



2018-2019 WRAP Workplan

Adopted by the WRAP Board on April 4, 2018
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I. WRAP Introduction

The Western Regional Air Partnership (WRAP) is a voluntary partnership of states, tribes, federal land managers, local air agencies and the U.S. EPA whose purpose is to understand current and evolving regional air quality issues in the West¹. The non-incorporated WRAP is administratively housed by the Western States Air Resources Council (WESTAR), a 501(c)(3) organization. WESTAR is a partnership of 15 western states formed to promote the exchange of information, serve as a forum to discuss air quality issues, and share resources for common benefit². WESTAR accepts grant funding for operations of both WESTAR and WRAP, enters into contracts and performs all financial functions for the WRAP. The WRAP Board approves WRAP actions; the WESTAR Council approves WESTAR actions. WRAP and WESTAR hold joint business meetings twice a year. More about the working relationship between WRAP and WESTAR can be found in the WESTAR and WRAP Joint Operating Agreement³ finalized August 1, 2017.

The WRAP Charter⁴ sets forth the purposes, principles and operating procedures for the WRAP. Co-Chairpersons of the WRAP Board of Directors facilitate consensus on all issues that come before the organization. The WRAP Board of Directors established the Technical Steering Committee (TSC) to oversee and direct the technical and analytical work and established Work Groups to manage specific elements of the work plan. A detailed description of the WRAP organizational structure is found as Attachment 1 of Appendix A.

The WRAP promotes, supports, and monitors the implementation of air quality management initiatives within and affecting the western U.S. through a process that strives for consensus (general agreement) among its partners and stakeholders⁵. It is the intent of the WRAP Board to resolve all issues on a consensus basis. Consensus has the following parameters:

- Consensus is agreement.
- Consensus is selection of an option that everyone can live with.
- Consensus may not result in the selection of anyone's first choice, but everyone is willing to support the choice.
- Consensus is not a majority vote.

In April 2018, the WRAP Board and WESTAR Council approved the Regional Haze Principles of Engagement to guide WRAP and WESTAR member and organizational efforts during the second round of regional haze analysis and planning.⁶ The WRAP/WESTAR regional haze planning process is owned by the WRAP/WESTAR membership and is dependent on member contributions, participation, and discussion. Members and ex-officio members are obligated to raise concerns and comment as issues arise to promote a transparent and trustworthy partnership among all involved⁷. WRAP and WESTAR committees work together to avoid duplication and enhance the collaboration needed for efficient, effective, and timely preparation and delivery of work products.⁸

The WRAP Board formed a four-member Administrative Subcommittee on Funding in the spring of 2017 to identify funding mechanisms to implement the WRAP Workplan. WESTAR's reporting system tracks the disposition of resources and work products. At the twice-yearly joint WESTAR/WRAP business meetings, the Treasurer of

¹ WRAP Strategic Plan, March 9, 2015, [link](#)

² WESTAR and WRAP Joint Operating Agreement, August 1, 2017, [link](#)

³ Ibid.

⁴ WRAP Charter, approved July 2014, [link](#)

⁵ WRAP Strategic Plan, March 9, 2015, [link](#)

⁶ WESTAR/WRAP Regional Haze Principles of Engagement, April 4, 2018, [link](#)

⁷ Ibid.

⁸ WESTAR and WRAP Joint Operating Agreement, August 1, 2017, [link](#)

WESTAR provides a financial report detailing the status of grants, contracts and expenditures of both WESTAR and WRAP⁹.

II. Summary of 2018-2019 Workplan

The 2018-2019 WRAP Workplan describes the topics, tasks, associated projects, and objectives for the WRAP TSC and Work Groups to continue in implementing the five goals laid out in the [WRAP Strategic Plan and Vision Statement](#) adopted by the WRAP Board on March 9, 2015. These five goals are:

1. Provide a forum for regional collaboration on technical and planning topics of common interest to the members.
2. Share and act on the current and future priority technical support needs of the members.
3. Provide timely and efficient access to needed technical information that is credible, current, comprehensive, and consistent for air quality management decisions.
4. Deliver technical support, training, products, and other services that meet the priority needs of the members.
5. Advocate and advance western technical issues for resolution.

In 2017, the WRAP achieved the near-term strategic objectives established by the WRAP Board in February 2016¹⁰:

- The TSC and Work Groups are operational,
- Funding for 2018/2019 is in place,
- Annual Workplans are in place to measure and track WRAP activities,
- The Regional Technical Operations Work Group is beginning work on a Regional Technical Operations Center, and
- The 2018-2019 Workplan continues implementation of the March 2015 WRAP Strategic Plan and Vision Statement.

Additional 2017 WRAP Workplan accomplishments are described in the appendices for each Work Group's 2018-2019 Workplan activities (section IV).

The 2018-2019 WRAP Workplan builds from the WRAP functional structure and five topical Work Groups established in the 2016 Workplan and identifies tasks for the TSC and each Work Group for 2018 and 2019. The 2018-2019 Workplan focuses on technical and planning analyses supporting Regional Haze State and Tribal Implementation Plan development, led by the Regional Haze Planning Work Group (RHPWG) and supported by all other Work Groups. The 2018-2019 WRAP Workplan also addresses associated regional analysis and technical support by the Work Groups, such as for Exceptional Events demonstrations and NAAQS SIPs and TIPs.

Sections A-F below provide an overview of these tasks. Part III of the 2018-2019 WRAP Workplan contains a tabular listings of key check-in points and milestones for regional haze, as well as associated regional analysis support, and budget summary. Part IV of the Workplan contains appendices presenting the detailed 2018-2019 Workplans for the TSC and all Work Groups, including deliverables. A description of the WRAP organizational structure is found as Attachment 1 of Appendix A. Appendix G provides detailed Gantt charts for the implementation of this Workplan.

Due to the inherent uncertainties with the reconsideration of the January 2017 Regional Haze Rule revision and draft nature of the July 2016 U.S. EPA guidance, the TSC, with the assistance of WRAP staff and Work Group Co-Chairs, revisited the 2018-2019 Workplan in the 4th calendar quarter of 2018 to conduct a mid-course review and progress assessment to identify outstanding issues and propose new tasks, in the interest of having a current Annual Workplan for the Board, TSC, Work Groups, and WRAP member agencies. The mid-course review did not revisit the 2017

⁹ Ibid.

¹⁰ WRAP 2016 Annual Workplan, May 9, 2016, p.3, [link](#)

WRAP Workplan status reports and accomplishments described in the appendices, but rather focused on action items for the 2018-2019 WRAP Workplan. Changes to the Regional Haze program and/or guidance by EPA may also necessitate review of the Workplan.

A. Implement and Manage Coordination: Technical Steering Committee

The TSC organizes, directs, and coordinates WRAP Work Groups and project activities, with the TSC Co-Chairs serving as liaisons to the Board responsible for reporting TSC activities to the Board. The TSC manages TSC activities and provides oversight to WRAP Work Groups and activities. Work Group Co-Chairs lead and execute the activities associated with the individual Work Groups. The TSC holds the lead responsibility for the annual WRAP Workplan.

The TSC and Work Groups are to conduct their business on a consensus basis. When a Work Group cannot reach consensus on an issue, it will be referred to the TSC. If the TSC cannot reach a consensus on the issue, it will be referred to the WRAP Board for resolution.

In consultation with Work Group Co-Chairs, the TSC will review and seek Board approval of the 2018-2019 Workplan. The Work Groups will provide inputs to the TSC for the workplan and budget for Board approval, covering technical projects and Work Group coordination. WRAP staff will provide support for the TSC and Work Groups. The TSC will focus on providing oversight of the work groups, committees and projects or tasks by reviewing and directing the effort of WRAP Work Groups and staff to manage projects via routine status reports, the annual workplan and budget, and periodic interaction with contractors. The TSC will meet regularly with Work Group Co-Chairs.

The TSC has been delegated the responsibility to prepare an allocation of funds in hand for both operations and technical analysis activities and track them for the Board. The TSC is well positioned to work with WRAP and WESTAR staff to manage expenditures and anticipate the needs for additional funding. The TSC will coordinate among and provide oversight for activities conducted under grants, cooperative agreements, and other Board-authorized projects, and coordinate with WESTAR work groups and committees to ensure WRAP activities provide needed support. The TSC will report to the WRAP Board at scheduled Board meetings. (See Appendix A)

B. Support Technical and Planning Analysis for Regional Haze State and Tribal Implementation Plans (SIPs and TIPs)

Regional Haze Implementation Plan preparation is a multi-year effort requiring regional planning and interstate coordination and consultation, as well as consultation with the FLMs and affected Tribes. Regional Haze SIP and TIP preparation requires extensive technical support: analyzing monitor data, developing and analyzing emission data, baseline and future year modeling, and control analyses. Preparation of Regional Haze SIPs and TIPs is facilitated by public access to regional planning data.

The RHPWG will focus on identifying and prioritizing the RH SIP preparation requirements and required technical support, providing a schedule and framework to support regional planning, and integrating the activities of other WRAP Work Groups to ensure the needed elements are available to meet the July 2021 SIP submittal deadline. Support for RH TIP preparation will be facilitated by the Tribal Data Work Group (TDWG). The RHPWG will direct the activities of subcommittees formed by the RHPWG. Additional tasks may be developed in response to the reconsideration of the RHR and finalization of draft EPA implementation guidance. (See Appendix B)

C. Promote Understanding of Role of Fire and Smoke in Regional and Local Air Quality Plans

Fire emissions, both natural and anthropogenic, are important pollution sources across the Western U.S. and are expected to increase in both intensity and duration for a variety of reasons, including accumulated fuels, climate changes, drought, and other factors. Estimating and tracking fire emissions will improve the understanding of the role

of fire and smoke in NAAQS attainment and for Regional Haze planning, both now and in the future. Modeling a range of future fire emissions will help constrain future impacts from this sector.

The Fire and Smoke Work Group (FSWG) will focus on analysis and planning activities related to improving activity data to support emissions inventories for fire and smoke emissions, begin scoping work to assess present and range of future year contributions of natural sources such as fire, undertake evaluation of Smoke Management Programs, survey and compile information about Exceptional Events assessment efforts, review the treatment of fire and smoke emissions in modeling studies, and improve coordination between state, tribal, and federal agencies. Several of these activities involve close coordination with other WRAP Work Groups as described in the FSWG Workplan. FSWG activities equally support Regional Haze planning and associated regional analysis technical support for Exceptional Events demonstrations and NAAQS SIPs and TIPS. (See Appendix C)

D. Promote Understanding of Role of Oil and Gas in Regional and Local Air Quality Plans

Emissions from the exploration, development, and production of oil and gas resources, as well as emissions from their transport and use, impact the Intermountain Region and other portions of the WESTAR-WRAP region. Air quality model performance will be improved by refining emissions inventories, especially from the rapidly changing Oil and Gas sector. Modeling a range of future emissions from the Oil and Gas sector will constrain future impacts from this sector.

The Oil and Gas Work Group (OGWG) will focus on analysis and planning activities related to improve activity data to support emissions inventories for oil and gas emissions, and begin scoping work to assess the scope of both the present, and the range of future year emissions management programs by the variety of regulatory jurisdictions within the WESTAR-WRAP region, by agency. The OGWG will coordinate among state, tribal, local, and federal member agencies' Oil & Gas programs, including review of modeling, monitoring, and control program assessment studies for Oil & Gas emissions. Several of these activities involve close coordination with other WRAP Work Groups as described in the OGWG Workplan. Oil and Gas Work Group activities primarily support Regional Haze planning but also address associated regional analysis technical support for Exceptional Events demonstrations and NAAQS SIPs and TIPS. (See Appendix D)

E. Provide Regional Technical Capabilities

Efforts by regional, federal, state, tribal, and local groups provide a strong foundation for regional collaboration on technical analysis in support of air quality planning across the Western United States. Various modeling platforms within the WESTAR/WRAP region, numerous special studies, and state, tribal and local air agency programs provide the basis for regional collaboration in support of technical analysis and air quality planning.

The Regional Technical Operations Work Group (RTOWG) will focus on regional analysis in support of planning activities related to: emissions and modeling for regional haze, ozone, PM, and other indicators of background and regional transport; sensitivity and other analyses of emissions data focused on the western U.S.; and performing and leveraging modeling, data analysis, and contribution assessment studies. Work will include investigation of "background ozone" impacts to western U.S. locations and coordination and collaboration with other WRAP member-sponsored regional air quality modeling groups, including the Intermountain West Data Warehouse (IWDW), the Air Information Report for Public Access and Community Tracking (AIRPACT), U.S.EPA Office of Air Quality Planning and Standards (OAQPS), Bay Area Air Quality Mgmt. District, and other state and local agencies doing regional ozone modeling. In addition, work will provide guidance on more complete and uniform model performance evaluations (MPEs) and develop and implement a protocol to use the IWDW-Western Air Quality Study (WAQS) capabilities to be the WRAP Regional Technical Center. Several of these activities involve close coordination with other WRAP Work Groups as described in the RTOWG Workplan. RTOWG activities support the spectrum of air quality planning issues across the WRAP with an emphasis on Regional Haze planning, but including NAAQS SIP and TIP development and exceptional events demonstrations. (See Appendix E)

F. Support Development of Tribal Air Quality Capacity and Capability

There are 480 federally recognized Tribes within the Western Regional Air Partnership (WRAP) with more than half in Alaska. There are 61 Tribal air quality programs in the WRAP area, excluding those in Alaska. WRAP currently has 23 active member tribes. Each Tribal air quality program has unique needs and requires specific emphasis to meet their goals.

The TDWG will focus on data gathering regarding the size, complexity, and scope of tribal air needs, expanding staff capacity, continuing current funding and identifying additional funding resources, and building capability by providing training opportunities from organizations specific to Tribes. The TDWG will closely coordinate with other WRAP Work Groups to assist in facilitating assessments and technical analyses that support TIP development and tribal air program efforts and activities among the spectrum of air quality planning issues across the WRAP. (See Appendix F)

III. Milestones and Budget 2018-2019

A. 2018-2019 Workplan Milestones

Key 2018-2019 Workplan milestones are outlined in the tables below. Check-ins (black boxes) and critical milestones (red boxes) for regional haze technical planning support are found in Table 1, and ongoing activities and check-ins for associated regional analysis technical support are found in Table 2. Master 2018-2019 WRAP Workplan Gantt Charts showing more detail for tasks and deliverables by Work Group, TSC and contracted support are included in Appendix G for both regional haze technical planning support and associated regional analysis technical support. Descriptive detail on 2018-2019 Workplan tasks and deliverables for the TSC and each of the Work Groups is found in the TSC and Work Group Workplans in Appendices A-F.

Table 1: Key Check-Ins and Critical Milestones for Regional Haze Planning Technical Support (by Task)

Key Check-Ins and Critical Milestones for Regional Haze Planning Technical Support (by Task)															
Task	2018				2019				2020				2021		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Task 1. Monitoring Data Analysis															
Reach consensus -- tracking metric					■										
Reach consensus -- Natural Conditions estimates							■								
Reach consensus -- adjusting the glideslope for natural fire and int'l emissions									■						
Task 2. Emissions Inventory															
Enhanced base year emission inventory ready for modeling					■										
Reach consensus -- inventory projection methods for fire, oil and gas, others							■								
Enhanced planning emission inventory (on-the-way/on-the-books) ready for modeling								■							
Final 2028 control measures emission inventory ready for modeling										■					
Task 3. Air Quality Modeling (Visibility and Source Appointment Modeling)															
Approve modeling plans and protocol					■										
Base year modeling and Model Performance Evaluation complete							■								
2028 planning modeling complete (on-the-way/on-the-books controls)									■						
Final 2028 control measures modeling complete											■				
Task 4. Evaluating Modeling Results															
Reach consensus -- resolution of tracking metric and model output						■									
Reach consensus -- scenarios for sensitivity testing/modeling								■							
Evaluate change in visibility -- Base year to 2028 (Reasonable Progress Goals)											■				
Task 5. Control Measures Analysis (Reasonable Progress Analysis)															
Reach consensus -- development and application of screening tools					■										
Reach consensus -- application of Source Appointment modeling results					■										
Reach consensus -- use of visibility as a fifth factor and how to incorporate					■										
States finish control analysis											■				
Task 6. Coordinate Training and Outreach Efforts															
Oversee compilation and distribution of materials														■	
Task 7. Technical Support System TSS v2															
TSS v2 fully functional with all necessary data and tools														■	
Task 8. State Planning and Adoption Process															
2018 RH SIP due															■

Table 2: On-going Activities and Key Check-Ins for Associated Regional Analysis Technical Support (by Work Group)

On-going Activities and Key Check-Ins for Associated Regional Analysis Technical Support (by Work Group)															
Task	2018				2019				2020				2021		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Technical Steering Committee															
Oversee finalization of 2018-2019 WRAP Workplan and budget for Board approval		■													
Provide monthly oversight and direction to Work Groups and coordinate activities	----- on-going -----														
Conduct periodic assessment of 2018-2019 Workplan progress and report out to Board		■		■		■		■		■		■		■	
Conduct mid-course review of 2018-2019 Workplan and revise as necessary					■										
Regional Haze Planning Work Group															
Provide oversight and direction to Subcommittees and coordinate activities	----- on-going -----														
Identify and provide training needed for SIP preparation	----- on-going -----														
Schedule and arrange regional haze planning webinars and meetings as needed				■		■	■	■		■	■				
Regional Technical Operations Work Group															
Coordinate with other Work Groups to identify needed air quality modeling products	----- on-going -----														
Leverage opportunities and WRAP work through coordination and collaboration	----- on-going -----														
Fire and Smoke Work Group															
WRAP Tools/Fire Emissions Tracking System update and continued operation	----- on-going -----														
Identify key data to collect in support of exceptional event demonstrations			■												
Coordinate wildfire response and smoke management										■	■	■	■	■	
Oil and Gas Work Group															
Member agency collaboration on sub-regional oil and gas management	----- on-going -----														
Regional and local air quality planning needs	----- on-going -----														
Tribal Data Work Group															
Solicit Tribal membership and participation in WRAP	----- on-going -----														
Assist Tribes with WRAP/WESTAR technical tools and data analyses	----- on-going -----														
Develop strategies to facilitate submittal of Tribal monitoring and emissions data					■										

B. Budget Table Summaries

The budget summaries below show the 2018-2019 WRAP budget and funding sources by TSC and Work Group (Table 3) and current and on-the-way contracted support by applicable Work Group (Table 4). Note the current and on-the-way contracted support costs are included in the overall 2018-2019 WRAP budget shown by Table 3.

Table 3: 2018-2019 WRAP Budget – March 2019 Update

Work Group	Funds awarded for 2018 through March 2020	Committed, not yet awarded Funds	Funding Source
Fire & Smoke WG	\$82,696	\$17,304	Regional Analysis funds
Oil & Gas WG	\$248,500	\$0	Regional Analysis and IWDW-WAQS project funds
Regional Technical Ops. WG Emissions & Modeling	\$252,941	\$447,891	Regional Analysis and IWDW-WAQS project funds
Tribal Data WG	\$72,826	\$0	Regional Analysis funds
WRAP regional support			
EGU Emissions Analysis	\$50,000	\$0 to date	WEST Associates
Monitoring Data Analysis	\$35,000	\$5,000	Regional Analysis funds
Planning Support & Analysis	\$25,000	\$94,500	Regional Analysis funds
Technical Support System v2	\$260,000	\$0	Regional Analysis funds
Totals	\$1,026,963	\$564,695	\$1,591,658
Expenses for WGs / Tech. Steering Comm. / Board / WRAP Operations paid by other WESTAR grant funds – travel, conference calls, meetings, salaries/indirect/fringe benefits			

Table 4: Current and On-the-Way Contracted Support (February 19, 2019 Report)

Contractor Name	Contract #	Activities & Funding Source EPA, NPS (IWDW-WAQS), Regional Analysis	Amount	End Date & Progress
Colorado State University / CIRA	18-04	Regional Haze TSSv2 development	\$ 10,905 + \$ 250,000	April 30, 2020, proceeding
Ramboll Environment	18-05	OGWG Emission Inventory Road Map #1 of 2	\$ 64,000 + \$ 34,500	early 2020, proceeding
Ramboll Environment	18-06	Regional Haze Planning Readiness	\$ 25,000	Feb. 28, 2019, largely complete, to be amended for additional tasks: Q/D, SS considerations, tribal consultation
Air Sciences	18-07	Fire & Smoke WG workplan tasks	\$ 82,696	late 2019, proceeding, add remaining funds to total \$100k
Ramboll Environment	18-08	OGWG Emission Inventory Road Map #2 of 2	\$ 150,000	early 2020, proceeding
Air Resource Specialists	18-09	Regional Haze Data Analysis	\$ 35,000	Spring 2019, proceeding, to be amended for additional tasks
Northern Arizona University / Institute for Tribal Environmental Professionals	18-10	Tribal Data WG workplan tasks	\$ 72,826	late 2019, proceeding, may need to be amended
Colorado State University / CNEE	18-11	EGU Emissions Analysis Project Phase I <i>WEST Associates funding</i>	\$ 50,000	April 2019, proceeding, likely Phase 2 project with additional WEST funding
Ramboll Environment	18-12	2014 Shakeout effort on Modeling Platform Development #1	\$147,880 combined funding	April 2019, proceeding
Ramboll Environment	19-01	2014 Shakeout effort on Modeling Platform Development #2	\$105,061 combined funding	

Current Total Active Funded

\$601,452 Regional Analysis / EPA | \$50,000 WEST | \$98,500 IWDW-WAQS | \$252,941 mix of Regional Analysis and IWDW-WAQS sponsor funds

Contracts “on-the-way” for 2018-2019 WRAP Workplan

Contractor Name	Contract #	Activities & Funding Source EPA, NPS (IWDW-WAQS), Regional Analysis	Amount	End Date & Progress
tbd	tbd	remaining tasks in Regional Modeling Timeline by RFP ~ 40% to be IWDW-WAQS funds at WESTAR ~ 60% to be Regional Analysis funds	Likely to be awarded in phases	RFP in Feb., work to be done April 2019 through March 2020

IV. Appendices

Appendix A

Technical Steering Committee Description, 2017 Update and 2018-2019 Workplan Activities

Introduction

This document presents the member qualifications, membership and committee structure, meeting and call schedule, duties, and work group oversight activities of the WRAP Technical Steering Committee (TSC) under the requirements of the WRAP Charter¹¹ and Board-approved planning documents. This 2018-2019 version of this document updates the Technical Steering Committee Description approved by the Board in 2015.¹² Updates to this document can be made through the WRAP Board at any time, and can be initiated by the Board, TSC members, or at the suggestion of WRAP member agencies.

Purpose

The TSC provides oversight of WRAP technical projects and Work Groups, and coordinates with WESTAR work groups and committees to provide needed support. The TSC serves as liaison to the Board and reports on the TSC and Work Group activities. Attachment 1 provides an overview of the WRAP organizational structure including the duties and relationships between the Board, WRAP staff, the TSC, Work Groups, and Project Teams.

TSC Co-Chairs and Work Group Membership Structure and Terms

Julie Simpson, Nez Perce Tribe, Air Quality Program
Ryan Templeton, Arizona Department of Environmental Quality

The TSC will have two (2) Co-Chairs appointed by the Board. TSC Chairs will be from WRAP member organizations. The Co-Chairs will be responsible for serving as liaisons to the Board and reporting on the TSC activities to the Board, with support from WRAP staff.

TSC members are from WRAP member organizations and are senior air quality technical or planning program management staff with experience in air quality programs distributed between tribal, state, local, and federal representatives. The desired distribution of TSC members is to reflect the diversity of member agency programs and air quality issues across the WRAP region, and draw upon the substantial collaborative regional air quality technical and planning needs and experience of WRAP member agencies.

The TSC is composed of:

- Three (3) state representatives;
- Three (3) tribal representatives;
- Three (3) Local Air Agency representatives – at least one (1) from the non-California WRAP region; and
- Three (3) federal agency representatives – one (1) of whom will represent the U.S. EPA.

The TSC will function by consensus as defined in the WRAP Charter.

Vacancies among TSC seats may be filled by the Board at any time. All TSC members and Chairs will be appointed for two-year terms. To assure appropriate time and effort commitment, the Board will nominate individual TSC members and the WRAP member agency representative from the nominee's agency will accept the nomination.

The TSC Co-Chairs may include participation from other WRAP member agencies. The TSC Co-Chairs will consult with the Board for participation from non-member agencies, industry, and environmental stakeholders. These

¹¹ WRAP Charter, approved July 2014, [link](#)

¹² Technical Steering Committee Description, October 13, 2015, [link](#)

participants beyond the core TSC Members will be considered Advisors. The TSC will discuss with the Board, the involvement of non-members, in the context of the annual Workplan update, including seeking the agreement of the Board for specific, named individuals from non-WRAP member agencies.

Duties and WRAP Staff Support

The TSC will have at least bi-monthly conference calls to manage TSC activities and provide oversight to WRAP work groups and projects. The TSC will oversee the preparation of an annual workplan and budget for Board approval, covering technical projects and Work Groups. The TSC may have meetings immediately preceding or following the Spring and Fall WRAP membership meetings, and/or other meetings as needed, to plan next steps, address comments and concerns, and review Workplans and activities. The TSC Co-Chairs will plan and direct the calls and meetings, and with assistance from WRAP staff, take the lead in communications and other necessary Board interaction.

WRAP staff will provide support for TSC calls and meetings. WRAP staff will assist with arranging and documenting TSC calls and meetings, prepare TSC Workplans and budgets for review and action, assist with status reports on the Work Groups' activities, and provide status reports on the deliverables, budgets, and timelines for the WRAP's technical projects.

Day-to-day management of WRAP technical projects will primarily be conducted by WRAP staff. The TSC will provide oversight and coordination for the work groups, committees, and projects or tasks listed below by reviewing and directing the effort of WRAP Work Groups and staff to manage these projects, via routine status reports, the annual workplan and budget, and periodic interaction with the contractors operating these systems.

TSC Oversight of WRAP Technical Projects

The TSC will coordinate among and provide oversight for the activities conducted under following grants, cooperative agreements, and other Board-authorized WRAP projects. The tasks comprising the projects are documented in the annual workplan, and posted on the WRAP website.

- 1) The WRAP Regional Technical Support portion of the WESTAR-EPA grant;
- 2) The WESTAR/WRAP-BLM Cooperative Agreement;
- 3) The WESTAR/WRAP-NPS Cooperative Agreement;
- 4) Development and ongoing implementation of WRAP regional analysis capabilities; and
- 5) Any modified or new tasks, projects, and/or initiatives recommended by the Board for implementation via acceptance by WESTAR through new or modified Cooperative Agreements, Grants, Funding Opportunities, or other mechanisms.

TSC Oversight of WRAP Work Groups

The TSC will provide oversight for the following WRAP Work Groups. The activities of the projects and work groups will be documented for review by the Board. Additional or modified Work Groups may be authorized by the Board and those changes made in the appropriate Work Group workplan document and via the annual workplan.

- 1) Regional Haze Planning Work Group (RHPWG)
- 2) Fire and Smoke Work Group (FSWG);
- 3) Oil and Gas Work Group (OGWG);
- 4) Regional Technical Operations Work Group (RTOWG); and
- 5) Tribal Data Work Group (TDWG).

WRAP Work Groups will be composed of members from WRAP member agencies, and Co-Chairs of each work group will be designated by the TSC to lead and execute the activities associated with the individual work group, outlined in each work group's workplan document. Some work groups will or could have significant participation

from industry and environmental stakeholders, as directed by the Board and overseen by the TSC. The TSC will provide oversight of the work groups by reviewing their annual Workplans, budget, projects and deliverables, via routine status reports, and periodic interaction with the work groups' Chairs and members.

Coordination

The TSC will also coordinate with the following work groups and committees to ensure activities conducted in WRAP projects, and under the auspices of the TSC and WRAP Work Groups provide needed support:

- 1) WESTAR Planning Committee;
- 2) WESTAR Technical Committee; and
- 3) Other groups as designated by the Board or WESTAR Council.

TSC Status Report for 2017 Workplan

In 2017, the WRAP achieved the near-term strategic objectives established by the WRAP Board in February 2016. The table below lists these strategic objectives and identifies 2017 WRAP Workplan accomplishments. Strategic objective activities will be carried forward into 2018-2019 Workplan:

WRAP Near-Term Strategic Objective	Progress
Create and operate the TSC and topical Work Groups.	Accomplished. Operation of Work Groups to continue in 2018-2019.
Create stable, sufficient funding for staff to support WRAP, organizational activities, and enable participation by all member agencies.	Accomplished. Activity to continue in 2018-2019.
Approve and utilize the WRAP Workplan to measure and track WRAP activities.	Accomplished. Activity to continue in 2018-2019.
Design and bring the Regional Technical Center (RTC) on-line.	Regional Technical Operations Working Group formed in 2016, developed a 2017 Work Group Workplan, and began RTC work in 2017. Activity to continue in 2018-2019.
Continue implementation of the March 2015 WRAP Strategic Plan and Vision Statement. ¹³	Accomplished. Activity to continue in 2018-2019.

In 2017, the Technical Steering Committee accomplished its tasks as laid out in the 2017 Annual WRAP Workplan and summarized in the table below. Many of the 2017 tasks have components that will also be addressed in the 2018-2019 WRAP workplan, as noted.

2017 TSC Task	2017 Progress	Outstanding Tasks
-Oversee finalization of the 2017 calendar year	Accomplished:	Carry any uncompleted

¹³ WRAP Strategic Plan, March 9, 2015, [link](#)

2017 TSC Task	2017 Progress	Outstanding Tasks
<p>annual workplan and budget for Board approval. -All WRAP Work Groups' tasks and activities, as well as WRAP projects are documented in the annual workplan.</p>	<p>-2017 Annual WRAP Workplan approved by WRAP Board August 14, 2017</p>	<p>2017 Workplan tasks forward in the 2018-2019 WRAP Workplan</p>
<p>-Coordinate among and provide oversight for activities conducted under grants, cooperative agreements, and other Board-authorized WRAP projects. -Provide monthly status updates to WRAP Board, including Work Group progress and the activities conducted under grants, cooperative agreements and other Board-authorized WRAP projects. -Provide coordination for the Work Groups and staff, and their projects and tasks. -Ensure periodic interaction with Work Group Co-Chairs and Members and with the contractors operating any projects</p>	<p>Accomplished: -TSC Co-Chairs and WRAP Staff participated in WRAP Board calls and Spring and Fall WRAP/WESTAR Business Meetings -Initiated and held monthly TSC calls -Participated in WG calls -Participated in WRAP Meetings of Administrative Subcommittee on Funding -Status and Budget Reports at WRAP Board Meetings and Spring and Fall WRAP/WESTAR Business Meetings -Other calls scheduled as needed</p>	<p>Ongoing: These tasks will be carried forward in the 2018-2019 WRAP Workplan, as appropriate</p>
<p>Workplan and Work Group oversight and direction Work with the Board-approved Work Group Co-Chairs to complete Work Group memberships</p> <ul style="list-style-type: none"> ● Work with the WRAP Work Groups on development and finalization of their individual Work Group Workplans ● Establish monthly status reports, with Work Groups and WRAP project leads reporting progress to the TSC during monthly TSC meeting ● Hold two Technical Planning meetings with TSC Members and Work Group Co-Chairs 	<p>Accomplished: -Work Group membership approved by Board - Participated in Work Group calls to facilitate workplan development -Monthly progress reported at scheduled TSC Member / Work Group Co-Chair calls -Organized and held spring and fall WRAP Technical Planning meetings April 12 (virtual) and Oct 26-27 (in-person), 2017</p>	<p>Ongoing: These tasks will be carried forward in the 2018-2019 WRAP Workplan, as appropriate</p>
<p>-Coordinate with WESTAR committees and work groups to ensure activities conducted in WRAP projects, under the auspices of the TSC and WRAP Work Groups, provide needed support. -Maximize coordination within WRAP and leverage work of other related partner organizations through outreach, hosting and attending technical conferences and producing white papers to network with other organizations with common interests and needs.</p>	<p>Accomplished: -Participate in WESTAR Technical and Planning Committees call -Hosted 2 technical planning meetings -Attended relevant technical conferences -Organized and held Western and National Regional Haze Planning Workshop Dec 5-7, 2017</p>	<p>Ongoing: These tasks will be carried forward in the 2018-2019 WRAP Workplan, as appropriate</p>
<p>-Develop the 2018 Annual WRAP Workplan and review the associated annual Work Group</p>	<p>Accomplished: -Initial Development of 2018-</p>	<p>Ongoing: These tasks will be carried forward</p>

2017 TSC Task	2017 Progress	Outstanding Tasks
Workplans, budgets, projects and deliverables -Post WRAP Board-approved Annual WRAP Workplan and status reports of the WRAP Work Groups and WRAP projects to the WRAP website.	2019 Draft WRAP Workplan: October-December, 2017 -Workplan and status reports posted on WRAP website	in developing the 2018-2019 WRAP Workplan, as appropriate

TSC Action Items for 2018-2019 WRAP Workplan

TSC tasks and deliverables for the 2018-2019 Workplan are identified below:

2018-2019 TSC Tasks	Deliverables	Schedule	Funding
Finalize 2018-2019 WRAP Workplan and Budget for all Work Group Tasks and Activities including WRAP Projects	2018-2019 WRAP Workplan Approved by WRAP Board	Board Approved April 4, 2018	In-kind
Work with Work Groups to Develop and Finalize Individual Work Group Workplans	2018-2019 Final Draft WRAP Work Group Workplans	Board Approved April 4, 2018	In-kind
Complete Final Edits to 2018-2019 Workplan and Submit Workplan to Board for Approval	2018-2019 Final Draft WRAP Workplan	Board Approved April 4, 2018	In-kind
Conduct Mid-Course Review, Addressing Scheduling Issues, Identifying and Proposing New Tasks and Opportunities for Collaboration, Prepare Addendums to Workplan	TSC, Work Group Co-Chairs, WRAP Staff Develop Addendums to Workplan, As Needed Board Approval of Addendums	Mid-Course Review December 2018 – February 2019	In-kind
Continue Implementation of March 2015 WRAP Strategic Plan and Vision Statement ¹⁴	Workplans and Work Products Consistent with Strategic Plan	On-going	In-Kind
Provide Oversight and Coordinate Activities Conducted Under Grants, Cooperative Agreements, and WRAP Projects	Monthly Calls of TSC Co-Chairs and WRAP Staff Timely Completion of Projects	On-going Monthly	In-Kind
Provide Oversight, Direction, and Coordination for Work Groups and WRAP Staff and Their Projects and Tasks	Arrange and Schedule Meetings as Needed	On-going As Needed	In-Kind

¹⁴ Ibid.

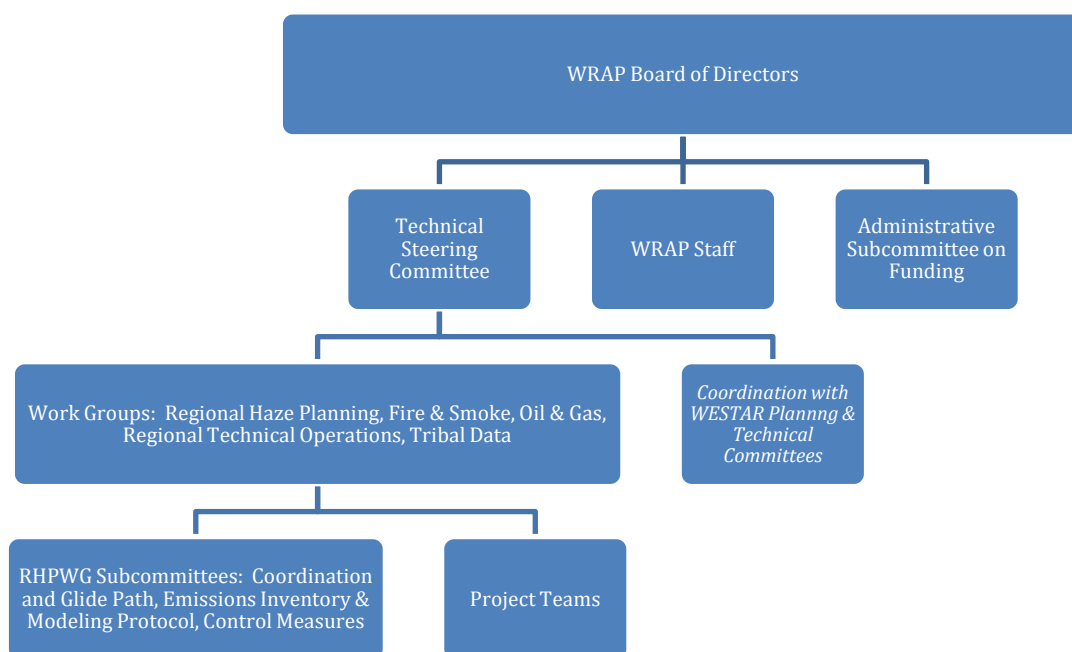
2018-2019 TSC Tasks	Deliverables	Schedule	Funding
	Timely Completion of Workplan Tasks		
Conduct Periodic Interaction with Work Group Co-Chairs and Membership, and Contractors Performing Support Tasks	<p>TSC Co-Chairs and WRAP Staff Participation in Work Group and Contractor Calls and Meetings</p> <p>Work Group Co-Chairs Participation and Report-outs at TSC Calls and Meetings.</p> <p>TSC, Work Group Co-Chairs, and WRAP Staff Participation in Technical Planning Meetings</p>	<p>On-going Monthly and as Needed</p> <p>Spring and Fall Technical Planning Meetings</p>	In-Kind
Work with Work Group Co-Chairs to update Work Group Memberships as Needed	<p>TSC and Work Group Co-Chairs and WRAP Staff Ensure Work Group Memberships Are Filled and Up to Date</p> <p>Board Approves Work Group Co-Chairs, TSC Approves Work Group Membership</p>	On-going Annually and As Needed	In-Kind
Develop draft 2020 Workplan and Review Work Group draft 2020 Workplans, Budgets, Projects, and Deliverables	Draft 2020 WRAP Workplan	October-December 2019	In-Kind
Design and Bring the Regional Technical Center (RTC) On-Line	RTC is operational	December 2018	In-Kind
Coordinate with WESTAR Committees and Work Groups to Ensure WRAP Workplan Provides Needed/Requested Support	TSC Co-Chairs and WRAP Staff Participation in WESTAR Committee and Work Group Calls and Meetings	On-going Monthly and As Needed	In-Kind
Leverage Work of Other Partner Organizations, Network with Other Organizations with Common Interests and Needs	TSC, Work Group Co-Chairs, and WRAP Staff Conduct Outreach, Host and Attend Technical Conferences and Produce Topical White Papers	On-going, As Needed	In-Kind
Conduct Comprehensive Budget Tracking for Operations and Technical Analysis Activities for the WRAP Board, Managing	TSC Co-Chairs and WRAP Staff Participation in WESTAR Committee and Work Group Calls and Meetings, TSC Calls and Meetings, WRAP Work	On-going Quarterly and As Needed	In-Kind

2018-2019 TSC Tasks	Deliverables	Schedule	Funding
Expenditures and Anticipating Funding Needs	Group Calls and Meetings, Calls and Meetings of WRAP Administrative Subcommittee on Funding		
Work with TSC to update Memberships as Needed	TSC Co-Chairs and WRAP Staff Ensure TSC Memberships Are Filled and Up to Date Board Approves TSC Co-Chairs and Membership	On-going Annually and As Needed	In-Kind
Reporting	Progress Reports and Recordkeeping Occur Regularly	On-going As Needed	In-Kind
Provide Monthly Status Updates to Board of Work Group Progress and Activities Conducted Under Grants, Cooperative Agreements, and WRAP Projects	TSC Co-Chairs and WRAP Staff Participation in Monthly Board Calls and at Spring and Fall WRAP/WESTAR Business Meetings	On-going Monthly	In-Kind
Provide Funding/Budget Updates for WRAP Activities	WRAP Staff Provide Budget Reports to WRAP Administrative Subcommittee on Funding and WRAP Board, then share with TSC and Work Groups at Calls and Meetings	Quarterly	In-Kind
Reports to Board Linking Work Products and Progress	WRAP Staff & TSC presentations	Semi-Annual at WESTAR and WRAP meetings	In-Kind
Post Board-Approved Workplan and Status Reports of WRAP Work Group and Projects to WRAP Website	WRAP Staff and Contractors Post to WRAP Website	On-going As Needed	In-Kind

WRAP Organizational Structure¹⁵

Membership in the WRAP is open to all states, federally recognized tribes, and local air agencies located in the geographical region encompassed by the states of: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming. Membership in the WRAP is also open to the US Forest Service, National Park Service, Bureau of Land Management, Fish and Wildlife Service, and U.S. EPA. In order to become a recognized member of the WRAP, eligible states, tribes, local air agencies, and federal agencies shall submit an official letter to the WRAP requesting membership and designating primary and secondary contacts for the jurisdiction or agency. Any tribe, state, or local air agency in the WRAP region may participate in the WRAP; however, for membership/Board matters brought to a vote, recognized membership is needed.

In order to accomplish the objectives of the WRAP the WRAP structure is organized as follows:



WRAP Board of Directors

The WRAP [Board of Directors](#) consists of five state, five tribal, five federal and two local air agency representatives. The Board of Directors acts on behalf of all WRAP members. The WRAP’s purposes, activities, powers, and duties of the Board of Directors are described in the [WRAP Charter](#), last amended in July 2014. From the Charter, the Board of Directors provides overall policy direction to the WRAP by accomplishing the following:

- Work with WRAP staff to solicit and accept funding for continued efforts under current activities and projects described in this Workplan, as well as the likely addition of new or expanded activities or projects;
- Sustaining the membership and providing oversight for the activities of the Technical Steering Committee;
- Provide oversight for WRAP Staff as described in the Charter;
- Establish Work Groups, Subcommittees, and Project Teams as recommended by WRAP Staff and the Technical Steering Committee for the effective coordination of WRAP initiatives;

¹⁵ This document will be updated annually and approved by the WRAP Board as part of the WRAP Workplan.

- Review and approve Workplans developed by the Technical Steering Committee;
- Ensure appropriate stakeholder participation in WRAP processes through coordination with the WRAP Staff and Technical Steering committee; and
- Initiate membership meetings twice a year or as necessary to oversee the general direction of the WRAP.

The WRAP Board resolves all issues on a consensus basis. The WRAP Board may vote on administrative matters when consensus cannot be reached. Consensus has the following parameters:

- Consensus is agreement.
- Consensus is selection of an option that everyone can live with.
- Consensus may not result in the selection of anyone’s first choice, but everyone is willing to support the choice.
- Consensus is not a majority vote.

WRAP Technical Steering Committee

The WRAP Board formed the [Technical Steering Committee](#) (TSC) in Fall 2015 to organize, direct, and coordinate WRAP project activities and Work Groups listed under the topical issues identified in the Annual WRAP Workplan, as well as to hold the lead responsibility for the WRAP Workplan, including progress reporting and budget tracking for the Board (see Appendix B: Technical Steering Committee Description). The WRAP TSC accomplishes the following:

- Work with the WRAP Board to establish the topical WRAP Work Groups by designating the WRAP. Work Group Co-Chairs to be approved by the WRAP Board.
- Work with the WRAP Work Group Co-Chairs to identify and approve Work Group members.
- Oversee the preparation of a calendar year annual workplan and budget for Board approval.
- Maintain the WRAP process through:
 - Open and transparent communications, including periodic meetings, conference calls and documentation;
 - Completion of deliverables that support the common needs of the WRAP membership and avoid duplication;
 - Pursuing opportunities to leverage multi-agency resources to accomplish larger projects; and
 - Providing TSC leadership on behalf of the Board to enable Work Groups and specific Project Teams to implement and track work under the Annual Workplan.
 - Coordinating with WESTAR committees and work groups to ensure activities conducted in WRAP projects, under the auspices of the TSC and WRAP Work Groups, provide needed support.

WRAP Staff

The WRAP Staff provide full-time technical leadership support as well as significant experience and expertise. As time and funds permit, the WRAP Staff work on technical projects with the TSC and Work Groups. The WRAP Staff accomplishes the following:

- As time and resources permit, support each Project Team of the TSC and Work Groups in completing the mission of the team. The WRAP Staff may retain outside contractors for support on specific projects;
- Seek out funding opportunities that align with the WRAP Board of Directors overall policy direction and bring these opportunities to the attention of the WRAP Board and TSC for consideration;
- Work with the TSC and Board of Directors to ensure timely submittal of grant applications;

- Track all current and any new WRAP activities and projects to assist the Technical Steering Committee, Work Groups, Subcommittees, and Project Teams, for periodic WRAP Board reporting;
- Consider the technical tools needed to assist the WRAP membership in making use of WRAP products and reports by conducting an annual needs assessment for WRAP membership;
- Improve communications among the WRAP membership by organizing WRAP meetings with input from the TSC and Board and conducting periodic conference calls with the TSC, Work Groups, Board and membership;
- In accordance with the direction of the WRAP Board, maintain a strategic plan and update the Annual Workplan for WRAP Board review and approval; and
- In coordination with the TSC, review available funding, WRAP membership needs and prioritized projects to produce reports and white papers outlining future technical needs and needed funding.

Administrative Subcommittee on Funding

The WRAP Board formed a four-member Administrative Subcommittee on Funding in the spring of 2017 to identify funding mechanisms to implement the WRAP Workplan. The membership is comprised of one state, one tribal, one local Board Member and one EPA representative. WRAP staff and TSC Co-Chairs attend Subcommittee meetings and provide reports and recommendations on funding needs and resources. The Subcommittee met regularly in 2017 and was successful in identifying the needed funding for WRAP operations and projects to proceed over the near term. In 2018-2019 the Subcommittee will meet at least two times per year.

WRAP Work Groups

Under WRAP Board approval, topical work groups were established in the 2016 WRAP Workplan and continue through this 2018-2019 Workplan. There are five WRAP Work Groups: Regional Haze Planning (RHPWG), Fire and Smoke (FSWG), Oil and Gas (OGWG), Regional Technical Operations (RTOWG), and Tribal Data (TDWG). With oversight by the TSC, WRAP Work Groups are charged with identifying annual priorities and work tasks to complete objectives in Board-determined topical work areas.

WRAP Work Group Co-Chairs are determined by the TSC and approved by the WRAP Board to lead and execute the Work Plan objectives associated with the individual Work Group. Work Group Co-Chairs work with the TSC to identify Work Group members who have applicable expertise related to that Work Group, seeking appropriate representation from the WRAP membership (states, tribes, locals, FLMs) to the greatest extent possible. WRAP Work Group membership will be composed of representatives from WRAP member agencies. Work Group membership is to be approved by the TSC. The Work Group Co-Chairs may include participation from other WRAP member agencies. The Work Group Co-Chairs will consult with the TSC for participation from non-member agencies, industry, and environmental stakeholders. These participants beyond the core Work Group membership will be considered advisors.

WRAP Work Groups work with the TSC on development of individual Work Group Workplans that will describe the detailed tasks and activities to meet Annual WRAP Workplan objectives, including incorporation of applicable WRAP projects (see WRAP 2016 Workplan, Appendix B - Work Group Workplan Template¹⁶). Work Group Workplans will be submitted by the TSC to the WRAP Board for approval. Individual 2018-2019 Work Group Workplans are found in Appendices B-F of this 2018-2019 WRAP Workplan.

¹⁶ WRAP 2016 Annual Workplan, May 9, 2016, [link](#)

Work Group Subcommittees

Work Groups may, with approval of the TSC and WRAP Board, form Subcommittees to address specific tasks or work areas that would benefit from concentrated effort by a smaller number of individuals. For example in 2018, to meet the objectives of the 2018-2019 WRAP Workplan, the RHPWG formed six Subcommittees: Consultation and Coordination, Shared Database, Emissions Inventories, Modeling Protocols, Monitoring Analysis and Glide Path, and Control Measures. In 2019, in evaluating Workplan tasks that were completed in 2018 and remained for 2019, the RHPWG reorganized the six Subcommittees into three: Coordination and Glide Path; Emissions Inventories and Modeling Protocols; and Control Measures.

Work Group Subcommittee membership will be composed of representatives from WRAP member agencies, and Work Groups will strive to create as balanced representation as possible in line with the WRAP partnership goals (i.e. states, tribes, federal land managers, local air agencies and the U.S. EPA). Work Group Subcommittee membership is to be approved by the TSC. The goal of the RHPWG Subcommittees is to define planning needs and coordinate work internal to the RHPWG and with other WRAP Work Group to complete studies and work products in a timely manner.

WRAP Project Teams

Under the leadership of the Technical Steering Committee, Work Groups, WRAP Staff, and ultimately the WRAP Board, needed Project Teams will be identified and included in the Annual Workplan process. The TSC and/or Work Groups will be responsible for managing the Project Teams, which are intended to enable non-members of WRAP to express interest and sponsor analysis or planning projects within the scope and topics of the WRAP Charter and Strategic Plan. The Project Teams will be associated with a discrete, defined project for which the non-member sponsor is providing funding and expertise resources. The Project Teams are intended to allow sponsor participation and will include members of WRAP Work Groups and TSC, WRAP Staff, and non-member sponsors. The TSC will define the scope and membership, and duration of each Project Team, and include that information in the Annual Workplan. Currently, the WRAP has one recent active Project Team, the Study Management Team for the [Drill Rig 1-hour NO₂ Collaborative Study](#).

Appendix B

Regional Haze Planning Work Group 2018-2019 Workplan

Reviewed by RHPWG in March 2018
Mid-Course Workplan Review and Update - Final March 5, 2019

Purpose

The purpose of the WRAP Regional Haze Planning Work Group (RHPWG) is to prepare the framework to support regional planning for the 15 western states, so that needed elements will be available for RH SIP submissions to meet the July 2021 deadline for the second planning period of the federal Regional Haze Rule (RHR). Regional Haze SIP (RH SIP) preparation is a multi-year effort and must incorporate time for the required consultation and public review process. Some member states require additional lead-time for legislative approval of SIPs. In 2017¹⁷, the RHPWG developed a prioritized schedule of tasks, beginning in 2017 and continuing through the first quarter of 2020 based on the RHR¹⁸ requirements and recent draft EPA guidance¹⁹. The RH SIPs are plans to continue improvement in visibility in the 118 Class I areas of the WESTAR-WRAP region for the second planning period ending in 2028. Tribes have the option to undertake Regional Haze Tribal Implementation Plans, but it is not required as it is for states.

The RHR spells out the basic SIP requirements with which to start planning. This rule and guidance provides the basis for tasks and work products contained in the WRAP Workplan.

The RHPWG will continue identifying and prioritizing SIP preparation tasks and deliverables, and identifying possible resources. General RH SIP preparation includes analyzing IMPROVE monitoring data to determine visibility trends; coordinating inventories for each state, tribe and federally managed area for modeling input; analyzing emissions trends and source categories to identify potential control targets; differentiating anthropogenic and natural visibility impacts; modeling for baseline and future years in order to develop reasonable progress goals for each Class I areas; modeling to identify potential sources impacting visibility; consultation with FLMS, states, and tribes throughout the process; and special studies as needed to further these overarching responsibilities.

The 2014 National Emissions Inventory (NEI)-based data with western regional improvements will provide the initial basis for the emissions that are used in the regional modeling. Emissions will be projected to reflect the 2028 milestone year. This Workplan also recognizes that Alaska and Hawaii are outside the regional modeling domain and require additional support.

RHPWG Status Report for 2017 Workplan

In 2017, the RHPWG identified the groundwork for the regional tasks supporting the development of RH SIPs. Members participated in a series of webinars designed to illustrate how needed information is assembled to meet SIP requirements. The RHPWG also participated in a three-day long kick-off workshop with other regional planning organizations or multi-agency planning organizations from across the United States. WESTAR previously prepared a document entitled “WESTAR Regional Haze 2018 SIP Update Plan,” dated April 2, 2014, which describes a scheduled set of tasks and deliverables needed for production of the RH SIPs for the second planning period. The RHPWG is updating this WESTAR document, now called “WESTAR 2021 RH SIP Update”, to guide those not familiar with SIP preparation, and to demonstrate how states and others can work together to complete RH SIP elements, based on experiences from the first planning period. The Work Group formed six Subcommittees to

¹⁷ WESTAR 2021 RH SIP Update

¹⁸ US EPA, January 10, 2017, *Protection of Visibility: Amendments to Requirements for State Plans, Final Rule*, 82 FR 3078-3128, available at: <https://www.federalregister.gov/d/2017-00268>

¹⁹ US EPA, *Draft Guidance on Progress Tracking Metrics, Long-term Strategies, Reasonable Progress Goals and Other Requirements for Regional Haze State Implementation Plans for the Second Implementation Period*, July 2016

prepare western protocols and work on topical issues as needed for specific Regional Haze SIP development tasks, whether performed in-kind or through contract services. The table below summarizes progress by the RHPWG on elements of the 2017 WRAP Workplan and identifies elements that remain outstanding.

Task	Progress	Outstanding Work
I. RHPWG Management		
Roles and Responsibilities of Work Group Members	Completed by forming six Subcommittees for RHSIP preparation needs: Consultation and Coordination; Shared Database Construction; Emissions Inventories; Monitoring Analysis and Glide Slope; Control Measures; and Modeling Protocols	Continue Implementation to (1) develop regional protocols; (2) perform in-kind work; (3) coordinate with other Work Groups on relevant tasks; (4) to assist with development of contract work and review of deliverables; and (5) to keep RH SIP preparation on schedule.
Conference Call Schedules	Completed: Held 6 conference calls during 2017	Continue Implementation
Interaction with TSC and Other Groups	Ongoing: Joined several of the other groups' conference calls to discuss updates and needs. Two in-person meetings, WRAP Technical Planning Meeting, and Western and National Regional Haze Planning Workshop in the Fall of 2017. Briefed WESTAR and WRAP Boards at Spring and Fall meetings.	Continue Implementation
Communication and Documentation	Ongoing	Continue Implementation
II. Scoping Tasks for 2017 WRAP Work Plan Elements		
Survey Individual State Needs and Collate Results	Completed: Survey results were distributed to the Work Group, TSC, and WRAP Board	Survey for Task input, as needed.
Determine Training Needed for Writing RH SIPS	Nearly Completed: A series of five teach-in webinars were held during the second half of 2017. Each one focused on a different aspect of preparing a Regional Haze SIP.	There may be additional training needed because the EPA is revisiting the revised rule and has not finalized the draft guidance. Training also anticipated for the shared database system.

Task	Progress	Outstanding Work
Identify Regional and State Responsibilities from the January 10, 2017 Rule	In Progress: There is still some uncertainty as to how much in-kind work needs to be done with the modeling. States have contributed funds to do regional modeling, but there will likely need to be additional in-kind support.	The rule is being reconsidered so we may need to reevaluate responsibilities. After the RHPWG determines what can be done by a consultant, then we can assign the remaining tasks.
Identify further Regional and State Responsibilities for the second planning period (RH SIPs due in 2021 setting the 2028 Reasonable Progress Goals) depending on pending US EPA guidance on RH SIP implementation	No guidance issued in 2017.	EPA announced the revisiting of rule and guidance in January 2018. The RHPWG will continue with work required by January 2017 rule revision, in the absence of further clarification.
Use the WESTAR Regional Haze 2021 SIP Update Plan as a means to identify tasks and processes for the 2017 WRAP Work Plan and subsequent years	Draft Completed: The Regional Haze 2021 SIP Update Plan is a work in progress and will be updated as needed.	Continue Updates
Order SIP tasks by Priority on a Preliminary Multi-Year Timeline (can utilize Gantt Chart in Appendix B of the WESTAR Regional Haze 2018 SIP Update Plan as starting point)	Completed: Refer to the Gantt Chart	Continue Implementation
Develop Regional Haze 2021 SIP Update Protocol using the WESTAR Regional Haze 2018 SIP Update Plan; the Regional Haze Rule effective January 10, 2017; and the pending US EPA Guidance for RH SIP Implementation as guides	First Draft Completed; Second Draft in progress	Some sections to reflect rule revisions and proposed guidance have been added and are not complete. As changes are made, tasks may need to be updated as well.
III. Preparing SIP Work Plan Elements (prioritize 2017- 2018 time frame)		

Task	Progress	Outstanding Work
Evaluate Inventory Issues (what's available, what improvements are needed, for which years)	Nearly Completed: There has been extensive discussion regarding whether states should use the 2014 NEI or a 2016 inventory. The general thought is that we should use 2014 because a 2016 inventory will not be ready in time. States will likely use 2014.	After further evaluation at the beginning of 2018 consensus will be reached on which inventory year to use. The base year inventory needs to be gridded and fed into the base year model performance testing.
Develop Emissions Inventory projection protocol, to forecast 2028	Incomplete	This task has not been done yet.
Evaluate TSS Existing Monitoring Data Functionalities and Future Needs (coordinate with RTOWG)	Incomplete and in progress	The TSS needs updates, especially to allow monitoring data to be sorted by most impaired days. Revisit addition of Site-Specific Rayleigh scattering.
Evaluate Modeling Needs (base year, 2028, and RPG) (for meteorology and for gridded emissions inputs)	Complete from the standpoint of the RHPWG.	This is a task that the RTOWG should continue. States will give input to scenarios for additional control scenarios in 2018, beyond on-the-books and on-the-way
Coordinate with USEPA Modeling (adjustments needed to make it useful for western states)	In progress by RTOWG	WRAP is coordinating efforts with USEPA for 2016 modeling using national 2016 ozone modeling platform.
Initiate Early Consultation with Federal Land Managers (initial discussion of monitoring and emission trends)	Completed: FLMs included in Work Group; informal caucus December 2017.	Ongoing: The conversations and consultation need to continue throughout the process.
Evaluate Protocol for Monitoring Data Analysis (Species separation into U.S. Anthropogenic, Natural, and International Anthropogenic)	In progress: Arizona staff used FED to prepare a significant amount of monitoring analysis and have shared it with the other western states.	The analysis needs to be further refined. States need to reach consensus on a protocol for separating U.S. Anthropogenic, Natural, and International Anthropogenic emissions. The EPA guidance on this is still in draft form. We can use the guidance or try to create our own metric.

Task	Progress	Outstanding Work
Coordination with FSWG for Fire & Smoke Quantification (for modeling inputs and for monitoring data analysis)	Ongoing	We have had initial discussions only. Coordination will be ongoing.
Protocol for Identifying “Natural Smoke” or “Wildland Fire” Days, to be differentiated from “Anthropogenic Fire” days.	In progress	This is part of the task to Evaluate a Protocol for Monitoring Data Analysis. Should be coordinated with Fire & Smoke Work Group.
Protocol for Identifying International Emissions (natural and anthropogenic)	In progress. EPRI preparing an international emissions inventory and forecast for 2016 ozone modeling that may be useful if completed in time.	This is part of the task to Evaluate a Protocol for Monitoring Data Analysis
Protocol for Identifying/Quantifying “Dust Days”	In progress	This is part of the task to Evaluate a Protocol for Monitoring Data Analysis
Protocol for Identifying/Quantifying “Volcanic Days”	In progress: Hawaii developed useful sulfate species comparative analysis, which might have applicability to unique situations in other states.	This is part of the task to Evaluate a Protocol for Monitoring Data Analysis
Initial Control Strategy Analysis based on Inventory Analysis and Growth Potential (are there critical source categories in the West)	In progress: There have been initial discussions on Control Strategy Analysis.	States will need to complete source analysis individually, but may develop clearinghouse of control techniques. Also need to prepare OTB-OTW scenario for initial 2028 forecast.
Determine Special Analysis Needs requiring Contractor Assistance	Ongoing: Initial indication of special analysis needs for Alaska and Hawaii identifying natural and international anthropogenic sources and quantifying impacts for Alaska and Hawaii in base year and 2028.	Differentiating State, Fed, and Tribe in-kind work and needs for contractor service.
Differentiate and Schedule State and Regional SIP Tasks	Complete: Based on the 2021 SIP Plan Update	Determining in-kind and contracted work.
Progress Report Analysis (identify regional vs. state needs)	Not Started	Need to identify how Progress Reports will be rolled into the 2021 SIPS.

Task	Progress	Outstanding Work
IV. RHPWG Administration		
Determine how and when co-chairs are appointed	Complete	Formalize process for replacement, when needed
Time commitments for all participants	Complete	Integrate work of Subcommittees
Development of budgets for projects	In progress	Projects have been outlined and rough budgets assigned by TSC. More detail in the budget as we further define the projects.
Write RHPWG portion of 2017 WRAP work plan (continue for subsequent years, as needed)	Complete	Continue Implementation
Deliverable Products Distributed to States or posted to WRAP website as appropriate	Complete: All products were distributed through each State's primary and secondary contacts	Continue Implementation

Duties and WRAP Staff Support

In consultation with the Co-Chairs from the Regional Haze Planning Work Group (RHPWG), the Technical Steering Committee (TSC) will review and seek Board approval of a written workplan to address and include all the elements for each Work Group, specific to RHPWG as described in Section I of the Annual WRAP Workplan. Based on these elements, the RHPWG is then charged with creating detailed workplan inputs to the WRAP annual workplan for achieving these objectives. The RHPWG workplan will include a schedule for progress reports to the TSC (monthly and semi-annual summaries) and a schedule for project completion. The RHPWG will work with WRAP staff to have progress reports posted to the WRAP website. The RHPWG and other Work Groups are responsible for translating technical materials into a form understandable by the TSC, Board, and the general public. The RHPWG has the additional responsibility for ensuring the best information and data are available for visibility protection planning across the region, with WRAP Staff support.

The RHPWG will have conference calls as needed to manage activities and provide oversight to WRAP projects. The RHPWG will provide inputs to the TSC for an annual WRAP workplan and budget for Board approval, covering technical projects and Work Group coordination. The RHPWG may have meetings identified in the annual workplan. The RHPWG Co-Chairs will plan and direct the calls and meetings, and with assistance from WRAP Staff, take the lead in communications and other necessary TSC and Board interaction.

WRAP Staff will provide support for RHPWG calls and meetings. WRAP Staff will assist with arranging and documenting RHPWG calls and meetings; preparing TSC workplan inputs and budgets for review and action; drafting status reports on the RHPWG’s activities; and providing status reports on the deliverables, budgets, and timelines for the WRAP’s technical projects.

Coordination

The RHPWG will coordinate with the following Work Groups and Subcommittees as needed to ensure activities conducted in WRAP projects, and under the auspices of the RHPWG provide needed support:

1. Tribal Data Work Group (TDWG);
2. Regional Technical Operations Work Group (RTOWG);
3. Oil and Gas Work Group (OGWG);
4. Fire and Smoke Work Group (FSWG);
5. WESTAR Planning Committee;
6. WESTAR Technical Committee; and
7. Other groups as designated by the Board in the annual Workplan process.

RHPWG co-chairs prepare brief agendas for conference calls. For efficiency sake, notes of calls and meetings will be limited to action items and reminders of who takes responsibility for various tasks.

In 2018, to meet the objectives of the 2018-2019 WRAP Workplan, the RHPWG formed six Subcommittees: Consultation and Coordination, Shared Database Construction, Emissions Inventories, Monitoring Analysis and Glide Slope, Control Measures, and Modeling Protocols. Later in 2018, due to the overlap in responsibilities, the Emissions Inventories and Modeling Protocols Subcommittees were merged to form the Emissions Inventories and Modeling Protocols Subcommittee.

In 2019, in evaluating Workplan tasks that were completed in 2018 and remained for 2019, the RHPWG reorganized the six Subcommittees into three: Coordination and Glide Path; Emissions Inventories and Modeling Protocols; and Control Measures:

1. Coordination and Glide Path (CGPSC lead – Elias Toon, Arizona Department of Environmental Quality)
This Subcommittee has three primary responsibilities:
 - Develop and implement framework for communication between Federal Land Managers, States, Tribes, and local air agencies and support educational outreach to the RHPWG;
 - Advise the technical contractors for the shared database (TSS v2) regarding content for that website. The content will include monitoring data, emissions data, modeling results, tutorials, and querying capabilities; and
 - Determine a feasible method for identifying Most Impaired Days, exploring the feasibility of reconstructing the Glide Path by redoing Baseline Conditions and adjusting the Natural Conditions at Class I areas.
2. Emissions Inventories and Modeling Protocols (EI&MPSC lead – Farren Herron-Thorpe, Washington Department of Ecology)
The Emissions Inventories and Modeling Protocols Subcommittee helps assemble base year data, coordinates regional inventory, and works with Modelers on Source apportionment modeling and Setting RPGs for Most Impaired Days.
3. Control Measures (CMSC lead – Curt Taipale, Colorado Department of Public Health and Environment – Air Pollution Control Division)
The Control Measures Subcommittee will develop a Four-Factor Analysis framework. They will also explore using visibility as a fifth factor in evaluating sources for controls.

The Subcommittees will develop needed planning work products and protocols for use in the regional analysis effort and document model approaches for all states to consider using in preparing RH SIP elements.

RHPWG Membership and Operation

Co-Chairs

Jay Baker, Utah Department of Environmental Quality
Rebecca Harbage, Montana Department of Environmental Quality
Amber Potts, Wyoming Department of Environmental Quality

RHPWG members include representatives from 15 Western States' Air programs, EPA, Federal Land Management Agencies, local air agencies, and tribal representatives. Liaisons from each of the other Work Groups and the TSC are invited to listen in or participate in the RHPWG conference calls to encourage the exchange of respective Work Group progress on activities of mutual interest and need. In addition, members participate in activities of other Work Groups to ensure coordination and information exchange on issues of common interest. This facilitates the formation of ad hoc teams utilizing the expertise of members of different Work Groups to address overlapping tasks serving multiple purposes.

WRAP/WESTAR staff are de facto members of the Work Group. The RHPWG holds at least bi-monthly calls; and more frequently as needed. Co-chairs from the Work Group participate in all Subcommittee calls to facilitate coordination between the Subcommittees.

RHPWG Tasks and Tracking Items for 2018-19 WRAP Workplan

The text and tables below present the tasks, deliverables, and schedules identified by the RHPWG necessary to complete the regional analysis work products by March 2020 to support comprehensive SIP revisions and progress reports by individual states, due July 2021. The table also identifies the entity with lead responsibility for completing or coordinating the tasks, as well as indicating which other Subcommittees, Work Groups, or contractors also have roles in the task requiring coordination. The text, providing overviews of the tasks, and tables are organized by eight over-arching tasks:

- Monitor Data Analysis,
- Emission Inventory Development,
- Air Quality Modeling,
- Evaluate Modeling Results,
- Control Measures Analysis,
- Coordinate Training and Outreach Efforts,
- Technical Support System TSS v2,
- State Planning and Adoption.

Task 1. Monitor Data Analysis

2016 draft and 2018 final U.S. EPA guidance^{20,21} propose a new visibility tracking metric designed to identify the most impaired days, where impairment is due to anthropogenic emissions. The new metric has generated considerable comment and requires further evaluation, particularly as it relates to regional considerations for western State IMPROVE monitoring datasets. These considerations are discussed in further detail in the subsections below and outlined in the table below.

Subtask 1.1 focuses on evaluation of EPA's tracking metric outlined in 2016 and 2018 guidance and potential alternatives to this approach. The ultimate deliverable is a most impaired day (MID) dataset for all Class I Areas.

²⁰ US EPA, Draft Guidance on Progress Tracking Metrics, Long-term Strategies, Reasonable Progress Goals and Other Requirements for Regional Haze State Implementation Plans for the Second Implementation Period, July 2016

²¹ US EPA, Technical Guidance on Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Program, December 2018

Towards this end, in 2018 the Monitoring Data and Glide Path Subcommittee (MDGPS) performed extensive analysis of EPA’s proposed tracking metric, particularly as it relates to the E3 threshold, and found that the metric performs adequately at most western Class I areas and recommends the proposed tracking metric’s usage for visibility tracking. This recommendation and an overview of the MDGPS analyses are available in the 2018 Subcommittee’s summary document²². A finalized western IMPROVE monitoring dataset is expected to be posted on the TSS by 3/31/2019. This dataset will include substituted data for sites that were determined to not meet data completeness requirements.

Subtask 1.2 focuses on analysis of monitor data trends, ranges, and linkages. Particularly, this task involves the development of a reconstructed glideslope from the new baseline to the year 2028. The guidance allows adjustments to the Uniform Rate of Progress (URP) or glideslope to account for contributions from wildland prescribed fire and international anthropogenic emissions, by incorporating these contributions into the end point or natural conditions estimate. Given that this effort will rely heavily on modeling, this task is scheduled for completion in December of 2019. In addition, the CSDGP Subcommittee will develop a document outlining recommended monitoring data trend analyses for a contractor to perform and for States to consider when examining IMPROVE datasets. This document is set for finalization by the end of June, 2019. As requested by individual States, the CSDGP will also assist States in developing methodologies for addressing unique uncontrollable sources (e.g. volcanic emissions) or international contributions that impact coastal States not otherwise addressed within the international anthropogenic emissions URP adjustment. Finally, as resources permit, the CSDGP will continue to evaluate Natural conditions for western Class I Areas.

<u>Task 1 – Monitor Data Analysis</u>				
<u>Subtask</u>	<u>Deliverables</u>	<u>Lead Responsibility</u>	<u>Coordination Required</u>	<u>Schedule</u>
1.1 Evaluate EPA tracking metric and alternatives	-MID Dataset for all Class I Areas -Summary report	CGPSC & contractor support	-RTOWG and FSWG -EPA & FLMs	Ongoing through March 2019
1.2 Analyze monitor data (trends, ranges, and linkages)	a. Revised tracking metric & natural conditions b. Glide path adjustment c. Trend analysis d. Coastal, Volcanic, etc. methodology assistance e. Topical summary reports	CGPSC & contractor support	-RTOWG, FSWG, & EI&MPSC -EPA & FLMs	Ongoing through Dec 2019

Task 2. Emissions Inventory (Emissions Inventory Development)

The WRAP has proposed using the 2014 National Emissions Inventory (NEI) as the starting point to developing a base year emission inventory for regional haze modeling efforts. The U.S.EPA, with several multi-jurisdictional organizations (MJOs) are developing a 2016 emission inventory and modeling platform. WRAP modeling efforts require refined base year emission inventories, currently the 2014 NEI, as well as projected future year emissions inventories, 2028 for regional haze planning. Emission inventories also support the development of screening tools to identify facilities or source areas for reasonable progress analysis (4-factor analysis) as states develop their long-term strategies. The RHPWG will coordinate with other Work Groups and seek consensus regarding: future projection of emission inventories for (1) wildfire estimated for 2028 modeling purposes; (2) prescribed fire estimated for 2028

²² *Monitoring Data & Glide Path Summary Document*, February 27, 2019, [link](#)

conditions; (3) oil and gas sectors for 2028 modeling; (4) international emissions for base year, 2028, and 2064; and (5) development and application of screening tools.

The RHPWG will track the RTOWG evaluation of benefits of using the EPA 2016 modeling platform and emission inventory and the development of screening tools in support of regional haze planning. Timely release of the 2016 platform is needed to determine its usefulness for WRAP regional haze modeling efforts. Comparison of the 2014 and 2016 emission inventories may be useful for informing regional haze planning, particularly for the change in anthropogenic emissions, and implementation of BART (for instance). More importantly, it will be necessary to have accurate emissions for natural and “uncontrollable” events (dust, wildfire, international, and volcanic emissions) as well as prescribed fire emissions for the base year modeling. Also, in discussion with seasoned modelers of the RTOWG, the RHPWG will assist in deciding what multi-year averages should be applied to certain emission source sectors for modeling purposes.

The base year inventory, combined with on-the-books and on-the-way changes, will be used to develop a representative emissions inventory dataset from which emissions projections to 2028 can be made. The 2028 projected emissions will be combined with the control measures analysis to create a control measures inventory for 2028.

Emission inventories are also needed to create 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 and create emission inventory access tools (e.g. pivot tables) to assist states in evaluating emissions by source sectors and prioritizing source sectors with highest potential emissions. Pivot tables will be set up using Emissions divided by Distance (Q/d) for individual facilities or for specific grid areas. Both tools can be used to inform source screening for reasonable progress analysis.

The RHPWG will coordinate with the Emissions Inventory & Modeling Protocols Subcommittee, the Control Measures Subcommittee, the RTOWG, and Contractor is to define the specific screening tools to be used in this second planning period and to implement these tools for the 2014/2016 base year and projected 2028 inventories, and create back trajectories for several years for each Class I area. 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) prior to the availability of source appointment modeling to inform reasonable progress analysis. The back trajectory analyses will also inform the discussions of how to account for prescribed fire impacts, and international emissions to adjust the glide path.

<u>Task 2 – Emissions Inventory Development</u>				
<u>Subtask</u>	<u>Deliverables</u>	<u>Lead Responsibility</u>	<u>Coordination Required</u>	<u>Schedule</u>
2.1 Evaluate, Refine, and Process Base Year Inventory	-Refined base year inventory -Gridded Inventory for States to confirm (“ground truth” at borders)	EI&MPSC	OGWG, FSWG, TDWG, and RTOWG	April 2019
2.2 Evaluate use of 2016 EPA modeling platform	-Analysis of air quality, met, and emissions representativeness of 2014, 15, and 16 -White paper of pros and cons of 2014 and 2016 inventory/modeling platform	EI&MPSC	Contractor, CGPSC, and RTOWG	March 2020
2.3 Develop and refine	-Report of projection methodologies to develop 2028 emissions inventory -Refined 2028 control measures inventory	EI&MPSC	Contractor, CMSC, OGWG,	On-the-way/books: Oct 2019

<u>Task 2 – Emissions Inventory Development</u>				
<u>Subtask</u>	<u>Deliverables</u>	<u>Lead Responsibility</u>	<u>Coordination Required</u>	<u>Schedule</u>
2028 forecasts			FSWG, TDWG, and RTOWG	Control Measures: Jan 2020
2.4 Develop screening tools	-2014/2028 Q/d pivot tables - 2028 on-the-way and on-the-books weighted emissions potential plots -Back Trajectory analyses for Alaska	CMSC	Contractor, CGPSC, EI&MPSC, and RTOWG	March 2019 Sept 2019
2.5 Special Inventory Needs	-Rx Burn Emissions Inventory for glide path adjustment -International Emissions Inventory for glide path adjustment -In-state Natural Emissions, seasonal and frequency analysis to be used to verify “Natural Conditions”	EI&MPSC	CGPSC, FSWG, and RTOWG	May - Dec 2019
2.6 State-Specific Analysis of EI Trends	-State Reports for screening and for justification of Long-term Strategy and for Progress Reports.	EI&MPSC	States Key Contacts	March 2018 for source screening and into 2020 for SIPs and embedded Progress Reports

Task 3. Air Quality Modeling (Visibility and Source Apportionment Modeling)

Regional air quality modeling is required to address requirements of the Regional Haze Rule and supports critical planning activities. Regional modeling of the continental US (CONUS) will occur in three phases; base year, future year planning (on-the-way/on-the-books controls), and control measures (all reasonable progress control measures). Base year modeling is needed to evaluate model performance, future year planning modeling provides information supporting development of long-term strategies, and control measures modeling will provide data to calculate 2028 reasonable progress goals (RPGs) for each Class I area. Additional efforts under this task are directed at preparation of a modeling protocol/plan, developing and evaluating meteorological data, dynamic model evaluations, evaluating the viability of using EPA’s 2016 modeling platform, and sensitivity testing of emissions from selected source sectors.

The RHPWG has a limited role in Task 3 beyond consultation and coordination, especially coordination between the EI&MPSC and the RTOWG, and its selected contractor(s). The RTOWG, in coordinating with the EI&MPSC, will lead efforts to develop a modeling protocol that addresses all the items under Task 3 *Air Quality Modeling* and some items under Task 4 *Evaluate Modeling Results for Regional Haze Planning Products*. The RTOWG will also lead efforts to develop plans for the dynamic model evaluations and sensitivity testing proposed under this task, also in consultation and coordination with the EI&MPSC. The RHPWG will also evaluate the benefits of using the 2016 platform initiated nationally for ozone, in addition to, or instead of, a 2014 modeling platform to be created for regional haze planning.

The modeling protocol for visibility and source apportionment modeling will incorporate model performance evaluation protocols, identify tags for source apportionment modeling, and identify sensitivity tests and methods, while addressing ancillary activities needed to support regional air quality planning. The protocol will address and build on elements of the WESTAR-BLM-NM AQB Four Corners Modeling Study. Sensitivity testing will evaluate

uncertainties in the emission inventories, evaluate a range of future emissions scenarios, evaluate the effects of various assigned natural/anthropogenic splits, and evaluate global modeling as related to boundary conditions. Dynamic model performance evaluations of previous modeling efforts will provide important information on both changes in emissions through time as well as the corresponding changes in visibility impairment.

<u>Task 3 – Air Quality Modeling</u>				
<u>Subtask</u>	<u>Deliverables</u>	<u>Lead Responsibility</u>	<u>Coordination Required</u>	<u>Schedule</u>
3.1 Prepare modeling plans	-Protocol for Visibility and Source apportionment modeling -Plan for dynamic modeling evaluations and sensitivity testing	EI&MPSC	Contractor, CSDGPSC, and RTOWG	Feb 2019
3.2 Prepare and evaluate Meteorological data	-Model-ready meteorological data set and evaluation report	EI&MPSC	Contractor and RTOWG	Feb 2019
3.3 Perform dynamic model evaluations	-Evaluation of various historic modeling platforms and evaluation report	EI&MPSC	Contractor, CM SC, and RTOWG, O&G, TD, F&S WG _s	Aug 2019
3.4 Conduct sensitivity testing	-Report to inform decision on how to predict future boundary conditions (global models) and natural emissions for 2028 forecasts	EI&MPSC	FSWG, OGWG, and RTOWG	Feb 2019
3.5 Evaluate use of 2016 EPA modeling platform	-See Task 2.2	EI&MPSC	Contractor and RTOWG	March 2020
3.6 Conduct Base Case Modeling	-Report on results of base year visibility, source apportionment modeling, and model performance evaluation	EI&MPSC	Contractor, CGPSC, and RTOWG	Dec 2018 – June 2019
3.7 Future Year Modeling	Report on results of future year visibility, source apportionment, sensitivity modeling, and control scenario modeling	EI&MPSC	Contractor, CGPSC, and RTOWG	Aug 2019 – March 2020

Task 4. Evaluating Modeling Results for Regional Haze Planning Products

The results of the sequential regional air quality modeling activities conducted under Tasks 2 and 3 will provide data and documentation that informs key air quality planning activities and state decisions for regional haze as well as NAAQS implementation. Evaluating base year modeling results provides critical information on model performance, evaluation of future year planning modeling results provides information supporting development of long-term strategies and confirmation of source sectors/facilities selected by states for control measures analysis, and analysis of the control measures modeling results provides information to calculate the reasonable progress goals (RPGs) for 2028. Additional sensitivity modeling results focus control measures analyses and provide a range of impacts from natural and international emissions. The screening tools developed under Task 2 and the base year modeling results are critical for understanding which impairment comes from anthropogenic rather than natural sources and also helps locate the source of impairment geographically (in-state, out-of-state, international).

The RHPWG has a limited role in Task 4 beyond consultation and coordination, especially coordination between the EI&MPSC and the RTOWG, and its selected contractor. The RTOWG, in coordinating with the EI&MPSC, will lead

efforts to analyze future year modeling results, including modeling conducted for sensitivity testing and control scenario evaluation. The RHPWG will also coordinate with other modeling centers to leverage work by others, such as EPRI's efforts to characterize background conditions and evaluate global models/boundary conditions, to further WRAP-sponsored modeling efforts.

This task focuses on analyzing and evaluating the results of future year modeling conducted under Task 3, including calculation of the change in visibility and 2028 RPGs for each Class I area, but also focuses on implementing the sensitivity testing and control evaluation modeling identified in the modeling protocol/plan developed under Task 3. In order to translate model results into a most-impaired metric, the implication of applying alternative approaches to calculating the Relative Response Factor (RRF) will be evaluated. Sensitivity modeling will provide evaluations of use of 4 km/12 km modeling grids including the possibility of only nesting from 12 to 4 km in sub regions with large emissions close to Class I areas; fire emission representations for base year and future projections such as year specific, averaged, and other unspecified representations; and global models that provide boundary conditions to CONUS modeling efforts. Model results will also be evaluated to determine how the 2028 milestone year of the glide path might be adjusted for the contributions of international emissions and prescribed wildland fire, and to inform planning related to contribution of EPA-defined natural species on the IMPROVE filters, linking back to Task 1 activities.

All Task 4 data and products will be posted on the TSS. The results of Tasks 4.2 and 4.3 will focus development and implementation of multiple air quality modeling scenarios for the projected 2028 emission inventory. Task 4.4 will provide Reasonable Progress Goals for each 2028 modeling scenario at each Class I area.

<u>Task 4. Evaluating Modeling Results</u>				
<u>Subtask</u>	<u>Deliverables</u>	<u>Lead Responsibility</u>	<u>Coordination Required</u>	<u>Schedule</u>
4.1 Review RTOWG-provided options for aligning monitoring data and model outputs	- RHPWG endorsement of RTOWG-supported report on options and preferred methodology	EI&MPSC	-Coord. w/ RTOWG & contractor	Feb-Sept 2019
4.2 Evaluate sensitivity and control strategy evaluation modeling for 2028	-RTOWG contractor-supported report presenting results of sensitivity testing	EI&MPSC	-Coord. w/ RTOWG & contractor - Data displays and documentation with CGPSC	Sept 2019-March 2020

<u>Task 4. Evaluating Modeling Results</u>				
<u>Subtask</u>	<u>Deliverables</u>	<u>Lead Responsibility</u>	<u>Coordination Required</u>	<u>Schedule</u>
4.3 Evaluate 2028 source appointment modeling results	-RTOWG contractor-supported report on results of source apportionment	EI&MPSC	-Coord. w/ RTOWG & contractor - Data displays and documentation with CGPSC	Sept 2019- March 2020
4.4 Evaluate change in visibility from base year to 2028	- RTOWG contractor-supported report on Reasonable Progress Goals - Assessment of visibility change	EI&MPSC	-Coord. w/ RTOWG & contractor, CMSC - Data displays and documentation with CGPSC	Sept 2019- March 2020

Task 5. Control Measures Analysis (Reasonable Progress Analysis)

EPA draft guidance²³ suggests states identify pollutants that contribute more than one percent to another state’s visibility impairment for potential control measures. The guidance also recommends states evaluate the top 80 percent of their non-mobile anthropogenic emission sources for those contributing pollutants. The evaluation consists of four statutory factors (often referred to as the 4-factor analysis or control measures analysis); cost of compliance, time necessary for compliance, energy and non-air environmental impacts, and remaining useful life of the source and, unlike the Best Available Retrofit Technology (BART) analyses conducted in the first regional haze planning period, does not consider visibility as a factor. Timely completion of the control measures analyses and resulting emissions limitations is critical to support refinement of the final 2028 control measures emission inventory for modeling of RPGs.

The RHPWG will conduct much of this task with in-kind efforts, states efforts, and limited support from the RTOWG. The RHPWG will coordinate with the Control Measures Subcommittee and RTOWG and its selected contractor. Coordination and consultation between the states/tribes/locals and FLM community are critical to timely completion of this task and will be a major focus of the RHPWG under this Task. Early consultation provides the opportunity for the FLMs to identify sources of concern for control analysis. At the December 2017 Regional Haze Workshop in Denver, informal consultation and discussions with the western FLMs identified emissions from oil and gas activities, mining activities, ancillary off-road area sources and unpaved roads associated with natural resource extraction areas, power plants, cement plants, pulp mills, gas plants, and refineries as potential source categories of interest.

²³ US EPA, Draft Guidance on Progress Tracking Metrics, Long-term Strategies, Reasonable Progress Goals and Other Requirements for Regional Haze State Implementation Plans for the Second Implementation Period, July 2016

A Reasonable Progress Protocol document was developed to establish a regionally-consistent method for identifying source categories/facilities for analysis through the application of Q/d (source emissions divided by distance to the nearest Class I area) and the evaluation criteria for the 4-factor analyses. The Q/d screening tool identified in the RP protocol will be used by a contractor to provide an initial list of sources, while weighted emissions potential (WEP) modeling results will provide additional information for selecting sources for analysis by states. The CMSC will review the draft contractor-provided Q/d and WEP analyses with the TSC prior to finalizing these tools. States will conduct 4-factor analysis on sources meeting Q/d and WEP screening criteria.

The Control Measures Subcommittee evaluated the potential incorporation of visibility, as discussed in EPA guidance²⁴, but ultimately could not reach group consensus. Accordingly, the Subcommittee did not establish a formal position on whether states should consider visibility as a “fifth” factor in the control measures analysis. Since the RP protocol does not limit the ability of a state from pursuing alternative approaches- any state can assess source specific visibility as a fifth factor on their own if desired. States will conduct control measures analyses throughout 2019 with the goal of identifying all 2028 control strategies and incorporating resulting emissions reductions from the final control measures in the 2028 emission inventory by the end of 2019 in support of final modeling efforts.

All Task 5 work products will be posted on the TSS.

<u>Task 5. Control Measures Analysis</u>				
<u>Subtask</u>	<u>Deliverables</u>	<u>Lead Responsibility</u>	<u>Coordination Required</u>	<u>Schedule</u>
5.1 Develop criteria for source identification and 4-factor analysis	-Control Measures SC develops a Reasonable Progress Protocol document	CMSC	-Coord. w/ EI&MPSC, CGPSC, and RTOWG & contractor	Feb 2018 – Feb 2019
5.2 Determine whether to use single source visibility impact modeling as a “fifth” factor in the four factor analysis	-RP Protocol document evaluates “fifth” factor visibility options	CMSC	-Coord. w/ CGPSC, EI&MPSC, RTOWG & contractor	March 2018 - Feb 2019

²⁴ US EPA, Draft Guidance on Progress Tracking Metrics, Long-term Strategies, Reasonable Progress Goals and Other Requirements for Regional Haze State Implementation Plans for the Second Implementation Period, July 2016

<u>Task 5. Control Measures Analysis</u>				
<u>Subtask</u>	<u>Deliverables</u>	<u>Lead Responsibility</u>	<u>Coordination Required</u>	<u>Schedule</u>
5.3 Conduct regional/state source screening	-RTOWG-contractor supported “Q/d” screening analyses that will provide a memo and Q/d spreadsheet describing results	CMSC	-Coord. w/ CGPSC, RTOWG, and tribes/states/locals	Aug 2018 - March 2019
5.4 Evaluate emission source impacts on Class I areas	-RTOWG –contractor supported Weighted Emissions Potential (WEP) analysis that will provide WEP maps of source areas impacting each Class I area	CMSC	-Coord. w/ CGPSC, RTOWG & contractor, and tribes/states/locals	Spring 2019
5.5 Identify 2028 emission reductions from control strategies and incorporate in 2028 inventory	-Tribes, states, and locals provide revisions to 2028 emission inventory reflecting application of controls	CMSC	-Coord. w/ EI&MPSC, RTOWG, and tribes/states/locals	Sept 2018- Dec 2019

Task 6. Coordinate Training and Outreach Efforts

Various materials and resources are available from historical RH SIP planning efforts and from various Subcommittee and Work Group deliverables. This task involves coordinating these efforts to effectively provide necessary resources to state planners for SIP preparation. Determination of what resources or documentation is needed by states will be the responsibility of the RHPWG. Similarly, the RHPWG, in consultation with all Subcommittees and Work Groups, will compile and make accessible existing and newly developed materials. Development and distribution of new materials not related to specific tasks of other Work Groups or Subcommittees will be coordinated by the CGPSC. New materials, including working drafts, will be placed into the WRAP docketing process. Training and outreach efforts will continue through 2020.

<u>Task 6 – Coordinate Training and Outreach Efforts</u>				
<u>Subtask</u>	<u>Deliverables</u>	<u>Lead Responsibility</u>	<u>Coordination Required</u>	<u>Schedule</u>
6.1 Assess needs for materials useful to SIP planners	a. Regular queries to SC leads and states b. Determine capacity of RHPWG and Subcommittees to meet state-identified needs, delegate lead responsibility for appropriate tasks, and communicate decisions back to states	RHPWG co-chairs	all SCs; states' key contacts	Ongoing through 2019
6.2 Identify and compile existing materials	a. Centralized list of/links to useful references and resources related to training and outreach b. Examples of training and outreach materials or methods used by states/locals/tribes	CGPSC	RHPWG co-chairs; all other SCs and WGs; State key contacts	Ongoing through 2020
6.3 Develop new materials	a. High-level overview of RH planning b. Glossary – haze-related terms c. FAQs d. Storyboard – Haze in the west e. Webinar presentations to states f. Other resources	CGPSC	RHPWG, all other SCs and WGs, contractors, states	Ongoing through 2019
6.4 Oversee completion and distribution of materials	a. Share working drafts b. Document docketing process c. Determine appropriate posting location(s) d. Schedule and support/facilitate training webinars	CGPSC	All other SCs, RHPWG co-chairs, TSC	Ongoing through 2020

Task 7 – Technical Support System (TSS v2) Development

The Technical Support System (TSS v2) will be a shared database for information on monitoring data and trends, the “glide path” and “uniform rate of progress,” emissions inventories and projections, various modeling outputs/results, and resources helpful for RH SIP planning. The TSS v1 served as the data repository for the regional technical analyses supporting the first round of RH SIPs. In general, the TSS provides common data presentation for monitoring, emissions inventory, geographic weighted emissions 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 (glide path). The TSS v2 will take datasets produced in Tasks 1-5 of this work plan and provide tools for planners to use that will show uniform representations across the western states. The CGPSC will coordinate with the other Subcommittees, Work Groups, and contractors, as shown in the table below, to assure timely delivery of data, data representations and documentation to planners via the TSS v2.

The Cooperative Institute for Research in the Atmosphere (CIRA), located at Colorado State University – the same group that developed the TSS v1 – has the responsibility for managing the database, creating the overall framework for the interactive web site and for populating it with the various data (“tools”) and documentation. The CGPSC will guide CIRA on priorities for inclusion on the TSS v2 and review in a methodical manner the tools developed by CIRA. Training on the TSS v2 tools will be incorporated with the informational webinars developed under Subtask 6.4. Various Subcommittees and Work Groups will provide data input to CIRA. Part of the CGPSC’s work will be to assure that all necessary data for SIP revisions (and embedded progress reports) are accessible and easily understood by using the various tools developed by CIRA.

Task 7 – Technical Support System (TSS v2) Development				
<u>Subtask</u>	<u>Deliverables</u>	<u>Lead Responsibility</u>	<u>Coordination Required</u>	<u>Schedule</u>
7.1 Review TSS v1 for priority needs	Priority needs document	CGPSC	RHPWG, state key contacts, CIRA	June 2019 for document to CIRA
7.2 Coordinate and review TSS v2 monitor data tool development	a. Haze analysis tool b. Visibility summary tool	CGPSC	CIRA., RHPWG, all other SCs; contractor for glide path/natural conditions	July 2019
7.3 Coordinate and review TSS v2 emissions data and projections tool development	a. 2014 emissions inventory tool b. 2028 emissions projections tool (base case and control measures scenario)	CGPSC	CIRA, EI&MPSC, OGWG, FSWG, TDWG, RTOWG	September 2019
7.4 Coordinate and review TSS v2 base year modeling tool development	Base year modeling results tool	CGPSC	CIRA, EI&MPSC, OGWG, FSWG, TDWG, RTOWG	November 2019
7.5 Coordinate and review TSS v2 2028 on-the-books modeling results tool development	2028 base case modeling tool	CGPSC	CIRA, EI&MPSC, OGWG, FSWG, TDWG, RTOWG	December 2019
7.6 Coordinate and review TSS v2 reasonable control modeling tool development	Reasonable control scenario modeling tool	CGPSC	CIRA, EI&MPSC, OGWG, FSWG, TDWG, RTOWG	April 2020
7.7 Provide TSS training webinars	Periodic webinars integrated with topics for educational outreach efforts (see Task 6.4 above)	CGPSC	CIRA, all other SCs, RHPWG co-chairs, TSC	Ongoing through 2020

Task 8. State Planning and Adoption Process

The Regional Haze Rule prescribes a certain level of formal consultation and coordination required for SIP adoption and submittal. The WRAP recommends that states engage in additional informal communication throughout the state planning process. This task includes developing a framework for such informal communication that clearly delineates where regional coordination ends and states should take the lead. The framework will also provide guidance to help state planners be successful in their communication with various partners and stakeholders. A critical piece of the consultation framework is how to “ask” for emissions reductions from adjacent or nearby states, but consultation

between WRAP member agencies and the FLM community is equally important. In addition to the formal 60-day FLM comment period, member agencies will consult with the FLM community early in the process on source screening for reasonable progress, consult on source controls and the underlying 4-factor analysis, and consult on long-term strategies.

To assist states with informal and formal communication, this task involves compiling and sharing contact information for key contacts at tribes, federal land management agencies, EPA, and state and local air agencies. This task also includes the identification of key planning target dates, milestones for technical support, and key consultation points. The CGP Subcommittee will take the lead developing timelines and charts to help state planners and WRAP member agencies understand how all of these dates and milestones fit together, and will coordinate with other Work Groups to ensure timelines reflect contract schedules and the availability of technical work products.

The subtasks within this task progress from the regional level, at which the CGP Subcommittee has lead responsibility in coordination with other Subcommittees and Work Groups, to the state level, at which states lead and WRAP Subcommittees and Work Groups serve in a supporting role by providing a regional forum for discussion, troubleshooting, and coordination.

<u>Task 8. State Planning and Adoption Process</u>				
<u>Subtask</u>	<u>Deliverables</u>	<u>Lead Responsibility</u>	<u>Coordination Required</u>	<u>Schedule</u>
8.1 Identify SIP planning target dates	a. Timeline identifying critical SIP planning milestones and target dates b. Timeline of critical informal consultation junctures and milestones	CGPSC	-Coord. w/ all other SCs and Work Groups	a. Finished in Spring 2017 b. April 2019
8.2 Establish consultation-coordination framework	a. White Paper describing recommended framework b. List of key regional contacts, including FLM, tribe, state, EPA	CGPSC	-Coord. w/ all other SCs and Work Groups	a. April 2019 b. April 2019, ongoing updates
8.3 Coordinate and support informal consultation among WRAP member agencies	a. Keep record of WRAP-facilitated meetings and conference calls b. Prepare and disseminate communication log template and other communication templates, as needed, for use by states c. Support regional information-sharing and informal consultation between agencies throughout analysis	CGPSC	-Coord. w/ all Work Groups, all SCs	Ongoing through July 2021

Task 8. State Planning and Adoption Process

<u>Subtask</u>	<u>Deliverables</u>	<u>Lead Responsibility</u>	<u>Coordination Required</u>	<u>Schedule</u>
	and SIP development tasks, and beyond, as needed			
8.4 Support state-led SIP development, formal consultation, and public review for July 31, 2021 submission to EPA	Provide a regional forum to support coordination regarding the following state tasks: - Formal FLM Consultation - Public Notice Period - Potential Hearing - Response to Public Comments - Record included in RH SIP Appendix - Packaging for Submittal to U.S. EPA	CGPSC	-States, Local agencies (and Tribes as appropriate)	2020 through July 2021 (depends on State schedule)

Appendix C

Fire and Smoke Work Group 2018-2019 Workplan

Approved by FSWG members February 27, 2018
Mid-Course Workplan Review & Update – Final January 28, 2019

Both natural, unplanned wildfires and long-standing practices of planned, prescribed fire are important air pollution sources in the Western United States. For wildfire, the length of the fire season, and the duration and intensity of individual fires are increasing due to the build-up of natural fuels after years of public policy for restricting wildfire spread, and a warming climate. With a better understanding of the role of natural fire in maintaining the health of natural landscapes, public policy is evolving to balance the need for natural fires with the need for protection of human infrastructure and public health, through application of prescribed fire. Additionally, climate change results in altered weather patterns, shifts in the types and composition of natural landscape communities, and increased threats from biological pests on weakened and transitioning ecosystems. Periodic and sustained drought and pressure to expand human communities into the urban-wildland interface heighten the importance of understanding wildfire in the western United States. In recognition of the increasing contributions of wildfire smoke, in frequency and duration, to ambient air quality, the western states have formed cooperative tracking systems that are the technical basis for improved understanding of smoke from uncontrolled wildfires. This regional interstate cooperation supports preparation of State Implementation Plans (SIPs) for Regional Haze and criteria pollutants.

The Fire and Smoke Work Group will focus on analysis and planning activities related to improve activity data to support emissions inventories for fire and smoke emissions, begin scoping work to assess present and range of future year contributions of natural sources such as fire, undertake evaluation of Smoke Management Programs, survey and compile information about Exceptional Events assessment efforts, review the treatment of fire and smoke emissions in modeling studies, and improve coordination between state, tribal, and federal agencies. Several of these activities involve close coordination with other WRAP Work Groups as described in the FSWG Workplan.

Duties and WRAP Staff Support

In consultation with the Chair or Co-Chairs from the Fire and Smoke Work Group (FSWG), the Technical Steering Committee (TSC) will review and seek Board approval of a written workplan to address and include all the elements for each Work Group, specific to FSWG as described in Section I of the Annual WRAP Workplan. Based on these elements, the FSWG is then charged with creating detailed workplan inputs to the WRAP annual workplan for achieving these objectives. The FSWG workplan will include a schedule for progress reports to the TSC (quarterly and annual summary) and a schedule for project completion. The FSWG will work with WRAP staff to have progress reports posted to the WRAP website. The FSWG and other Work Groups are responsible for translating technical materials into a form understandable by the TSC, Board, and general public. The FSWG has the additional responsibility for ensuring the best information and data are available for air quality planning across the region, with WRAP Staff support.

The FSWG will have conference calls on alternating months to manage activities and provide oversight to WRAP projects. The FSWG will provide inputs to the TSC for an annual WRAP workplan and budget for Board approval, covering technical projects and Work Groups. The FSWG may have meetings identified in the annual workplan. The FSWG Chair or Co-Chairs will plan and direct the calls and meetings, and with assistance from WRAP Staff, take the lead in communications and other necessary TSC and Board interaction.

WRAP Staff will provide support for FSWG calls and meetings. WRAP Staff will assist with arranging and documenting FSWG calls and meetings, prepare TSC workplan inputs and budgets for review and action, assist with status reports on the FSWG's activities, and provide status reports on the deliverables, budgets, and timelines for the WRAP's technical projects.

Processes

The FSWG is to conduct their business on a consensus basis. Consensus has the following parameters:

- Consensus is agreement.
- Consensus is selection of an option that everyone can live with.
- Consensus may not result in the selection of anyone's first choice, but everyone is willing to support the choice.
- Consensus is not a majority vote.

When the FSWG cannot reach a consensus on an issue it will be referred to the TSC. If the TSC cannot reach a consensus on the issue it will be referred to the WRAP for resolution.

Coordination

Through the TSC, the FSWG will coordinate with the following work groups and committees as needed to ensure activities conducted in WRAP projects, and under the auspices of the FSWG provide needed support:

1. Tribal Data Work Group (TDWG);
2. Regional Technical Operations Work Group (RTOWG);
3. Oil and Gas Work Group (OGWG);
4. Regional Haze Planning Work Group (RHPWG)
5. WESTAR Planning Committee;
6. WESTAR Technical Committee; and
7. Other groups as designated by the Board in the annual Workplan process.

FSWG Co-chairs

Sara Strachan, Idaho Department of Environmental Quality
 Bob Kotchenruther, U.S. EPA Region 10
 Paul Corrigan, U.S. Forest Service

FSWG Status Report for 2017 Workplan

The table below presents the FSWG’s progress on Work Group activities listed in the 2017 WRAP Workplan and lists outstanding work necessary to complete the task. Many of the outstanding tasks are included in the 2018-2019 Work Group activities.

2017 FSWG Task	2017 Progress	Outstanding Tasks
Activity Data to Support Emissions Inventory	- Review current functions of FETS/WRAP Tools: complete (Matt’s report) - Identify improvements to track activity and improve emissions estimates: complete (Matt’s report)	-Update state, tribal, and federal data streams - Add PFIRS tracking and SmartFire/Bluesky forecasting data streams
Determine present and range of future year contributions of natural sources		Synthesize current research - Report possible approaches to model future year contribution of natural sources
Evaluation of Smoke Management	Review current state Smoke	Ongoing, need to review more states

2017 FSWG Task	2017 Progress	Outstanding Tasks
Programs	Management Programs: completed WA, OR, ID	- Track, reference, and apply effects of SMPs on fire management-related regional haze controls on regional ozone and PM - Identify SMPs certified by states for use in prescribed burn exceptional event demonstrations
Exceptional Events	-Survey states planning on developing a mitigation strategy: complete - Compile elements of mitigation plans: complete - Identify key data to collect for EE demonstrations: complete	Need to put list on website and plan for regular updates
Smoke emissions modeling		-Identify and evaluate emissions and modeling for fire-related ozone background and regional transport evaluation - Specify modeling studies of fire emissions and impact analysis
Coordination between states/tribes/federal agencies		Establish how agencies coordinate during wildfire season and determine how to improve

Action Items for 2018-2019 FSWG Workplan

The table below lists the FSWG action items for the 2018-2019 WRAP Workplan. The information in this table is supplemented by the outline below, which provides some additional detail regarding the 2018-2019 FSWG activities.

Deliverable	Source	Funding	Timeline
WRAP Tools/FETS Update and Operation	Workgroup, Matt Mavko	Request funds for Matt's time.	2019
Evaluation of Smoke Management Plans	Workgroup	In-kind and contractor work.	2019
Multi-year baseline and Future Fire Activity and Emissions	Workgroup	In-kind and contractor work.	2019
Wildfire coordination between states/tribes on wildfire response and smoke management	Workgroup	In-kind work.	2020

- I. FSWG Management
 - a. Finalize workgroup recruitment
 - b. Schedule bi-monthly meetings
 - c. Send quarterly reports to TSC
 - d. Send yearly accomplishment narrative to TSC and WRAP board
 - e. Schedule work project completion with milestones of progress
 - f. Consider workshop/conference attendance to promote group's work

- II. WRAP Tools/FETS Update and Operation (contractor support needed)
 - a. Restructure and update WRAP Tools/FETS based on survey
 - b. Update data streams and continue collecting annual activity data to support emissions inventory
 - c. Determine present trend of fire activity and emissions by state and ecosystem, and range of future year contributions of fire-related natural sources
 - d. Promote use of updated FETS for regional coordination
 - e. Propose methods for more timely information on planned burned with enhanced user roles
 - f. Help establish new, better SMP data connections to FETS - outreach focused

- III. Evaluation of Smoke Management Plans
 - a. Review current state smoke management programs
 - b. Track, reference, and apply effects of smoke management programs on fire management-related regional haze controls on ozone/PM/nitrogen
 - c. Identify Smoke Management Plans certified by states for use in prescribed burn exceptional event demonstrations

- IV. Historic and Future Fire Activity and Emissions (contractor support needed)
 - a. Identify potential methodologies to determine future year emissions (2023 [Ozone], 2028 [Regional Haze]) and multi-year baseline emissions
 - i. Synthesize current research
 - ii. Report possible approaches and calculate ranges of model future year contribution of natural sources for air quality modeling
 - b. Support for sensitivity testing for modeling platform (RTOWG, RHPWG)

- V. Wildfire coordination between states/tribes on wildfire response and smoke management
 - a. Determine how states, tribes, and federal agencies coordinate (or don't) during wildfire season
 - b. Identify ways to improve coordination

Appendix D

2018-2019 WRAP Workplan Oil and Gas Work Group Status Report

Final - February 20, 2018

Mid-Course Workplan Review & Update – Final February 12, 2019

The Oil and Gas Work Group will focus on analysis and planning activities related to improve activity data to support emissions inventories for oil and gas emissions, and begin scoping work to assess the present and range of future year scope of emissions management programs by the variety of regulatory jurisdictions within the WESTAR-WRAP region, by agency. The OGWG will coordinate among state, tribal, local, and federal member agencies' Oil & Gas programs, including review of modeling, monitoring, and control program assessment studies for Oil & Gas emissions. Several of these activities involve close coordination with other WRAP Work Groups as described in the OGWG Workplan.

The WRAP Workplan set up topical Work Groups including the Oil and Gas Work Group to “*promote understanding of the role of oil and gas in regional and local air quality plans.*” The WRAP Workplan also identified the following with respect to the topic of oil and gas.

“The Intermountain Region is especially impacted by exploration and production emissions from the oil and gas industry, and the West more broadly by emissions from the transport and use of those fuels. NAAQS exceedances during winter in production regions of Utah and Wyoming have demonstrated localized effects, while the contributions from exploration and production in the wider region on summer ozone is still being assessed. In addition, this sector must be considered for Regional Haze planning. Studies currently point to improvements in the emissions inventory as being one of the most needed products to improve performance of the air quality models. Current projects and funding opportunities make improvements in these areas likely in the 2016-17 timeframe. This is a rapidly changing sector due to variations in commodity prices, technology innovations, and emerging regulatory programs.” - Annual WRAP Workplan approved by the WRAP Board May 9, 2016

Duties and WRAP Staff Support

In consultation with the Co-Chairs from the Oil and Gas Work Group (OGWG), the Technical Steering Committee (TSC) will review and seek WRAP Board (Board) approval of a written workplan to address and include all the elements for each Work Group, specific to OGWG as described in Section I of the Annual WRAP Workplan. Based on these elements, the OGWG is then charged with creating detailed workplan inputs to the WRAP annual workplan for achieving these objectives. The OGWG workplan will include a schedule for progress reports to the TSC (quarterly and annual summary) and a schedule for project completion. The OGWG will work with WRAP staff to have progress reports posted to the WRAP website. The OGWG and other Work Groups are responsible for translating technical materials into a form understandable by the TSC, Board, and general public. The OGWG has the additional responsibility for ensuring the best information and data are available for air quality planning across the region, with WRAP Staff support.

The OGWG will have conference calls on alternating months to manage activities and provide oversight to WRAP projects. The OGWG will provide inputs to the TSC for an annual WRAP workplan and budget for Board approval, covering technical projects and Work Groups. The OGWG may have meetings identified in the annual workplan. The OGWG Co-Chairs will plan and direct the calls and meetings, and with assistance from WRAP Staff, take the lead in communications and other necessary TSC and Board interaction.

WRAP Staff will provide support for OGWG calls and meetings. WRAP Staff will assist with arranging and documenting OGWG calls and meetings, prepare TSC workplan inputs and budgets for review and action, assist with status reports on the OGWG's activities, and provide status reports on the deliverables, budgets, and timelines for the WRAP's technical projects.

Processes

The OGWG is to conduct their business on a consensus basis. Consensus has the following parameters:

- Consensus is agreement.
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- Consensus may not result in the selection of anyone's first choice, but everyone is willing to support the choice.
- Consensus is not a majority vote.

When the OGWG cannot reach a consensus on an issue it will be referred to the TSC. If the TSC cannot reach a consensus on the issue it will be referred to the WRAP for resolution.

Coordination

Through the TSC, the OGWG will coordinate with the following work groups and committees as needed to ensure activities conducted in WRAP projects, and under the auspices of the OGWG provide needed support:

1. Tribal Data Work Group (TDWG);
2. Regional Technical Operations Work Group (RTOWG);
3. Fire and Smoke Work Group (FSWG);
4. Regional Haze Planning Work Group (RHPWG);
5. WESTAR Planning Committee;
6. WESTAR Technical Committee; and
7. Other groups as designated by the Board in the annual Workplan process.

OGWG Co-chairs

Amanda Brimmer, Regional Air Quality Council, Denver, CO

Mark Jones, New Mexico Environment Department, Air Quality Bureau

Darla Potter, Wyoming Department of Environmental Quality, Air Quality Division

OGWG Structure

The OGWG Co-Chairs were designated by the TSC and approved by the WRAP Board to lead and execute the Workplan objectives associated with the OGWG. OGWG members have applicable oil and gas expertise and provide appropriate geographic representation from the WRAP member agencies (state, tribal, local, federal) to the greatest extent possible. OGWG members will be approved by the TSC. All OGWG Co-Chairs and members are appointed for two-years. Additional individuals with applicable oil and gas expertise will be encouraged to participate in the OGWG as advisors. The OGWG structure, including identification of Co-Chairs, members, and advisors is attached and will be updated as necessary.

Project Teams

Project Teams are intended to enable non-members of the WRAP to express interest and sponsor analysis or planning projects within the scope and topics of the WRAP Charter and Strategic Plan. Project Teams will be associated with a discrete, defined project for which the non-member sponsor is providing funding and expertise resources. The Project Teams are intended to allow sponsor participation and will include members of WRAP Work Groups and TSC, WRAP Staff, and non-member sponsors. Information will be included in the Annual Workplan to define the scope, membership and duration of each Project Team.

Project Teams that may be beneficial to the OGWG as future funding allows:

- Continue the Drill Rig 1-hour NO₂ Collaborative Study
- Implement the Collaborative Air Landscape-Scale Management Pilot (CALM) Study – Oil and Gas development impacts in the intermountain west

Project Team Update:

- CALM Study
The CALM Study is awaiting federal funding for implementation.
- Drill Rig 1-hour NO₂ Collaborative Study
The purpose of this Study is to collect ambient measurements adjacent to operating drilling rigs to evaluate actual 1-hour NO₂ impacts from drilling operations. In addition, sufficient data would be collected regarding emissions from drilling operations that could be used to verify NO₂ air quality models. The data were collected during two field studies in the fall of 2014. One field study was conducted in the Denver-Julesburg Basin of Colorado and the other was conducted on the north slope of Alaska.

To provide direction and guidance for the Study, the Study participants formed a Study Management Team involving the BLM, EPA OAQPS, Wyoming DEQ, and API. WESTAR and WRAP provide overall administrative and other assistance to the Study Management Team. The Study Management Team has continued efforts to seek additional funding for contractor assistance with the Study and additional funding was secured in 2017. Continued contractor assistance through WESTAR will provide for general study coordination and data analysis coordination.

A Model Evaluation Workgroup was formed to further process the Alaska and Colorado field studies data and to conduct the modeling to assess model performance. EPA is providing leadership for two functional Working Groups that have been active since late 2015 to review, analyze, and reformat the field studies data, which will be followed by dispersion modeling to assess model performance compared to the collected ambient data. With the additional funding, consulting services will assist the work of the Working Groups.

Once the work of the Working Groups is complete, they will summarize and document findings and conclusions, perhaps in technical journal articles, and then submit recommendations to the EPA for making improvements to applicable regulatory dispersion models. Available funding is anticipated to provide Study support through mid-2018.

2016-2017 OGWG Activity Summary

The OGWG formation began in 2016 by seeking members and advisors with oil and gas expertise from the WRAP member agencies (state, tribal, local, federal) and culminated with the TSC approval of OGWG members February 9, 2017. The OGWG formation also involved development of the OGWG 2017 Workplan, which was approved by Consensus January 10, 2017. The OGWG conducted ten (10) conference calls in 2016-2017 with an average of 14 participants including OGWG co-chairs, members, and advisors, WRAP staff, TSC and RHPWG co-chairs, and contractors. Progress on 2017 OGWG Workplan Tasks is captured in the deliverables table below.

Oil & Gas Work Group	2017 Deliverable	Source	Funding	Timeline	2017 Progress
	Develop communication plan to distribute Oil and Gas Work Group work products	Workgroup	In-kind work, WRAP Budget SharePoint Development	2 nd Quarter 2017	Complete/Ongoing: www.wrapair2.org/OGWG.aspx Materials posted include call agendas, call notes, pertinent documents, finalized work products, and upcoming call dates
	Identify Oil and Gas Work Group action items that will require coordination with WRAP and WESTAR work groups and committees	Workgroup	In-kind work	2 nd Quarter 2017	Ongoing: -Aug. & Sept. '17 OGWG Conf. Calls w/ RHPWG Co-Chairs -Identify coordination need(s) for 2018-2019 tasks
	Oil and Gas Work Group Scope: Identify Oil and Gas sources for the entire upstream and midstream sectors Identify WRAP member agencies dealing with oil and gas sources	Workgroup	In-kind work	2 nd Quarter 2017	Complete: -Oct. '17 Oil and Gas Emission Sources approved by Consensus -June '17 identified WRAP Member Agencies

Oil & Gas Work Group	2017 Deliverable	Source	Funding	Timeline	2017 Progress
	Review Oil and Gas Specific Work Products: review existing work products to identify and discuss relevance, strengths, areas for improvement, and gaps	Workgroup will initiate and continue to explore if additional assistance is necessary	Initiate in-kind work and continue to explore if funding is necessary	4 th Quarter 2017	Underway: Incorporated into Road Map Scope of Work approved by Consensus Oct. '17 for contracted support
	Identify regional and local air quality planning needs: Regional Haze, Ozone, Climate Change, Hazardous Air Pollutants, and Other Air Pollution Indicators	Workgroup will initiate and continue to explore if additional assistance is necessary	Initiate in-kind work and continue to explore if funding is necessary	4 th Quarter 2017	Ongoing through coordination with TSC and RHPWG

2018-2019 OGWG Workplan Action Items

OGWG 2018-2019 Workplan activities were developed in the 2018-2019 Workplan Master Task List and approved as such relate to the Gantt chart. The OGWG Workplan activities are incorporated below and are associated with Regional Haze Planning Technical Support as well as Associated Regional Analysis Technical Support.

Task 12.1 Regional Haze Planning Technical Support

2.0 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.

2.1 Process 2014 NEI and refinements (base year modeling) – Feb 2018 – April 2019

2.1.1 Incorporate inventory data from OGWG, FSWG, and TDWG

2.1.1.1 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.

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.

The OGWG will leverage work performed to develop the WRAP oil and gas base year inventory (version 1) to review 2016 Modeling Platform base year emissions.

2.1.2 Refine base year inventory

2.1.2.1 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.

2.1.2.2 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 Regional Haze SIP Workplan, page 14

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.

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.

The OGWG will gather information through a survey that will be sent to agencies and then operators in select oil and gas basins. Additional contract assistance is necessary to transition the survey from agencies to operators.

2.3 Develop and refine 2028 emission inventories – December 2018 - Summer 2019

2.3.1 Determine and adjust emissions as needed for source apportionment and sensitivity scaling of base year and 2028 Inventories

2.3.1.1 Determine and process 2028 emissions for modeling of on-the-way/on-the-books controls

2.3.1.2 Determine and process 2028 emissions for modeling of Additional Reasonable Controls scenarios

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.

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.

The OGWG will leverage work to-be completed on WRAP oil and gas future year inventory development to describe oil and gas activity forecast methods for EPA to implement in future year emission inventory development.

3.0 Air Quality Modeling (Visibility and Source Appointment Modeling) – Feb 2018-early 2020

3.4 Conduct sensitivity testing (boundary conditions, fire emissions, grid size, climate change) – Summer – Winter 2019

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.

4.0 Analyzing Future Year Modeling Results (Analysis of Modeling Results) – Feb 2018-early 2020

4.2 Sensitivity and Control Strategy Evaluation Modeling for 2028 projections – Fall 2019-early 2020

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.

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.

5.0 Control Measure Analysis (Reasonable Progress Analysis) – Jan-Dec 2019

5.3 Conduct Regional/State Source Screening – April - late 2019

5.3.3 O&G sector focus on production engines, heaters/treaters, point vs. non-point tracking/permitting, fugitive dust, reconcile VOC emission estimates with observations

5.3.3.1 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.

Task 12.2 Oil and Gas Associated Regional Analysis Technical Support

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.

12.2.2 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.

12.2.3 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.

12.2.4 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.

12.2.5 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.

12.2.6 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.

Appendix E

Regional Technical Operations Work Group 2018-2019 Workplan

Mid-Course Workplan Review and Update -- Final March 11, 2019

The WRAP Workplan established topical Work Groups including the Regional Technical Operations Work Group (RTOWG). Since its inception in the WRAP Strategic Plan and Vision Statement, the mission statement for RTOWG is to, “Provide a forum for regional collaboration on technical and planning topics of common interest to the members”. Over the past several years, various efforts by regional, federal, state, and local groups have developed infrastructure upon which the RTOWG can effectively build a forum for regional collaboration for technical analysis and planning. The modeling center selected by the RTOWG for regional modeling in this workplan is the [Intermountain West Data Warehouse](#) the Intermountain West Data Warehouse (IWDW – Western Air Quality Study (WAQS)). The IWDW-WAQS modeling center will be directly applying its resources to support and deliver WRAP regional modeling work efforts described in this workplan, readily adaptable for air quality planning purposes for the NAAQS, Regional Haze, and other programs, utilizing available resources from, and through coordination with, sponsoring agencies of the IWDW-WAQS and WRAP members.

The focus of the Regional Technical Operations Work Group includes:

- Regional analysis in support of planning activities related to emissions and modeling for regional haze, ozone, PM, and other indicators;
- Background and regional transport, international transport, sensitivity and other analyses of emissions data focused on the western U.S.;
- Perform and leverage modeling, data analysis, and contribution assessment studies;
- Investigation of “background ozone” impacts to western U.S. locations;
- Coordination and collaboration with the WRAP member-sponsored IWDW-WAQS regional air quality modeling groups including NW-AIRQUEST, EPA-OAQPS, and other state and local agencies performing regional modeling;
- Provide guidance on more complete and uniform model performance evaluations (MPEs);
- Several of these activities involve close coordination with other WRAP Work Groups and Subcommittees of the Regional Haze Planning Work Group as described in the WRAP Workplan.

The WRAP Regional Technical Center, in the form of the IWDW-WAQS, will provide data support and decision support for air quality planning in the WRAP region and will be comprised of three components. The -WAQS website provides storage of all the data required to support regional air quality modeling including meteorological, emission inventories, air quality modeling platforms, and monitoring data, and the website hosts the results of a variety of western air quality modeling activities. The IWDW-WAQS provide the data support. Planning decision support will be in the form of the [Technical Support System v2](#) (TSSv2), which will provide access to a variety of data, work products, and data analysis capabilities to support air quality planning activities. The WRAP Regional Technical Center will be the collective of the IWDW-WAQS and TSSv2 efforts.

The work that the RTOWG does and oversees often uses guidance provided by EPA and others. The EPA’s Air Quality Modeling Group (AQMG) provides guidance documents to EPA Regional, State, and Tribal air quality management authorities and the general public on how to prepare attainment demonstrations for National Ambient Air Quality Standards (NAAQS) and the Regional Haze Rule using air quality modeling and other relevant technical analyses. These guidance documents are primarily directed at modeling applications in nonattainment areas but are also useful for modeling in maintenance areas or to support other rules or sections of the Clean Air Act. These guidance documents recommend procedures for estimating if a control strategy to reduce pollutant emissions (e.g., ozone precursors) will lead to attainment of the appropriate NAAQS or visibility metric. These guidance documents are periodically updated or new documents published at the discretion of EPA-OAQPS. Some of the current applicable guidance documents include:

- [Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM2.5, and Regional Haze \(PDF\)](#) (205 pp, 2.24 M) - November 2018 - Final version of the updated Ozone, PM_{2.5}, and Regional Haze modeling guidance document.
- [Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, PM2.5, and Regional Haze.](#) (1 MB, PDF) - April 2007 - Final version of the Ozone, PM_{2.5}, and Regional Haze modeling guidance document.
- [Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards \(NAAQS\) and Regional Haze Regulations](#) (149 pp, 1 MB, July 2017)

Duties of the RTOWG and WRAP Staff Support

In consultation with the Chair or Co-Chairs from the RTOWG, the Technical Steering Committee (TSC) will review and seek Board approval of a written workplan to address and include all the elements for each Work Group, specific to RTOWG as described in Section I of the Annual WRAP Workplan. Based on these elements, the RTOWG is then charged with creating detailed workplan inputs to the WRAP annual workplan for achieving these objectives. The RTOWG workplan will include a schedule for progress reports to the TSC (quarterly and annual summary) and a schedule for project completion. The RTOWG will work with WRAP staff to have progress reports posted to the WRAP website. The RTOWG and other Work Groups are responsible for translating technical materials into a form understandable by the TSC, Board, and general public. The RTOWG has the additional responsibility for ensuring the best information and data are available for air quality planning across the region, with WRAP Staff support.

The RTOWG will have conference calls on a regular basis and as needed to manage activities and provide oversight to WRAP projects. The RTOWG will provide inputs to the TSC for an annual WRAP workplan and budget for Board approval, covering technical projects and Work Groups. The RTOWG may have meetings identified in the annual workplan and will leverage IWDW-WAQS periodic technical meetings to review and discuss work products related to the regional modeling platform. The RTOWG Co-Chairs will plan and direct the calls and meetings, and with assistance from WRAP Staff, take the lead in communications and other necessary TSC and Board interaction.

WRAP Staff will provide support for RTOWG calls and meetings. WRAP Staff will assist with arranging and documenting RTOWG calls and meetings, prepare TSC workplan inputs and budgets for review and action, assist with status reports on the RTOWG's activities, and provide status reports on the deliverables, budgets, and timelines for the WRAP's technical projects.

Processes

The RTOWG is to conduct their business on a consensus basis. Consensus has the following parameters:

- Consensus is agreement.
- Consensus is selection of an option that everyone can live with.
- Consensus may not result in the selection of anyone's first choice, but everyone is willing to support the choice.
- Consensus is not a majority vote.

When the RTOWG cannot reach a consensus on an issue it will be referred to the TSC. If the TSC cannot reach a consensus on the issue it will be referred to the WRAP for resolution.

Coordination

Through the TSC, the RTOWG will coordinate with the following work groups and committees as needed to ensure activities conducted in WRAP projects, and under the auspices of the RTOWG provide needed support:

1. Tribal Data Work Group (TDWG);

2. Fire and Smoke Work Group (FSWG);
3. Oil and Gas Work Group (OGWG);
4. Regional Haze Planning Work Group and Subcommittees (RHPWG);
5. WESTAR Planning Committee;
6. WESTAR Technical Committee; and
7. Other groups as designated by the Board in the annual Workplan process.

The RTOWG will hold conference calls on a regular basis and as needed with members to provide an update on activity status and coordinate future work. Initial calls will be held monthly. Additional calls will be scheduled as needed especially for topics of higher interest. A survey of topics will be provided to RTOWG members to identify and prioritize areas of interest.

Agendas, reports, and other documents will be shared with the existing IWDW infrastructure. Information in regards to the IWDW-WAQS can be found at: <http://views.cira.colostate.edu/tsdw/> and on the WRAP’s regional haze planning website at: <http://www.wrapair2.org/RHPWG.aspx>.

RTOWG Co-chairs

Mike Barna, National Park Service, Air Resources Division
 Kevin Briggs, Colorado Department of Public Health and Environment, Air Pollution Control Division
 Gail Tonnesen, U.S. EPA Region 8 Air Program

RTOWG Structure

The structure of the RTOWG is very similar to the other work groups. The RTOWG Co-Chairs were designated by the TSC and approved by the WRAP Board to lead and execute the Workplan objectives associated with the RTOWG. RTOWG members are from the WRAP member agencies and represent Federal, State, Local and Tribal agencies and also represent a geographic expanse and interest across the WESTAR-WRAP region. RTOWG members generally have technical expertise in ambient air monitoring, emission inventory development, air quality modeling, data analysis, and regulatory expertise. RTOWG members are approved by the TSC. All Co-Chairs and members are appointed for two-years.

Additional individuals that are not Co-Chairs and members of the RTOWG with technical expertise are also encouraged to participate in the RTOWG as advisors. The RTOWG structure, including identification of Co-Chairs, members, and advisors is included as part of the overall work plan.

RTOWG Status Report for 2017 Workplan

2017 RTOWG Task	2017 Progress	Outstanding Tasks
I. RTOWG Management	ongoing	ongoing
II. Coordinate with other Work Groups to identify air quality modeling products that will be relevant to their Workplans	ongoing;	ongoing
III. Participate in upcoming science conferences	Co-Chairs and members of the RTOWG were present at all the conferences and workshops listed in the 2017 workplan.	New planning workshops and conferences are listed for the 2018 workplan

2017 RTOWG Task	2017 Progress	Outstanding Tasks
IV. Leverage opportunities and work by WRAP member-sponsored technical centers as well as other technical and scientific groups to:	ongoing	ongoing
V. Provide modeling Coordinate with Federal Land Managers (FLM) to discuss possible transfer of modeling products to FLAG.	ongoing	ongoing

The RTOWG has completed a [Modeling Representativeness Analysis](#). The results of this analysis compare the ambient measurement data, meteorology, emissions inventory and other factors such as exceptional events that may influence the decision to use one base year (i.e. 2014 vs. 2016) over another. This work anchors the understanding of applying 2014 and 2016 modeling platforms described below in this workplan

RTOWG Action Items for 2018-2019 WRAP Workplan

Action Items for the 2018-2019 Workplan

I. RTOWG Management

- a. Recruit and retain RTOWG membership and advisors based on geographic representation, WRAP member agency representation and technical expertise. Maintain the RTOWG Members + Advisors and WG Co-Chairs and WG rosters spreadsheet
- b. Schedule and facilitate monthly conference calls or meetings. Schedule and facilitate additional calls on an as needed basis.
- c. Quarterly reports to TSC
- d. Yearly accomplishment narrative to TSC and WRAP board
- e. Schedule for work project completion with milestones of progress

II. Coordinate with other Work Groups to identify air quality modeling products that will be relevant to their Workplans, in particular, those tasks specifically listed in Section III of the TSC workplan with the accompanied Gantt chart.

- a. Tribal Data Work Group
 - i. Simulated air quality impacts and comparison to Tribal monitoring sites
 - ii. Identifying regions of high air pollutant impacts
- b. Fire and Smoke Work Group
 - i. Coordinate fire emission inventory development suitable for air quality modeling
 - ii. Evaluate impacts from fire emissions on regional air quality

- c. Oil and Gas Work Group
 - i. Coordinate oil and gas inventory development suitable for air quality modeling
 - ii. Evaluate impacts from oil and gas emissions on regional air quality
 - d. Regional Haze Planning Work Group and its Subcommittees
 - i. Modeling necessary to develop Reasonable Progress goals for 2028 in deciviews for IMPROVE monitors in the WRAP region
 - ii. Associated source apportionment modeling and other modeling products as needed to support Regional Haze SIP and TIP preparation by WRAP States, Albuquerque, and Tribes
- III. RTOWG will oversee and facilitate the following high-level Tasks which will be provided principally by contractor services, with in-kind effort and support from RTOWG members. Task examples below will require summary reports at their completion to document approach, assumptions, results, et cetera. Additional detail for planned analysis and modeling schedule is displayed in the table below the list of example tasks.
- a. Monitoring and Data analysis for most representative modeling year and modeling performance evaluation
 - b. Dynamic Model Evaluation to assess Regional Haze
 - c. Selection of global model simulations to be used for boundary conditions, and method for estimating natural and anthropogenic contributions to boundary conditions.
 - d. Base Year (i.e. 2014 or 2016) emission processing including those inventories provided by the other work group
 - e. Base Year Meteorological Modeling and meteorological model performance
 - f. Base Year Air Quality Modeling
 - g. Baseline period (i.e., 2013-17) representative emissions and air quality modeling for Regional Haze planning projections
 - h. Future Year (i.e. 2028) emissions processing
 - i. Future Year Air Quality Modeling
 - j. Source Apportionment/Sensitivity Modeling
 - k. Technology transfer/Make modeling platform available through the IWDW

Planned Regional Analysis and Modeling Schedule

	2018	2019												2020		
	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March
Shakeout Project	2014 Base Year Modeling Platform v1 Shakeout - Emissions Processing, Met Modeling/MPE, Global Modeling/MPE, AQ Modeling/MPE, Modeling Plan (RTOWG and contractor team)															
				2014 Base Year Modeling Platform v2 and 2013-2017 Representative Baseline Development - Processing of revised Emissions, AQ Modeling/MPE (RTOWG, EI&MPSC, and modeling contractor team)												
	OGWG Base Year Inventory Development and Finalization															
	FSWG Base Year Inventory Development															
Task 1	Completion of RH Monitoring Data Analysis Round 1 (MGSSC and contractor)															
			RH Monitoring Data Analysis Round 2 (contractor for CGPSC)													
Task 2						Dynamic Model Evaluations for Regional Haze Progress to Date (RTOWG and contractor team)										
Task 3							Assessment / possible application of data for 2016 & projections - National Collaborative Emissions Modeling Platform (RTOWG and contractor team)									
Task 4					2023 and 2028 On-the-books Emission Inventory Development (RTOWG, EI&MPSC, and contractor team)											
	OGWG On-the Books 2028 Inventory Development															
							OGWG Additional Reasonable Controls 2028 Inventory Development									
	FSWG Future Year Inventory Development															
Task 5									2023 and 2028 On-the-books Air Quality Modeling (RTOWG and contractor team)							
Task 6										2028 Source Apportionment / Sensitivity / Control Scenarios Modeling (RTOWG and contractor team)						
Task 7	Data and Documentation Delivery (SDSC with modeling contractor team and IWDW / TSSv2 team)															

Detailed 2014 Modeling Platform Development and Shakeout Activities

	2018		2019										
	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Task 1	Develop and Finalize Modeling Plan												
Task 3	Update 2014 NEI with State comments												
Task 7	Single-Source Modeling Webinar and memo												
Task 3		2014 Emissions Modeling and Reporting / Transfer to IWDW											
Task 4		2014 Met Modeling, MPE, and Reporting / Transfer to IWDW											
Task 5		Process Global Modeling for BC / Transfer to IWDW											
Task 3			2014 Emissions Summary Reporting										
Task 6			2014 PGM Configuration, MPE, Annual Runs, Sensitivity Testing, and Reporting / Transfer to IWDW										
Task 12				Shakeout Close-out Meeting									

- IV. Participate in upcoming science conferences – regional and national meetings and workshops as they are scheduled.

As time permits and WRAP members' interest warrants in 2019, organize and facilitate the bi-annual workshop on western modeling and emission inventory efforts.

- V. Leverage opportunities and work by WRAP member-sponsored technical centers as well as other technical and scientific groups to:
- a. Investigate “background ozone” impacts to western U.S. locations, utilizing recommendations from the March 28-29, 2017 Background Ozone workshop and subsequent journal publication
 - i. Coordinate western regional ozone analyses with the planned collaborative effort among BAAQMD, CARB, and the Coordinating Research Council (CRC).
 - ii. Coordinate and collaborate with other WRAP member-sponsored regional air quality modeling groups including IWDW, NW-AIRQUEST, EPA-OAQPS, BAAQMD, and other state and local agencies doing regional ozone modeling.
 - iii. Develop an assessment protocol for modeling studies to understand international anthropogenic contribution to include trans-Pacific sources, Mexico and Canada sources, and “natural” sources
 - iv. Assess coordination opportunities with academic and other modeling groups.
 - b. Provide guidance on more complete and uniform model performance evaluations (MPEs)
 - i. Identify key model performance statistics and representative figures to apply to regional air quality and meteorology simulations.
 - ii. Discuss/specify what we mean by “benchmarks” in the context of model evaluation.
 - iii. Work with IWDW-WAQS, EPA OAQPS
 - iv. Reference docs
 - v. Identify outcomes and committed participants to write and test
 - c. Develop and implement a protocol to use the IWDW-WAQS capabilities as the WRAP Regional Technical Center
 - i. Assess the adequacy of a 12 km grid resolution modeling platform and develop procedures for nesting down from 12 to 4 km grid resolution if needed.
 - ii. Evaluate additional modeling year (i.e. 2015, 2016) that fall outside the triannual NEI (i.e. 2014)
 - iii. Assess expansion and grid resolution of IWDW-WAQS modeling domain
 - iv. Address the IWDW-WAQS expansion to include additional states of MT, ND, SD
 - v. Address any additional expansion to add other western and central states?

VI. RTOWG Administration

- a. Development of budgets for projects as resources are available
- b. Summary budget for RTOWG activities

- c. Write and track progress on 2018-19 RTOWG work plan

Appendix F

Tribal Data Work Group 2018-2019 Workplan

Mid-Course Workplan Review and Update – Final March 27, 2019

There are 480 federally recognized Tribes within the 15 states that comprise the Western Regional Air Partnership (WRAP) area of interest. Many of these, 225, are in the state of Alaska, while the remaining Tribes (240) are spread throughout the Environmental Protection Agency (EPA) Regions 8, 9, the lower three states of 10 and New Mexico in Region 6. There are at least 61 Tribal air quality programs in the WRAP area, excluding those in Alaska. Due to the large numbers WRAP considers all federally recognized Tribes as members has but does request a letter requesting to become an active member. WRAP currently has 24 active member Tribes.

EPA Region	Number of Tribes	Number Tribes with Air Quality Programs ¹
6 New Mexico	25	2
8	26	14
9	146	30
10	42	15
10 Alaska	225	
¹ Based on the number of federally recognized Tribes by BIA and 2017 NTAA State of Tribal Air Quality Report. Highest number of Tribes monitoring or conducting Emissions Inventories		

Each Tribal air quality program encompasses unique needs and requires specific emphasis to meet their goals. There are however, certain common themes that weave them together including:

1. Staff (capacity) – many programs have one or two people to address the complexities of air quality. Some Tribes experience turnover in positions that tend to keep them at a lower level of performance compared to long-term stable programs.
2. Funding – Most tribal air programs are funded by EPA Clean Air Act (CAA) 103, 105, Direct Implementation Tribal Cooperative Agreements (DITCA), or Indian General Assistance Grant (IGAP) grant programs. IGAP and 103 grants are used to build capacity while DITCA and 105 grants are awarded to programs that have built their capacity and capability to operate long-term.

3. Training (capability) – New personnel to Tribal air programs may not always possess the basic knowledge or experience needed to manage the program. Opportunities to expand skills are available to Tribal professional, from several sources specific to Tribes and are imperative to building capacity and capability.

By virtue of numbers and geographic spread a large amount of variability exists in the needs and goals of Tribal air programs. To capture how WRAP can help meet these needs the Tribal Data Work Group (TDWG) will continue data gathering on the size, complexity, and scope of tribal air needs in the WRAP states. TDWG will continue the effort to provide services and help solve Tribal needs.

Duties and WRAP Staff Support

In consultation with the Chair or Co-Chairs from the TDWG, the Technical Steering Committee (TSC) will review and seek Board approval of a written workplan to address and include all the elements for the Work Group as described in Section I of the Annual WRAP Workplan. Based on these elements, the TDWG is then charged with creating detailed workplan inputs to the WRAP annual workplan for achieving these objectives. The TDWG workplan will include a schedule for progress reports to the TSC (quarterly and annual summary) and a schedule for project completion. The TDWG will work with WRAP staff to have progress reports posted to the WRAP website. The TDWG and other Work Groups are responsible for translating technical materials into a form understandable by the TSC, Board, and general public. The TDWG has the additional responsibility for ensuring the best information and data are available for air quality planning across the region, with WRAP Staff support.

The TDWG will have conference calls on alternating months to manage activities and provide oversight to WRAP projects. The TDWG will provide inputs to the TSC for an annual WRAP workplan and budget for Board approval, covering technical projects and Work Groups. The TDWG may have meetings identified in the annual workplan. The TDWG Chair or Co-Chairs will plan and direct the calls and meetings, and with assistance from WRAP Staff, take the lead in communications and other necessary TSC and Board interaction.

WRAP Staff will provide support for TDWG calls and meetings. WRAP Staff will assist with arranging and documenting TDWG calls and meetings, prepare TSC workplan inputs and budgets for review and action, assist with status reports on the TDWG's activities, and provide status reports on the deliverables, budgets, and timelines for the WRAP's technical projects.

Processes

The TDWG is to conduct their business on a consensus basis. Consensus has the following parameters:

- Consensus is agreement.
- Consensus is selection of an option that everyone can live with.
- Consensus may not result in the selection of anyone's first choice, but everyone is willing to support the choice.
- Consensus is not a majority vote.

When the TDWG cannot reach a consensus on an issue it will be referred to the TSC. If the TSC cannot reach a consensus on the issue it will be referred to the WRAP board for resolution.

Coordination

Through the TSC, the TDWG will coordinate with the following work groups and committees as needed to ensure activities conducted in WRAP projects, and under the auspices of the TDWG provide needed support:

1. Regional Technical Operations Work Group (RTOWG);
2. Fire and Smoke Work Group (FSWG);
3. Oil and Gas Work Group (OGWG);
4. Regional Haze Planning Work Group (RHPWG);
5. WESTAR Planning Committee;
6. WESTAR Technical Committee; and
7. Other groups as designated by the Board in the annual Workplan process.

The TDWG will participate in a Google Documents site coordinated by WRAP staff, which enables collaboration on projects within the group and with other workgroups. Access will be provided to all members of the Technical Steering Committee, TDWG, and co-chairs of other workgroup. The TDWG believes this will foster great communications and enhance collaboration.

The TDWG may decide to further coordinate information gathering efforts with other Tribal organizations such as the National Tribal Air Association (NTAA) and the Tribal Air Monitoring Support Center (TAMS) Steering Committee. These entities actively support Tribal air programs and gather information that would benefit the work of the TDWG. WRAP also engages with the Clean Air Act Advisory Committee, and the Northwest Air Quality Communicators Group

National Tribal Air Association – <http://www7.nau.edu/itep/main/ntaa/>

Tribal Air Monitoring Support Center - <http://www7.nau.edu/itep/main/tams/>

TDWG Co-chairs

Emma Ruppell, Bishop Paiute Tribe

Kris Ray, Confederated Tribes of the Colville Reservation

Members

Participation in the TDWG will be dynamic and evolving depending on projects being addressed and interests of the work group's members. Therefore, a members list will be provided as attachment 1 and will be updated by the co-chairs when needed. Although a Tribal focus exists, the TDWG encourages other interested parties to join the group.

Progress on 2017 Workplan Activities

The table below lists progress on 2017 TDWG WRAP Workplan deliverables. Many of these activities will be carried forward in the 2018-2019 WRAP Workplan.

Tribal Data Work Group Progress Update for 2017 Workplan Activities				
2017 Deliverable	Source	Funding	Time line	2017 Progress
Administrative Projects				
Develop SharePoint site to house TDWG documents and projects.	WRAP Staff	WRAP Budget	March 1, 2017	Shared documents on Google Docs; determined SharePoint not needed at this time Document sharing will be carried forward in the 2018-2019 WRAP Workplan
Help Tribes understand the benefits of using WRAP and WESTAR products and services	TDWG, WRAP Staff, other workgroups	In-Kind	July 1, 2017	IWDW Webinar July 20, 2017 Ongoing: These tasks will be carried forward in the 2018-2019 WRAP Workplan
Change Section F title to – Support Development of Tribal Air Quality Capacity and Capability and rewrite narrative	TDWG and WRAP Staff	In-Kind	Completed	Accomplished
Solicit Tribal membership in WRAP and participation in the TDWG	TDWG and WRAP Staff	In-Kind	September 1, 2017	Accomplished; Two additional Tribes became active WRAP members Ongoing: These tasks will be carried forward in the 2018-2019 WRAP Workplan
Schedule TDWG meeting and provide activity reports	TDWG and WRAP Staff	In-Kind	September 1, 2017	Accomplished; Monthly TDWG calls with activity reports Ongoing: These tasks will be carried forward in the 2018-2019 WRAP Workplan
Co-Chairs attendance at Technical Steering Committee In-person Meeting, 2 meeting per year	TDWG Co-Chairs	\$4,800	December 1, 2017	Accomplished for 2017 Ongoing: These tasks will be carried forward in the 2018-2019 WRAP Workplan
Information Gathering Project				
Assessment of the status of Tribal air quality monitoring, AQS, and emissions inventories	TDWG, WRAP Staff and IWDW	In-Kind	September 1, 2017	Developed AQS, EI survey and distributed in November 2017 Ongoing: These tasks will be carried forward in the 2018-2019 WRAP Workplan

Tribal Data Work Group Progress Update for 2017 Workplan Activities				
2017 Deliverable	Source	Funding	Time line	2017 Progress
WRAP General Projects				
Determine the types of Tribal data needs for WRAP projects and deliverables	TDWG, WRAP Staff, RTOWG RHPWG, OGWG, and FSWG	In-Kind	September 1, 2017	In progress Ongoing: These tasks will be carried forward in the 2018-2019 WRAP Workplan
Provide educational opportunities for WRAP member Tribes and Tribes within the area of interest.	TDWG and WRAP Staff	In-Kind and supplemental funds	December 1, 2017	IWDW Webinar July 20, 2017; DART Webinar December 19, 2017 Ongoing: These tasks will be carried forward in the 2018-2019 WRAP Workplan

Action Items for 2018 - 19 Workplan

The 2018-19 Workplan tasks were selected and approved by consensus of the TDWG. Details for each task are included in the table below and will be developed further and recorded as the tasks are executed. Tasks may be revised if and where deliverables are overlapping. The TDWG expects to partner with others such as ITEP and EPA Regional staff to complete some of the informational/assessment tasks.

Multi-year Action Items

The majority of this work plan spans many years of effort and potential effort by the TDWG to provide needed information and services to the WRAP membership. Some of the identified tasks are considered ongoing, but have been incorporated into the 2018-19 Workplan tasks.

Tasks to Promote Access to Tribal Air Quality Data

Tasks identified here can be supported by utilizing other organizations information gathering efforts, and possibly also augment those efforts. Data gained via WRAP/TDWG managed projects will be collected for the WRAP area but can be sorted by EPA region. The TAMS Steering Committee is updating the TAMS, Technical Needs Assessment, an effort during which they will be gathering information concerning air quality monitoring methods utilized by Tribes. That project includes estimates of tribal air program monitoring activities based on identified/requested assistance. The NTAA compiles information every year into a State of Tribal Air Report (STAR). Information for Emissions inventories and Air Quality System reporting may be gleaned from that effort.

**Tribal Data Work Group
Action Items for 2018-2019 WRAP Workplan**

Task	Deliverable	Source	Funding	Timeline
Administration	-- Development of budgets for projects including Travel budget proposal for WRAP twice yearly meeting -- Summary budget for TDWG activities	TDWG	In-Kind	Jan 31, 2018
	Write/Revise 2018 TDWG work plan	TSC, TDWG	In-Kind	Jan 31, 2018, 2019 (Annual revisions)
	Schedule TDWG monthly meeting conference calls; record minutes.	TDWG, WRAP Staff, other Work Groups	In-Kind	Monthly
Solicit Tribal membership in WRAP and participation in the TDWG	Send out once each year information about WRAP and the benefits of Tribal membership to list of WRAP area Tribes.	TDWG	In-Kind	February 1, 2019
	Membership in TDWG letter requesting participation by WRAP Tribes – ongoing yearly request	TDWG	In-Kind	February 1 2019
	WRAP for Tribes Fact Sheet	TDWG, Contractor	WRAP Budget	December 2018
Help Tribes understand the benefits of using WRAP and WESTAR products and services.	Intermountain West Data Warehouse Webinar	TDWG, WRAP Staff, IWDW, other Work Groups	In-Kind	June, 2019
	WRAP Tools Webinar	TDWG, WRAP Staff	In-Kind	August, 2019
	Information Booth & Presentations at Annual National Tribal Air Forum Conference	TDWG, WRAP Staff	In-Kind	May 2019
Develop strategy for WRAP member/area Tribes to overcome	Summary Assessment: Tribal Air	TDWG,	WRAP	February 1, 2019

**Tribal Data Work Group
Action Items for 2018-2019 WRAP Workplan**

Task	Deliverable	Source	Funding	Timeline
barriers identified & submit monitoring data to AQS: -- Identify which WRAP area Tribes are submitting data to AQS -- Identify air pollutants, equipment used -- Determine goal of monitoring -- Identify unmet monitoring needs	Quality Monitoring & AQS Submittal Status	WRAP Staff and IWDW, Contractor	Budget, In-Kind	
Develop strategy for WRAP member/area Tribes to overcome barriers & submit data to NEI: -- Identify which WRAP area Tribes are submitting data to NEI	-- Summary Assessment: Tribal Emissions Inventories Status -- Results of questionnaire	TDWG, WRAP Staff and IWDW, Contractor	WRAP Budget, In-Kind	February 1, 2019
	-- Provide Tribal data to process 2014 NEI and refinements for base year modeling -- Provide Tribal data to develop and refine 2028 modeling emission inventories	TDWG, WRAP Staff	WRAP Budget, In-Kind	January-August 2019
Support Regional Haze and other WRAP projects by identifying Tribal data to support those projects' deliverables: -- See list (below table) of TDWG Workplan activities associated with Critical Milestones for Regional Haze Planning Technical Support	Promote RH consultation and assist in developing framework with WRAP member agencies and Federal agencies	TDWG, WRAP Staff and RHPWG	WRAP Budget, In-Kind and contractor	Ongoing Framework June-December 2018
	Coordinate with other WRAP Work Groups to assist in facilitating assessments and technical analyses that support TIP development and tribal air program efforts and activities among the spectrum of air quality planning issues across the WRAP.	TDWG, WRAP Staff and RHPWG	WRAP Budget, In-Kind and contractor	Ongoing See Detailed Gantt Chart for Activity Dates
	Identify SIP planning target dates and help tribes understand how to participate and review	TDWG, WRAP Staff and RHPWG	WRAP Budget, In-Kind and contractor	Ongoing SIP Planning Dates

**Tribal Data Work Group
Action Items for 2018-2019 WRAP Workplan**

Task	Deliverable	Source	Funding	Timeline
	Co-Chairs attendance at Technical Steering Committee In-person Meeting, 2 meeting per year	TDWG Co-Chairs	\$4,800	April and September 2018, 2019
	- Identify WRAP member tribes dealing with oil and gas production emissions & their data sources - Conduct WRAP member tribe oil and gas industry emission inventory	TDWG Co-Chair; OGWG, contractor, IWDW	WRAP Budget, In-Kind	April 2018, December 2018
	Determine & locate the types of Tribal data WRAP is interested in for modeling; will coordinate with the RTOWG	TDWG Co-Chairs	In-Kind	December 2018
	Quarterly reports to TSC with updates & results of Assessments.	TDWG Co-Chairs	In-Kind	Quarterly
Provide educational opportunities for WRAP member Tribes and Tribes within the area of interest. These opportunities could be in the form of webinars, classroom, or phone conference discussions. The TDWG will identify subjects, method of presentation and venues along with implementation costs during this workplan year.	2 Webinars e.g. AirNow, Regional Haze for Tribes	TDWG and WRAP Staff	In-Kind and suppleme ntal funds	May 2019
	-- Provide information on the status, benefits to Tribes for having an emission inventory -- Include identifying emission factors for the oil and gas industry and make available	TDWG, OGWG	In-Kind	May 2019
	Provide information on the status, benefits to Tribes for submitting AQS data	TDWG	In-Kind	May 2019

2018-2019 TDWG Workplan Action Items listed by WRAP Workplan Gantt Chart Categories

TDWG 2018-2019 Workplan activities from the above table are categorized below and ranked as listed in the 2018-2019 Workplan Detailed Gantt chart for Regional Analysis Technical Support:

- TDWG Management - periodic calls and meetings, reports on deliverables completed
- Help Tribes understand the benefits of using WRAP and WESTAR products and services
- Solicit Tribal membership in WRAP and participation in the TDWG
- Help Tribes understand air quality monitoring data and use of the Air Quality System
- Help Tribes understand the emissions inventory process and National Emissions Inventory capability and use

- Ensure availability of monitoring/ emissions data from Tribes
- Coordinate with other WRAP Work Groups to facilitate support of TIP development and tribal air programs.
- Provide educational opportunities for WRAP member Tribes.

Critical Milestones for Regional Haze Planning supported by the TDWG Workplan activities are listed below:

- Task 1.2 Analyze monitoring data (trends, ranges, linkages)
- Task 2.1 Process 2014 NEI and refinements for base year modeling
- Task 2.3 Develop and refine 2028 modeling emission inventories
- Task 3.6 Conduct/evaluate AQ modeling for base year and 2028 inventories
- Task 4.2 Sensitivity/control strategy evaluation modeling for 2028
- Task 4.3 Evaluate base year and 2028 source apportionment modeling results
- Task 4.4 Evaluate change in visibility from base year to 2028
- Task 7.5 Provide TSS training
- Task 8.1 Identify SIP planning target dates
- Task 8.2 Establish consultation framework
- Task 8.3 Consultation with WRAP member agencies

Appendix G

Detailed Gantt Charts of 2018-2019 Workplan Critical Milestones

- Critical Milestones for Regional Haze Planning Technical Support
- Critical Milestones for Associated Regional Analysis Technical Support in 2018-2019

WRAP 2018-2019 Work Plan							2018				2019				2020				2021				
RHP	RTO	F&S	O&G	TD	CON	#	Task	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Critical Milestones for Regional Haze Planning Technical Support																							
							Evaluation of RHR revisions																
							Monitoring data evaluation																
							Base, planning, and future year emissions data work																
							Base-year model platform and MPE completed																
							States use WRAP analysis for RH Planning																
							Future-year on-the-books scenarios modeling																
							Source apportionment & sensitivity analysis																
							Technical work done, data products in TSS.v2																
							SIP submission to EPA																
Timeline by Task																							
						1.0	Monitor data analysis																
						2.0	Emission inventory																
						3.0	Air quality modeling																
						4.0	Evaluating modeling results																
						5.0	Control measures analysis																
						6.0	Coordinate training and outreach efforts																
						7.0	Technical support system																
						8.0	States' planning and adoption process																
Detailed Timeline by Task																							
1.0 Monitoring Data Analysis																							
						1.1	Evaluate EPA tracking metric and alternatives																
						1.2	Analyze monitor data (trends, ranges, linkages)																
						1.3	Identify dominant visibility-improving pollutants for each CIA																
2.0 Emissions Inventory																							
						2.1	Process and evaluate 2014 NEI and refinements																
						2.2	Evaluate use of 2016 EPA modeling platform																
						2.3	Develop and refine 2028 emission inventories																
						2.4	Develop screening tools																
						2.5	Special inventory needs																
						2.6	State specific analysis of EI trends																
3.0 Air Quality Modeling																							
						3.1	Prepare modeling plan																
						3.2	Prepare and evaluate meteorological data																
						3.3	Perform dynamic model evaluations																
						3.4	Conduct sensitivity testing																
						3.5	Evaluate use of 2016 EPA modeling platform																
						3.6	Conduct/evaluate base year air quality modeling																
						3.7	Conduct/evaluate 2028 air quality modeling																
4.0 Evaluate Modeling Results																							
						4.1	Resolve tracking metric and model output issue																
						4.2	Sensitivity/control strategy evaluation modeling for 2028																
						4.3	Evaluate base year & 2028 source apportionment modeling results																
						4.4	Evaluate change in visibility from base year to 2028																
5.0 Control Measure Analysis																							
						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																
						5.4	Evaluate emission source impacts on Class I areas																
						5.5	Identify/incorporate 2028 emissions reductions from control strategies																
6.0 Coordinate Training and Outreach Efforts																							
						6.1	Assess needs for materials useful to SIP planners																
						6.2	Identify and compile existing materials																
						6.3	Develop new materials																
						6.4	Oversee completion and distribution of materials																
7.0 Technical Support System TSS.v2																							
						7.1	Review TSS v1 for priority needs																
						7.2	Coordinate and review TSS monitor data tool development																
						7.3	Coordinate/review TSS emissions data/emissions projections tool development																
						7.4	Coordinate and review TSS base year modeling tool development																
						7.5	Coordinate and review TSS 2028 on-the-books modeling tool development																
						7.6	Coordinate and review TSS reasonable control modeling tool development																
						7.7	Provide TSS training webinars																
8.0 State Planning and Adoption Process																							
						8.1	Identify SIP planning target dates																
						8.2	Establish consultation framework																
						8.3	Coordinate and support consultation among WRAP member agencies																
						8.4	Support state-led SIP development, consultation, and public review																
						8.5	Submit SIP to U.S. EPA																

WRAP 2018-2019 Work Plan							2018				2019				2020				2021			
RHP	RTO	F&S	O&G	TD	CON	#	Task	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Critical Milestones for Associated Regional Analysis Technical Support in 2018-2019																						
						10.1	BY emissions processing, modeling															
						10.4	2028 Emissions projections															
						10.5	IWDW-WAQS 2028 on-the-books air quality modeling															
						10.7	IWDW-WAQS 2028 control scenarios' air quality modeling															
							WRAP tools/FETS update and operation															
							Historic and future fire activity and emissions															
							Evaluation of smoke management plans															
							Ongoing Exceptional Events analysis and coordination															
							WRAP member-agency coordination on wildfire response &...															
							Review existing Oil and Gas Work Products															
							ID regional and local air quality planning needs															
						13.1	Help Tribes understand WRAP/WESTAR product benefits															
						13.2	Solicit Tribal membership in WRAP and participation in TDWG															
						13.7	Coordinate to facilitate support of TIPs and tribal programs															
Detailed Timeline by Work Group																						
9 Technical Steering Committee (TSC) Progress Calls and Meetings																						
							Planning/oversight/coordination/direction calls															
							Board/TSC/Co-Chairs meetings at Business Meetings															
							Biannual planning/progress/informational Meetings															
10 Regional Technical Operations Work Group (RTOWG)																						
						10.1	BY emissions processing, modeling															
						10.2	Dynamic model evaluations for ozone/PM/nitrogen															
						10.3	IWDW-WAQS AQ modeling for...															
						10.4	2028 emissions projections															
						10.5	IWDW-WAQS 2028 on-the-books air quality modeling															
						10.6	IWDW-WAQS FY source apportionment/sensitivity modeling															
						10.7	IWDW-WAQS 2028 control scenarios' air quality modeling															
11 Fire and Smoke Work Group (FSWG)																						
							WRAP Tools/FETS update and operation															
							Historic and future fire activity and emissions															
							Evaluation of smoke management plans															
							Exceptional Events: ID key data to collect for demonstrations															
							Coordination on wildfire response and smoke management															
12 Oil and Gas Work Group (OGWG)																						
							Regional and local air quality planning needs															
							ID and review of member agency oil and gas programs															
							ID and review of member agency emissions management															
							Assess impacts from oil and gas production															
							Develop oil and gas tool box															
							Member agency collaboration on sub-regional oil and gas management															
13 Tribal Data Development Work Group (TDDWG)																						
						13.1	Help Tribes understand WRAP/WESTAR product benefits															
						13.2	Solicit Tribal membership in WRAP and participation in TDWG															
						13.3	Help Tribes understand monitoring data and use of AQS															
						13.4	Help Tribes understand the EI process and NEI capability and use															
						13.6	Ensure availability of monitoring/emissions data from Tribes															
						13.7	Coordinate to facilitate support of TIPs and tribal programs															
						13.8	Provide educational opportunities for WRAP member Tribes															
14 Regional Haze Planning Work Group (RHPWG)																						
						10.1	BY emissions processing, modeling															
						10.2	Dynamic model evaluations for ozone/PM/nitrogen															
						10.3	IWDW-WAQS AQ modeling for...															
						10.4	2028 emissions projections															
						10.5	IWDW-WAQS 2028 on-the-books air quality modeling															
						10.6	IWDW-WAQS FY source apportionment/sensitivity modeling															
						10.7	IWDW-WAQS 2028 control scenarios' air quality modeling															
							WRAP Tools/FETS update and operation															
							Historic and future fire activity and emissions															
							Evaluation of smoke management plans															
							ID action items requiring coordination with others															