



Fire Emissions Joint Forum

Resources for Regional Haze Planning: Policies, Documents, and Tools

August 31, 2007 final draft – FETS 308/309 text to be added

Purpose

The purpose of this document is to catalog and summarize policies, documents, and tools developed by the FEJF in support of regional haze planning, for use by states, tribes, and EPA in the Regional Haze implementation plans due in late 2007. In the WRAP region, the requirements for the fire emissions management portions of these plans found under §51.308(d)(3)(v)(E) or §51.309(d)(6) of the Regional Haze Rule¹, generically referred to as “§308” or “§309” requirements.

The §308 regional haze fire planning requirement is as follows: “§51.308(d)(3)(v) *The State must consider, at a minimum, the following factors in developing its long-term strategy... (E) Smoke management techniques for agricultural and forestry management purposes including plans as currently exist within the State for these purposes.*”

The §309 regional haze fire planning requirement is: “§51.309(d) *The plan must provide for... (6) Programs related to fire. The plan must provide for:*

- (i) *Documentation that all Federal, State, and private prescribed fire programs within the State evaluate and address the degree visibility impairment from smoke in their planning and application. In addition the plan must include smoke management programs that include all necessary components including, but not limited to, actions to minimize emissions, evaluation of smoke dispersion, alternatives to fire, public notification, air quality monitoring, surveillance and enforcement, and program evaluation.*
- (ii) *A statewide inventory and emissions tracking system (spatial and temporal) of VOC, NOx, elemental and organic carbon, and fine particle emissions from fire. In reporting and tracking emissions from fire from within the State, States may use information from regional data-gathering and tracking initiatives.*
- (iii) *Identification and removal wherever feasible of any administrative barriers to the use of alternatives to burning in Federal, State, and private prescribed fire programs within the State.*
- (iv) *Enhanced smoke management programs for fire that consider visibility effects, not only health and nuisance objectives, and that are based on the criteria of efficiency, economics, law, emission reduction opportunities, land management objectives, and reduction of visibility impact.*
- (v) *Establishment of annual emission goals for fire, excluding wildfire, that will minimize emission increases from fire to the maximum extent feasible and that are established in cooperation with States, tribes, Federal land management agencies, and private entities.”*

The §309 requirements are more specific, as under §309 the demonstration of reasonable progress for the 2018 regional haze planning milestone and the implementation of long-term strategies to improve visibility were predetermined, based on the recommendations of the Grand Canyon Visibility Transport Commission². The §309 requirements are an optional planning approach for a subset of the WRAP region, and originally required plans to be submitted in late 2003, well in advance of the December 2007 date for the rest of the

¹ http://www.epa.gov/ttn/oarpg/t1/fr_notices/rhfedreg.pdf

² <http://www.wrapair.org/WRAP/reports/GCVTCFinal.PDF>

country. Four states (AZ, NM, UT, WY) and Bernalillo County (NM) are opting in §309 in late 2007 under revised regional haze requirements.

The §308 requirements are more general with respect to fire emissions. While the fire planning requirements for §308 are not very specific compared to §309, the regional haze planning requirements for §308 are very broad and comprehensive, directing each state to assess the nature and causes of regional haze, and define 2018 reasonable progress goals and the long-term emissions reduction strategies to meet the goals. Fire emissions are large and comparable to those of other source categories in the WRAP region, and wildland fire occurs both in and very and near to the Class I areas to be addressed in the regional haze plans.

Use of the FEJF resources described next is necessary for developing and operating fire and smoke emissions management programs to meet both §308 and §309 regional haze planning requirements.

Applying FEJF resources in Regional Haze planning

Fire Emissions Inventories in Regional Haze Modeling & Analysis Scenarios

Regional Analysis Purpose	Regional Modeling Scenario	Fire Emission Inventory Used
Use actual 2002 emissions to test regional model performance, compare to 2002 monitored values	Base02b , see: http://pah.cert.ucr.edu/aqm/308/spec_sheets/RMC_Model_run_specification_base02b_05_10_2006.doc	Phase II Fire EI , see: http://www.wrapair.org/forums/fejftasks/FEJFtask7PhaseII.html
Use actual 2002 emissions combined with 2000-04 average data for fire emissions data as basis for regional haze planning	Plan02c , see: http://pah.cert.ucr.edu/aqm/308/spec_sheets/RMC_Model_run_specification_plan02c_06_19_2006.doc - this will be replaced with a final Plan02d analysis in October 2007, using the same fire emissions as Plan02c.	Phase III Fire EI , see: http://www.wrapair.org/forums/fejftasks/FEJFtask7Phase3-4.html - 2000-04 average fire activity by state, with fires at the same location and timing as they were in 2002.
Use base case 2018 emission projections (growth/control on the books) for non-fire sources and 2000-04 fire emissions data with Emissions Reduction Techniques applied to represent Enhanced Smoke Management Programs as a basis for 2018 regional haze planning.	Base18b , see: http://pah.cert.ucr.edu/aqm/308/spec_sheets/RMC_Model_run_specification_base18b_05_10_2006.doc - the point and area source (non-fire) emissions in this scenario were analyzed and modified as the basis for PRP18a.	Phase III Fire EI with ERTs applied , see: http://www.wrapair.org/forums/fejftasks/FEJFtask7Phase3-4.html - 2000-04 average fire activity by state, with fires at the same location and timing as they were in 2002, and applying ERTs.
Use corrected 2018 P&A emission projections (growth/control on the books and estimates of EGU BART controls for SO ₂) for non-fire sources and the same 2000-04 fire emissions data as Base18b.	PRP18a (Preliminary Reasonable Progress) , see: <i>link to be posted</i> – basis of haze plans – to be updated in early 2008 with final BART control emissions rates – fire unchanged	Same as Base18b.
Final 2018 Reasonable Progress for comparison to Plan02d, will include BART controls.	FRP18 (Final Reasonable Progress) , to be done in early 2008.	To be same as Base18b.

FEJF Policies

Tribes are not subject to the same requirements of the Regional Haze Rule as states, but tribes wishing to assume the regional haze requirements outlined in the Rule may, according to the CAA, seek approval to be treated in the same manner as states, under the Tribal Authority Rule (TAR), 40 CFR 49. The intent of this Policy is to assist both states and tribes with the development of their regional haze implementation plans

(SIPs/TIPs), and therefore, tribes are included in all references to states, except where specific requirements and/or deadlines of the Rule are cited.

Fire Categorization (11/15/01) [PDF](#)

The Policy is comprised of two main sections: Classification Criteria and Classification Program Management. The Classification Criteria section determines the “natural” and “anthropogenic” sources of fire that contribute to regional haze, as stated in the Preamble to the Rule. The Program Management section expresses the prerequisites that enable classification to be effective and equitable. Although the Program Management section addresses prerequisites that need to exist, it does not describe how they will be brought about. This work is currently underway in the FEJF as well as in other WRAP Forums.

The Classification Criteria clarify the relationship between what would be defined as a “natural” fire emissions source and what would be defined as an “anthropogenic” fire emissions source, thereby addressing the complex relationship EPA acknowledges in the Preamble to the Rule. Under the Policy, most fire emissions sources are classified “anthropogenic”, which is in keeping with the Rule’s primary objective of the development of long-term strategies for reducing emissions of visibility impairing pollutants. However, some fire emissions sources are classified as “natural” in recognition of fire’s inherent occurrence as part of the landscape.

The Program Management section supports the classification process by iterating that all types of fires must be managed to minimize visibility impacts in order to assure equity among the different fire source types and other air pollution sources. In cases where a fire is classified as “anthropogenic”, its emissions will be controlled in order to demonstrate reasonable progress toward the 2064 natural conditions goal. The Program Management section also recognizes that to determine fire emissions’ contribution to visibility impacts, emissions from all fires will be tracked. This across-the-board tracking is also necessary to allow the classification process to function uniformly across the WRAP region.

Enhanced Smoke Management Programs (01/07/03) [PDF](#)

Enhanced smoke management programs are specifically required in Section 309 of the Rule. However, if a state, under Section 308, has determined that fire emissions are contributing to visibility impairment and that smoke needs to be addressed in its SIP, then an enhanced smoke management program is a viable tool to accomplish this goal. Therefore, the WRAP is advancing the WRAP ESMP Policy for states under both Section 308 and 309 to meet the requirements of the Rule. States/tribes in the WRAP region may utilize the WRAP ESMP Policy to protect visibility in non-mandatory Class I areas.

The WRAP ESMP Policy defines the enhanced smoke management program as smoke management efforts that specifically address visibility. It is the position of the WRAP ESMP Policy that there are nine elements of an enhanced smoke management program that are necessary to meet the requirements of the Rule. According to the Rule, enhanced smoke management programs are to be included in implementation plans based on the criteria of efficiency, economics, law, emissions reduction opportunities, land management objectives, and reduction of visibility impacts.

Smoke management efforts/programs currently in place (sometimes referred to as “basic smoke management programs”) may not specifically address visibility effects in mandatory Class I areas. The WRAP ESMP Policy explicitly addresses visibility effects from fire that contribute to visibility impairment in mandatory Class I areas. Fortunately, smoke management efforts/programs, regardless of the purpose (e.g., visibility protection, avoidance of National Ambient Air Quality Standards [NAAQS] violations, or prevention of nuisance smoke impacts), have many common elements. It is anticipated that the enhanced smoke

management program elements outlined here will integrate well with current and future smoke management efforts/programs.

The WRAP ESMP Policy document is comprised of four major sections. Section 1 is the eight WRAP ESMP Policy statements. Section 2 provides overall background for the WRAP ESMP Policy, including a discussion of the regulatory environment, the current context of smoke management in the WRAP region, and details of the Rule that are germane to the WRAP ESMP Policy. Section 3 is an annotation of each of the eight policy statements, further explaining and defining them, and including a description of the nine enhanced smoke management program elements. Finally, Section 4, the Appendices, include (A) a glossary of terms, (B) a related documents listing, and (C) specific examples for states/tribes on the implementation of the nine enhanced smoke management program elements.

Annual Emission Goals (04/02/03) [PDF](#)

The GCVTC recognized that projected increases in fire activity will result in episodic impacts on visibility in the West, and called for the development of annual emission goals that would minimize these impacts. Section 309 of the Rule specifically requires the establishment of annual emission goals that minimize emission increases from fire to the maximum extent feasible. Further, these goals must be developed in cooperation with states, tribes, land management agencies and private entities.

The WRAP defines the annual emission goal as a quantifiable value that is used to measure progress each year toward the desired outcome of achieving the minimum emission increase from fire. In this WRAP AEG Policy, the WRAP outlines a process by which states/tribes may establish annual emission goals, based on the utilization of currently available emission reduction techniques (ERTs), to include in their regional haze implementation plans.

Although Section 309 of the Rule specifically requires the establishment of annual emission goals, the strategy outlined here for the utilization of ERTs could be considered by states and tribes that choose to follow the requirements of Section 308 of the Rule and/or may be used to protect visibility in non-mandatory Federal Class I areas. In the case of tribes and annual emission goals, the WRAP considers them a viable tool for all tribes in the WRAP region to use to achieve the minimum emission increase from fire.

The WRAP AEG Policy document is comprised of four major sections. Section 1 is the seven WRAP AEG Policy statements. Section 2 provides overall background for the WRAP AEG Policy. Section 3 is an annotation of each of the seven policy statements, further explaining and defining them. Finally, the Appendices include (A) a glossary of terms, (B) a related documents listing, (C) additional guidance for states/tribes on the implementation of annual emission goals, and D) an example of a table that will be developed as a separate guidance document by the WRAP Fire Emissions Joint Forum for use with annual emission goals.

Fire Tracking Systems (04/02/03) [PDF](#)

It is the position of the WRAP FTS Policy that it is necessary to track fire activity information in the WRAP region using a fire tracking system, which will also provide the information essential to create a fire emissions inventory. The WRAP FTS Policy identifies seven essential components of a fire tracking system that represent the minimum spatial and temporal fire activity information necessary to consistently calculate emissions and to meet the requirements of the Rule. The resulting emissions will be used in modeling exercises to assess fire impacts to regional haze.

An emissions inventory and tracking system for fire are specific requirements under Section 309 and a broader requisite under Section 308 of the Rule. The fire tracking system and WRAP emissions inventory

system are regional approaches to the data gathering and tracking initiatives, which are specifically encouraged in the Rule. Therefore, the WRAP is advancing the WRAP FTS Policy for states and tribes under both Sections 308 and 309 to meet the requirements of the Rule.

Most fire emissions inventory and tracking efforts established to date in the WRAP region have been developed in conjunction with smoke management programs to address public health and nuisance concerns. Fortunately, fire emissions inventory and tracking efforts regardless of the purpose, have some common elements. It is anticipated that the fire tracking system and WRAP emissions inventory system outlined herein will integrate well with current and future fire emissions inventory and tracking efforts.

The WRAP FTS Policy document is comprised of four major sections. Section 1 is the five WRAP FTS Policy Statements. Section 2 provides overall background for the WRAP FTS Policy, including a discussion of the regulatory environment and details of the Rule that are germane to the WRAP FTS Policy. Section 3 is an annotation of each of the five policy statements, further explaining and defining them, and a description of the seven essential fire tracking system components. Finally, Section 4 Appendices include: A) a glossary of terms, B) a website references listing, and C) supporting information on fire tracking systems.

FEJF Haze Planning Support Documents

Regional Coordination Guidance (05/11/07) ([PDF](#))

The *Guidance for Coordinating Smoke Management Programs* (Guidance) was developed to assist WRAP region burners and regulators in fulfilling RHR requirements during the implementation of smoke management programs (SMPs). This Guidance does not alter or change the 2002 *WRAP Policy on Enhanced Smoke Management Programs for Visibility* (ESMP Policy). Rather, this Guidance focuses primarily on the interjurisdictional exchange of certain critical information describing characteristics of planned burns, i.e., SMP elements. The following summarizes the guiding principles upon which this Guidance was developed.

The Guidance is intended to provide strategies to prevent / mitigate visibility impairment in Class I areas from emissions of planned burning from one jurisdiction to another. The Guidance also:

- Clarifies the *WRAP Policy on Enhanced Smoke Management Programs for Visibility*;
- Emphasizes planned burning, which may include other emissions;
- Defines who is eligible to participate;
- Generally describes types of fire emissions;
- Recommends program elements to share inter-jurisdictionally;
- Complements the work of the fire tracking system;
- Provides examples of other coordination strategies;
- Provides information for air quality planning purposes and attaining reasonable progress goals; and
- Will be revised as necessary.

The Guidance is NOT intended to:

- Mandate participation;
- Create or revise smoke management programs or regulations;
- Emphasize National Ambient Air Quality Standards (NAAQS) or nuisance smoke;
- Dictate how shared information is used;
- Provide a basis for litigation or otherwise gain access to proprietary information;
- Require database entry; and/or
- Determine what constitutes “cause or contribute” to visibility impairment.

Emissions from fire may cross jurisdictional boundaries and obscure visibility miles from the source. Therefore, burners and regulators should develop strategies to share SMP elements on a regional basis. Coordination is necessary in order to harmonize planning and tracking of fire emissions that are continuous across state and tribal boundaries and take into consideration various burn seasons. Regional coordination increases communication between burners and regulators, thus increasing regulatory predictability and minimizing possible regulatory differences across state and tribal boundaries. A state or tribe may elect to adopt this Guidance as State Implementation Plan (SIP) or TIP measures. SMP elements may also form the basis of regulatory measures developed to demonstrate reasonable further progress for improving visibility impairment.

Fire Emissions Tracking System (FETS) and FETS Development White Paper (07/31/06) [PDF](#)

The FETS is in development at: <http://www.wrapfets.org/>, with a planned operational date of September 2007.

This White Paper presents to the Fire Emissions Joint Forum a summary of the current products and proposed next steps pertaining to developing the FETS for the WRAP. This White Paper includes:

- A restatement of the purpose and objectives of the FETS.
- The status of the Fire Tracking System (FTS) Evaluation Project.
- The conclusions of the FTS Evaluation Project.
- The proposed next-steps to evolve the conclusions of the FTS Evaluation Project to an operable FETS for the WRAP.
- Recommendations for the technical and contracting approaches to develop an operable FETS for the WRAP, including a proposal to develop a commodity-based FETS.

The WRAP and the FTS Task Team endorse this proposal for the following reasons. This approach is expected to:

- have a high probability of success,
- be ready on-schedule and accepting data uploads by September 2007,
- fall within WRAP budget constraints,
- efficiently accommodate data exchanges from currently operational FTSs,
- seamlessly integrate fire emissions data with other technical data and SIP tools in the WRAP's Technical Support System (TSS), and
- will streamline regional coordination.

The purpose of this White Paper is to provide the FEJF sufficient information to develop consensus on the technical and contract approaches to develop an operable FETS for the WRAP.

Emissions Reduction Techniques (03-04/04)

These techniques (ERTs) have been applied and/or are intended for application in the:

- Annual Emission Goal-setting process ([PDF](#));
- Phase III/IV Planning Fire EIs (<http://www.wrapair.org/forums/fejf/tasks/FEJFtask7Phase3-4.html>), and
- Fire Emissions Tracking System (<http://www.wrapfets.org/>)

Background

In December 2002 the FEJF issued an RFP for a bibliography and summary table on Emission Reduction Techniques for agricultural burning and wildland fire in support of our guidance development process. The final deliverables are posted below. The reviewers guide describes the methodology for gathering data, lists information sources, and describes how to use the work products linked below.

- Reviewers Guide - "A Guide to the Final Work Products" (03/04/04) [PDF](#)
- Emission Reduction Techniques in Tables (12/15/03) [PDF](#) or [DOC](#)
- Annotated Bibliography (12/15/03) [PDF](#)
- Wildland Burning Index - by fuel type (12/15/03) [XLS](#)
- Wildland percent reduction only (12/15/03) [XLS](#)
- Wildland emission factors only (12/15/03) [XLS](#)
- Agricultural Residue Index - by fuel type (12/15/03, revised 05/28/04) [XLS](#)
- Agricultural percent reductions only (12/15/03) [XLS](#)
- Agricultural emission factors only (12/15/03) [XLS](#)
- All Related Emission Reduction Techniques in Zipped Archive (03/04/04) [ZIP](#)

Guidance for Categorizing Natural Vs Anthropogenic Fire Emissions (11/30/05) [PDF](#)

The Guidance on Categorizing Natural vs Anthropogenic Fire Emissions (Guidance) was developed to assist WRAP region burners and regulators in categorizing fire emissions as either “natural” or “anthropogenic” for the purpose of fulfilling RHR requirements under 40 CFR Part 51 Subpart P – Protection of Visibility. This Guidance was not developed for use involving exceedances and/or violations of National Ambient Air Quality Standards (NAAQS).

This Guidance does not alter or change the categorization policy set forth in the 2001 WRAP Policy for Categorizing Fire Emissions document (Policy). Rather, this Guidance provides reference to research, field procedures, maps, plans, etc. (categorization methods) to be used by burners and regulators when categorizing fire emissions as either “natural” or “anthropogenic.” This Guidance also acknowledges the recommendations made by the Initiatives Oversight Committee Transmittal Letter to the WRAP as found in Appendix C of the Policy. Interested parties have the capability, at any time, to review and comment on fire categorizations, procedures, and methods reported as part of a state or tribe visibility protection plan. Therefore, reference to interested parties as users of this Guidance is limited. Interested party access to tribal categorizations, processes, and methods is a matter between that party and the tribe.

Identifying categorization methods through consensus prior to categorization provides burners and regulators with information for categorizing fire emissions that is uniform, unbiased, and defensible and avoids potential disputes over emission categorization. Categorizing fire emissions will support states and tribes in tracking fire activity efforts in their respective jurisdictions using a fire tracking system. This information is essential for creating an accurate fire emissions inventory. The fire emissions inventory is used in regional modeling to demonstrate reasonable progress toward the 2064 “natural” conditions goal. The Policy, in part, addresses emissions from agricultural fire and Native American cultural fire. The Policy establishes that emissions from agricultural fire will be categorized as “anthropogenic” except in escaped prescribed fire situations where emissions from the escaped portion will be categorized as either “natural” or “anthropogenic” according to state or tribal interpretation of the Policy. The guidance notes that emissions from escaped prescribed fire (Agricultural and Wildland) outside the original burn area should be categorized according to state or tribal regulator preference, as well as encouraging states and tribes to work toward consistent application of categorizations. Additionally, the Policy establishes that emissions from Native American cultural fire will be categorized as “natural”.

Non-burning Alternatives to Prescribed Fire on Wildlands in the Western United States (02/04) [HTML](#)

The use of alternatives to prescribed burning on the wildlands, when and where such alternatives are feasible, is expected to result in fewer emissions than burning. However, practices vary widely from state to state, as well as from stand to stand; obstacles are numerous; and there is limited awareness of viable alternatives to burning. The FEJF hired a contractor to conduct a series of interviews with landowners, land managers, and stakeholder group members to examine the use of nonburning alternatives on wildlands. Information developed during the course of the interviews was used to:

- identify nonburning alternatives,
- establish criteria for the use of nonburning alternatives,
- identify barriers to the use of nonburning alternatives,
- investigate approaches to overcome these barriers,
- examine current accountability mechanisms, and
- develop recommendations to promote the use of nonburning alternatives.

The objectives of this document are:

1. to provide landowners and land managers with a reference document that describes alternatives to prescribed burning;
2. to provide decision makers with the tools necessary to develop cogent nonburning strategies for vegetation and fuel management; and
3. to assist air quality regulators, environmental organizations, and the general public in understanding the environmental, economic, and practical considerations of nonburning alternatives.

Non-Burning Management Alternatives on Agricultural Lands in the Western United States [Final Report](#) (zip file, 09/19/02)

The objectives of this project were designed to facilitate the development of crop production and agricultural burning activity data to support analysis of alternatives to burning, and they include:

- Development of a crop production database and an agricultural burning activity database;
- Identification of the “universe” of potential non-burning management alternatives;
- Design of a methodology to assess the impacts of alternatives (e.g., agronomic, environmental, economic, etc.);
- Identification of existing and potential accountability mechanisms for tracking if, and which, non-burning alternatives are used by federal, state, local, and tribal entities, and potential barriers to their implementation; and
- Development of a plan for implementing alternatives in the 15 Western states.

This analysis was supported by a three-tiered approach to research. The three tiers of sources included: (1) federal agencies such as the U.S. Department of Agriculture (USDA) and the National Agricultural Statistics Service (NASS); (2) agencies such as the University Agricultural Extension Services and state air agencies; and (3) private consortiums such as growers, producers, distributors, and information clearinghouses. The results of this project are documented in two reports under the title “Non-Burning Management Alternatives on Agricultural Lands in the Western United States,” Volume I and II.

Prescribed Fire Plan Assessment [Assessing Status of Incorporating Smoke Effects into Fire Planning and Operations](#) (8/29/02)

The predominant sources of smoke in the WRAP region typically are from fires for prescribed burns, natural wildland fires, and agricultural burns. The GCVTC recognized the need to address air quality effects from prescribed fire and managed natural fire (or wildland fire use [WFU]) because of increased use of prescribed

fire throughout the West. The GCVTC concluded that fire planning efforts should consider more thoroughly the effects of smoke on visibility, public nuisance, and the National Ambient Air Quality Standards (NAAQS) and also as required by the Environmental Protection Agency's (EPA) Regional Haze Rule.

The following sections describe a project that is one step in investigating the existing level of consideration given to smoke impacts in fire planning documents, and this was the overall purpose of the project. The project involved gathering and reviewing a number of different types of fire-related documents from a variety of agencies and tribal entities that perform or authorize controlled or natural burns, to assess the emphasis placed on smoke impacts. The project had several objectives, including:

- assess the status of federal, state, local, tribal, and private prescribed fire programs in considering smoke effects from prescribed fires and WFUs in strategic planning documents, known as programmatic plans,
- evaluate whether non-burning alternatives were considered by land managers in programmatic plans,
- assess the status of federal, state, local, tribal, and private prescribed fire programs in considering smoke effects from prescribed fires and WFUs in operational plans, including use of the Wildland Fire Situation Analysis (WFSA) by federal land managers,
- evaluate the smoke effects from implementation of operational plans for prescribed fires and WFUs, including use of WFSA by federal land managers,
- identify and summarize relevant guidance documents for agencies on consideration of air quality effects from prescribed fire and WFU in programmatic and operational plans, and
- identify and summarize relevant guidance documents for use of the WFSA process for assessing air quality effects for wildfire and WFU incidents.

Prescribed Fire is defined as a management-ignited wildland fire that burns under specified conditions where the fire is confined to a predetermined area and produces the fire behavior and fire characteristics required to attain planned fire treatment and resource management objectives.

WFU refers to the management of naturally-ignited fires to accomplish specific, pre-stated resource management objectives in predefined geographic areas that are outlined in the governing programmatic plan. Prescribed Natural Fire is another term often used to describe WFU, and both terms refer to the same concepts. WFU operational plans are only developed by Federal Land Management agencies that have approved Wildland Fire Management Plans. WFU does not apply to state or county agencies, private land managers or tribal entities.

WFSA is a decision-making process jointly established by the Federal Land Managers that evaluates alternative management strategies related to firefighter safety, environmental, social, economic, political, and resource management objectives. As such, WFSA plans only apply to wildland fires on federally managed lands. Consequently, WFSA plans were not received from state, county, private or tribal entities. The documents of interest fit into three general categories: programmatic plans, operational plans, and guidance documents. The discussion of methodology and results of the project is broken out by these categories.

FEJF Emissions Tracking & Regional Smoke Management Coordination Tools

Fire Emissions Tracking System (FETS) <http://www.wrapfets.org/>

Insert Air Sciences document: "REGIONAL HAZE RULE REQUIREMENTS AND THE FIRE EMISSIONS TRACKING SYSTEM"- here and/or at the end in FETS section

Fire Emissions Inventories

- [Emissions](#)
 - [Phase I Fire EI](#) (first draft of actual 2002 fire emissions)
 - [Phase II Fire EI](#) (final QAed actual 2002 fire emissions)
 - [Phase III/IV Fire EI](#) (2000-04 average fire and 2018 fire scenarios)
 - [InterRPO Wildfire EI](#) (alternative nationally-consistent analysis of fire emissions and lessons learned)