

FIRE EMISSIONS JOINT FORUM

***A Forum of the
Western Regional Air Partnership***

“Working to Balance Human and Ecosystem Health”



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What is the Fire Emissions Joint Forum (FEJF)?

The FEJF is a group formed under the auspices of the Western Regional Air Partnership (WRAP), which was established to implement the recommendations of the Grand Canyon Visibility Transport Commission (GCVTC report, June 1996) and to address western regional air quality issues. The WRAP is a broad stakeholder-based partnership charged with developing visibility protection programs, specifically for Federally-protected Class 1 park and wilderness areas. WRAP members include Western governors or their designees, state air quality agencies, federal/state/private land managers, tribes, the Environmental Protection Agency, environmental groups, industry, academia, and others. Several stakeholder forums have been established, including the FEJF, to assist the WRAP in

carrying out its tasks.

The FEJF is a consensus-based group working to develop solutions to the problem of fire effects on air quality and visibility. Most of the WRAP forums are either technical or policy in nature, but the FEJF is both and therefore is called a “joint” forum. The FEJF is guided by the recommendations contained in the GCVTC Final Report (1996), and the requirements of EPA’s Regional Haze Rule (July 1999), concerning smoke effects from wildland and agricultural burning activities on public and private lands in the western states. This storyline outlines the mission of the FEJF, its membership, activities, and timelines, and in general terms, the role of fire and its effects on air quality in the West. For additional information, please see the links, “The Grand Canyon Visibility Transport Commission - Recommendations for Improving Western Vistas, June 10, 1996” and the FEJF Workplan and other documents located on the WRAP website.

What is the mission of FEJF?

The FEJF’s mission is to develop programs and tools relating to prescribed fire and air quality for the WRAP and related WRAP forums. The principal client of the FEJF is the WRAP. FEJF’s workproducts will be presented to the WRAP as recommendations for WRAP approval. WRAP member states, tribes, and land managers are then expected to utilize the FEJF

1990 Clean Air Act Amendments
1991 GCVTC formed
1996 GCVTC Report to EPA
1996-7 WRAP formed
1999 Regional Haze Rule

workproducts in developing or augmenting their respective programs. These workproducts include model smoke management and public education/outreach programs and emissions assessment tools.

The FEJF is creating an important opportunity for experts and interested parties to come together to solve real problems. The *goal* of the FEJF is to find ways to successfully meet the challenge of accomplishing both fire and land management goals with respect to prescribed burning, and clean air goals. The FEJF is a logical group to address these complex issues and its members understand and appreciate the importance of finding ways to accomplish both sets of goals in a collaborative way. Creating the workproducts recommended by the GCVTC is a task that requires our best efforts in terms of creating a vision for the future and then utilizing our scientific knowledge, creativity, and consensus skills to help create it. Although thousands of people in the West are involved in fire and air quality work, the eighteen representative members of the Forum and others who participate, are committed to developing the best possible technical analyses and model programs for all the stakeholders to use in the coming years.

Who’s on the FEJF and what interests are represented?

Stakeholders representing key interests who contribute to the Forum come from federal/state/tribal air and land management agencies; private landowners, including agricultural interests; industry; environmental advocacy groups; and academia. Other stakeholders and interested people are welcome to attend and participate in the FEJF meetings and task teams. The FEJF works by

consensus in developing and forwarding its recommendations to the full WRAP.

The FEJF will focus on western states (AZ, CA, CO, ID, MT, ND, NM, NV, OR, SD, UT, WA, and WY) although information from other states and/or neighbor countries (i.e., Canada, Mexico, Alaska, Hawaii) may also be used for developing the work products as appropriate.

Who will benefit from FEJF's work?

The primary users of the workproducts of the FEJF will be air regulatory agencies, land managers, tribes, and advisers (or providers of technical assistance) to these groups. These products for the primary users are likely to be technical and comprehensive in nature (eg, analytical tools for estimating fire emissions and alternatives to burning) and will provide necessary tools and information for air quality planning, smoke management programs and fire management programs. These groups will select and use the FEJF workproducts that they need for their own programs. Other users will likely include local governments, industry, forestry, range and agricultural interests, and non-governmental organizations such as health organizations and environmental groups.

What are FEJF's tasks?

The key pollutants being addressed as contaminants in smoke from fire, as determined by the WRAP Emissions Forum, are particulate matter (PM_{2.5} and PM₁₀ - particle sizes expressed in microns), elemental and organic carbon, volatile organic compounds (VOC), sulfur oxides (SO_x), nitrogen oxides (NO_x), nitrates, and carbon monoxide (CO). These pollutants will be addressed in terms of their effect on visibility impairment and regional haze, nuisance effects, and the health-based national ambient air quality standards (NAAQS), as appropriate.



Visibility Monitoring Site

The FEJF has organized into teams to develop consensus-based workproducts that address key areas related to fire and air quality. These areas correspond to the GCVTC recommendations and Regional Haze Rule requirements. Team members include Forum and non-Forum members with special expertise. The *timeline* for completion of the work outlined below is early 2001. The key areas are:

1. Smoke Management Programs (SMPs)

The FEJF will: 1) assess the progress of current prescribed fire programs to address smoke effects; 2) assess existing smoke management programs and establish a clearinghouse of existing programs; 3) develop requirements for model basic and enhanced SMPs; and, 4) develop and recommend

cooperative funding mechanisms for cross-jurisdictional agencies to use for funding SMPs.

2. Fire Emissions/Assessment

The FEJF will: 1) gather and review pertinent information on methodologies used to estimate fire emissions; 2) present information at one (or more) workshops in order to obtain input from participants and evaluate existing information/methodologies related to fire emissions assessment; and to identify additional technical and institutional needs; 3) develop an Emissions Tracking System (ETS), and a process for states and tribes to adopt and implement an ETS; and, 4) develop annual emissions goals for all fire programs, where appropriate, for incorporation into SMPs.

3. Alternatives to Burning

The use of alternatives to burning on wildlands and agricultural lands may result in fewer atmospheric emissions. The FEJF will: 1) develop criteria (including economic and social considerations) for the use of non-burning alternatives to fire; 2) identify non-statutory (for example, bureaucratic, social, economic) administrative barriers to the use of non-burning alternatives; 3) develop accountability mechanisms for use of alternative practices; and, 4) develop implementation plans.

4. Public Education and Outreach

Education and outreach is a critical aspect of smoke management programs, especially for the public and for all of the key stakeholders. The FEJF will: 1) coordinate with and assist other FEJF teams on developing public outreach materials for their workproducts; 2) compile public education/outreach materials from stakeholder groups and agencies, synthesize these materials, and recommend model program elements for others to use; 3) create a clearinghouse of existing and new information related to FEJF topics on the FEJF/WRAP website; and, 4) create appropriate means for public involvement in the FEJF process - this will include public workshops, mail outs and website posting of draft FEJF workproducts for comment, and notifying interested parties of FEJF activities.

5. Natural Conditions

Natural visibility conditions will need to be defined for each Federal Class 1 park and wilderness area under the Regional Haze Rule. Natural conditions are defined as the level of visibility for the 20 percent most-impaired and 20 percent least-impaired days, that would exist if there were no man-made impairment. Wildland and prescribed fire, including agricultural burning, is both human caused and naturally caused. The FEJF will work with its membership, other scientists and professionals involved in this issue, and other Forums to seek a common understanding of what constitutes natural conditions with regard to fire and air quality at Class 1 areas.

GCVTC's recommendations regarding fire

The GCVTC recommended eight specific measures be developed to address the potential

impacts of fire on air quality. These measures are to be developed in a stakeholder process similar to that used by the GCVTC, now incorporated into the FEJF, and are to be adopted by these stakeholders in developing their future smoke management programs and plans. Following is a summary of the recommendations:



- 1. Plan for the visibility impacts of smoke**
- 2. Implement an emissions tracking system for all fire activities**
- 3. Improve integrated assessment of emissions**
- 4. Enhance smoke management programs**
- 5. Develop cooperative funding mechanisms**
- 6. Promote public education programs**
- 7. Establish annual emission goals for fire programs**
- 8. Remove administrative barriers to the use of alternatives to burning**

What have other agencies done to address fire and air quality?

At the Federal level, land and fire management agency directors under the Departments of Interior and Agriculture and EPA developed and adopted the **Federal Wildland Fire Management Policy and Program Review in 1995**. This federal fire policy recognized that an increase in prescribed fire was needed on public lands to: reduce the threat of wildfires after almost a century of fire suppression, reduce the risk to firefighter safety, and “allow fire to function as nearly as possible, in its natural role in maintaining healthy wildland ecosystems”.

In response to this change in Federal fire policy, and in conjunction with the promulgation of new national ambient air quality standards for particulate matter and ozone, and the 1999 national Regional Haze Rule in the works, EPA facilitated the development of the **“Interim Air Quality Policy on Wildland and Prescribed Burning (1998)”**. This was also a stakeholder process, which resulted in policy guidelines similar to the GCVTC’s recommendations on addressing smoke management issues. This policy outlined a framework for public and tribal air and land managers and private landowners to follow in developing smoke management programs. EPA plans to amend the interim policy to address agricultural burning and regional haze. The elements of this policy are incorporated into EPA’s 1999 Regional Haze Rule which requires states to adopt these measures into their existing or new smoke management programs as part of future state planning for regional haze.

These policies and the Regional Haze Rule guide the work of the FEJF with regard to wildland/silvicultural burning and smoke management development. In addition the US Department of

Agriculture and EPA are completing another stakeholder effort to develop similar guidelines for agricultural burning. These guidelines will also assist FEJF's efforts in developing smoke management recommendations for agricultural sources.

What is the role of fire in ecosystems and agriculture and what are its effects on air quality and public health?

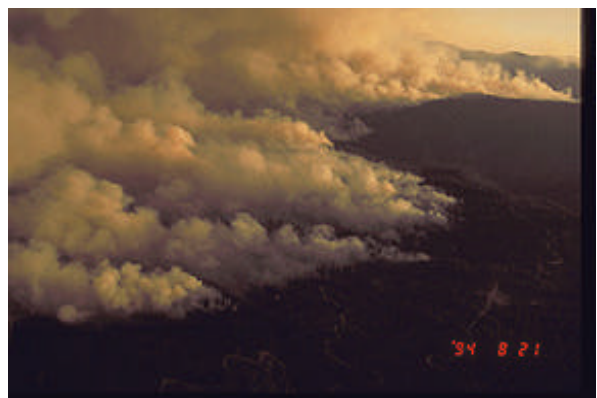
The GCVTC recognized that smoke from wildfire and prescribed burn activities can have a significant impact on visibility and regional haze, public health and public nuisance. The GCVTC also recognized the important role fire plays in maintaining the health of ecosystems and as a land management tool in many agricultural operations. The GCVTC report states,

“Fire has played a major role in the development and maintenance of most ecosystems in the West. The long-term future of the West is dependent on healthy ecosystems that are capable of sustaining natural processes and human uses.

An increase of accumulated fuels in the West has occurred because of past land management practices, including decades of fire suppression. Evident ecosystem changes include increasing tree densities, disrupted nutrient cycling, and altered forest structure. As a result, wildfires are becoming larger in size, unnaturally destructive, and more dangerous and costly to control. In 1994, wildfire burned 3.1 million acres in the West and cost \$1 billion in direct suppression costs while causing firefighter deaths and serious human health impacts. *(Since this report was issued, the acreage and costs of wildfires have been rising)*. Rectifying this problem will take years and is a basic responsibility of wise land stewardship. Fire is an essential component of most natural systems, and perpetuation of fire at a level required to maintain ecosystem processes is necessary. The natural role of fire in the wildland/urban interface must also be addressed to protect life and property. A substitute for fire and its natural role has not been found in many ecosystems. The objective of future prescribed fire programs is to cooperatively meet land management, human health, and visibility objectives.”

Land management agencies participating on the GCVTC estimated 3 million acres of prescribed burning are planned by the year 2015 and 6 million acres by the year 2040. These estimates are rough because prescribed fire programs are greatly dependent on available resources and funding. In any case, significant increases in fire on all wildlands are expected to occur, whether by prescribed fire or by uncontrolled wildfire.

Fire has not only been a natural part of ecosystems, but has also been an important management tool for as long as humans have systematically grown crops. Agricultural burning is used to stimulate new growth and trigger higher

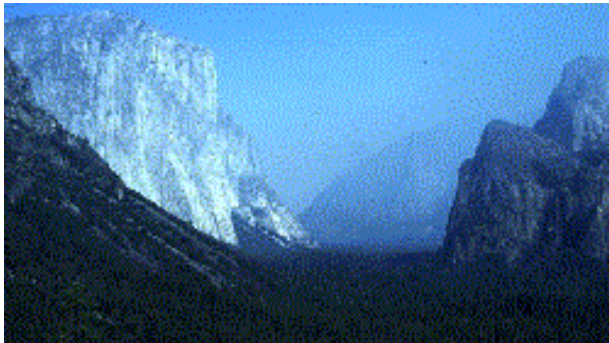


yields, control pests and weeds, reduce the need for herbicide and pesticide chemical treatments, reduce fire hazards, clear irrigation ditches and canals, and dispose of crop residue. Although some western states develop inventories of agricultural burning acreages and emissions, a regional emissions inventory currently does not exist.

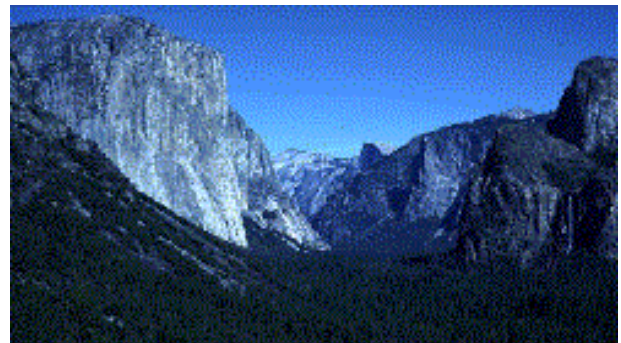
The GCVTC's recommendations focused on ways to limit increased visibility impairment from fire that could occur in the coming decades. The GCVTC's Fire Emissions Project estimated that emissions from prescribed fire (excluding agricultural), are likely to have the single greatest impact on visibility at Federal Class 1 areas through 2040. "[This] modeling indicates that, at certain times, increased visibility impairment from fire is likely to exceed the potential visibility improvements associated with other GCVTC recommendations." As an illustration, even if smoke management programs which employ optimal levels of smoke mitigation and control are implemented throughout the Grand Canyon visibility transport region, *prescribed fire's* contribution to annual visibility impairment at Hopi Point, a popular vista point at the Grand Canyon, could increase by 400% between 1995 and 2040. Granted, estimates such as these do not take into account the kinds of practical, daily decisions land and air managers make in utilizing optimal weather conditions to minimize smoke effects from prescribed burning. Nevertheless, this example illustrates that increased prescribed fire programs in the West will potentially cause greater visibility impairment at Class 1 areas (and elsewhere) than exists today.

While the GCVTC focused mainly on the long-term visibility effects of smoke, other air quality impacts from smoke have been recognized not only by the GCVTC, but by the WRAP, EPA, states, tribes, land managers, and others. These include such short and long-term effects as public nuisance during smoke events and exposure to high concentrations of harmful air contaminants like particulate matter and air toxics. Short-term, high-impact smoke episodes from wildfire and prescribed burning can produce very high concentrations of inhalable particulate matter in downwind communities and other smoke-sensitive areas such as hospitals, schools, public events, or tourist attractions. Certain populations, including children, the elderly, those suffering from asthma and other respiratory diseases are especially vulnerable. The national (and some states') ambient air quality standards (NAAQS), which are set at levels to protect the public health, can be threatened or violated at times by prescribed burning, and certainly by wildfire events. The FEJF and other agencies and groups throughout the country all recognize this threat and are combining their efforts to develop effective smoke management programs.

Yosemite Valley



On a Hazy Day



On a Clear Day