**WRAP RHPWG EI and Modeling Committee Meeting 02/27/2020**

**Agenda w/Notes:**

Note taker for this call: Oregon; meeting was recorded. Please refer to recording for more in-depth detail for discussions.

Roll Call:

|  |  |
| --- | --- |
| States & Organizations | In Attendance (Y/N) |
| Arizona | N |
| California | Y |
| Colorado | Y |
| Montana | Y |
| New Mexico | Y |
| North Dakota | Y |
| South Dakota | N |
| Wyoming | Y |
| Oregon | Y |
| Washington | Y |
| Ramboll | Y |
| EPA | Y |
| FLM | Y |
| Alaska | Y |
| Hawaii | Y |
| Idaho | Y |
| Nevada | Y |
| WRAP | Y |

1. **Update from Ramboll – Ralph**

Two presentations: (posted to website)

1. 2014 Modeling Platform & 2028 Emissions Update (Ralph Morris)
2. Representative Baseline vs. 2014v2 CAMx Modeling Results (Tejas Shah)

Modeling update:

* 2/27/2020 will compare CAMx 2014v2 against representative baseline (RepBase) to look at Most Improved Days (MID) and will post presentations on website.
1. 2014 Modeling Platform & 2028 Emissions Update (Ralph Morris)
* WRAP/WAQS 2014 modeling platform (working on getting results up on data warehouse)
	+ Used 2014v2 NEI with State emission updates to evaluate model performance.
	+ Model runs included:
		- 2014-2018 RepBase Emissions: zero out natural and known international emissions and do source apportionment.
		- 2028 OTB running 2 scenarios a and b
			* 2028 OTBa uses fire data derived by Fire and Smoke workgroup
			* 2028 OTBb uses 2014v2 actual fire emissions
			* OTBb will be used for 2028 visibility projections and source apportionment
* Dynamic evaluation using 2002 emissions and modeling to get a past look.
* Model Results
	+ Spatial Maps: (organic aerosol (OA) top maps and sulfate bottom maps)
		- 2 left maps are RepBase and 2014v2
		- Right map is overlap of both datasets in one map to show differences
			* Red color is RepBase higher than 2014v2
			* Blue color is 2014v2 higher than RepBase
		- 2014 fires mainly in coastal states (CA and OR),
			* higher OA in Seattle (red- 2014v2)
			* higher OA closer to San Francisco (blue- RepBase)
	+ 2014 MID daily light extinction slides demonstrate
		- NW- fires not in 2014v2 actuals but are in RepBase
		- West- fires in 2014v2 but not in RepBase
	+ Differences came from use of Fires Smoke workgroup RepBase emissions (2014-2018 5 year planning period) data versus 2014v2 actual fires
		- Most of time no fire impacts so differences are small
		- But, when fire impacts are represented differences are very large
		- 2014v2 did not include all fires (i.e. Rainier) nor did RepBase in some cases.

*Concerns with differences in modeling results:*

* + - EPA recommends using 2014 IMPROVE MIDs to develop Relative Response Factors (RRFs) to project emissions for 2028 Visibility projections (Vis = RRF x Vis 2014-2018).
		- Depending on which fire impact data used (2014v2 versus RepBase) may result in stiff RRFs, base/current/future years will be closer to 1 then they should be, and
		- underestimate visibility improvements for 2028
* Conclusion:
	+ Develop whitepaper to determine which data set to use in projecting 2028 visibility.
1. Representative Baseline vs. 2014v2 CAMx Modeling Results (Tejas Shah)
* Data used from WRAP EGU Emissions Analysis Project and includes updates from states for specific EGUs.
* California provided emissions replacement for both 2014 and 2028.
* Oil and Gas workgroup provided emissions.
* 2028 mobile source emissions developed by Ramboll
* Comparison of anthropogenic emissions between 2014v2, RepBase, and 2028 OTB by state and source category for multisector analysis.

Part 1- 2028 OTB EGU NOX and SO2 Results:

* Shows sharp decline of NOX emissions in future due to coal plant closures for AZ, CO, NM, and WY.
* Another sharp decline in SO2 emissions by EGU unit-level in future years
* Increasing emissions for ND (oil and gas)
* Everybody else emissions declines in 2028

Part 2- 2028 OTB vs RepBase/2014v2 Comparison across multiple sectors (i.e. mobile, nonpoint, point)

All states but CA, AK, HI show:

NOX:

* Onroad emissions are identical between 2014v2 and RepBase
* Decline 25% in future years
* Sharp decline in mobile emissions (fleet turnover, newer vehicles, and cleaner fuels) and EGUs (coal plant shutdowns).
* Not much change in oil and gas as a whole but ND and WY experience some increases in future year.

SO2:

* Dominated by point sources: EGU and non-EGU industrial sources, oil and gas
* Decline by 50% in future years
	+ Increase in emissions for ND based on oil and gas
	+ All other states show decreasing emissions in 2028
1. OAQPS “Regional Haze – 2nd Planning Period Questions and Answers” Feb. 25th doc (attached) – Marc Houyoux
* Questions attached in 1/24/2020 and 2/27/2020 meeting invites.
* NACAA call questions- document prepared after that call (publicly released)
* Concerns for use of 2014 versus 2017 data
* Q4,5,6 are collaborative emissions acceptable for modeling?
* Document data used by states
* Provide statewide inventories for recent and future years
* Consideration of most recent year of data- WRAP 2014 is ok to use
* Commitment of periodic update of inventory

Q1- Does 2017 or more recent data need to be used for modeling Reasonable Progress Goals (RPGs)?

* No regulatory requirement for 2017 or more recent data
* Can use 2014
* EPA recommends using air quality guidance for selecting emissions to use.

Q2- EPA determined that 2017 or more recent data must be used to evaluate possible control measures, but for states that are not using 2017 or newer data for base year modeling, are they required to show how their base year emissions compare to the 2017 or newer data for all source categories?

* Not necessarily
* Idea is to see if higher emissions in more recent data than what was provided in baseline data (newer facilities or increased production for existing facilities).
* Document what information considered and how newer data impacts source selection and evaluation of potential controls.
* Refer to guidance
* For four-factor analysis, go back to source selection procedure to make sure nothing left out.
* Cross check years for data
* You don’t have to use most conservative estimate

Questions by State:

HI- is there a cost threshold to determine if control is more economically feasible. Ist planning period there was something set at $5000 per ton. Is there something for 2nd period?

* check with EPA region 9
* still looking into the topic

NM- this raises a red flag for them because they used more current year they had at the time, 2016, for Q/d. Have not looked at 2017 for any newer sources that might change the distribution of total emissions for NOX and SO2 for four-factor analysis selection. Is it prudent to go back through and do this additional analysis? If went back now and do 2017 evaluation requires more work by state to do evaluation,

* Rule requires most recent year states submitted for inventory with a 1 year buffer
* Need to look at 2017 data
* Not in rule, though, whether new facilities need to do four-factor analysis. Depends on states analysis criteria for whether new facility has to do four-factor analysis.
1. Reminder: March 16th deadline for control emissions needed for modeling
* March 16th is the deadline for states to submit the potential additional controls scenario emissions for facilities for 2028 control scenario.
1. State Updates on progress for determining Potential Additional Controls –

WA- most reductions came out of OTB/OTW for coal plant shutdown and submitting reduction of NOx by a few 100 tpy at oil refineries for control scenario.

AZ- changing emissions for three facilities and emissions reductions for three nonpoint sectors for the March modeling and continue refining their four-factor analysis.

CO- similar to WA have lots of reductions with OTB/OW with power plant retirements, still working on four-factor analysis review and won’t have anything really to submit for 3/16/2020 controls scenario, going with OTB/OW controls for 2028.

ND- similar boat as CO submitting controls anticipated for EGUs identified in OTB/OTW for 3/16/2020 deadline.

NM- same path as AZ and ND, submitting controls proposed for those units for OTB/OTW. They want to use spreadsheet submitted for OTB/OTW for 2028 control change information and adjust those numbers and rename it. (Farren- only submit the facilities that changed and make sure to submit the entire facility that changed.) (Recommend working with Farren directly on what and how to submit.)

ID- still working on four-factor analysis and will be pushing the deadline to get any potential additional controls for modeling.

OR- We are in the same boat as WA and ID. We are behind the times with our four-factor analysis and need to check in with team members to determine what we can turn in by 16th deadline. (Farren- they are still working on theirs and will likely be rounded best estimates.)

1. Spec sheet review – Tom
* Will post 5 run specification sheets in the data warehouse
* Weighted Emissions Potential (WEP)/Area of Influence (AOI) - is coming out before modeling results and may be of interest to planners.

RepBase and 2028OTB Simulation Development Details:

* Representative Baseline (2014-2018 5 year planning period)
* 2028OTB both a and b scenarios (RepBase Fires and 2014v2 Actual Fires)
* 2028 Visibility Projections using both OTB scenarios
* Relative Response Factors (RRFs)-Vis2028 = RRF x Vis2014-2018

Simulations:

1. Natural simulation no worldwide anthropogenic emissions. Ran MEGAN eliminating fertilizer and anthropogenic deposition from biogenic emissions sources.

2. Zero out rest of world (no international anthropogenic emissions) - used to adjust glide paths adding in international emissions to 2064 natural conditions endpoint. Used EPA model run as example.

3. RepBase source apportionment simulations

* Model PM and Ozone Source Apportionment
* Find emission source contributions to PM and ozone: international and US anthropogenic, fire, and natural sources of emissions.

4. Dynamic Evaluation 2002 CAMx Simulation

* Compare predicted and observed changes in visibility from past, present, and future.
* Purpose is to determine how model reacts to these changes in emissions.
* Back cast 2014v2 emissions to 2002 and compare with observed emission changes
* Used EPA Trends data mostly but also used ARB CEPAM trends data, WRAP RegHaze Round 1 inventory, and WRAP RepBase and WRAP RegHaze Round 1 O&G back cast factors.

5. WEP/AOI

* No photochemical modeling
* Identify source regions and surrounding neighboring states that will most likely contribute to visibility impairment during 2014-2018 period.
* Uses back trajectories for each MID and IMPROVE site
* RT/AOI: Yosemite, SF bay area, Badlands, Salt Creek (Mexico) power plants, Wichita Mountains, Texas are the focus of these concentrations.
* SO4/NO3 mostly causes impaired days.
* Results not available yet
	+ Need 2028 emissions to do WEP
* Offshore sources- determine how far out to go, processing and transfer data- still in progress

Next call 3/26/2020.