*** *DRAFT* ***

For Planning Team, AMC, IOC, and TOC Review

Western Regional Air Partnership

Strategic Plan

2003 – 2008

March 12, 2003

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Executive Summary

The WRAP is reaching a turning point in 2003. Most major technical and policy products needed for §309 state implementation plans (SIPs) and tribal implementation plans (TIPs) have been completed, products for §308 SIPs/TIPs must now be more directly addressed, and these products must complement the longer term (i.e., 2008) needs for §309 SIP/TIP revisions. As the WRAP turns its attention to longer term requirements, its planning process is complicated by a number of factors. For one, the May 2002 decision of the U.S. Court of Appeals for the District of Columbia Circuit in the case of the *American Corn Growers Association versus the U.S. Environmental Protection Agency* creates uncertainty regarding SIP submittal due dates and best available retrofit technology (BART) required by the Clean Air Act (CAA) and the federal regional haze rule (RHR).

There are also several aspects to §308 SIPs/TIPs and §309 SIP/TIP revisions that were not required by §309 and are therefore new to the WRAP. These include an apportionment of emission reduction obligations among states and tribes, which also implies a more explicit apportionment of the causes of haze (i.e., source apportionment) than was required by §309. Whereas §309 was prescriptive in the types of control strategies that must be implemented, §308 has a much less specific requirement that BART be implemented and that "reasonable progress" by achieved. This provides a lot of flexibility, but opens the door to a wide range of potential control strategies – virtually anything that limits emissions of particulate matter or its precursors. Identifying, screening, and ranking such control strategies will be a challenge, as will determining whether the ones chosen constitute reasonable progress according to the statutory factors of cost, time necessary for compliance, energy and non-air quality impacts, and the remaining useful life of affected sources. Finally, the state of Alaska has joined the WRAP, which adds some complexity through additional data and analytical requirements and the consideration of another 200 tribes.

The purpose of this strategic plan is to identify these and other potential challenges and to provide a strategy for developing regional haze SIPs in the face of such challenges. The strategic plan also describes how the WRAP's regional haze efforts can serve other air quality interests of WRAP members.

Another purpose of this plan is to provide the direction and transparency needed to foster stakeholder participation and consensus-based decision making – key features of the WRAP process. In this sense, the plan also provides a resources to individuals who are new to the WRAP and a reference to those already involved, as well as an overall road map to WRAP committees and forums as they plan their annual activities and work products.

To develop this plan, the WRAP Planning Team convened work group comprised of representatives from seven state, three tribes, EPA, and WRAP staff from NTEC, WESTAR, and WGA. It was subsequently reviewed and approved by WRAP Committees and the WRAP Board.

Simply put, the WRAP strategic plan assumes a SIP/TIP submittal date of December 2007 but relies on a two-phased approach as a hedge against earlier submittal dates resulting from *American Corn Growers*. The two-phase approach also provides an opportunity to procedures for addressing the challenges noted above in Phase I before applying them for SIP and TIP purposes in Phase II. Phase I would focus predominantly on regional analyses and regional control strategies. Phase II would look more closely at subregions within the WRAP. Time and resources will be provided in each phase to allow two or more iterations of control strategy analysis. This is important for isolating a suitable set of emission management options and determining reasonability

SIP submittal dates are critical to WRAP planning efforts. As such, the WRAP Board should consider a consensus position on regional haze SIP due dates and forward that position, if available, to the EPA as it seeks a remedy to issues raised by the Appeals Court.

I. The WRAP Process

What Is the WRAP?

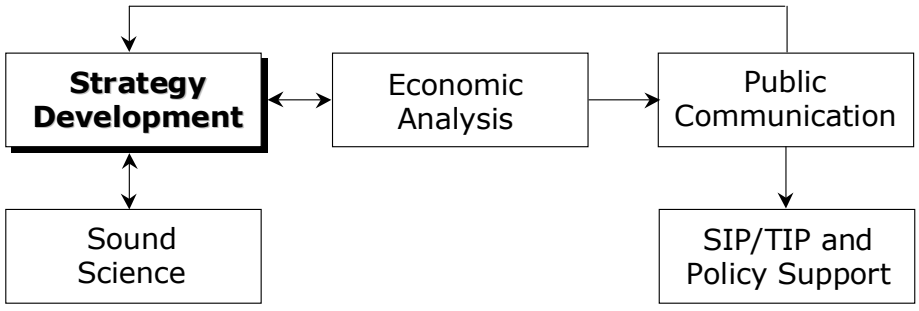
The Western Regional Air Partnership (WRAP) is a collaboration of tribal governments, state governments, and federal agencies. Its primary focus is to implement the recommendations of the Grand Canyon Visibility Transport Commission (GCVTC) and to develop the technical and policy tools needed by western states and tribes to comply with the regional haze rule (RHR) promulgated by the U.S. Environmental Protection Agency (EPA). Other common western regional air quality issues raised by the WRAP membership may also be addressed. The WRAP's process for conducting its work and supporting its members is described in the WRAP Charter and Bylaws. These, and all other WRAP documents, can be found on the WRAP Web site at http://www.wrapair.org. The WRAP is staffed by the Western Governors' Association (WGA) and the National Tribal Environmental Council (NTEC).

Summary of the WRAP Process

The figure below is a summary of the WRAP process. It is based on the Enlibra principles of environmental management, adopted by the western governors in WGA Policy Resolution 02-07. This process is applicable to all WRAP activities, including those relating to the RHR.

Much of the WRAP's effort is focused on regional technical analysis that serves as the basis for developing strategies to meet the RHR requirement to demonstrate reasonable progress towards natural visibility conditions in national parks and wilderness areas. This includes the compilation of emission inventories, air quality modeling, and ambient monitoring and data analysis. The WRAP is committed to using the most recent and scientifically-acceptable data and methods. The WRAP does not sponsor basic research, but WRAP committees and forums interact with the research community to refine and incorporate the best available tools and information pertaining to western haze.

Emission management strategies (or potential strategies) identified through the WRAP process are analyzed for their economic impact, both positive and negative, on the region. Public communication is important to facilitate implementation of the strategies and to provide early input to the strategy development process on the most suitable approaches. All this leads to the support needed by states and tribes to comply with the RHR and to address other air quality issues as needed.



The WRAP Board

Members of the WRAP Board include Governors of 13 states and 13 tribes, the Secretary of Agriculture, the Secretary of Interior, and the Administrator of the USEPA, or their designees. The Board is the governing body of the WRAP. It reviews and endorses major WRAP products and recommended strategies, facilitates consensus among participants in the WRAP (including non-member stakeholders), appoints members to oversight committees, and approves the annual WRAP Work Plan. A map of the WRAP region – including a list of WRAP members and the location of federal lands covered by the RHR – is provided on the following page.

Committees and Forums

Most WRAP work is conducted through a network of committees and forums. The members of two oversight committees are appointed by the Board to represent the WRAP membership and stakeholders. The oversight committees convene and oversee forums to carry out specific tasks or address specific issues. The oversight committees appoint forum co-chairs, who in turn recruit a balanced set of individuals to carry out the forum's charge. Finally, work groups can be formed by committees and forums on an *ad hoc* basis to perform tasks that are relatively specialized and/or short-lived. The work group which drafted this strategic plan is one example. An organizational chart showing the current committees and forums is presented later in this document.

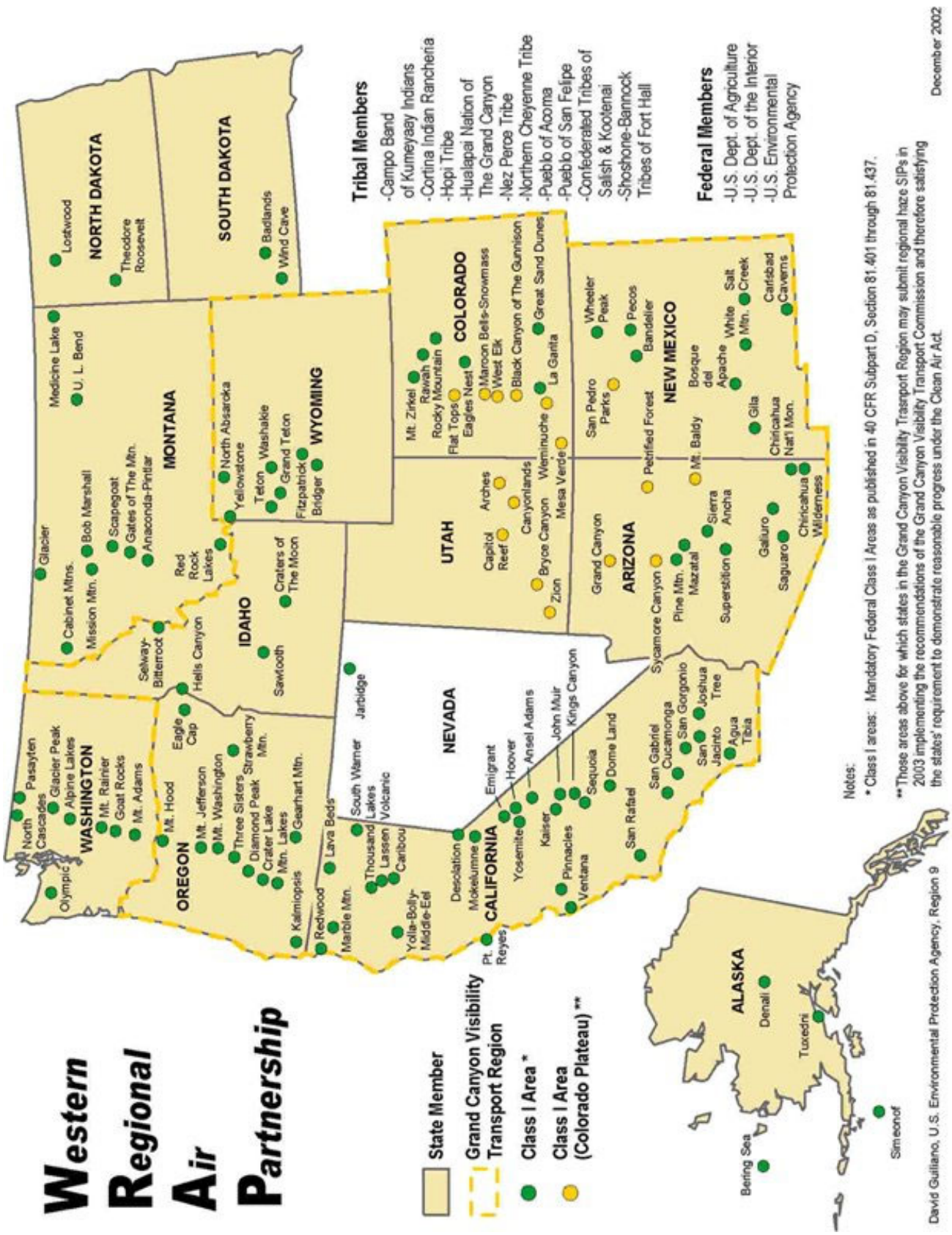
Consensus and Stakeholders

The WRAP operates through consensus, not a majority basis. Stakeholders – in addition to states, tribes, FLM, and EPA representatives – are included in the consensus process at the committee, forum and work group levels. Stakeholders include members of affected business and industry, local governments, academia, environmental organizations, and the general public.

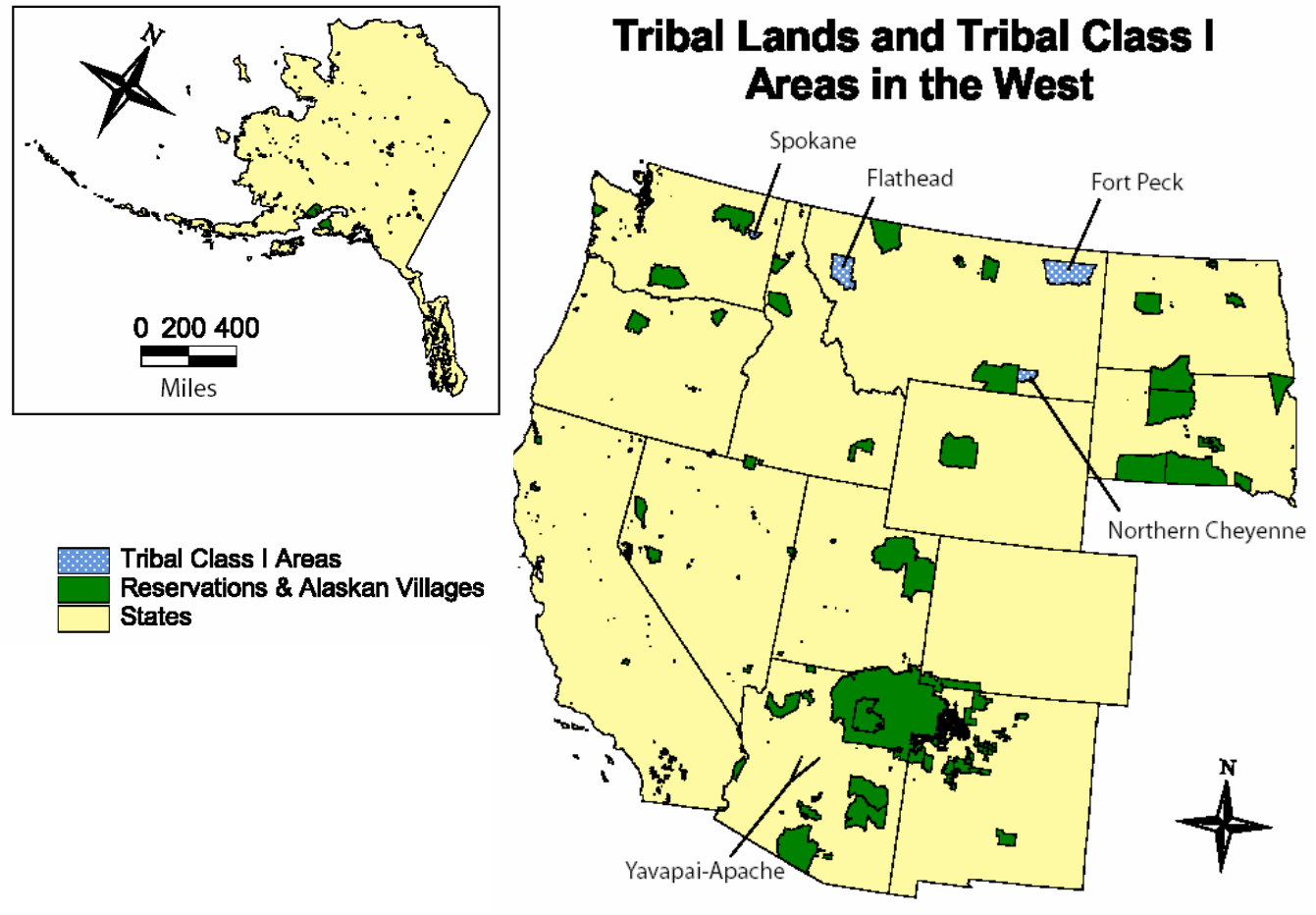
Part 4 of the WRAP Charter discusses the consensus process. A central tenet involves resolving disputes at the lowest possible but best-informed level – i.e., among individuals or within forums and committees. Over the last six years, the WRAP has established a consistent track record of reaching consensus on major policies (e.g., the SO2 Annex and EPA's gasoline sulfur rule) and on other issues needed to move ahead with the regional planning process.

If necessary, parties in the WRAP may participate in a formal consensus building processes. The WRAP's primary role is to facilitate discussion among the appropriate parties by providing (or improving) a consistent, transparent, and high-quality body of information.

WRAP Region, Members, and Federal Areas Covered by the Regional Haze Rule



Tribal Lands and Tribal Class I Areas in the West

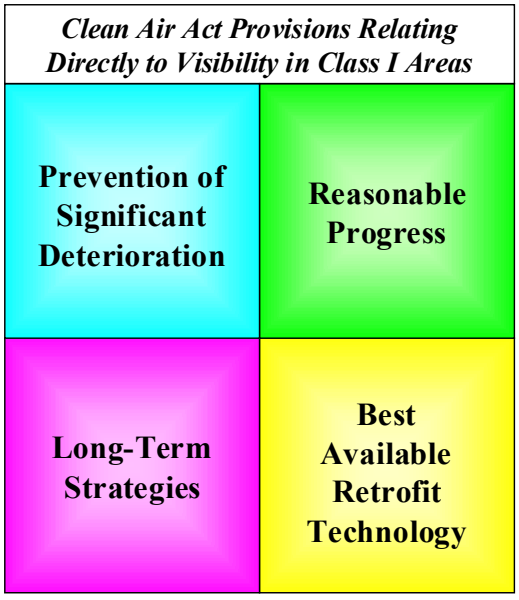


II. Regional Haze SIP and TIP Requirements

This chapter summarizes the 1999 regional haze rule and the scope and contents of the state implementation plans (SIPs) that must be submitted to comply with the rule.

Historical Summary

Further background on the history of regional haze control in the U.S. (pre-1999) is provided in Appendix A. In short, a national visibility program was first established by the 1977 Clean Air Act (CAA) Amendments. The Amendments established a prevention of significant deterioration program (PSD) to limit impacts (including visibility impacts) from large, new stationary sources, especially on Class I areas. They also established a program in Section 169 to address visibility more directly. This section pertains only to Class I areas but provides authorization to address existing sources, in addition to new ones. Section 169 establishes a goal to achieve natural visibility conditions and places a responsibility on states to make reasonable progress towards this goal through SIPs that include provisions for best available retrofit technology (BART) and long-term strategies.



The EPA sought to implement Section 169 in two rulemakings. The first, promulgated in 1980 and commonly known as the plume blight rule, addresses impairment from a single source or small group of sources, typically through visual observations. The second rule was intended to addresses regional haze from many sources over hundreds of miles but was postponed until better science and tools were available.

The 1999 Regional Haze Rule

Buttressed by better technical tools and scientific understanding, the 1990 CAA amendments, the 1993 National Academy of Sciences report, the 1996 Grand Canyon Visibility Transport Commission (GCVTC) report, and the 1997 $PM_{2.5}$ air quality standards, the EPA implemented the second phase of its visibility regulations with the promulgation of the 1999 regional haze rule.

The rule sets for the first time a definitive, yet long-term period in which to achieve the national goal and criteria for establishing and measuring reasonable progress toward that goal. It is applicable to all 50 states and the Virgin Islands.

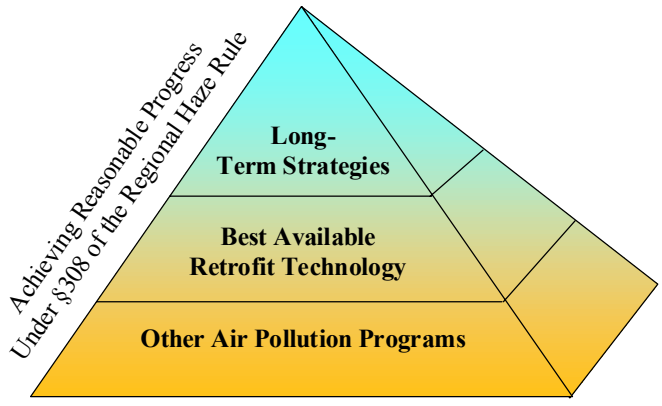
Pursuant to the 1990 CAA amendments, the regional haze rule reflects the statutory framework for addressing visibility – that is, to make reasonable progress toward the national goal through federally-approved and enforceable SIPs and TIPs (tribal implementation plans) containing long-term strategies and BART provisions. The rule also requires interstate and state-FLM

consultation; documentation of technical analyses, emission inventories, and ambient monitoring and analysis efforts; periodic progress reports and SIP revisions; and encourages interstate analysis, planning, and cooperation.

Although analysis and planning among several states and tribes is a challenging task, the RHR provides more flexibility in crafting SIPs and TIPs than most other rules do for NAAQS SIPs. This includes the option of implementing an emissions trading program or alternative measure in lieu of BART. It also provides the states and tribes in the Grand Canyon Visibility Transport Region (GCVTR) with an option to submit SIPs and TIPs implementing the recommendations of the GCVTC, provided they do so by the end of 2003 (Section 309). SIPs and TIPs that fully implement these recommendations will be approved by EPA as satisfying the state or tribes BART requirements for SO2 and their contribution to reasonable progress at the 16 Class I areas on the Colorado Plateau through 2018. The following chapter provides further details of the RHR requirements.

Section 308 SIP Requirements

The table below summarizes the major requirements of Section 308 of the RHR. These same requirements apply to the Section 309(g) plans addressing Class I areas outside the Colorado Plateau. The WRAP is assuming that these SIPs will be due in December 2007, based on EPA's stated intention to modify the current statutory deadline in response to the American Corngrowers case. In the absence of such a change to the statute, it is expected that all WRAP states except California would have a submittal date of December 2005 (one year after $PM_{2.5}$ designations).



Section 309 SIP Revision Requirements

The table below summarizes the major post-2003 requirements of Section 309 of the RHR.[1] This section is available as a compliance option to the nine states in the GCVTR. SIPs meeting the requirements of this section will also meet the requirements of Section 308. Section 309 SIPs are due by December 31, 2008.

Tribal Authority and Tribal Implementation Plans

The table below summarizes the issues and options available to tribes wishing to address regional haze. Federally-recognized Indian tribes have been integrally involved in regional haze planning in the West beginning with the GCVTC. Four tribes were members of the Commission and numerous others participated, contributing significantly to its final recommendations in 1996. Tribes have stayed involved throughout the promulgation and implementation of the RHR and the creation and development of the WRAP. Indian tribes are sovereign governments, rather than private stakeholders, and are therefore represented on the WRAP Board.

[1] The pre-2003 requirements of Section 309 of the rule have been addressed in earlier planning documents and are not addressed in the strategic plan.

Under the CAA, tribes may receive delegation to implement portions of the Act. This is done through a TIP, which is analogous to SIP. However, tribes are not subject to deadlines for TIPs or sanctions for failure to adopt them. In addition, tribes may choose to implement "reasonably severable" elements of CAA programs. In the absence of a TIP, the EPA will work with the tribe and implement a federal implementation plan (FIP) as necessary and appropriate to protect air quality.

The RHR recognizes this tribal/federal framework. For tribes in the GCVTR, the rule allows TIPs to be adopted under Section 308 or 309, without regard to the section utilized by adjacent states. Moreover, the EPA has indicated that the 2003 deadline applicable to states for Section 309 SIPs does not apply to tribes; tribes may submit a section 309 SIP after 2003.

Within this general framework, much detail remains to be addressed. For example, one unexplored question is which portions, if any, of the regional haze rule could be "reasonably severed" and implemented by a tribe which did not want to implement the entire rule. The relative youth of tribal air programs makes this question more difficult to address. The tribal authority rule (TAR), which provides delegation of CAA authority to tribes, was promulgated in 1998, only one year before the RHR. To date, no tribe in the nation has received final approval of a TIP, though several are in the process of acquiring it.

American Corn Growers et al. v. EPA

[To be completed.]

Section 308 SIP Requirements

Visibility Goals

- **Prevent degradation of the 20% cleanest days**
- **Determine a uniform rate of progress for each Class I area needed to return the 20% dirtiest days to natural conditions by 2064**
- **Establish a reasonable progress goal for each Class I area for 2018**
  - Cost of compliance
  - Time necessary for compliance
  - Energy and non-air quality environmental impacts of compliance
  - Remaining useful life of affected sources

Apportionment

- **Determine which Class I areas the state's emissions may affect**
- **Determine the state's share of emission reduction obligations**

Control Measures

- **Must achieve the state's share of emission reduction obligations**
- **Must consider construction and fire activities**
- **Should consider all other sources**
- **Must include BART or superior alternative**
  - Cost of compliance
  - Energy and non-air quality environmental impacts of compliance
  - Existing pollution control technologies in use at affected sources
  - Remaining useful life of affected sources
  - Degree of improvement

Consultation, Documentation, and Future Commitments

- **Consultation with other states and FLMs**
- **5-year progress reports and 10-year SIP revisions**
- **Technical basis of SIP/TIP (including emission, monitoring, modeling)**

Section 309 SIP Revision Requirements

Comply with all major 308 requirements (except SO_2 BART) for areas outside the Colorado Plateau

Tracking Activities

- **Clean air corridor emissions**
- **Mobile source emissions**
- **Fire emissions**
- **SO_2 emissions (for compliance with milestones)**
- **Progress towards meeting the renewable energy and energy efficiency goals of the GCVTC**

Tribal Implementation Plan Issues

Timing

- **Tribal 308/309 decisions independent of states, not subject to deadlines**
- **TIPs optional, FIPs as necessary and appropriate**
- **FIP decision tribe-by-tribe or regional?**
- **Consistency between EPA regions**

Severability

- **Tribes may receive delegation of authority to implement all or parts of a Clean Air Act program**
- **What portions of Section 309 may be severable?**
- **Since Section 308 does not contain prescriptive elements (other than BART), tribes can presumably develop unique plan under 308; severability not at issue.**

Resources

- **No TIPs have been fully approved since the TAR promulgated in 1998**
- **More extensive public process may be necessary, as a practical matter, for tribes than for states**
- **Demand for EPA funding beginning to outstrip supply, resulting in competition for funds and prioritization among issues. Priority of regional haze plans not clear.**

III. Challenges Meeting SIP and TIP Requirements

Developing effective SIPs and TIPs meeting the requirements summarized in the previous chapter will be a challenging process requiring effective regional coordination and cooperation. As with any regulatory effort involving multiple jurisdictions, economic sectors, technical complexity, and scientific uncertainty, there will be many challenges. This chapter describes the most significant challenges anticipated at this time and thereby "sets the stage" for a strategic plan of action in the following chapters.

The challenges emphasized in this chapter are those which may pose new and unique issues to WRAP members or which weigh heavily upon the shape of the strategic plan – that is, they affect the overall approach to and choices in developing SIPs and TIPs. The WRAP faces challenges simply developing tools and datasets, which are often large and complex given the size of the WRAP region. But since many of these tools and datasets are relatively well defined and have been previously applied, such challenges pose primarily workload and management issues as opposed to "directional issues" and are therefore not emphasized in this chapter.

SIP Submittal Dates

As noted in the previous chapter, it is not certain whether most regional haze SIPs will be due in 2005 or 2007, and the matter may not be resolved for another year. This suggests the need for a flexible, possibly two-phase or two-track approach to developing SIPs and TIPs.

Apportionment

The RHR requires states to apportion emission reduction obligations in such a way that achieves reasonable progress throughout the region. This implies that some level of apportioning the causes of haze (source apportionment) should be done to ensure that state emission reduction obligations are at least proportional to their contribution to the problem. The challenges here are two fold. First, there are several source apportionment methods (falling broadly within modeling, receptor, and emissions-based categories) and some are still experimental. Results from different methods will have to be reconciled and synthesized using expert judgement. This poses a new and resource-intensive type of task to the WRAP, and one which will require a high level of coordination among its technical forums.

Second, the apportionment process, whether apportioning causes of haze or emission reduction obligations, may lead to disagreements among WRAP members and/or stakeholders. This may be especially true in border areas or in certain airsheds within the region. Disagreements in these cases may benefit from a geographically-enhanced modeling system (perhaps one not yet in use by the WRAP)[2], but the disagreements are not likely to be resolved in all cases by such tools. Moreover, equitable emission reduction obligations will depend not only a jurisdiction's contribution to the problem, but on the cost and

[2] Such a system could also support the analysis of "in and near" strategies, Alaska haze assessment issues, and issues related to haze, such as human exposure to particulate matter.

effectiveness of emission control measures available to that jurisdiction. Thus, the apportionment of emission reduction obligations must consider source apportionment results and available emission control measures in a way that promotes agreement as much as possible. This calls for a high level of coordination between the WRAP's Technical and Initiatives Oversight Committees and among the policy forums. In particular, the IOC must inform the TOC as to how much information or detail regarding source contributions will be sufficient for the purpose of apportioning emission reduction obligations, lest the TOC over-invest its effort.

Control Strategies

Section 309 of the regional haze rule requires implementation of specific strategies recommended by the GCVTC By contrast, Section 308 SIPs and TIPs and Section 309 SIPs and TIPs addressing other Class I areas have much broader requirements, namely that they implement BART (or a superior alternative) and achieve reasonable progress. This lack of "prescription" provides a lot of flexibility, but also opens the door to a wide range of potential control strategies – virtually anything that limits emissions of particulate matter or its precursors (VOCs, NOx, SOx, and ammonia).

Several approaches could be taken to identifying, screening, and evaluating potential control strategies, ranging from ones that focus on the most regionally-prevalent species (such as sulfates and organic carbon) to ones based on the cheapest control measures regardless of the relative contribution to visibility impairment of the species being controlled. Clearly, the WRAP faces a "navigational challenge" in determining the most appropriate emission management strategies. This should be a high priority for the WRAP committees and forums over the next year.

Determination of Reasonable Progress

The RHR rule indicates that, as a default, reasonable progress will be equal to the uniform rate of progress needed to achieve natural visibility conditions in 2064 – that is, a "straight line" from current baseline conditions to natural conditions. The goals that must be established in the SIPs and TIPs would presumably lie on this line. However, the goals could be more or less stringent depending on how reasonableness is judged.[3] At a minimum, this judgement must include certain factors specified in the CAA: cost, time necessary for compliance, energy and non-air quality impacts, and the remaining useful life of affected sources. This sort of judgement must be included in the SIP and TIP development process and will probably be new to many WRAP members. A major challenge to the IOC will be to develop procedures to evaluate the factors above and to weigh them against some criteria of reasonability.

BART Provisions

It is not yet clear how or when EPA will respond to the issues raised in *American Corn Growers v. EPA*, although mid 2004 has been suggested as a time at which a final rule would be promulgated. It is clear that the Appeals Court held that EPA overstepped its authority by requiring that states assess visibility from BART reductions on an aggregate basis and EPA

[3] If a less stringent goal is established, the state or tribe must provide justification, estimate the time at which natural visibility conditions would be achieved, and notify the public with such information.

must respond to the Court's remand. The WRAP will engage with EPA on the issue of responding the Court's decision to ensure that the Agency's response provides an adequate and viable approach to BART. In the meantime, WRAP committees and forums will need to move ahead to develop the informational and technical basis for evaluating BART.

Prescribed Fires

Due to many decades of active fire suppression, prescribed fires on wildlands are expected to increase dramatically to restore ecosystem balance and prevent catastrophic wildfires. In some areas – depending on size, frequency, technique, and time of year of the prescribed fires – this may have the potential to worsen the best or worst 20% visibility days and may also change the relative contribution of sources to impairment on the best and worst days. In addition to mitigating smoke impacts as much as possible, the WRAP may have to consider a communication strategy that explains why this might happen, what it means for non-smoke emission control strategies, and how it may be compatible with reasonable progress under the CAA. The WRAP fire categorization policy and recognition of conflicting public policy goals would be important to such a communication strategy.

8-Hour Ozone and $PM_{2.5}$ Planning

Measures implemented to attain and maintain the 8-hour and $PM_{2.5}$ ozone standards (CA and AZ) will benefit regional haze reduction efforts. It is important to include such measures in WRAP models which project visibility changes, but these measures might not be known or implemented at the time the projection is required and may therefore have to be approximated. In addition to incorporating the effects of ozone and $PM_{2.5}$ control measures, the WRAP is challenged by coordinating these measures in such a way that maximizes visibility benefits.

Multipollutant Legislation

Consistent with the position of the WRAP and the Western Governors' Association, any new federal legislation to address multiple pollutants from electric utilities must preserve the SO_2 emissions reductions agreed to in the WRAP Annex. Multi-pollutant legislation may supplant SO_2 and NOx BART requirements for electric utility sources. The WRAP will track these issues and respond where appropriate.

Data Submittal and Integration

The success of WRAP modeling and assessment efforts is highly dependent on timely submittal of data from states and tribes, especially emissions data, but also ambient monitoring, demographic, and other types of information including the specifications fore desired modeling scenarios. This critical dependency needs to be understood by all parties and should be accompanied by careful and realistic planning and timelines. Also, the WRAP should do what is possible to facilitate state and tribal compilation and submission of the data. The emissions inventory needs assessment and subsequent design of an inventory system is a current example of the facilitation WRAP should be promoting.

IV. WRAP Process for Developing Regional Haze SIPs and TIPs

The following strategy for developing regional haze SIPs and TIPs is based on meeting the requirements summarized in Chapter II while heeding or addressing the challenges identified in Chapter III. Simply put, the strategy assumes a SIP submittal date of December 2007 but relies on a two-phased approach as a hedge against earlier submittal dates. The two-phase approach also provides an opportunity to test new procedures in Phase I before applying them for SIP and TIP purposes in Phase II. Phase I would focus predominantly on regional analyses and control strategies. Phase II would also include subregions of the WRAP. Time and resources would be provided in each phase to allow two or more iterations of control strategy analysis. This is important for isolating a suitable set of emission management options and determining reasonability.

Two-Phased Approach

This strategic plan assumes (for planning purposes) a regional haze SIP and TIP submittal date of December 2007. However, given the uncertainties of this due date, the plan includes a two-phased approach designed such that the first phase, with some modification, might suffice for developing SIPs and TIPs by December 2005.

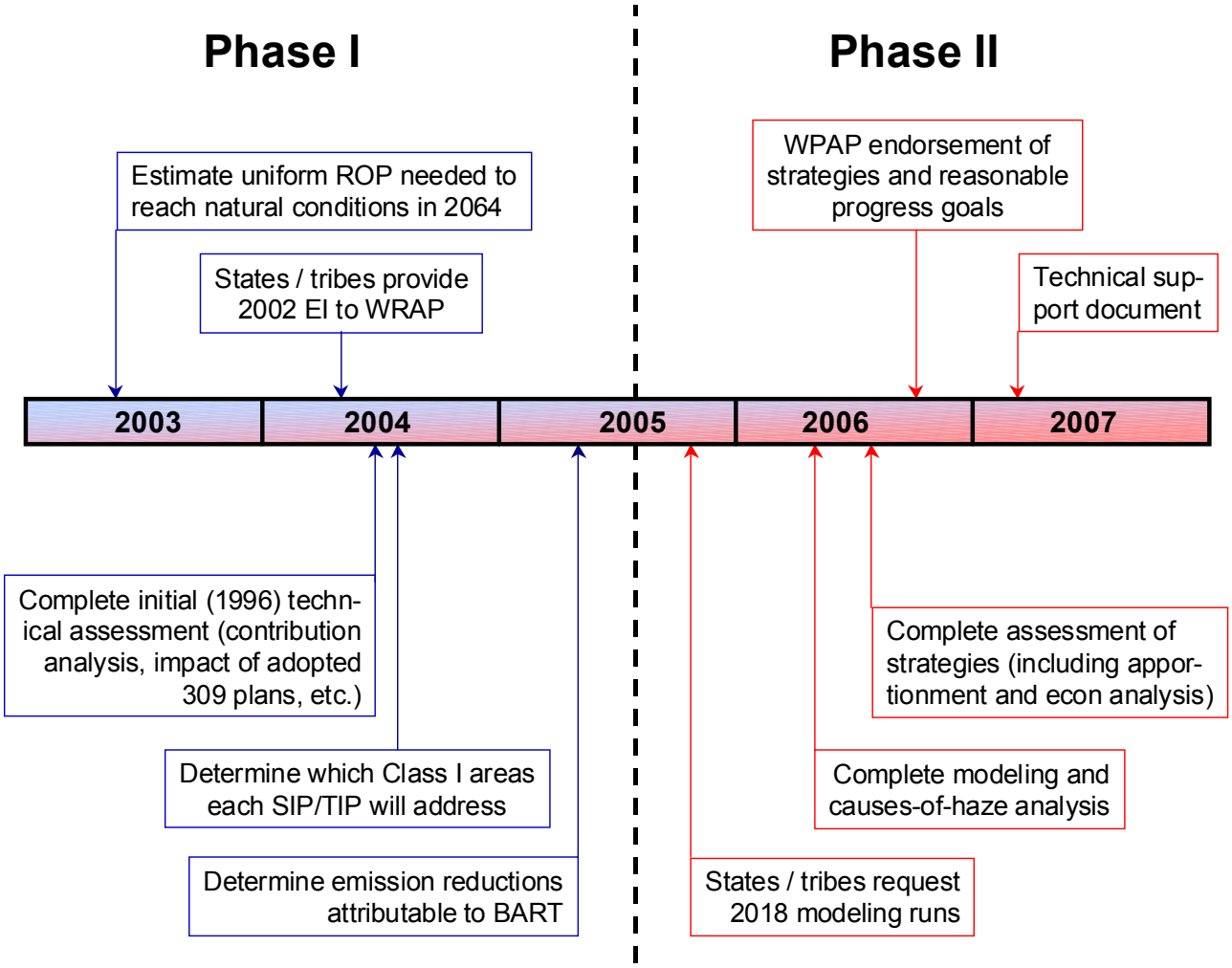
The phased approach has the added advantage of using Phase I (in a sense) as a dry run for Phase II, during which most SIP data and policy determinations would be made. Each phase similarly requires timely input from states and tribes, completion of a source apportionment process, and a policy decision, such as determining which Class I areas each SIP and TIP will address (Phase I)[4] and what the emission reduction obligation would be for each SIP and TIP (Phase II). Development of emission strategies also lends itself to two phases, first to explore and screen strategies (including demonstration projects) and second to refine them and to more accurately determine their costs and benefits. Finally, communication strategies could use Phase I to educate the public about haze and Phase II to foster the construction and acceptance of SIPs and TIPs.

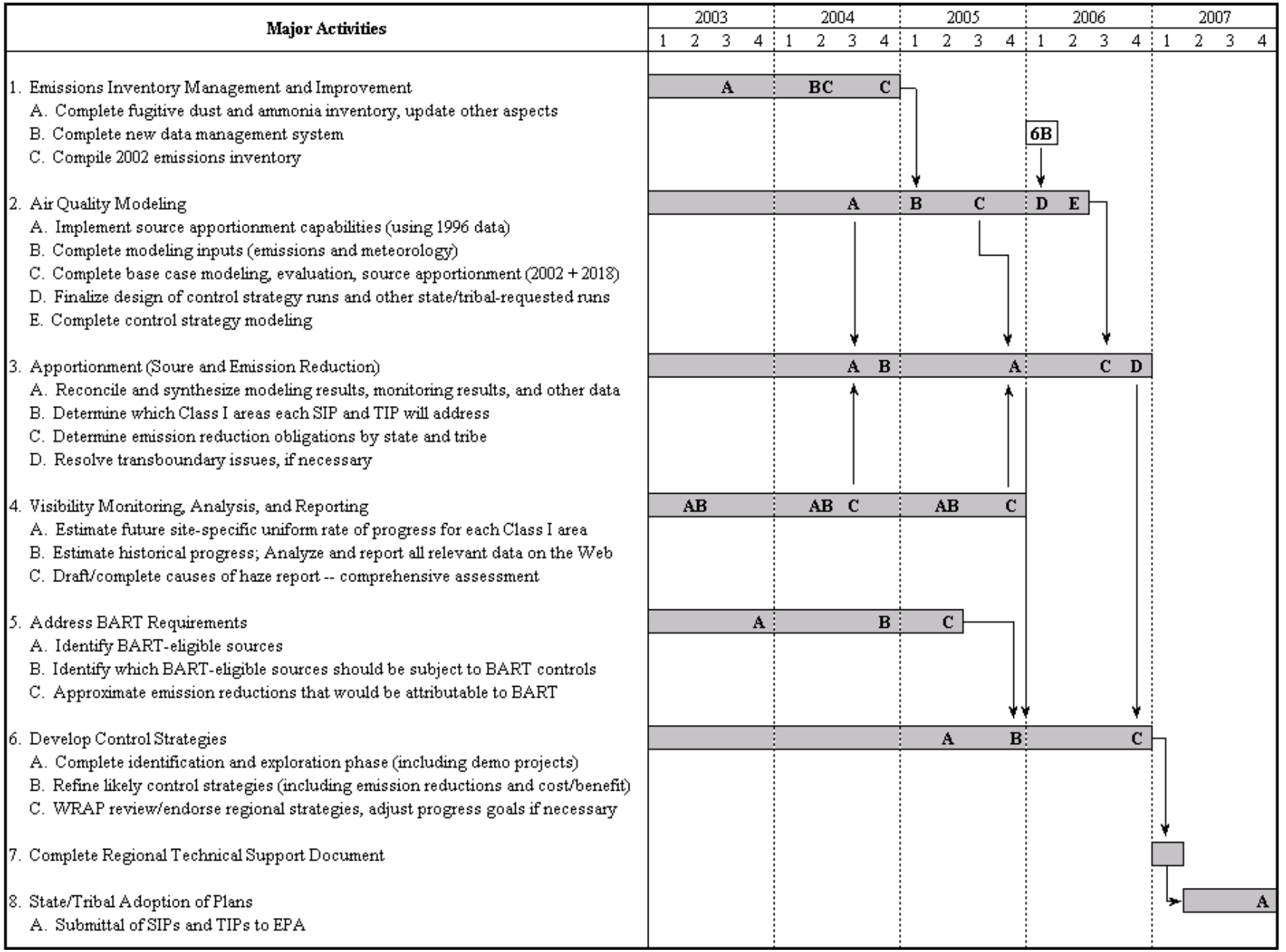
A simple timeline showing this phased approach is provided on the following page. Because it is comprised of two similarly-structured phases, the year 2005 provides an excellent opportunity to evaluate the process and revisit this strategic plan as necessary, assuming that SIPs are not due that year.

A more detailed timeline is provided on the following pages, emphasizing major work products and their relationships to each other. This timeline may be more useful to WRAP committees and forums as they plan their yearly activities and budgets.

Geographically speaking, Phase I would focus predominantly on regional analyses and control strategies. Phase II would include tools and processes for addressing haze within subregions of the WRAP, although development of the tools needed for Phase II would begin sooner. This is shown on the flow chart following the timelines. Note, the chart indicates two or more iterations of control strategy analysis. This is important for isolating a suitable set of emission management options and determining reasonability.

[4] This could be amended later if necessary.


Phase I
Phase II
Estimate uniform ROP needed to reach natural conditions in 2064
States / tribes provide 2002 EI to WRAP
WPAP endorsement of strategies and reasonable progress goals
Technical support document
2003
2004
2005
2006
2007
Complete initial (1996) technical assessment (contribution analysis, impact of adopted 309 plans, etc.)
Determine which Class I areas each SIP/TIP will address
Determine emission reductions attributable to BART
States / tribes request 2018 modeling runs
Complete modeling and causes-of-haze analysis
Complete assessment of strategies (including apportionment and econ analysis)


Major Activities
2003
2004
2005
2006
2007
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4
1. Emissions Inventory Management and Improvement
A. Complete fugitive dust and ammonia inventory, update other aspects
B. Complete new data management system
C. Compile 2002 emissions inventory
2. Air Quality Modeling
A. Implement source apportionment capabilities (using 1996 data)
B. Complete modeling inputs (emissions and meteorology)
C. Complete base case modeling, evaluation, source apportionment (2002 + 2018)
D. Finalize design of control strategy runs and other state/tribal-requested runs
E. Complete control strategy modeling
3. Apportionment (Soure and Emission Reduction)
A. Reconcile and synthesize modeling results, monitoring results, and other data
B. Determine which Class I areas each SIP and TIP will address
C. Determine emission reduction obligations by state and tribe
D. Resolve transboundary issues, if necessary
4. Visibility Monitoring, Analysis, and Reporting
A. Estimate future site-specific uniform rate of progress for each Class I area
B. Estimate historical progress; Analyze and report all relevant data on the Web
C. Draft/complete causes of haze report -- comprehensive assessment
5. Address BART Requirements
A. Identify BART-eligible sources
B. Identify which BART-eligible sources should be subject to BART controls
C. Approximate emission reductions that would be attributable to BART
6. Develop Control Strategies
A. Complete identification and exploration phase (including demo projects)
B. Refine likely control strategies (including emission reductions and cost/benefit)
C. WRAP review/endorse regional strategies, adjust progress goals if necessary
7. Complete Regional Technical Support Document
8. State/Tribal Adoption of Plans
A. Submittal of SIPs and TIPs to EPA
A
BC
C
6B
A
B
C
D
E
A
B
A
C
D
AB
AB
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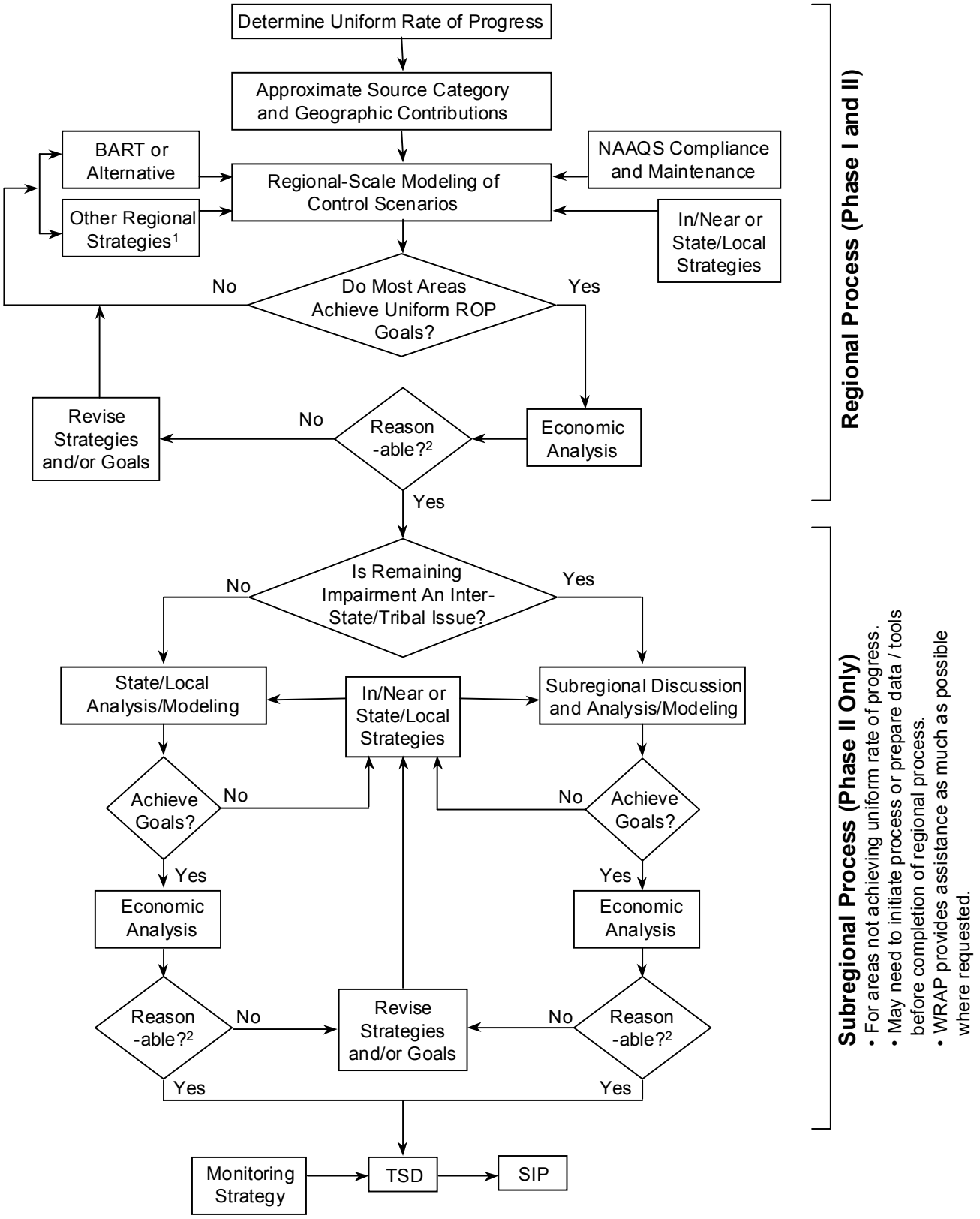
A

	2003				2004				2005				2006				2007			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Tribal Activities																				
9. Refine Framework for Tribal/Federal Implementation on Tribal Lands																				
A. Develop policy to determine when federal implementation is appropriate																				
B. Develop guidance on what elements of a TIP may be "reasonably severable"																				
309 Activities																				
10. Emissions Tracking					**A**			**B**	**A**			**B**	**A**			**B**	**A**			**B** **C**
A. SO2 emissions for comparison to milestones																				
B. Fire emissions																				
C, Clean air corridor and mobile source emissions																				
11. Renewable Energy and Energy Efficiency Tracking		**A**																		**A**
A. Report on programs and progress																				
12. Compliance with all major 308 requirements (except SO2 BART) for areas outside the Colorado Plateau																				

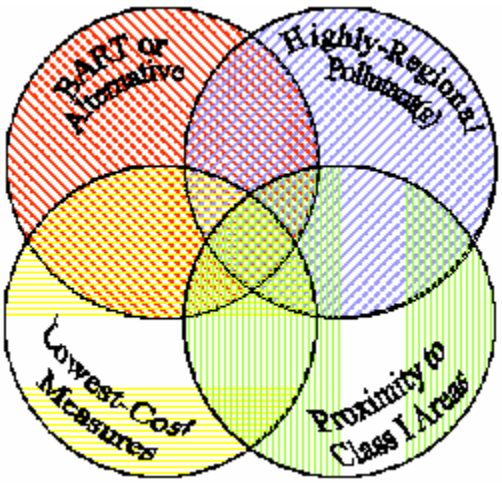


[1] Section 308 plans must at least consider construction and smoke management activities.

[2] Section 308 requires consideration of cost, time, energy/non-air quality impacts, and remaining life.

Control Strategies

The figure below provides a conceptual model for addressing the "navigational challenge" described in Chapter III regarding the large number and diversity of possible control strategies. The colored circles represent approaches to developing control strategies which will be at the heart of future SIPs and TIPs – i.e., enforceable measures achieving most of the regional emission reductions. The objective here would be to develop strategies that lie within as much of the overlapped areas as possible. The ideal strategy(ies) would therefore address the most prevalent pollutant(s) in the region at the lowest possible cost, preferably in areas upwind or near western Class I areas, while satisfying BART emission reduction obligations.



One approach not mentioned above is to conduct sensitivity runs using regional-scale models as a means of determining the approximate amount of emissions reductions (or combination of emissions reductions) that would produce a given visibility benefit. Then, strategies would be investigated with the aim of achieving those reductions at the least cost. In the event that some areas are not anticipated to fully achieve their uniform rate of progress from these regional strategies, subregional strategies and analysis tools can be pursued. This approach is reflected in the flow chart above.

Finally, since the RHR is not prescriptive with respect to control strategies to be developed over the next few years, and since "reasonableness" is one of the criteria for determining SIP and TIP adequacy, innovative and common-sense measures can be pursued, such as improving state and tribal outreach to the regulated community to optimize compliance with existing regulations. In addition, although states and tribes do not have as much leverage over nonroad mobile sources as the federal government, there are some emission reduction measures they can pursue, and the WRAP Board has recently expressed interest in pursuing these measures with the EPA's support.[5] Measures such as these and outreach to the regulated community could help close the gap to achieving reasonable progress for visibility.

Apportionment

The regional haze planning process will, as best as possible, determine the contribution of each jurisdiction and source category to regional haze and then assign emission reduction obligations on that basis. Air quality modeling and ambient data analysis may not produce fully consistent and precise results over the next few years with respect to who contributes how much to which areas and when. And if they did, it is not likely that emission management policies could be tailored to such nuances.

[5] See January 28, 2003 letter from WRAP Board to EPA Administrator Christine Whitman.

Perhaps for these reasons, the RHR does not suggest how a source apportionment should be conducted or what types of results should be sought. In fact, the rule does not explicitly require a source apportionment in the first place. Rather, it stresses the apportionment of "emission reduction obligations" among states. Wherever apportionment is mentioned in the rule, it is described in this manner. This places a distinct emphasis on the policy outcome. That is, a SIP must describe the state's commitment to emission reductions and the technical basis for determining such commitment, but it is not compelled to quantify or express its contribution to the problem in each Class I area. Provided states commit to emission reductions sufficient to achieve reasonable progress (such as through a regional trading program), the issue of source apportionment may become secondary.

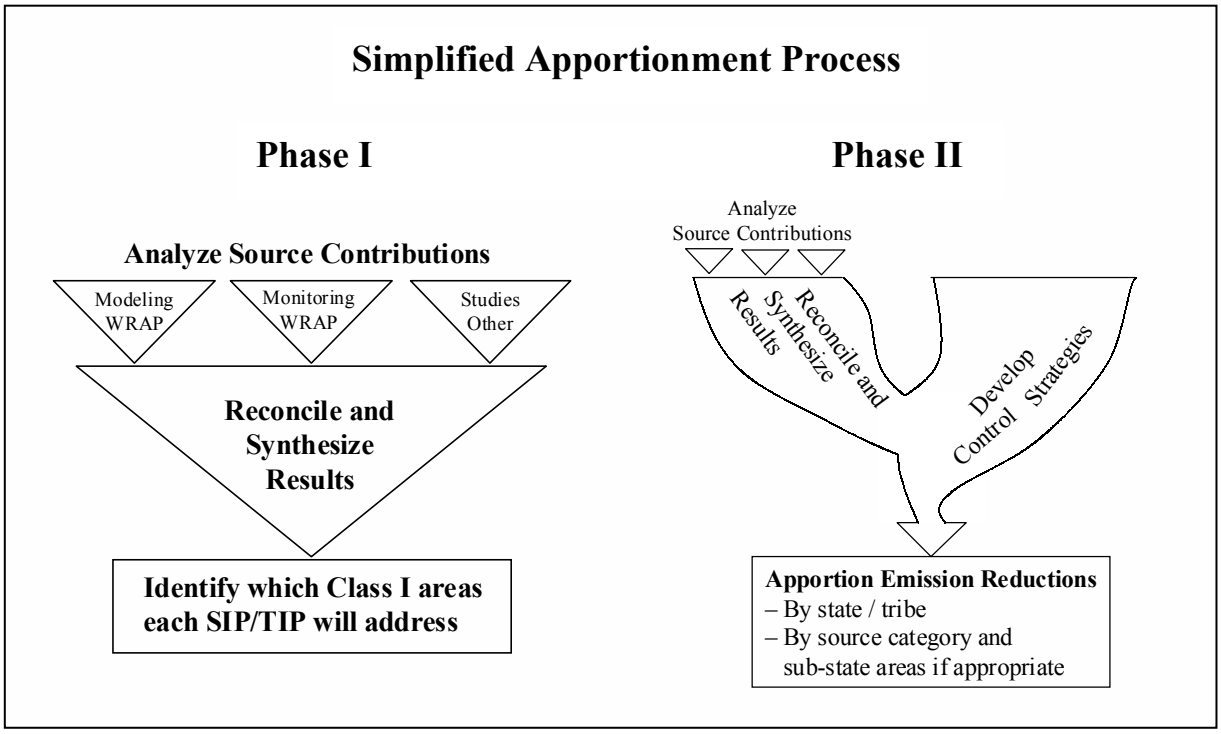
Nonetheless, some level of source apportionment is important to ensure that appropriate sources and pollutants are addressed and that state emission reduction obligations are at least proportional to their contribution to the problem.

A key challenge will be to marry "source apportionment" results from both air quality models and ambient monitoring data analyses into a cohesive and interpretive "contribution assessment" that takes into consideration the strengths and weaknesses of each approach, emissions inventory information, other studies in the region, and the broader understanding of atmospheric science. To do this, the TOC should consider establishing a work group of diverse and multidisciplinary individuals. Moreover, the contribution assessment should be performed twice – once in 2004 to determine preliminary results, work out the process, and inform the control strategy development process (discussed above), and again in 2006 for policy purposes.

Second, mindful of the goal of achieving a consensus regional approach to the problem of haze, the WRAP must balance the rigor, specificity, and expense of the contribution assessment with what is effective for regional planning and sufficient for SIP and TIP purposes. An approach for conducting a source and emission reduction apportionment is provided on the following pages.

Analyses Which May Be Needed on a Subregional Basis

Although visibility-impairing pollutants may have impacts hundreds of miles away from their points of emission, the WRAP nonetheless contains relatively unique subregions (or airsheds) defined by geography, climatology, and emission source strength and diversity. Regional haze planning in some of these airsheds may benefit from air quality modeling at high geographic resolutions, especially in political or geographic border areas, or where disagreement exists over apportionment. Such resolution might be provided by the modeling system currently in place, but to the extent that other modeling systems may work better at scales of approximately 100 miles, or may achieve similar results with fewer resources, the Air Quality Modeling Forum should consider such possibilities in its long-range plan, especially considering the long ramp-up time to implement and test new systems. Modeling systems at this scale may also benefit analysis of sources and strategies in and near Class I areas and in the Alaska region, in addition to supporting related air quality issues, such as human exposure to $PM_{2.5}$ from relatively nearby sources (dry lake beds, agricultural burning, etc.)


Simplified Apportionment Process
Phase I
Analyze Source Contributions
Modeling WRAP
Monitoring WRAP
Studies Other
Reconcile and Synthesize Results
Identify which Class I areas each SIP/TIP will address
Phase II
Analyze Source Contributions
Reconcile and Synthesize Results
Develop Control Strategies
Apportion Emission Reductions
– By state / tribe
– By source category and sub-state areas if appropriate

Apportionment Process

Begin Technical Process

Analyze Source Contributions

By: Modeling and Monitoring Forums
Using: Data from baseline and prior years and 2018 (for modeling analysis)
Outputs: Periodic reports from each forum summarizing source contributions to each Class I area by:
a) Grid cell and/or source region,
b) Aerosol species, and
c) Source classification code.

Reconcile and Synthesize Results

By: A periodically-convened work group under TOC oversight
Using:
a) Modeling results
b) Monitoring results (causes of haze reports)
c) Emission inventories and external data sources and studies
Outputs: Periodic assessments integrating the information sources above into qualitative and quantitative summaries of source contributions (including characterizations of uncertainty, confidence, and natural/anthropogenic contributions) to each Class I area or group of areas.

End of Technical Process

Begin Policy Process

Apportion Responsibility and Emission Reduction Obligations

By: A periodically-convened work group under IOC oversight
Using:
a) Results from assessments above
b) Control strategy options developed by policy forums
c) 2018 emission inventory information
d) 2018 scenario modeling results
Outputs: Periodic policy reports recommending which Class I areas each SIP/TIP should address and approximately how much emissions reductions each state/tribe should contribute toward the necessary regional reduction.

V. Opportunities to Build on WRAP Regional Haze Efforts

The WRAP's extensive and growing base of air quality data, tools, and expertise, as well as its history of cooperation and policy development, provides a strong foundation for its members to address other issues of regional importance. The WRAP should be prepared to capitalize on these efforts and support its members where resources permit.

Tribal Issues

Tribes in the WRAP region face a range of unique environmental, health, institutional, and resource issues. The WRAP Board has strong tribal representation, and much has been done recently to improve tribal data resources, such as the tribal emission inventory software, tribal pollution prevention documents, and ongoing work in the Economic Analysis and In and Near Forums. Furthermore, reduction in visibility-impairing pollutants will tend to have other (e.g., health) benefits for the tribes.

To maximize the utility of the WRAP's products for tribes, for both regional haze and other air quality objectives, there is a need for a better understanding of the shortcomings, if any, of WRAP technical tools from a tribal perspective. That is, what would be the difference in the emissions inventories, modeling, monitoring, economic analyses, and other tools, if the WRAP had "perfect" data for tribes? At a qualitative level, what effect would more complete data regarding tribal lands have on decisions regarding control strategies?

Future work plans of WRAP forums and other groups should be designed to address these general questions in the specific context of the group's charge. The WRAP will maintain and strengthen its willingness to advance tribal air issues of all sorts and its readiness to address them, at least technically.

State Issues

Although resources and the capacity to address a wide range of air quality issues are also a challenge to WRAP state members, states (because of some pre-existing experience and expertise) may often benefit more simply from technology transfer. Good examples of technology transfer that should be continued and investigated include the Visibility Information Exchange Website (VIEWS) for analyzing and presenting ambient monitoring data, a new emissions data management and tracking system, and a capability for modeling subregions of the WRAP domain.

Regional Ozone Assessment

Tropospheric ozone shares many attributes with visibility-impairing pollutants, including emission sources, transport distances, health effects, and inter-related chemical reactions. Indeed, the WRAP's regional scale modeling system includes ozone as one of its parameters and products. At a minimum, these ozone data should be included more routinely in the assessment and reporting of regional haze modeling efforts.

The WRAP should also be prepared to build upon its regional-scale modeling capacity to address long-range transport and background ozone concentrations when requested by its members. Indeed, EPA grant guidance to regional planning organizations such as the WRAP

acknowledges the need to integrate work on other pollutants, such as ozone and fine particles, so long as this is accomplished "in such a way that regional haze is not overtaken and dominated by the other pollutants."

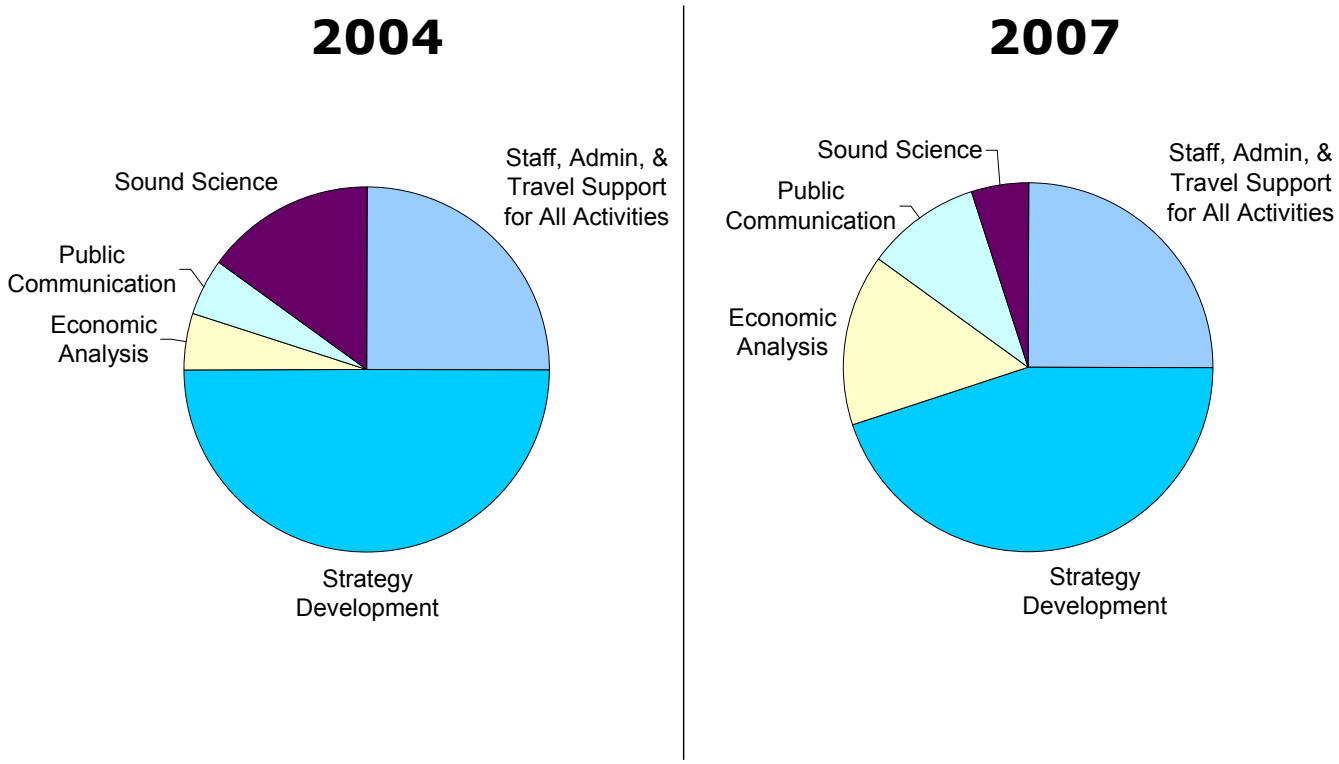
Member Participation

Given tribal resource limitations and the largest state revenue shortfall since World War II, maintaining active participation by some WRAP members may be challenging. Furthermore, state and tribal grants from the EPA do not include resources for regional haze rule implementation. Some options for maintaining active member participation in light of diminishing resources include requesting the EPA to provide some resources to states and tribes for participation in the regional planning organizations (RPOs) and increasing WRAP staff support to facilitate state/tribal involvement.

VI. Conceptual WRAP Budget Allocation

The figure below recommends an approximate allocation of the WRAP's budget among major activity areas. These areas correspond with those shown on Page 2 of this strategic plan. Absolute figures are not provided, nor can they be fully predicted. However, it is presumed that the WRAP will be funded at approximately its current level over the period covered by this plan.

The figure illustrates that efforts to develop emission management strategies and to improve the scientific basis for WRAP policies should receive relatively greater emphasis in 2004 than in 2007, at which time economic analysis and public outreach should receive greater emphasis.



VII. Organization of WRAP Committees and Forums

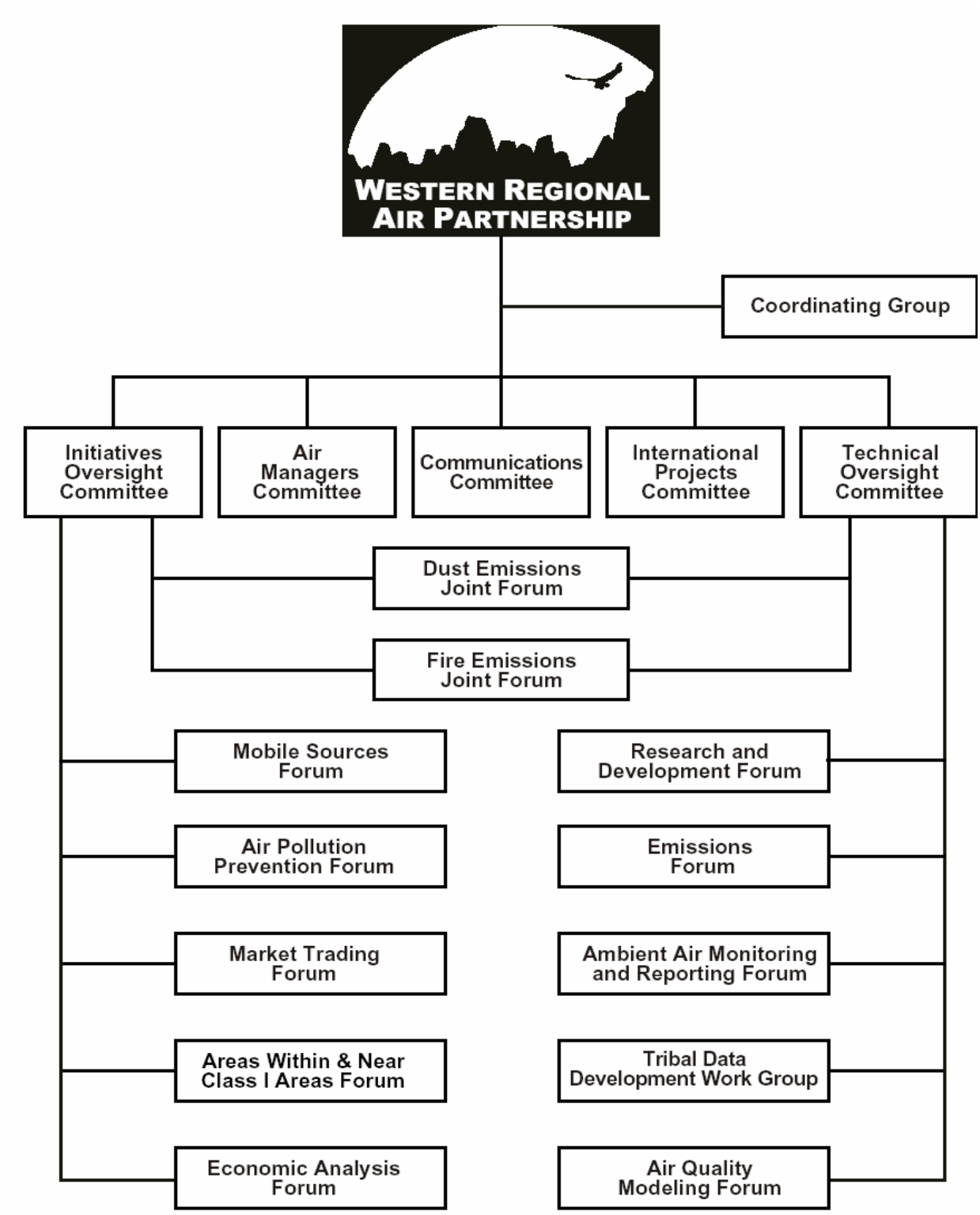
A chart showing the current organization of WRAP committees and forums is provided on the following page. The following recommendations are made to streamline the organization and reflect management practices that have proven more efficient in the recent past:

- Consider eliminating the Coordinating Group and replacing it with the Planning Team.
- Consider eliminating the International Projects Committee. International issues are currently and should continue to be, addressed as needed in the appropriate forums (e.g., emissions).
- Consider eliminating the Research and Development Forum. Use of the best science is an integral part of all forum and committee activities and may be best addressed in specific forum activities.
- Consider changing the Air Pollution Prevention Forum (AP2) into a work group. This forum has made substantial stakeholder-based recommendations, but future work will involve mostly tracking.

The following recommendations are made in anticipation of potential new challenges facing the WRAP. Unlike the ones above, which are more "house-keeping" in nature, these recommendations address more fundamental issues about the focus and interaction of forums:

- Consider establishing a source apportionment work group under the TOC to integrate various technical analyses into qualitative and quantitative summaries of source contributions (e.g., by source region, source category, and natural vs anthropogenic).
- Consider establishing a reduction apportionment work group under the IOC to recommend emission reduction obligations that must be included in each SIP. The work group would consider the source apportionment summaries, feasibility and effectiveness of control strategies, and other issues as necessary to determine an equitable manner(s) for achieving reasonable progress.
- Both work groups suggested above may have to pay considerable attention to potential disagreements and resolution procedures. Such procedures exist in the WRAP, but the work group must be familiar with them.
- Consider changing the Market Trading Forum to a Stationary Sources Forum to broaden or clarify its mission such that it addresses all stationary sources (including large fugitive ones) and all visibility impairing pollutants they emit. This will also be more consistent with other source-oriented forums. However, the Forum may want to establish an Annex Implementation Work Group to track this program where implemented and address issues related to its possible expansion to other states.
- Given the many potential control measures – and the need to select and tailor them in response to the source apportionment results and in consideration of the statutory criteria for reasonable progress – the IOC may need to provide strong guidance and coordination to its forums to prevent divergence. The use of work groups based on types of control measures, pollutants, or geographic scales may help ensure that the source-oriented forums do not overlook the most effective or integrated approaches.

Current Organization of WRAP Committees and Forums



Appendix A: History of Regional Haze Control in the U.S.

The 1977 Clean Air Act Amendments

Federal oversight of visibility was initiated with the Clean Air Act (CAA) amendments of 1977. The amendments established two programs that deal explicitly with visibility. The first, known as the prevention of significant deterioration (PSD), is meant to limit backsliding in relatively clean areas of the country and to provide extra protection to unique federal lands known as Class I areas. The PSD program applies only to new and modified large stationary sources located in areas attaining the national ambient air quality standards (NAAQS). It requires the use of best available control technology (BACT) and limits the amount pollution that affected sources can cumulatively add to the environment to specified "increments." Class I areas are provided more protection through lower increments and through the role federal land managers (FLMs) play in protecting air quality related values (AQRVs), which may include visibility.

The second program established by the CAA to address visibility is found in Section 169 of the Act. This section focuses exclusively on visibility and provides authority to address existing sources of air pollution, as well as new ones. Section 169 declares as a national goal "the prevention of any future, and the remedying of any existing impairment of visibility in mandatory class I Federal areas which impairment results from man-made air pollution." Section 169 requires the EPA to promulgate regulations assuring reasonable progress towards meeting this national goal. The regulations must include guidance to states and implementation plans for states in which mandatory Class I areas are located or from which emissions may reasonably be anticipated to cause or contribute to any impairment of visibility in any such area. A state implementation plan (SIP) must contain a long-term (10 to 15 years) strategy for making reasonable progress toward the national goal and require best available retrofit technology (BART) to be installed at major stationary sources which began operation between 1962 and 1977 and which may cause or contribute to haze in any Class I area.

In 1979, the EPA designated all but two of the 158 mandatory federal Class I areas as subject to regulations promulgated under Section 169 of the Act. These areas were selected on the basis of visibility as an important value and in consultation with the Secretary of the Interior.

The 1980 Visibility Rule

The EPA took a two-phased approach in implementing Section 169 of the CAA. First, with rules published in 1980, it sought to address impairment that can be traced to a single stationary source or small group of sources. Often known as the plume blight rule, it covers only sources whose contribution is "reasonably attributable" through "visual observation or any other technique the State deems appropriate." Lacking monitoring, modeling, and scientific knowledge about regional haze – caused by numerous sources over wide geographic areas – the EPA deferred its second phase.

The 1990 Clean Air Act Amendments

Recognizing the lack of progress towards meeting the national visibility goal,

especially as affected by regional haze, these amendments instructed the EPA to carry out additional studies, form regional visibility transport commissions where appropriate or requested, and based on the findings of these studies and commissions, promulgate regulations under the existing statutory framework (e.g., BART and SIPs with long-term strategies). The 1990 CAA Amendments required the EPA to create the GCVTC (in 1991) and to take its recommendations into account in subsequent rulemaking.

The National Academy of Sciences Report

In 1993, the National Academy of Sciences (NAS) published a report on regional haze titled *Protecting Visibility in National Parks and Wilderness Areas*. Some of the reports major findings are provided below:

- Current scientific knowledge is adequate and control technologies are available for taking regulatory action to improve and protect visibility.
- A program that focuses solely on determining the contribution of individual emission sources to visibility impairment is doomed to failure.
- Achieving the national visibility goal will require a substantial, long-term program.
- Progress toward the national goal will require regional programs that operate over large geographic areas.
- Visibility policy and control strategies might need to be different in the West than in the East.

The 1996 Grand Canyon Visibility Transport Commission Report

The Commission was comprised of eight states, four tribes, and (as ex officio members) five federal agencies and an inter-tribal commission.

The purpose of the GCVTC was to assess information about the adverse impacts on visibility in and around 16 Class I areas on the Colorado Plateau and to provide policy recommendations to the EPA to address such impacts. The GCVTC recommendations covered a wide range of control strategy approaches, planning and tracking activities, and technical findings. The GCVTC issued its final recommendations in 1996, and these were largely included in the final RHR in 1999 as an option for nine Western states and tribes within those states (Section 309). The primary recommendations of the Commission covered nine categories of activities:

- Air pollution prevention, primarily in the form of renewable energy development;
- Tracking the effect of new sources of emissions on clean air corridors;
- Establishment of regional emission milestones for sulfur dioxide and contingencies for market-based regulatory programs and other pollutants if necessary;
- Emission reductions in and near Class I areas;
- Capping of mobile source emissions for areas contributing to visibility impairment;
- Further assessment of the contribution of road dust to visibility impairment;
- Binational collaboration with Mexico;
- Smoke management programs to minimize effects of all fire activities on visibility; and
- The need for a future regional coordinating entity to follow through on implementing the recommendations.