Technical and Planning Considerations in selecting a regional modeling base year for western Regional Haze planning

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Emissions Inventories and Emissions Modeling	
Actual 2014 NEIv2	**Proposed 2016 Emissions Modeling Platform**
Knowns 2014 NEI version 2 to be released in Dec. 2017. Fire in 2014 vs. 2016 in western U.S. and Canada? Peak U.S. oil and gas production year, sector subsequently evolving as commodity prices are lower **Unknowns:** Who will prepare 2023 and 2028 projections? Available when? Likely additional costs to process 2014 and 2023/2028 projections. **Pros** Bird in the hand, ready to process for modeling and haze planning **Cons** Some would be concerned that these actual data are older, and/or are not the same as the EPA national platform that will happen regardless	**Knowns** 2016 alpha (planned to be) available Feb 2018. 2016 Beta (planned to be) available Summer 2018. 2016 version 1 and 2028 projections (planned to be) available in Feb 2019. Fire in 2014 vs. 2016 in western U.S. and Canada **Unknowns:** How much better are any of the alpha and beta 2016 versions than a stable 2014 NEIv2? Can we know this answer until we wait for these 2016 EMP versions? Is it acceptable to use 2016 Beta emissions if we cannot wait for 2016 version 1? Are there additional costs or savings if we use the 2016 emissions platform? **Pros** Some level of greater coordination with other states, RPOs and EPA results in more consistent emissions nationally **Cons** Not possible to complete modeling in time if we wait for Feb 2019 version 1 platform Risk that 2016 version platform will be late. Some states will not participate and not all states will use 2016.
Global scale model evaluation and boundary condition data	
2014 NEIv2-based Modeling Platform	**Proposed 2016 Modeling Platform**
Unknowns: Are well-evaluated 2014 global modeling data sets available? What is a sufficient level of evaluation of the available 2014 global modeling datasets?	**Unknowns:** What is a sufficient level of evaluation of the 2016 global modeling datasets listed below? Who would do this evaluation? What is “adequate” global model performance for Regional

Who would do / has done this evaluation? What is "adequate" global model performance for Regional Haze planning? Are there additional costs to contract new work on global model evaluation and processing of BC data? **Pros** Assuming availability, use existing global modeling results after evaluation. Possibility of cost savings if we use BC from 2014 global models. **Cons** Need to have 2014 global model results available and evaluation done before using in regional modeling	Haze planning? **Pros** EPRI/Ramboll 2016 global/regional scale modeling in progress to evaluate international contributions to impairment EPA OAQPS plans to perform a global modeling study for 2016. Possibility of cost savings and higher quality data sets if we use BC from 2016 global models. **Cons** Need to have 2016 global model results completed and evaluation done before using in regional modeling
IMPROVE data issues for 2013 through 2017	
Knowns/Unknowns 2017 would be end year of 5-year average available for regional analysis in early 2019. States could look at 2018 data and updated 5-year averages starting in 2020. Meteorological/monitoring data representativeness study for 2014 through-2016 for the West in progress now. Results will be available in early 2018. **Pros** 2016 was the cleanest year on record for IMPROVE data. Might be an advantage to project from a clean base year, and wildfire/dust storm impacts might be minimized. **Cons** Will not be possible to calculate a 5-year average of IMPROVE data centered on 2016 until early 2020. Many impacts on IMPROVE species concentrations are as much local as they are regional. Difficult to speculate that a cleaner year for total light extinction is due to regional emission changes or local activity, without modeling. Some calculated metric of the 5-year monitoring average at each IMPROVE site will be used as a single distribution of species (a Relative Response Factor) to adjust the ratio of base and future projections years' modeling results to estimate the projected 2028 visibility (the Reasonable Progress Goal). Given statistical selection of monitored days and problems seen with metric in existing EPA national modeling results- it is not clear that an informed decision about one 5-year period vs. another, can be made until significant base and future-year modeling is completed.	
Meteorological and Photochemical Modeling for 2014 versus 2016	
Pros Modeling work can begin now and be complete by end	**Pros** Multiple agencies are working on the 2016 platform, which can allow for leveraging of resources and, potentially, a

of 2019. Most, if not nearly all work already completed on EI inputs to 2014 emissions modeling platform Meteorological modeling for 12 km domain already complete, and 4 km modeling complete for UT/WY/CO WAQS/Intermountain West project is working on 2014 platform, with substantial leveraging of resources among WAQS and WRAP projects. **Unknowns** Is there any benefit or need to 4 km modeling, or is 12 km sufficient?	higher quality platform, perhaps avoiding errors and redos. Consistency of emissions and modeling datasets for interstate consultations if LADCO/CENSARA also use 2016. **Cons** Completion of each version updated of 2016 emissions modeling platform requires work by states, MJOs, and EPA in order to advance to the next version States are required to complete 2017 NEI submittals by Jan. 1, 2019, so substantial parallel work required. Modeling might not be complete in time for states to prepare SIPs. **Unknowns** 2016 Meteorological model simulations from EPA?
Air Quality Planning Representativeness and other issues **See MJO-state-EPA report:** 2016 Base Year selection memo, April 2017	
2014 NEIv2-based Modeling Platform	**Proposed 2016 Modeling Platform**
Pros Traditional, NEI triennial-cycle platform, utilizes best-available NEI work based on extensive review, v2 Complete modeling platform EI inputs already done **Cons** Judged by OAQPS and more easterly MJOs and states to not be a good base year for next round of Ozone nonattainment analysis and planning (see memo link above)	**Pros** First coordinated effort between EPA, states, tribes, MJOs – more input and review across various users Will be set up for modeling analysis to more directly support future planning as opposed to NEI-based platform **Cons** Not ready now May or may not be better for Regional Haze planning in the West