

WESTERN STATES AIR RESOURCES COUNCIL



April 9, 2014

Chet Wayland, Director
Air Quality Assessment Division
Mail Code C304-02
Office of Air Quality Planning and Standards
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

The Western States Air Resources (WESTAR) Council, an association of 15 western state air quality managers, appreciates the opportunity to comment on the modeling platforms under development by EPA, particularly the 2011 emission inventory elements of interest to the western states. We intend to provide additional comment on the 2018 emission projection methodologies this summer. We appreciate the significant effort by EPA to improve the inventory and look forward to collaborating with you on the development of the modeling platform.

EPA has indicated that it will rely on the next update of this 2011 modeling platform for rulemaking related to transported air pollution, NAAQS associated Regulatory Impact Analyses, and the National Air Toxics Assessment, among other uses. The modeling platform also includes emissions inventories for Canada and Mexico, source areas particularly important to our international border states.

At this point, we recognize that EPA is most interested in state comments on the National Emission Inventory (NEI) for 2011 that will be used in the modeling platform. Some of the WESTAR states will be commenting separately on specific concerns they have with regard to the 2011 NEI. Our comments are focused on improvements to western regional source categories, especially those sources for which western states, primarily through the Western Regional Air Partnership (WRAP), but also by Idaho, Oregon, and Washington through AIRPACT4, have made to the NEI for regional scale modeling. Those broad categories of concern are fire, oil and gas development, and biogenics. We also have comments about boundary conditions, emissions from Canada and Mexico, and electric demand models (see attachment for a more detailed explanation). We also urge EPA to invest the resources to update emissions factors across all U.S. sectors and pollutants, so that emissions information used by states and EPA is more accurate and representative of regional differences.

We understand that the development focus and current application of the modeling platform in the short term is on the eastern U.S. and the Cross-State Air Pollution Rule. In the long term, the use of the updated 2011 modeling platform for other assessment and regulatory activity affecting the WESTAR region requires that the emission inventories portray the temporal and spatial allocation of properly speciated emissions as accurately as possible. Inventories that mis-characterize actual emissions well may result in improper allocation of state impacts that are actually due to non-anthropogenic emissions, internationally transported emissions, or other emission sources beyond the control of state agencies.

In addition to characterizing domestic emissions for fire, oil and gas, and biogenics, we want to emphasize the importance of establishing appropriate boundary conditions in the modeling platform. We urge EPA to make every effort to improve the boundary condition estimates, so that international anthropogenic emissions, as well as natural sources (i.e. stratospheric intrusions of ozone) are based on the best current science available.

Regional inventory improvements undertaken by western states have resulted in a much better understanding of key modeling platform issues and in significantly improved western U.S. modeling. We recommend that EPA build upon the existing WRAP tools used to develop emission inventories specific to the western U.S. and incorporate these tools into its modeling platform.

We would like to arrange a time when you or your staff could discuss western state concerns and improvements to the modeling platform. In the meantime, if you have any questions or require further clarification, please contact WESTAR Executive Director Dan Johnson at 206.254.9145 or djohnson@westar.org.

Sincerely,



Alice Edwards, President
WESTAR Council

Attachment

cc: Anna Wood, Director
Air Quality Policy Division

ATTACHMENT
WESTAR Modeling Platform Considerations/Improvements

- Fire
 - The large role of fire emissions, including wildland, prescribed, and agricultural fires, across the western states and associated large inter-annual variations in both spatial patterns and associated emissions has been well documented by western emissions tracking and modeling efforts by the WRAP. Scientific literature indicates that future wildfire activity will span a longer “fire season”, consume more acres, and will have more intense burning activity during wildfires.
 - EPA is using the SMARTFIRE-BlueSky framework processed through the NEI to estimate fire emissions, but western states have found the SMARTFIRE-based approach estimates a range of planned and unplanned fire emissions that may not be usable for interstate air quality analysis and planning purposes, rather than the Fire Emission Tracking System (FETS) and related systems developed by the WRAP specifically for the western states, which we believe to be more accurate. FETS data has been used for the West-wide Jump Start Air Quality Modeling Study (WestJump AQMS), Deterministic and Empirical Assessment of Smoke’s Contribution to Ozone (DEASCO₃), and Prescribed and Other Fire Emissions: Particulate Matter Deterministic and Empirical Tagging and Assessment of Impacts and Levels (PMDETAIL) regional modeling exercises by the WRAP.
 - WESTAR supports the treatment of wildfires as “exceptional events” and suggests that a mechanism be found to address this in the development of baseline design values. However, the observational record to date indicates that regional wildfires have widespread effects on what are now considered background levels of ozone and fine particulates. Moreover, these effects are widely variable in space and time. WESTAR recommends a collaborative approach to address this issue specifically for the western U.S. where such natural-event-influenced background conditions will increasingly complicate evaluation of potential control strategies for all controllable sources.
 - FETS is one of six data sources used by EPA to develop national fire emissions, however WESTAR is not certain how EPA uses FETS data in the development of the national fire emissions, particularly as regards agricultural fire.
 - Given the important role of fire emissions on western air quality and the knowledge gained by the WRAP, WESTAR suggests EPA work with western states, tribes, local air agencies, federal and state land managers, and EPA regional offices in a collaborative process to develop stable consensus methodologies for fire that address the western states’ concerns regarding the need for better temporal and spatial representation of current fire emissions as well as the anticipated greater role of fire in projections for 2018 and other future-year inventories.

- Oil and Gas

- Uncertainty in upstream oil and gas emissions currently in use by EPA in the 2011 platform is high except in western basins where the sources have been closely studied through great effort, expense, and collaboration with industry. States and industry groups have commented previously about O&G inventories, and that the EPA tools used for the 2011 and 2018 platforms are not sufficient. Maintaining the quality of emissions estimates will continue to be challenging as production methods and practices are rapidly changing and expanding.
- These uncertainties are compounded by the existing EPA approaches to growth and control for emission projections which are not viable for realistic regional haze, ozone, and particulate matter analyses in support of planning requirements.
- Although EPA has developed an oil and gas emissions estimation tool and applied it nationally, the tool has numerous default assumptions, which western states have found tends to over predict oil and gas emissions.
- The EPA's Office of Inspector General in Report No. 13-P-0161, noted uncertainties in EPA's oil and gas controls, inventory, and emission factors. WESTAR states have provided O&G activity and emissions inputs to the EPA modeling platform.
- WESTAR urges EPA to improve O&G emissions factors and conduct further analysis of control effectiveness, to ensure the NEI data for this industry sector are complete to make key decisions regarding air emissions from oil and natural gas production.
- WESTAR urges the EPA to accept states' oil and gas emissions estimates for the 2011 platform and to work collaboratively with states and WESTAR to develop realistic approaches to growth and control of emissions from the rapidly changing western oil and gas sector.

- Biogenics

- Large, rural areas of the Intermountain West show ambient ozone values close to the current ozone NAAQS. In many of these regions biogenic VOC is the predominant category of emissions and thus careful review of this component of the inventory platform is essential.
- EPA is using the Biogenic Emission Inventory System (BEIS) to predict biogenic emissions for the NEI v.1. However, EPA is evaluating the use of Model of Emissions of Gases and Aerosols from Nature (MEGAN) as well as evaluating updated landuse data in BEIS for the next update of the modeling platform.

- MEGAN has significant model changes to enhance the accuracy of biogenic emissions which include western-specific inputs ([WRAP Biogenic Emissions Improvement Project](#)):
 - Improved emissions factors based on better data sources (satellites and field studies),
 - Higher temporal and spatial variability of land cover and other environmental inputs.
 - Biogenic emissions from the landscape and ecosystems across the West are changing, for example due to rapid energy development as well as the inter-related effects of climate change, wildfire, and invasive species. Emissions data representing natural sources must consider these changes, and anticipate continuing changes and effects to those lands on western emissions for future air quality analysis and planning.
 - WESTAR urges EPA to conduct sensitivity testing and use model performance evaluation statistics to identify which biogenic model best represents biogenic emissions from the unique western ecoregions.
- Boundary Conditions
 - The scientific literature indicates the important role of long-range/international transport as well as transport from the stratosphere on North American ozone and particulate matter, including regional haze, background levels. Long-range pollutant transport will play a larger future role as anthropogenic emissions from North American sources are reduced.
 - The contribution of boundary conditions from global models to local and regional warm season modeling for ozone NAAQS planning is very large and must be accurately accounted for in EPA transport modeling.
 - Several global models are available to predict boundary conditions for the 2011 National 12km Modeling Domain. WESTAR urges EPA to conduct sensitivity testing and use model performance evaluation statistics to identify which global model provides the best estimate of 2011 boundary conditions for the national domain as related to transport modeling.
 - EPA proposes to hold boundary conditions constant for both the 2011 and 2018 modeling platforms, but WESTAR urges EPA to develop some quantitative evaluation mechanism to assess the effects of changing future boundary conditions on the national domain for the 2018 platform.
 - Mexico and Canada National Emission Inventories
 - For the 2011 and 2018 modeling platforms EPA is using year-2006 emissions from Canada and year-1999 emission projections to 2012 and 2018 for Mexico.

Canada and Mexico emissions were used as-is for the most part with some modification.

- Wildfires or prescribed burning were not included in the 2006 Canada inventory.
 - Eastern Research Group developed the 2012 and 2018 inventories projected from 1999 in 2005 and 2006, in part sponsored by EPA as part of the WRAP and other regional haze planning efforts.
 - Projections of aged inventories or the use of aged inventories is not consistent with the stated uses of the 2011 and 2018 modeling platforms and are inadequate for future air quality analysis and planning, especially for U.S. Border States.
 - The Canada and Mexico inventories are in need of updating. WESTAR urges EPA to account for growth in emissions from Canada and Mexico by collaborating with these countries to update the emission inventories for the portions of each country within the 12-km modeling domain. Alternatively, EPA could work with one of the Regional Planning Organizations to develop these updated inventories.
 - WESTAR also urges EPA to incorporate Canada fire emissions in the modeling platform or conduct sensitivity testing to determine the effects of excluding the fire emissions from Canada as well as evaluate the treatment of modeled Canada fire emissions in the same manner as US fire emissions. If a fire inventory update is not available, WESTAR could provide a fire inventory for southern Canada and northern Mexico developed for the WRAP's PMDETAIL regional modeling exercise discussed above.
- Electric Demand Models
 - Projected power demand for the 2018 platform is based on the Energy Information Administration's "Annual Energy Outlook" as an input to the Integrated Planning Model (IPM) developed by EPA Clean Air Markets Division, which then uses a least cost allocation scheme and may not be fully accounting for operational changes to the fleet of historic electric generation units (EGUs) in the west due to BART, the Mercury MACT, and other reasons in addition to cost. In addition, the 11-state Western Interconnection grid is separate from the Eastern and Texas Interconnection grids and any power demand models should recognize the independence and current very dynamic nature of Western grid operations.
 - Future power sector supply is also subject to considerable regulatory uncertainty in light of likely revisions of the ozone NAAQS and the GHG regulations for existing fossil fuel EGUs to be proposed in June 2014 under Clean Air Act §111(d). Meeting the requirements of new regulatory constraints has significant cost implications that may not be addressed by IPM while at same time changes to the existing EGU fleet as a consequence of the 2014-18 time horizon to install BART and the California "lowest GHG emission rate" requirements for that electricity

market, may significantly change the distribution of electricity sources within the Western Interconnection.

- IPM may not adequately account for regional differences in the distribution of generating capacity. This is true, in particular, for renewable and fossil energy generation within the Western grid. Given the options for future electricity generation in the west, the IPM should be made more transparent to western states to address the factors above and enable the states to fully account for emissions control and planning efforts currently underway for the Western grid.
 - Western states are leading renewable power generation efforts to meet increasing renewable portfolio standards resulting in a power supply mix different from other parts of the country. The 2018 modeling platform should account for the range of the west's unique blend of power sector projections.
 - WESTAR urges the EPA to accept bottom up input from States to address the independence of the Western grid, regulatory uncertainty, the role of renewables in EGU retirement and replacement, and their state's unique power sector blend which may be driven by a range of complex factors beyond cost. Western states suggest that given current information, a single EPA future projection scenario for western EGUs would have very significant uncertainties, as informed by western air quality planning efforts of the past 20 years for regional haze.
 - WESTAR requests a conference call or webinar with the Clean Air Markets Division staff in early May on the current status of IPM, to assist western states with further, targeted comments on the 2018 EPA Modeling platform.
- 2011 Modeling Platform Performance Evaluation
 - WESTAR suggests EPA conduct model performance evaluations following the initial transport modeling incorporating NEI v1 and also conduct a second round of model performance evaluations following the modeling based on NEI v2 to evaluate the improvements to the emission inventories.