 180, 190), there is an artifact caused by lumping 36 possible wind directions into 16 bins. As the question notes, each of the cardinal directions (N, E, S, and W) represents a greater span of actual wind directions than the other 12 bins. While this is less than ideal, we anticipate that the wind roses will still be a useful tool in assessing the meteorological factor. In those cases, where greater precision is needed in distinguishing directional frequencies, we anticipate the analyst would rely on wind direction data rather than the wind rose.

21. **Question:** Is wind rose information available for seasonal or just annual?

Answer: The wind roses in the mapping tool are aggregates of all available hourly data from 2009 to 2012 at the location of the meteorological observation.

22. **Question:** Do the wind roses indicate frequency of wind blowing to or from?

Answer: A wind rose is a common way to illustrate the frequency of wind direction and speed. Most wind rose tools convert a table of hourly wind speeds and directions into a frequency distribution for speed and direction, which can be illustrated in table form or in the graphic known as a wind rose. The center of the wind rose indicates the location of the monitoring station while the "spokes" of the wind rose indicate the direction and speed of the originating winds (i.e., the direction the wind is blowing *from*).

23. **Question:** It appears the wind roses are averages over the 4-year time period from 2009 – 2012. Can the mapping tool generate daily wind roses, so that wind direction can be analyzed for specific days in which PM concentrations are particularly high?

Answer: No, the PM Designations Mapping Tool cannot generate daily wind roses. The wind roses displayed in the PM Designations Mapping Tool were generated using 2009-

2012 annual average wind speed and direction data as measured at monitoring stations located within 50 miles of violating monitors.

24. **Question:** Can you demonstrate the HYSPLIT function?

Answer: The EPA intends to provide a README file that describes the HYSPLIT configuration used to generate the trajectories in a subsequent update to the mapping tool.

Factor 4: Geography/Topography

25. **Question:** What is the vintage of the satellite imagery? How often will it be updated?

Answer: The designation mapping tool is built atop an ArcGIS Viewer and uses base map imagery provided by ESRI. This imagery is considered to represent the best available imagery at that location and is frequently updated. The metadata suggests that most of the background over the U.S. represents 2012-2013 imagery. More information is at: <http://www.arcgis.com/home/item.html?id=10df2279f9684e4a9f6a7f08febac2a9>

Factor 5: Jurisdictional Boundaries

26. **Question:** Does the tool have the capability to suggest boundaries for new violating areas?

Answer: No. The PM Designations Mapping Tool cannot “suggest” boundaries for newly violating areas. The Tool accesses and visually displays publicly available data to allow users to conduct their own “what if” scenarios to aid in their analyses and formulation of initial area designation and boundary recommendations.

27. **Question:** Does the tool include a layer for township/range or hydrographic boundaries?

Answer: No, the PM Designations Mapping Tool does not include township/range or hydrographic boundaries because there is not a publicly available national database with this information. If individual areas believe this information will be helpful in their assessment, they are encouraged to discuss this issue with the appropriate EPA regional office and with Doug Solomon in the EPA’s Office of Air Quality Planning and Standards (solomon.douglas@epa.gov, 919-541-4132). States and tribes will be responsible for providing these additional data in the format appropriate to incorporate into the PM Designations Mapping Tool. Any data incorporated into the functionality of the PM Designations Mapping Tool will be publicly available to all tool users.