

Key tasks for WRAP 2018-19 Workplan (bold text appears in Gantt Chart)

Title of Gantt Chart section: **Critical Milestones for Regional Haze Planning Technical Support**

* + - **Evaluation of RHR Revisions – Feb. through April 2018**

RTOWG and RHPWG need improved regular communication on task needs, deliverables, scheduling, and progress status.

* + - **Monitoring Data Evaluation – Feb. through May 2018**
    - **Base, Planning, and Future Year (on-the-books) Emissions Data work – Feb. through Dec. 2018**
    - **Base-year model platform and MPE completed – Feb. through July 2018**
    - **States begin using WRAP analysis for Regional Haze Planning – April 2018 onward**
    - **Future-year “on-the-books” scenarios – Jan. through April 2019**
    - **Source apportionment and sensitivity analysis – May 2019 through early 2020**
    - **Technical work done, data products in TSS.v2 – Jan. 2018 through early 2020**
    - **Reasonable Progress Goals from final modeling - available 1st Quarter 2020**

Major Work Areas for Gantt Charts (bold text appears in Gantt Chart)

1. **Monitoring Data Analysis (Monitor Data Analysis) – Feb-May 2018**
   1. **Evaluate EPA tracking metric and alternatives – Feb-March 2018 (RHP, RTO)**

The RHP anticipates that a contractor will be needed to conduct a regionally consistent analysis of the IMPROVE monitoring data representing the 118 Class I areas located in the 15 western states. The RHP’s Monitoring and Glideslope subcommittee will consult with the “Fire and Smoke Subcommittee and the RTO to provide technical oversight and recommend specific analyses for the contractor’s scope of work. General tasks are defined below, to be refined with the contractor. Several states are already evaluating IMPROVE data for specific Class I areas and will be able to provide insight to the regional effort.

* + 1. Reconstruct EPA most impaired metric calculations to verify EPA estimates

The 2017 RHR instructs states to track visibility progress on the most impaired days, defined as those days most influenced by anthropogenic emissions. The 2016 EPA draft guidance proposes methods to split natural and anthropogenic contributions. EPA defines the Uniform Rate of Progress (URP) on the most impaired days as the slope of the straight-line Glide Path between the 2000-2004 baseline period and assumed natural conditions in 2064. States will use photochemical grid models (Sections 3 and 4) to project visibility progress by 2028 and compare progress to the Glidepath URP.

This task is intended to evaluate the EPA method for each of 118 Class I areas in the 15 western states. Data products including spreadsheets, bar charts, and glide paths will be web-based and maintained on the WRAP Technical Support System. All daily IMPROVE aerosol measurement data for the years 2000 through 2016 and speciated aerosol light extinction (calculated using revised IMPROVE equation) will be maintained. The period 2000-2004 will be used to define the Baseline Period (Baseline) as the starting point of the Glide Path. The period 2000-2016 will be used to evaluate aerosols trends and to inform estimates of natural contributions to aerosol species.

Following EPA 2016 draft Guidance and Technical Support Document, reconstruct EPA’s calculations of the split of natural from anthropogenic contributions for each speciated aerosol for each year. Identify the 20% most impaired and the clearest days in each year. Define the average 20% most impaired days in 2000-2004 as the Baseline for the most impaired days Glide path. The EPA method uses the natural contribution on the average of the most impaired days for 2000-2014 to estimate the natural contribution in 2064.

* + 1. The objective of this task is to evaluate 3-4 alternate methods and compare results to the EPA method. The Monitoring Subcommittee in consultation with the Fire and Smoke Subcommittee, the RTO and states, will direct the Contractor to evaluate 3-4 alternative methods for all western Class I areas and summarize differences among the methods for species, seasons, years, and monitors (e.g. the number of dust, carbon, and sulfate events, consistency of days selected as most impaired). In the case that a State has already determined an alternative method, include that state-specific approach in the summary report.

Recommend regionally consistent approach to identify natural and anthropogenic contributions and to sort IMPROVE data to identify most impaired days.) Re-evaluate 2000-2004 Baseline, assess trends to 2016, and Glide Path to Natural Conditions for 2064 using EPA method and each alternate metric for most impaired days to demonstrate that the method selected is reasonable. Discuss uncertainties and implications of uncertainties for natural conditions and glidepath

(NOTE: The Embedded Progress Report (task 6.0) will use the Worst days average for the 5-year period ending in 2018 because the 2018 Reasonable Progress Goals used Worst days.)

*Gail Tonnesen - Task 6 does not currently specify using the worst visibility days. It is easy to show results for both the worst visibility days and the most impaired days. I recommend using the most impaired days, or showing both approaches. We are likely to show less progress if results are only shown for the worst visibility days.*

Alternate impairment approaches that could be considered in this task include the following:

* Evaluate alternate thresholds for episodic extreme events, e.g., use a concentration threshold (or a deviation from the mean concentration as used in the Boylan method) instead of a constant 95th percentile threshold.
* Evaluate alternative methods to assign routine natural contributions (e.g. better account for seasonal variation in natural emissions)
* estimate anthropogenic contributions directly rather than by difference (e.g. ranking days by ammonium sulfate, ammonium nitrate, or combination of aerosol species more likely to reflect anthropogenic contributions)
* incorporate source attribution techniques (see task 3.6) to inform estimate of split of natural and anthropogenic, recognizing that statistical analysis of IMPROVE data alone cannot distinguish contributions from local and regional anthropogenic sources, fire and geogenic sources, and international transport.
* estimate of natural conditions in 2064 used for the most impaired days URP Glide path
* impact of using constant versus site specific values for Rayleigh scattering.

* + - 1. The EPA proposed method applies a 95% threshold for the 2000-2014 period to define episodic extreme events of carbon or dust, attributed to wildland fire or dust storms. Contractor is asked to evaluate whether a site-specific threshold based on the historic monitoring data would better define days impacted by episodic extreme natural events. Would such an approach lead to a different set of most impaired days at a monitor? (Individual states may already have completed this exercise.) The Monitoring Subcommittee will consult with Fire and Smoke Subcommittee and the RTO to discuss possible approaches to validate fire events (e.g. compare statistical definition of fire event from monitoring data to documented occurrences of wildland fire and dust storms (dates, locations, emissions) and photochemical modeling (predictive and analytic) (Tasks 3.6 and 4.2.2) and satellite evidence of transported smoke.)
      2. The EPA proposed method defines daily routine natural contributions to IMPROVE aerosol species for the period 2000-2014. The contractor is asked to evaluate the EPA method and propose alternatives (for optional future funding) that might better account for seasonal and source variability in natural emissions. Do alternatives approaches change the fraction of daily aerosol species assigned as natural, particularly on the most impaired days?
      3. In EPA’s proposed method, Natural Conditions for the average of the most impaired days in 2000-2014 are used to define Natural Conditions in 2064 for each IMPROVE monitor. Errors in these assumptions can affect the slope of the URP glidepath. The contractor, in consultation with the Monitoring Subcommittee, the Fire and Smoke Subcommittee, and the Regional Haze Planning Work Group, is to identify analyses to improve (create more realistic) estimates of natural conditions on the most impaired days for the purposes of the URP glidepath. This task will be informed by previous tasks evaluating episodic and routine natural contributions to aerosol extinction. The RHP and RTO will determine whether to pursue alternative definitions of Natural Conditions as part of this RH planning effort. EPA guidance allows states to propose methods to account for the contributions from prescribed fire or international emissions to the URP. In this task the Contractor will work with the RTO and the Regional Haze Planning Work Group, to evaluate source apportionment modeling results and propose a method and to account for International Sources impacts at each Class I area to add to the 2064 Natural Conditions estimate to be applied to create a revised Results of tasks 1.1.2.1 and 4.2.2 should be evaluated to consider options to better account for contributions from wildland fire smoke on most impaired days.

Rayleigh (natural light scattering) is a significant contribution to Light Extinction in the West. IMPROVE has defined values for Rayleigh to use when calculating deciviews; however, a constant Rayleigh value of 10 is routinely used in IMPROVE trends analyses, EPA calculations of modeled future visibility, and the URP glidepath for each site. Using site specific Rayleigh in the calculation could cause differences in deciview values for natural conditions between two sites with the same amount of natural haze but at different elevations. Using same dv value for all sites could lead to negative dv values on some clearest days at some sites. Summarize benefits and drawbacks of using site specific Rayleigh or alternatively, just use the site-specific Rayleigh at Western States without further analysis.

* + 1. Identify tracking metric options for western states’ 2028 RH SIPs

Based on analyses in Tasks 1.1.1-1.1.3, recommend tracking metric approach for western states to implement beginning with the second planning period base year average.

Discuss uncertainties and implications of uncertainties for natural conditions and glidepath

FSWG: Consultation with RTO and RHP on alternative methods identified

RHPWG: we need to have clear explanation of what “Natural Conditions” means.  There is the regulatory metric and there is reality (in plain English.)  There are routine fluctuations in natural emissions.  There extreme episodic events, and there are routine episodic events (wildfires and dust storms come every year, just like hurricanes and tornados, some are worse than others.)  There are routine plant and animal emissions.  Are they man-made if they are related to farming, forestry practices, or ranching?  If Natural Conditions are not a constant, then what is the 2064 target (endpoint on the Glide Path) supposed to be, conceptually and numerically.

* 1. **Analyze monitor data (trends, ranges, and linkages) – March-May 2018 (RHP, RTO)**
     1. Using data developed in Task 1.1, c using observational and/or model produced data
        1. Monitor data (per Task 1.1.1)
        2. Regional modeling data (per Task 3.6)
        3. EPRI modeling data (per Task 4.2.2.2)
     2. Reconstruct glide slope incorporating natural and international components

Summarize results and recommend approach to propose to EPA for states’ use in 2021 RH SIPs.

FSWG:

* Evaluate emissions inventory for 2014
* Develop methodology to produce a range of emissions scenarios for 2028
* Consult with SMPs and FLMs to understand land management priorities and inform anthro fire emissions trends and patterns
  1. **Identify dominant visibility-impairing pollutants for each CIA – May 2018 (RHP)**

Prepare report summarizing finding in Task 1 and recommend approach to identify most impaired days based on findings in previous tasks 1.1-1.3.

1. **Emissions Inventory (Emission Inventory Development) – Feb-April 2018**

OGWG: The Western Regional Air Partnership (WRAP) Oil and Gas Workgroup (OGWG) has developed the “WRAP OGWG Road Map Scope of Work” (November 2017) which will guide efforts on all O&G related Regional Haze Planning Technical Support tasks.

* 1. **Process 2014 NEI and refinements (base year modeling) – Feb-May 2018 (RTO, F&S, O&G, TD)**
     1. Incorporate inventory data from OGWG, FSWG, and TDWG
        1. Deliver WRAP O&G inventory, ensuring no double counting of interstate O&G fields

OGWG: *The OGWG will identify and review existing oil and gas specific work products. Relevant strengths, areas for improvement, and gaps will be identified. Particular attention will be given to base year emissions inventory emission factors, calculation methods, assumptions and tracking of emissions reduction regulations, data completeness for minor source / midstream facilities, data for non-point sources not reporting directly to air agencies, and other topics.* *[Completion in March 2018]*

*The OGWG will develop regionally consistent base year oil & gas emissions inventories for the WRAP Region. The base year emission inventories will utilize work products with the most relevance and strength as the basis to focus on areas for improvement and gaps. To the extent feasible, technical improvements to emissions inventories will be made. Emission factor, speciation profiles, and spatial surrogate information will be identified for oil and gas sources. Reconciliation with existing inventories would be performed to ensure no double counting. [Completion in Summer 2018]*

* + - 1. Deliver WRAP natural/anthropogenic fire emissions
    1. Refine base year inventory
       1. States review minor source/area emission inventory

OGWG:

The draft inventory developed in 2.1.1.1 will be reviewed by state, local, and tribal agencies. Any necessary updates would be made to the final base year emission inventories. [Completion in Summer 2018]

* + - 1. Consider sectors for refinement (O&G, Canada/Mexico, natural marine, offshore shipping, global, episodic dust storms, wildfires (average for 2028 projection), agricultural/industrial/mobile ammonia, prescribed fire projections, lightning NOx) from 2021 WESTAR WP, page 14

FSWG:

* Evaluate, refine, and deliver emissions inventories for 2014
* Determine present trend of fire activity and emissions by state and ecosystem
* Review fire classifications for Nat/Anth: informs downstream analysis
* Evaluate refinements to plume rise, diurnal profiles

OGWG: The OGWG will identify and review existing oil and gas specific work products. Relevant strengths, areas for improvement, and gaps will be identified. Particular attention will be given to base year emissions inventory emission factors, calculation methods, assumptions and tracking of emissions reduction regulations, data completeness for minor source / midstream facilities, data for non-point sources not reporting directly to air agencies, and other topics. [Completion in March 2018]

The OGWG will develop regionally consistent base year oil & gas emissions inventories for the WRAP Region. The base year emission inventories will utilize work products with the most relevance and strength as the basis to focus on areas for improvement and gaps. To the extent feasible, technical improvements to emissions inventories will be made. Emission factor, speciation profiles, and spatial surrogate information will be identified for oil and gas sources. Reconciliation with existing inventories would be performed to ensure no double counting. [Completion in Summer 2018]

TSC and all WGs: clarify decision(s) about modeling base year(s) for Regional Haze Planning? States would like to know, to assist in allocating effort to assess the state-level emissions inventories as one of the first SIP steps.

* 1. **Evaluate use of 2016 EPA modeling platform – June-August 2018 (RHP, RTO)**
     1. Assess 2016 national Emissions Modeling Platform as it progresses and need to create “average” or “typical” base year platform linked to 2016 EMP

EPA and the Multi-Jurisdictional Organizations are developing a 2016 emissions inventory and modeling platform for use in Regional Haze SIP planning. While the 2016 inventory and modeling may not be delivered in time to use as the base year for RH planning, a second base year with different meteorology, atmospheric transport patterns, and emissions (particularly for uncontrollable emission events such as wildland fire and dust), offers a useful comparison of source contributions and benefits of emissions reductions. In this task states will evaluate the benefits of using 2016 in addition or instead of 2014 as base year for SIP modeling and for inventory projections to 2028.

* 1. **Develop and refine 2028 emission inventories – May 2018-Jan 2019 (RTO, F&S, O&G, TD)**
     1. Determine and adjust emissions as needed for source apportionment and sensitivity scaling of base year and 2028 Inventories
        1. Determine and process 2028 emissions for modeling of on-the-way/on-the-books controls
        2. Determine and process 2028 emissions for modeling of Additional Reasonable Controls scenarios

FSWG work related to Task 2.3

* Determine range of future year contributions of fire-related natural sources (March through Sept. 2018)
* Identify potential methodologies to determine future year emissions (Sept. 2018 through Jan. 2019)
* [Evaluate potential for longer-term disturbance](https://www.wrapair2.org/pdf/REACHFAQS-WEST_TechnicalProposal_11_16_2012final.pdf) modeling (e.g., [FETM](https://www.frames.gov/catalog/7167)) for 2028 and natural cond. estimates

OGWG:

The OGWG will identify and review existing oil and gas specific projection methodologies. Relevant strengths, areas for improvement, and gaps will be identified. Particular attention will be given to emissions inventory projections and potential consideration of historic growth, supply, demand, production decline, control, and/or efficiency/effectiveness factors as well as spatial distribution. [Completion in March 2018]

The OGWG will develop regionally consistent 2028 forecast (OTB & OTW controls) emissions inventory for the WRAP region. Projection methodologies with the most relevance and strength will be used as the basis to focus on areas for improvement and gaps. Historic growth, supply, demand, and production decline; a range of forecast year oil and gas scenarios; OTB & OTW Controls for oil and gas sources; and spatial surrogates will be identified. [Completion in Fall 2018]

RHPWG: Fire & Smoke to help with determining how we add Prescribed Burning amount to the 2028 milestones and/or the 2064 endpoint?

* 1. **Develop screening tools (Q/d and weighted emission potential) – Sept-Dec 2018 (RHP, RTO) (this task could start spring 2018; in kind services could be used to begin weighted emissions potential for 2014 NEI and several years meteorology)**
     1. Source Sector Analysis (Ranking)

States are to evaluate emissions to include in a long-term strategy to demonstrate reasonable progress by 2028 in improving visibility in Class I areas. In the first RHR planning period, WRAP used 2002 and 2018 Weighted Emission Potential plots (gridded emissions weighted by the NOAA Hysplit back trajectories) to define geographic areas with greatest potential to contribute emissions to Class I areas. WRAP also developed emission inventory access tools (pivot tables) to assist states in evaluating emissions by source sectors and prioritizing source sectors with highest potential emissions. Both tools would be applicable in the second RH implementation period. The Control Measures Subgroup, working with the RHP, RTO, and Contractor is to define the specific screening tools to be used in this second planning period and to implement these tools for the 2014 or 2016 base year inventory and back trajectories for several years, for each Class I area in the western states. States can use these results to prioritize sources or source categories to consider in Reasonable Progress analyses and to make process decisions on consultation and analyses (Task 5.0). States can review the base year inventory and consider known or expected changes to facility operations or control measures after 2014 (e.g. controls for 1 hr SO2, consent decrees, shut down, final BART implementation) that might affect priority for source consideration in Reasonable Progress analyses.

* + 1. Develop 2028 screening tools to inform reasonable progress screening

States will need to first evaluate EPA’s draft 2028 projection inventory and make any revisions for known changes to facility operations or control measures by 2028. Using a WRAP approved 2028 inventory, repeat the analyses performed in task 2.4.1. If states adopt both an “On the Books” inventory of know control requirements and an “On the Way” inventory of expected controls, repeat the weighted emissions potential for both inventories.

* + - 1. Weighted Emission Potential plots

Weighted Emission Potential plots would be produced for 2014 and 2028 for all western Class I areas and housed on the WRAP TSS II.

* + - 1. Emissions Pivot tables

Pivot tables have been recommended by some of the WRAP states as an effective tool to visualize emissions inventories; the Emissions Control Measures workgroup will direct products for this task. Pivot tables could be set up using Emissions divided by Distance (Q/d), or both. Facilities should be divided into process level emissions (Source Classification Code, SCC) to assist prioritization of emission reduction opportunities.

1. **Air Quality Modeling (Visibility and Source Appointment Modeling) – Feb 2018-early 2020**
   1. **Prepare modeling plan – Feb-March 2018 (RHP, RTO, F&S)**
      1. Develop modeling protocol for visibility and source appointment modeling
         1. Define MPE protocols
         2. Identify sensitivity tests and methods
            1. address elements of WESTAR-BLM-NM AQB 4 Corners modeling study work
         3. Identify “tags” for source appointment modeling

need to assure that global model outputs are separated into natural and anthropogenic contribution. Previous 2011 WAQS tags can be used as starting point; additional breakdown of anthropogenic source categories may be feasible, recognizing budget will constrain number of categories

FSWG: Evaluate uncertainties in EI, range of future scenarios, effects of various Nat/Anth splits

* 1. **Prepare and evaluate meteorological data – March-April 2018 (RTO)**
     1. Conduct meteorological modeling for 2014 and 2016 and evaluate Model Performance for each
  2. **Perform dynamic model evaluations – Feb-July 2018 (RHP, RTO)**
     1. Perform dynamic model performance evaluation for previous visibility modeling efforts
        1. Emissions trends analysis. Develop emissions estimates by state and major source category for U.S. anthropogenic emissions for 2002, 2008, 2011, 2014, 2016 and 2028 with on the books controls. Source categories should include: major point source, minor point sources, oil and gas, mobile, non-road, area sources, and off-shore shipping. The report should document the methodology used for emissions estimates and identify cases in which changes in methodology from 2002 to 2028 might affect the trends analysis. If feasible, emissions estimates for 2002 should use the most recent methodology, e.g., the most current version of the MOVES model should be used for mobile source emissions.
        2. Develop CAMx U.S. and off-shore shipping anthropogenic emissions input files for 2002, and prepare a model ready input files that merge the 2002 anthropogenic emissions with natural and fire emissions for the current base year (either 2014 or 2016).
        3. Perform CAMx simulations using the current base year WRF data with the 2002 anthropogenic emissions scenario, and evaluate CAMx model changes in speciated PM2.5 at Class I areas for 2002 anthropogenic emissions compared to the current year emissions scenario and to the current year zero U.S. anthropogenic emissions scenario. Results should be shown as average concentration changes by species for the 20% most impaired and 20% best visibility days, and average light extinction and deciviews. This analysis will show the cumulative visibility benefits from progress in reducing U.S. anthropogenic impairment from the 2002 baseline year to the current year (2014 or 2016), assuming constant current year meteorological conditions.
  3. **Conduct sensitivity testing (boundary conditions, fire emissions, grid size, climate change) – April-July 2018 (RHP, RTO, F&S, O&G)**

FSWG: Evaluate results of sensitivity tests and provide analysis of implications for tasks 1.1-1.3

OGWG: No specific tasks/deliverables have been identified for this task. Base year and future year emission inventory development will inform this analysis. Potential changes (e.g. widespread implementation of tankless sites) and/or uncertainties in upstream emissions (e.g. high emitters) could be evaluated. [Completion in Summer 2018]

RHPWG for Alaska and other coastal states: provide a report to "estimate quantities" of international visibility impairment at all Alaska, Hawaii, California, Oregon, and Washington IMPROVE monitors. Meteorological data analysis on days selected as representative of high, normal and low monitoring days for sulfate and nitrate, to suggest a "percent contribution" ratio for assigning probable international visibility impairment. The simple sort would be "from within the coastal state" vs. "from outside the coastal state". Goal so assist planners by assessing contribution from outside their control, when we have no emissions inventories for other countries such as Russia, and other Asian countries. Once a methodology was clear, a contractor could churn away with the calculations, leaving coastal states to work on other things with fewer unknowns in-state, such as their own inventory, potential controls for their highest and nearest-to-Class I Areas emissions sources and categories, and their monitoring data trends. The methodology might be most useful for states that have more out-of-country impacts.

* 1. **Evaluate use of 2016 EPA modeling platform – June-July 2018 (RHP, RTO, F&S)**
     1. Determine air quality modeling timing and scope for 2016 national Emissions Modeling Platform as it progresses and need to create “average” or “typical” base year platform linked to 2016 EMP

FSWG: Determine data sources and methodology for 2016 EI. Start with EPA base.

* + - 2016 EI refinement will depend on data from FETS, since EPA base EI only includes remote sensing data, wildfires
    - Coord. w/ EPA/AirFire on 2016 refinements
  1. **Conduct and Evaluate Air Quality Modeling using source apportionment and sensitivity methods for base year and 2028 Inventories – April 2018-early 2020 (RTO)**
     1. Conduct Air Quality Modeling for 2014 as initial Base Year for Model Performance Evaluation, testing of monitoring metrics
        1. address elements of WESTAR-BLM-NM AQB 4 Corners modeling study work
     2. Conduct Air Quality Modeling for on-the-books 2028 Emissions
        1. address elements of WESTAR-BLM-NM AQB 4 Corners modeling study work
     3. Conduct Air Quality Modeling for 2028 emissions of Additional Reasonable Controls scenarios
        1. address elements of WESTAR-BLM-NM AQB 4 Corners modeling study work

1. **Analyzing Future Year Modeling Results (Analysis of Modeling Results) – Feb 2018-early 2020**
   1. **Resolve tracking metric and model output issue – Feb-July 2018 (RHP, RTO)**
      1. Implications of applying different metrics in calculating RRF-determined RPGs for 2028

In addition to selection of most impaired days, the methods used to split natural and anthropogenic contributions to aerosol species will affect the calculation of RRF. Working with the RHP and RTO, evaluate the implications of alternative approaches to calculating RRF.

* 1. **Sensitivity and Control Strategy Evaluation Modeling for 2028 projections – May 2019-early 2020 (RHP, RTO, F&S, O&G)**
     1. Conduct sensitivity modeling
        1. Global models/boundary conditions

The Electric Power Research Institute has committed to develop a 2016 GEOS-CHEM v11.2 global model run as background conditions for a 2016 Continental U.S. CAMx model platform. GEOSCHEM will rely primarily on the HTAP2 emissions inventories for 2010/2011 base year and supplement missing source regions or categories as available. The combined inventory will be updated to 2016 and 2028. GEOSCHEM model performance will be evaluated. CAMx will be run for 2016 and 2028 to project visibility responses to changes in U.S. anthropogenic emissions. Contributions from international natural and anthropogenic emissions in 2016 and 2028 will be tracked separately.

In consultation with the WRAP workgroups, the WRAP contractor will evaluate the EPRI results and recommend further analyses to improve model performance that could be conducted by WRAP or recommended to external collaborators. WRAP workgroups will determine the priority for an optional task to conduct sensitivity analyses using alternative global models and compare to EPRI GEOSCHEM results.

*Are we wanting a contractor to propose an evaluation of alternative approaches to EPRI's GEOSCHEM v11.2?*

* + - 1. 4 km versus 12 km grid

Review previous model analyses to determine differences in regional model performance and source apportionment results using 4 km versus 12 km grid. Recommend tradeoff between differentiation of more source sectors or finer grid resolutions with fewer source sectors.

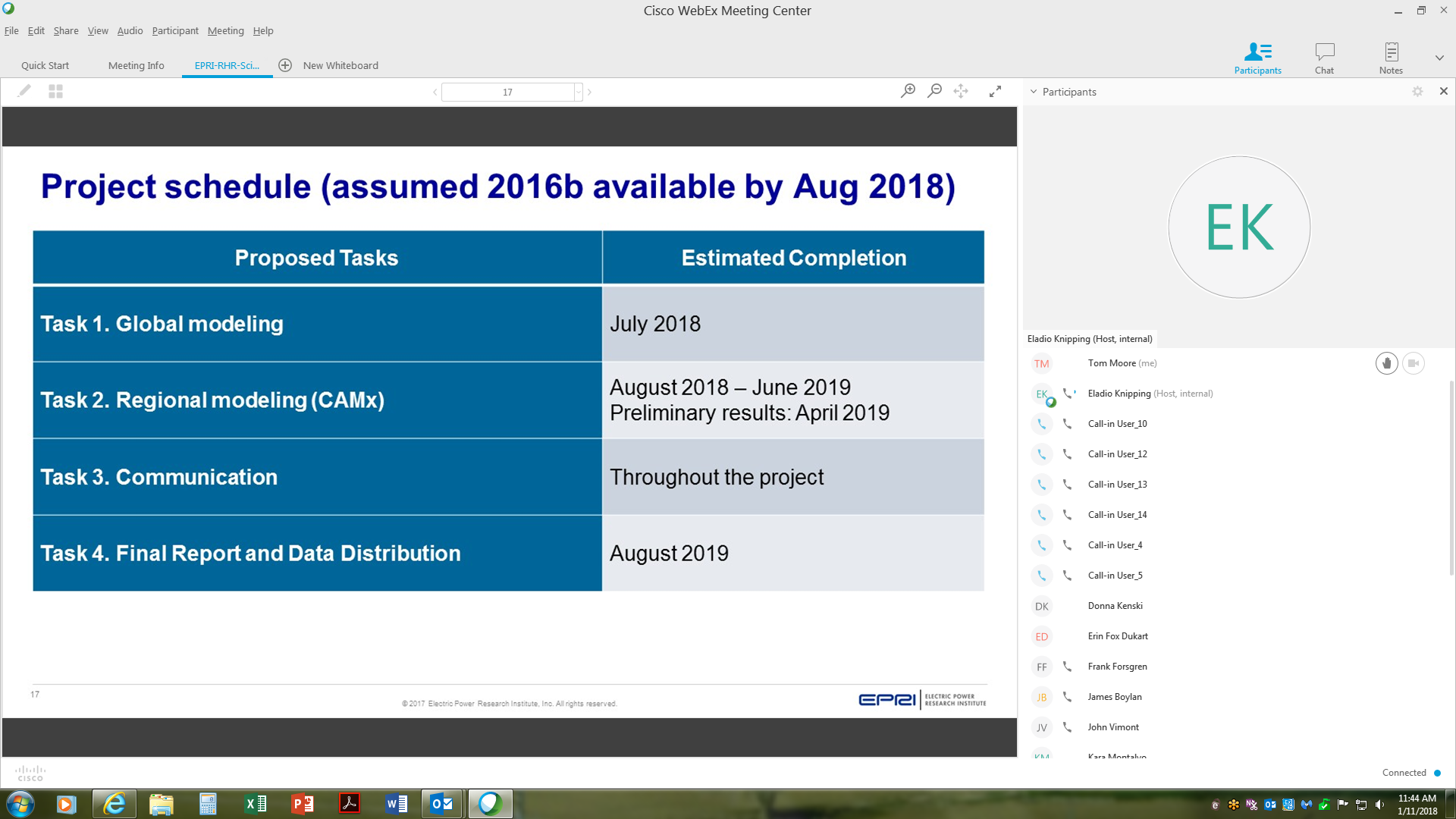
* + - 1. Base year and projected fire emissions representations (year specific, averaged, others)
         1. address elements of WESTAR-BLM-NM AQB 4 Corners modeling study work

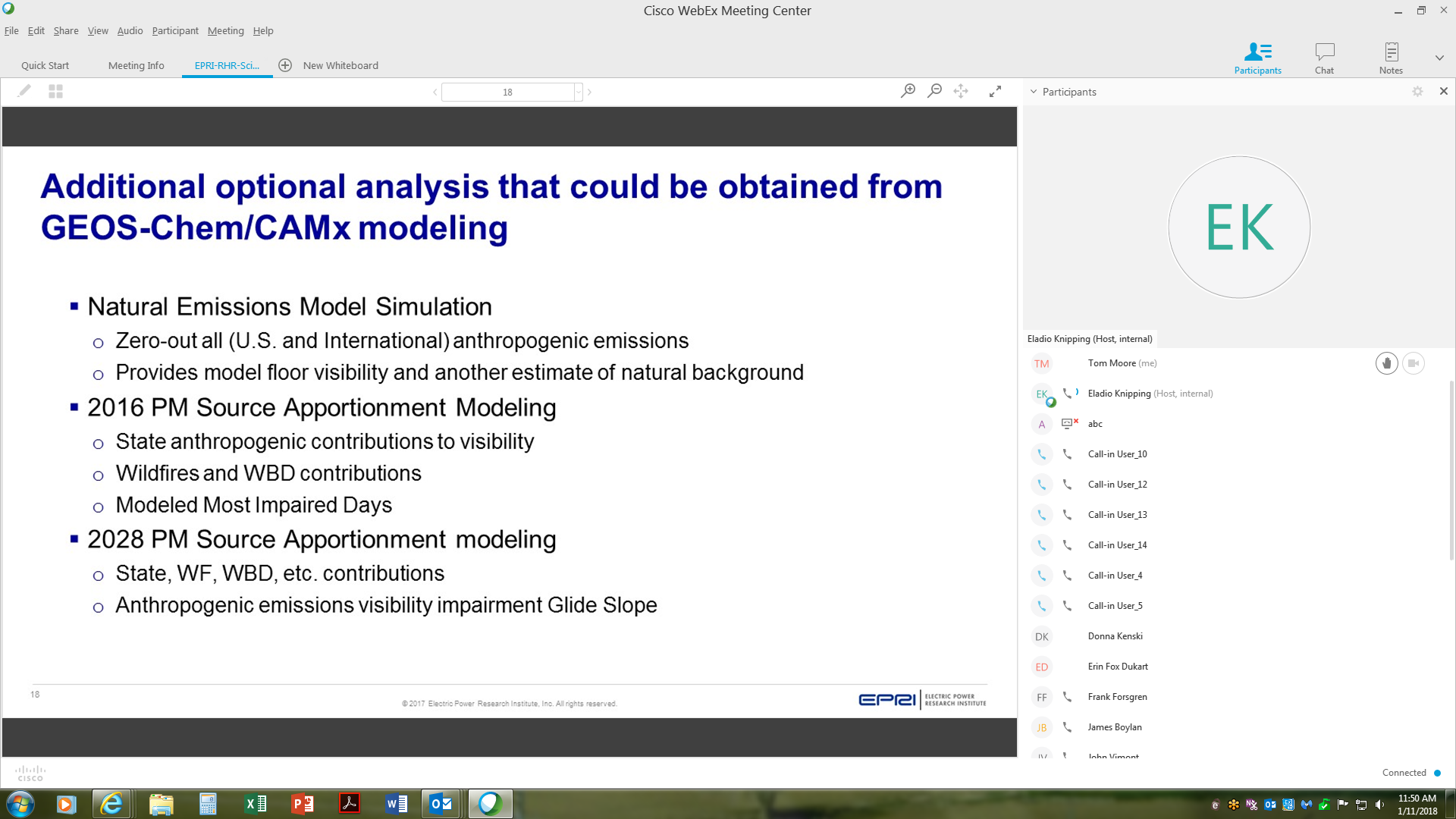
FSWG: Dovetails with work in 3.1; work should be coordinated even though will not be concurrent (i.e. consider how they affect each other)

OGWG: The OGWG will compile a comprehensive list of local, state, and federal regulations applicable to developing a controls analysis for O&G emission inventory forecasts in the WRAP region, noting applicable pollutants, geographical area(s) and source categories; applicability to existing, new, and/or modified sources. Approaches taken to apply controls to emission inventories will be identified. [Completion in March 2018]

The OGWG will develop regionally consistent 2028 control scenario future year emission inventory/inventories. The 2028 control scenario inventory/inventories will consider additional Reasonable Controls for oil and gas sources, rule penetration and effectiveness, and spatial surrogate information. [Completion in June 2019]

* + 1. Determine Contributions of International Emissions and Natural Fire Emissions to inform Natural Conditions estimates and glide slope development
       1. Coordinate with other modeling groups – EPRI study, others
       2. Add Natural and International Impacts to 2028 or 2064 glide slope
       3. Re-evaluate Glide Slope





* 1. **Evaluate Base Year and 2028 OTW/OTB source appointment modeling results to identify source sectors/facilities for control measures evaluation – Jan-April 2019 (RHP, RTO)**
  2. **Evaluate change in visibility from base year to 2028 – early 2020 (RHP, RTO)**
     1. Change in visibility from base year to on-the-books in 2028
     2. Change in visibility from base year to Additional Reasonable Controls scenario in 2028
     3. Calculate 2028 Reasonable Progress Goals (apply one of the metrics from Monitor Data Analysis based on best results from base year Model Performance Evaluation)

1. **Control Measure Analysis (Reasonable Progress Analysis) – Jan-Dec 2019**
   1. **Develop criteria for “how to identify sources and move through the 4-Factor Analysis process” based on monitor, emissions, screening, and modeling data – Jan-March 2019 (RHP) (consider that the Control Measures workgroup can begin in Spring 2018 in parallel with development of 2014 or 2016 weighted emission potential analyses. This would allow states more time for source specific evaluation and recommendations for control to be included in WRAP 2028 modeling of long term strategy.)** 
      1. Establish intra- and interstate consultation process during screening analyses to identify contributing upwind sources for control analysis (“Ask” process). Include Tribal and Federal Land Manager consultation in this planning task so that sources identified by Tribes and FLM are incorporated at the beginning of the state screening process.

States can begin to define process for control strategy evaluation, including common regional analyses of control options, prior to states conduct source-specific 4 factor analyses. Among questions for Emissions Control Measures subgroup to resolve, in consultation with RHP and RTO,

* Will states identify specific pollutants, sources or source categories regionally that all states will consider?
* Will states apply regionally consistent criteria (e.g. Q/d, weighted emission potential, common source categories, common threshold percentage inventory)?
* What information resources (from WESTAR, NACAA, EPA, MANE VU, LADCO etc.) will be used to compile the set of control measures to be analyzed? Will this be compiled regionally or by state?
* How will states incorporate regional data into interstate consultation? Will a state ask other states to evaluate specific sources or will all states agree to evaluate all sources that meet common criteria?
* What criteria will be used to select potential control measures? EPA's draft 2016 Regional Haze SIP Guidance says that states should identify and consider all control measures that are "technically feasible" for the sources being analyzed (2016 Guidance, Section 7.1, page 85). How does CMS decide what that means?
* To what extent, and how, should the method chosen for four-factor analysis account for circumstances facing individual states, rather than just conditions prevailing throughout WESTAR states?
* Will contractor support be required for regionally common analyses?
* How will Tribal and FLM consultation
  + 1. Identify pollutants and areas of interest (what and where are we going to cut) based on monitoring, emissions, modeling, and screening analyses

Building on pollutant contributions identified for each Class I area in Task 1.1, source prioritization identified in task 2.4, and process for evaluating control measures identified in task 5.1.1, and if available, source apportionment results from task 4.3, the Control Measure subgroup, with RHP and RTO, will determine if contractor support is needed for states to prioritize anthropogenic pollutant emissions, source categories, and individual sources and to evaluate potential control measures.

* + 1. Determine whether modeling results will be used to identify sources for screening and threshold(s)

Control Measure Workgroup should determine if screening methods such as emission inventory tools and weighted emissions potential are sufficient for screening purposes to define specific pollutants, sources or source categories to begin evaluation of existing controls and opportunities for further emission reductions. Given the cost and time to deliver source-specific apportionment results, states would likely need an iterative process to screen sources to determine which sources or source categories merit modeled contribution assessment. Consider first applying simple screening tools to evaluate where control opportunities exist.

* + 1. Translate modeled pollutant/sector visibility impact to identify specific facilities for screening

The following products are expected from this task:

1. Final report on methodology to be used in performing 4-factor analysis, including descriptions of: method that was used to select initial universe of source categories to be screened; method used for screening; final universe of sources selected for 4-factor analysis. Substance of this report might help in writing individual SIPs.

2. Final report – or online database/"clearinghouse" – providing results of 4-factor analysis for source categories/sources that occur throughout WESTAR/WRAP states. Substance of this report might help in writing individual SIPs.

* + 1. Range of consideration for identifying Feasible Controls (using 4-factors)

Control Measures Subcommittee will evaluate previous source sector 4 factor evaluations (e.g. LADCO, MANE-VU) to determine value of similar source sector analyses for western states. A sort of existing 2014 NEI can identify the major source categories that are common across western states and Tribes (e.g. (EGUs, Boilers, Oil and Gas, Aluminum Smelters, Pulp Mills, Petroleum Refineries, Cement Plants)

* 1. **Determine whether to use visibility as a “fifth” factor for control measure analysis and identify threshold – Jan-March 2019 (RHP, RTO)**

**a. In what ways will the 4-factor analysis follow or deviate from EPA's (2016 draft or later revised) Regional Haze SIP guidance?**

**b. In what ways will the 4-factor analysis follow or deviate from the method used for 4-factor analysis in the first planning period?**

* 1. **Conduct regional/state source screening – April-June 2019 (RHP, O&G)**

**See Section 5.1 for details addressing thoughts outlined below.**

* + 1. Identify sources/sectors near Class I areas: Conducted by individual states?
    2. Consult with FLM community to identify sources of concern for control analysis (EGUs, Boilers, Oil and Gas, Aluminum Smelters, Pulp Mills, Petroleum Refineries, Cement Plants, and sources on Tribal Land) Regional or state led consultation?
    3. O&G sector focus on production engines, heaters/treaters, point vs. non-point tracking/permitting, fugitive dust, reconcile VOC emission estimates with observations
       1. address elements of WESTAR-BLM-NM AQB 4 Corners modeling study work

OGWG: Analyses and deliverables for this task have not yet been decided on by the OGWG. Base year and future year inventory development and control scenario analyses will inform source screening.

* + 1. Additional Sectors for control analysis (more from industry, residential controls)
       1. Consistent with source sector priorities established in Task 5.1.1, may need to request minor source emissions data from regional offices and local agencies, as applicable
       2. Outreach to Tribal Air Programs in the WRAP region. Consistent with Task 5.1.1, clarify how Tribal data will be incorporated in state prioritization of source categories and specific sources. If Tribal sources are identified as priority for consideration, who conducts 4 factor analyses?
       3. For these outreach efforts, please specify:
          1. When do you need the data?
          2. Sources only report facility total emissions assuming the process level stack and SCC information is in the states’ databases

Should all the appropriate SCCs for the facility be listed, or something else?

Should any stack information be provided for facilities that have more than one release point?

**States conduct control measures analysis – April-Dec 2019**

* + 1. Consideration of political factors in control measure analysis (PUC, MOUs, etc.)
  1. **Identify 2028 control strategies and incorporate into 2028 emission inventory (Additional Reasonable Control scenario) – Sept-Dec 2019 (RHP)**
     1. Document timing and format to finalize States’ Control Strategies’ options for implementation in Regional Analysis
     2. Identify “What If” Control Strategies from each state for 2028

1. **Embedded Progress Report (Five-Year Progress Reports) – June 2020-June 2021**
   1. **Assess visibility conditions and changes – June- Dec 2020 (RHP, RTO)**
      1. Current visibility conditions
      2. Visibility change from baseline
      3. Visibility change over the past 5 years
         1. Decide period to evaluate (2014-2018?)
      4. Review results from Dynamic Model Evaluations for historic modeling platforms to determine modeled visibility trends
   2. **Analyze changes in emissions over the past 5 years – June-Dec 2020 (RHP, RTO)**
      1. Conduct status review of control measure implementation and emissions reductions achieved
      2. Evaluate Emissions Trends
         1. Reference individual state’s submittals for 2017 NEI
         2. Evaluate Species Trends
      3. Assessment of emissions changes limiting or impeding visibility improvement
      4. Determine how much progress will be made by 2018 and amount of progress anticipated toward 2028 - how much have state anthropogenic emissions declined?
   3. **Prepare progress report – Jan-June 2021 (RHP)**
2. **Technical Support System TSS.v2 (Technical Support System) – Jan 2018-early 2020**

The TSS served as the data repository for the regional technical analyses supporting the first round of RHR SIPs. The TSS provided common data presentation for monitoring, emissions inventory, geographic weighted emission potential, source apportionment modeling, regional air quality modeling for base year and projection year inventories, and visibility progress compared to the uniform rate of progress glidepath. For the second RHR planning period, the intent is to archive the original TSS and to maintain TSS v2 with the data sets generated in tasks 1-6 of this workplan. The Cooperative Institute for Research in the Atmosphere (CIRA) located at Colorado State University will continue to manage the TSS v2 website.

**7.1 Regional Haze Planning WG reach out to CIRA staff to review TSSv1 and v2 needs – Feb.- April 2018 (RHP)**

* 1. **Populate TSS with monitor data (products of Task 1 and Task 6) – May-July 2018 (RHP)**

In support of the Embedded Progress Report (Task 6), continue existing data analyses and graphics for the 20% haziest and 20% best days through 2018 to allow states to compare 2018 Reasonable Progress Goals to actual visibility progress by 2018 and for the 5 yr average 2014-2018.

In addition, populate TSS v2 with the products of Task 1 including 20% best days, 20% most impaired days, natural conditions for 20% most impaired days calculated using 2016 EPA guidance, and results of alternative calculation of most impaired days and natural conditions.

* 1. **Populate TSS with emissions data – April 2018-Dec 2019 (RHP)**

Populate TSS with products of Task 2 of this workplan, including:

* 2014 NEI with WRAP state-approved updates
* 2014 modeling inventory including refinements for source categories with high inter-annual variability (e.g. dust, fire, international emissions)
* 2016 EPA modeling inventory with WRAP state-approved updates
* 2028 projection inventory grown from the 2014 modeling inventory for On the Books, On the Way, and Additional Reasonable Progress scenarios
* 2014 and 2028 weighted emissions potential and any other screening analyses used to prioritize source categories and specific sources for Reasonable Progress Analyses
  1. **Populate TSS with base year modeling results – July-Sept 2018 (RHP)**

Include all products from Task 3 (and consistent with formatting from Intermountain West Data Warehouse unless otherwise instructed)

* Model Protocol for 2014 model run
* Model Performance Evaluation: meteorological and air quality model performance including summary report and site-specific graphics comparing measured to modeled aerosol species mass and extinction
* Dynamic model evaluations
* Model sensitivity results including global models and boundary conditions
* Source apportionment modeling results
* Evaluation of EPA 2016 modeling platform

**7.5 Provide TSS training – fall 2018 (RHP)**

For WRAP webinar, review components of TSS v2 including demonstration of where to find specific components required for SIPs

* 1. **Populate TSS with 2028 on-the-books modeling results – Sept-Dec 2019 (RHP)**

Include all products from Task 4:

* 2028 OTB model results for every western Class I area and other sites as instructed by RHP and RTO
* Recommendations for calculating Relative Response Factors and implications for comparison of model results to URP for most impaired days
* Evaluation of model results for international emissions contribution to most impaired days and recommendations for accounting for international emissions in URP glide path.
  1. **Populate TSS with 2028 Additional Reasonable Control scenario modeling results – early 2020**

Include all products from Task 5:

* Final methodology for screening sources to consider for Reasonable Progress
* Report and database for 4-factor analysis performed at regional level for common source categories or sources
* Listing of control evaluation materials provided for state and source-specific analyses
* Lists of sources and emissions reductions by state that are included in 2028 control strategies, 2028 emissions inventory, and 2028 air quality modeling

1. **State Planning and Adoption Process (State Planning and Adoption) – Feb 2018-July 2021**
   1. **Identify SIP planning target dates – Jan-March 2018 (RHP, TD)**
      1. Gantt chart with planning timelines
      2. Identify milestones for technical support and key consultation points
   2. **Establish consultation framework – June-Dec 2018 (RHP, TD)**
      1. Identify key decision makers on issues between Council, Board, TSC, or Work Group
      2. Compile contact lists of Tribes, FLMs, EPA regions, States, and Locals engaged in RH planning
      3. Establish framework for consultation including “asks”

RHPWG: State-to-State Consultation and the FLM Consultation time line is shorter for those States which want to submit in 2020 or for Colorado who must get approval through Fall legislature.  That consultation would be pretty much be completed by end of Quarter 1, 2020 for those states.  The longer timeline would be for those states submitting in 2021; they would still need to finish consultation by end of Quarter 1, 2021.

* 1. **Consultation between WRAP member agencies including Federal Land Managers and Tribes (informal and formal) – Feb 2018-June 2021 (RHP, TD)**
     1. Early consultation on source screening for reasonable progress
     2. Consultation on source controls (4-factor analysis)
     3. Consultation on long-term strategies
     4. Formal 60-day FLM comment period
     5. Revisions/Responses based on FLM comments

RHPWG, RTOWG, TDWG: Who is responsible for the protocol for obtaining tribal data or for coordinating with tribes, so that we know the proper procedure?  For instance, California has a specific tribal air issues contact – and that person is not plugged into Regional Haze Planning.  It would be helpful to know what information we could request or exchange, especially as regards emissions for regional modeling for haze.

* 1. **Public Comment period (30 days) -- June 2021**
     1. Revise SIP based on public comments, respond to comments
  2. **SIP Submission to USEPA – July 2021**

Title of Gantt Chart section: **Critical Milestones for Associated Regional Analysis Technical Support in 2018-19** (bold text to appear in Gantt Chart)

* + TSC Progress Check Milestone Meetings/Calls
    - Kickoff call on Feb. 5, 2018
    - Board/TSC meeting on April 26th
    - July 9th Progress call
    - Sept. 13th Board/TSC meeting - determine meetings and calls, work product deliverables for late 2018 and first part of 2019
  + RTOWG
    - Modeling protocol complete
    - Model-ready base case emissions (2014 or 2016)
    - Base case ozone/PM/nitrogen transport modeling and source appointment results available (leverage from Regional Haze tasks)
    - Model-ready projected emissions for ozone/PM/nitrogen regional analysis (on-the-way and on-the-books for 2028, addressed by leveraging Regional Haze tasks)
    - Projected 2028 ozone/PM/nitrogen transport and source appointment results available (leverage from Regional Haze tasks)
    - Reasonable control projected emissions affecting ozone/PM/nitrogen by 2028 (leverage Regional Haze tasks)
    - Changes in ozone/PM/nitrogen from Reasonable Controls visibility modeling
  + FSWG
    - WRAP Tools / FETS update and operation
    - Historic and Future Fire Activity and Emissions
      * Recommend how to treat trends for Rx and Wx fire emissions by state and ecoregion to give some basis for "averaging time-space-chemical factors for fire emissions" useful for the 2013-2017ish baseline period to then project late 2020s scenarios for future levels of fire activity / emissions.
    - Evaluation of Smoke Management Plans
    - Ongoing Exceptional Events analysis and coordination
    - WRAP member agency coordination on wildfire response and smoke management
  + *OGWG*
    - *To be determined*
    - *Same*
    - *Same*
    - *Same*
  + *TDWG*
    - *To be determined*
    - *Same*
    - *Same*
    - *Same*

1. **TSC Progress Calls and Meetings**
   1. **Kickoff call on Feb. 5, 2018**
   2. **Board/TSC meeting on April 26th**
   3. **July 9th Progress call**
   4. **Sept. 13th Board/TSC meeting** - determine meetings and calls, work product deliverables for late 2018 and first part of 2019
2. **Regional Technical Operations Work Group - Associated Regional Analysis Technical Support tasks *need to update progress from 2017 and flesh out 2018-19 tasks*)**

Regional Haze Planning Technical Support – IWDW-WAQS contract technical tasks

Task 10.1 (following are subtasks)

Task 10.1.1 Evaluate EPA tracking metric and alternatives

Task 1.2 Analyze monitor data (trends, ranges, linkages)

Task 1.3 Re-evaluate glideslope

Task 2.1 Process 2014 NEI and refinements (base year modeling)

Task 2.2 Evaluate use of 2016 EPA modeling platform

Task 2.3 Develop and refine 2028 emission inventories

Task 2.4 Develop screening tools (e.g., weighted emissions potential)

Task 3.1 Prepare modeling plan

Task 3.2 Prepare and evaluate meteorological data

Task 3.3 Perform dynamic model evaluations

Task 3.4 Conduct sensitivity testing

Task 3.5 Evaluate use of 2016 EPA modeling platform

Task 3.6 Conduct/Evaluate AQ Modeling for BY and 2018 inventories

Task 4.1 Resolve tracking metric and model output issue

Task 4.2 Sensitivity/control strategy evaluation modeling for 2028

Task 4.3 Evaluate BY and 2028 source apportionment modeling results

Task 4.4 Evaluate change in visibility form BY to 2028

Task 5.2 Determine whether to use visibility as “fifth” factor

Task 6.1 Access visibility conditions and changes

Task 6.2 Analyze changes in emissions over the past 5 years

Associated Regional Analysis Technical Support

Task 10.2 (following are subtasks)

* + 1. RTOWG Management - periodic calls and meetings, reports on deliverables completed
    2. common calendar
    3. Base Year Emissions Processing, Meteorological Modeling/MPE, Global Modeling/MPE, Regional Air Quality Modeling/MPE (Feb. through July 2018)
    4. Dynamic Model Evaluations for ozone/PM/nitrogen changes to date – various platforms (Feb. through July 2018)
    5. 2016-ish IWDW-WAQS Air Quality Modeling for Planning/4 Corners Study/coordinate with EPRI International Haze Study (July through Oct. 2018)
    6. 2028 (2023?) Emissions Projections (contributions from OGWG, FSWG, rules on the books, and states) (Sept. 2018 through Jan. 2019)
    7. IWDW-WAQS 2028 On-the-Books Air Quality Modeling (Jan. through April 2019)
    8. IWDW-WAQS Future Year(s)’ Source Apportionment/Sensitivity Modeling (May 2019 through early 2020)
    9. IWDW-WAQS 2028 Control Scenarios’ Air Quality Modeling (May 2019 through early 2020)

1. **Fire and Smoke Work Group - Associated Regional Analysis Technical Support tasks (*need to update progress from 2017 and flesh out 2018-19 tasks*)**

Regional Haze Planning Technical Support

Task 11.1 (following are subtasks)

Task 1.1 Evaluate EPA tracking metric and alternatives – Feb. – March 2018 (**(RHP, RTO)**

Task 1.2 Analyze monitor data (trends, ranges, linkages)

Task 1.3 Re-evaluate glideslope

Task 2.1 Process 2014 NEI and refinements (base year modeling)

Task 2.3 Develop and refine 2028 emission inventories

Task 3.1 Prepare modeling plan

Task 3.4 Conduct sensitivity testing

Task 3.5 Evaluate use of 2016 EPA modeling platform

Task 4.2 Sensitivity/control strategy evaluation modeling for 2028

Associated Regional Analysis Technical Support

Task 11.2 (following are subtasks)

* + 1. FSWG Management - periodic calls and meetings, reports on deliverables completed

Foundational task. Consider workshop/conference attendance to promote group’s work.

* + 1. Annual Activity Data to support Emission Inventory (complete 2013-16, then early 2018 for 2017 year, repeat though early 2020)
    2. Review FETS/WRAP Fire Tools and identify potential updates and restructuring of FETS/WRAP Fire Tools (links to 10.2, complete April 2018)
    3. Determine present trend of fire activity and emissions by state and ecosystem, and range of future year contributions of fire-related natural sources (March through Sept. 2018)

Promote use of updated FETS for regional coordination (what venue(s)?). Propose methods for more timely information on planned burns (enhanced user roles). Help establish new, better SMP data connections to FETS (WRAP and beyond).

* + 1. Identify potential methodologies to determine future year emissions (Sept. 2018 through Jan. 2019)
       1. Synthesize current research
       2. Report possible approaches and calculate ranges of future year contribution of natural sources for air quality modeling
    2. Evaluation of Smoke Management Programs (complete in 2018)
    3. Review/Update current state smoke management programs
    4. Track, reference, and apply effects of smoke management programs on fire management-related regional haze controls on regional ozone/PM/nitrogen
    5. Identify Smoke Management Plans certified by states for use in prescribed burn exceptional event demonstrations
  1. Exceptional Events (complete in 2018)
     1. Survey states planning on developing a mitigation strategy
     2. Compile elements of mitigation plans
     3. Identify key data to collect for exceptional event demonstrations

Develop a resource guide with recommendations on key data sources and tools, and where to find them. Develop a framework to allow for the guide to stay up-to-date.

* 1. Smoke Emissions Modeling of Smoke (complete in 2018, links to 10.4 and 10.5)
     1. Identify and evaluate emissions and modeling for fire-related ozone/PM/nitrogen background and regional transport evaluation
     2. Specify modeling studies of fire emissions and impact analysis
  2. Coordination between States/Tribes/Federal Agencies (start June 2018, annual report in 2019 and 2020)
     1. Establish how states/tribes/federal agencies coordinate during wildfire season with focus on improvement
     2. Leverage work on evaluation of Smoke Management Programs to identify ways states/tribes/federal agencies can improve smoke management coordination

FSWG in Tasks 1.1 and1.2 touch on aspects of existing tasks 11.2-11.6, 11.9

FSWG in Task 2.1 has strong overlap with existing tasks 11.2 & 11.3, plus additional goals from FETS report

FSWG work related to Task 2.3

* Determine range of future year contributions of fire-related natural sources (March through Sept. 2018)
* Identify potential methodologies to determine future year emissions (Sept. 2018 through Jan. 2019)
* [Evaluate potential for longer-term disturbance](https://www.wrapair2.org/pdf/REACHFAQS-WEST_TechnicalProposal_11_16_2012final.pdf) modeling (e.g., [FETM](https://www.frames.gov/catalog/7167)) for 2028 and natural cond. estimates

1. **Oil and Gas Work Group - Associated Regional Analysis Technical Support tasks (*no dates, need to update progress from 2017 and flesh out 2018-19 tasks*)**

Regional Haze Planning Technical Support

Task 12.1 (following are subtasks)

* Task 2.1 Process 2014 NEI and refinements (base year modeling)
* Task 2.3 Develop and refine 2028 emission inventories
* Task 3.4 Conduct sensitivity testing
* Task 4.2 Sensitivity/control strategy evaluation modeling for 2028
* Task 5.3 Conduct regional/state source screening

Associated Regional Analysis Technical Support

Task 12.2 (following are subtasks)

* + 1. OGWG Management - periodic calls and meetings, reports on deliverables completed
    2. OGWG Administration
    3. OGWG Scope
       1. Identify Oil and Gas Sources for the entire upstream and midstream sectors (2)
       2. Identify WRAP member agencies dealing with oil and gas sources (2)
       3. Review Oil and Gas Specific Work Products to identify and discuss relevance, strengths, areas for improvement, and gaps
       4. Identify regional and local air quality planning needs

OGWG work for Task 12.2

1. Regional and Local Air Quality Planning Needs

*The Regional Haze Planning Technical Support deliverables may also be relevant to regional and local air quality planning needs for ozone and other air pollution indicators. Further, the effort by the OGWG to develop data and implement the results from the Regional Haze Planning Technical Support tasks will underpin a wide variety of air quality planning activities in the WESTAR and WRAP region for the next several years.*

1. Identification and Review of Member Agency Oil & Gas Programs

*Identification and review of member agency oil and gas programs to provide information on existing programs such as requirements for permitting and registration, emissions management, emission inventory, modeling, and monitoring. This task will also include the identification and discussion of information strengths, areas for improvement, and gaps. The OGWG will discuss needs of agencies without existing oil and gas programs and develop a basic oil and gas program example.*

1. Identification and Review of Member Agency Emissions Management

*Identification and review of member agency oil and gas emissions management to provide information on existing and proposed emissions management requirements by state, tribal, local, and federal agencies. This task will also include the identification and discussion of potential requirement overlap and authority concerns.*

1. Assess Impacts from Oil and Gas Production

*Assess benefits from oil and gas production as well as the associated environmental compliance costs to the regional economy. This task will also include the identification of commonalities and differences in oil and gas production, resource uses, and management programs in the WRAP region.*

1. Develop Oil and Gas Tool Box

*Utilize the data and results from the Regional Haze Planning Technical Support tasks to develop an oil and gas tool box with the ability to project future scenarios and trend assessments. Variables to be considered in the development of a tool box include methodologies, emissions, controls, production types and techniques, etc.*

1. Member Agency Collaboration on Sub-Regional Oil and Gas Management

*Evaluate and identify opportunities for state, tribal, local, and federal agencies to collaborate on sub-regional oil and gas management matters.*

1. **Tribal Data Development Work Group tasks (*no dates, need to update progress from 2017 and flesh out 2018-19 tasks*)**

Regional Haze Planning Technical Support

Task 13.1 (following are subtasks)

* Task 2.1 Process 2014 NEI and refinements (base year modeling)
* Task 2.3 Develop and refine 2028 emission inventories
* Task 8.1 Identify SIP planning target dates
* Task 8.2 Establish consultation framework
* Task 8.3 Consultation with WRAP member agencies

Associated Regional Analysis Technical Support

Task 13.2 (following are subtasks)

* + 1. TDWG Management - periodic calls and meetings, reports on deliverables completed
    2. Develop SharePoint website or WRAP webpage (or similar arrangement) to house TDWG documents and projects.
    3. Help Tribes understand the benefits of using WRAP and WESTAR products and services
    4. Solicit Tribal membership in WRAP and participation in the TDWG
    5. Provide educational opportunities for WRAP member Tribes and Tribes within the area of interest.
    6. Ensure availability and use of monitoring and emissions data from tribes in Regional Haze and Associated Regional Analysis Support tasks

Implement and follow-up on short survey for tribes distributed Fall 2017 on Emissions Inventory, Nation Emission Inventory, and Air Quality System Barriers, Interest and Capacity Survey.

Work with ITEP concerning the development of several products including education and outreach to entice WRAP participation and information on the importance of Regional Haze to Tribes.  Item 3 on the list would be a precedent setting task, looking at Tribal data from a regional perspective.

Conduct webinar on how tribes can participate in regional haze and why they should.  We would need a presenter that could speak to that and any other aspects to help tribes understand the significance of RH.

1. **Regional Haze Planning** **Work Group tasks (*no dates, need to update progress from 2017 and flesh out 2018-19 tasks*)**

**Many of these tasks will be done by other WGs and in some cases through contractor support.**

**Assign tasks below to: 1) tracking and coordination, or 2) lead responsibility for work products – each through a RHPWG Subcommittee**

**Subcommittees’ duties, and list of Subcommittees to be reviewed and edited.**

The 6 RHPWG Subcommittees (need list) will be like “Project Teams”, such as OGWG has. The Subcommittees are to act as coordinators and traffic cops, based on Regional Haze planning elements listed below and timing/deliverables for these elements identified in this workplan.

1.1 Evaluate EPA tracking metric and alternatives

1.2 Analyze monitor data (trends, ranges, linkages)

1.3 Re-evaluate glideslope

1.4 Identify dominant visibility-impairing pollutants for each CIA

2.2 Evaluate use of 2016 EPA modeling platform

2.4 Develop screening tools

3.1 Prepare modeling plan

3.3 Perform dynamic model evaluations

3.4 Conduct sensitivity testing

3.5 Evaluate use of 2016 EPA modeling platform

4.1 Resolve tracking metric and model output issue

4.2 Sensitivity/control strategy evaluation modeling for 2028

4.3 Evaluate BY & 2028 source apportionment modeling results

4.4 Evaluate chance in visibility from BY to 2028

5.1 Develop criteria for source identification & 4-factor analysis

5.2 Determine whether to use visibility as "fifth" factor

5.3 Conduct regional/state source screening

5.5 Identify 2028 control strategies & add to 2028 inventory

6.1 Access visibility conditions and changes

6.2 Analyze changes in emissions over the past 5 years

6.3 Prepare progress report

7.1 CIRA staff to reach out to RHPWG to review TSSv1 & v2

7.2 Populate TSS with monitor data

7.3 Populate TSS with emissions data

7.4 Populate TSS with base year modeling results

7.5 Provide TSS training

7.6 Populate TSS with 2028 on-the-books modeling results

7.7 Populate TSS with 2028 ARC scenario modeling results

8.1 Identify SIP planning target dates

8.2 Establish consultation framework

**Associated Regional Analysis Technical Support (if any, to be determined)**