

AIR QUALITY AND SMOKE MANAGEMENT

1 Introduction

Visibility and clean air are primary natural resource values in all NPS units. The protection of these resources must be given full consideration in fire management planning and operations.

In order to minimize negative smoke effects on air resources, NPS units must comply with the regulations and standards covered in this chapter. NPS units are required to identify the effects of smoke on air resources, establish current levels of pollutants, estimate levels of pollution for different fire management actions, and identify effects on public health and enjoyment. The NPS must then identify and pursue the best measures to control or mitigate smoke emissions.

Guidance in this section should be supplemented by [Reference Manual 77 \(RM 77\): Natural Resource Management](#) (formerly [NPS 77: Natural Resource Management Guideline](#)). *RM 77* is the definitive authority for direction on all air quality issues in National Park Service areas. The Environmental Protection Agency (EPA) establishes [National Ambient Air Quality Standards](#) (NAAQS) and other air quality rules, but the federal government has delegated to the states the responsibility for planning and enforcing air management programs that meet these requirements. Therefore, all NPS units are required to comply with state regulations on these matters regardless of the type of legal jurisdiction that applies to other activities within the NPS unit. NPS units will also follow the six elements of Basic Smoke Management Practices (BSMPs) ([Natural Resources Conservation Service, 2011](#)).

Internal NPS unit programs for planning and monitoring air quality and smoke emissions must be augmented by participation in external (interagency) planning and regulatory actions where appropriate.

This chapter covers the following topics:

- Legal requirements for air quality that must be met by the fire management program.
- Directions for establishing acceptable within-unit standards.
- A statement of the need to monitor essential variables.
- Recommendations for working with state and local regulatory boards and agencies.
- Guidance on how and with whom to coordinate smoke management questions and practices.

- Reference to the Natural Resources Conservation Service's (NRCS) Basic Smoke Management Practices ([BSMP](#)).

2 Responsibilities

2.1 National Level—Air Resources Division (ARD) Coordination

When the draft fire management plan is sent to the regional office for review, smoke management portions of the plan will be sent to the Air Resources Division (ARD) for review and comment. Comments from the ARD will be returned to the regional office and will be forwarded to the NPS unit along with regional comments. The regional air quality coordinator will also review the plan's smoke management portion and comments from ARD before they are returned to the NPS unit. A copy of the air quality section(s) of the approved fire management plan will be sent to the ARD.

2.2 Regional Level

The regional office air quality coordinator or a representative from the NPS unit may be the agency representative for the development of interagency or regional smoke management plans. When a decision is made to develop an interagency or regional plan, the agency representative will inform the ARD and the NPS Branch of Wildland Fire Management, and an agreement will be reached on the degree of their subsequent involvement. An agreement should also be reached between the NPS unit and regional director's office on the extent of involvement for each.

2.3 Park Level

In addition to the effects of smoke on health and safety, effects on the visual resource must also be considered. Many NPS units were established and are visited because of their scenic views.

Fire, and therefore smoke, is a natural process, but the presence of chronic or severe episodes of smoke may unacceptably impinge upon the NPS unit's visual resources, visitors, or employees.

Each NPS unit is required to develop methods to manage smoke from prescribed fires and, to the extent possible, wild fires. Air quality management objectives must be set, and prescriptions and techniques must be developed to meet these objectives. These objectives should appear in all project implementation plans.

In some areas, local or state air quality offices may have already established visibility standards or smoke management programs and requirements. Smoke management should be discussed with the appropriate local or state air quality office and the regional air quality coordinator.

Park fire management planning and implementation documents should identify the key vistas and smoke sensitive areas (highways, campgrounds, developments) for which smoke management objectives will be created. Key scenic vistas can be defined by park staff or the Air Resources Division can offer assistance in assessing park visual resources or designing visitor surveys.

Air quality management objectives must be quantifiable and measurable at designated points in the NPS unit. Objectives could include avoiding impacts on popular scenic vistas, maintenance of acceptable visual range, allowable loss of detail or clarity of a key feature, the number of consecutive days in which the visual range is attenuated below the acceptable standard, consecutive nights with the odor of smoke in a developed area, or maintenance of acceptable visibility on highways.

The techniques and prescribed conditions used to achieve smoke management objectives should be defined in a fashion similar to the way techniques and burning prescriptions are defined for achievement of fire management objectives. Critical mixing heights, transport wind speeds, and wind directions should be stated. Smoke management techniques should include an appropriate combination of dilution of particulate matter, avoidance of targets, and emission reduction. The Smoke Management Guide for Prescribed Fire 2018 ([NWCG PMS 402-2](#)) provides information on smoke management techniques, while RX-410 Smoke Management Course provides instruction in these techniques. Fire management and prescribed burn plans may define actions taken to minimize emissions. These actions should be discussed with the appropriate local or state air quality regulatory office and the regional office air quality coordinator.

The smoke management sections of the fire management plan must describe personnel and methods to be used to monitor and measure the degree to which objectives have been met. The presence or absence of prescribed conditions for smoke management will also be recorded.

Decision support tools and prescribed fire plans will describe holding actions and smoke mitigation measures that may be used to keep the fire within prescription for air quality objectives. For example, the following actions may be specified:

- Using firing crews to ignite smoldering fuels so that the fuels burn with flaming rather than with glowing combustion.
- Constructing fire lines to halt fire spread.

- Mopping up smoldering heavy fuels until conditions improve for smoke dispersion.
- Using hose lays and pumps to wet fuels to extinguish all or a portion of the fire front.
- Evaluate smoke dispersion conditions.
- Consider and use where appropriate emission reduction techniques. (NWCG PMS420-2)
- Coordinate with other federal land managers during the planning and execution of planned burns.
- Notify the public of burn projects, especially sensitive receptors.

All such actions must be approved by the superintendent as part of a decision support tool or prescribed burn plan.

Some wildland fires can be reasonably expected to significantly affect air quality in and around the NPS unit. Large wildland fires may affect the number of burning permits that can be issued by the air regulatory agency and may therefore affect the fire management accomplishments of neighboring land management agencies.

3 Legal Authorities

3.1 General Authorities for Air Resource Management

There are several Congressional Acts that relate to the National Park Service's general authority to manage air resources of national park units. These include the [NPS Organic Act of 1916](#), the [National Environmental Policy Act of 1969](#), the [Wilderness Act of 1964](#), and other statutes. These laws, together with the parks' enabling legislation and legislative histories, collectively provide the NPS with opportunities to manage air resources and protect other park resources and values that are dependent upon air quality.

3.2 The Clean Air Act (42 United States Code (USC) 7401 et seq.)

The most explicit legislation pertaining to NPS air resource management is the [Clean Air Act](#), as amended, which defines the authority and duty of the National Park Service to protect park resources from air-pollution-related adverse effects. The Clean Air Act establishes specific air quality management programs that provide special protection for many national parks and NPS wilderness areas.

Sections 160 through 169 of the Act establish a program to Prevent Significant Deterioration (PSD) of air quality in "clean air areas" of the country. (i.e., attainment areas), which include many national park units. Among the purposes of the PSD program are "to preserve, protect and enhance air quality in national parks, monuments, national seashores, and other areas of special national or regional natural, recreational, scenic or historic value."

The PSD program establishes an area classification scheme, which determines the level of air quality protection afforded these clean air areas. All PSD areas were initially classified as Class I or Class II areas. Class I areas, which include 48 national park units, receive the highest degree of protection. In addition to such protections related to industrial permitting Congress also provided visibility protection for Class I areas in Section 169A of the Clean Air Act, which specifies a national goal of "remediating any existing and preventing any future manmade visibility impairment" in these areas. National Ambient Air Quality Standards have been established to protect human health and welfare for six air pollutants: sulfur dioxide, nitrogen oxide, carbon monoxide, ozone, particulate matter, and lead. Smoke from wildland fire can contribute to elevated levels of these pollutants, exceedances of the health standards, and impaired visibility.

For NPS units within or near a non-attainment or maintenance areas (i.e., an area violating a NAAQS), there may be additional restrictions imposed by state or local air authorities to ensure fire management activities do not interfere with attainment of the appropriate ambient standard. For example, ambient standards for fine particulate matter smaller than 2.5 microns (PM-2.5) could significantly affect management of smoke from wildland fires because a large fraction (up to 90%) of smoke particles are smaller than 2.5 microns. These small particles also have significant effects on visibility. EPA regulations provides states with the ability to demonstrate that sources of particulate matter or ozone precursors that are not controllable like dust storms or wildfire contributed to measured concentrations above a NAAQS. It is also possible for such a demonstration to be made for prescribed fire in some limited cases. It is then good practice for fire management programs to keep records of how burn prescriptions were carried out to assist states in such demonstrations.

3.3 NPS Compliance Responsibilities

NPS fire management activities that result in the discharge of air pollutants (e.g., smoke, carbon monoxide, and other pollutants from fires) are subject to, and must comply with, all applicable federal, state, interstate, and local air pollution control requirements, as specified by Section 118 of the Clean Air Act, as amended (42 USC 7418). These requirements are the same substantive, procedural, and administrative requirements that apply to a private person or other non-governmental entity.

All NPS units, including those with exclusive jurisdiction, are required to comply with the [National Ambient Air Quality Standards](#) (NAAQS) both inside and outside unit boundaries, obtain necessary permits for prescribed fires, and protect visibility in congressionally mandated Class I areas. These and other potential requirements are discussed further in this section and in more detail in the Air Quality chapter of *RM 77*.

The [Clean Air Act](#) (Section 176(C) (1)) requires that federal actions must conform to a state, tribal, or federal implementation plan (SIP, TIP or FIP). The intent of the General Conformity Rule is to prevent the air quality impacts of federal actions from causing or contributing to a violation of the National Ambient Air Quality Standards (NAAQS) or interfering with the purpose of a SIP/TIP/FIP. Under these regulations federal action is defined as: 1) actions taken by federal agency itself, and 2) actions of non-federal entities that the federal agency approves funds, licenses, or permits.

There may be additional state and/or local air quality rules and regulations that must also be complied with if the jurisdictional boundaries of these agencies include lands managed by the NPS or lands that may be affected by activities occurring on NPS lands.

Such additional requirements may be procedural or substantive and may include the following:

- State or local ambient air quality standards more stringent than the NAAQS.
- Protection of state-identified scenic views that may or may not be associated with NPS areas.
- Possible quantitative standards for protection of visibility in Class I areas, such as specified minimum acceptable levels of visual range or contrast.
- Review and/or approval of smoke management aspects of fire management plans.

Compliance with these requirements may necessitate the use of computer simulation models or instrument monitoring in the field, as specified by the regulatory authority.

An additional concern is whether smoke emissions from prescribed fires are considered to be "natural" or "manmade" emissions. At present, there is no national policy on this issue with respect to planned ignitions.

Failure to comply with any applicable requirements, such as open burning permit requirements, could subject the NPS to fines or other sanctions.

3.4 Intra-agency and Interagency Coordination

A good working relationship within the NPS and between the NPS and interstate, state, and local air quality officials and neighboring land management agencies should help assure that both air quality and fire management objectives are met with the least amount of conflict.

3.4.1 State Agency Coordination

Coordination with the state is required during the development of fire management plans. NPS unit staff may want to first consult with the regional air quality coordinator on the proper procedures for coordination with the state or states in which the NPS unit is located.

The regional air quality coordinator may handle the coordination activities with the state or may recommend that the NPS unit staff work directly with the state. For multi-state air quality management activities, regional air quality coordinators or national program staff will represent NPS. If more than one NPS unit with fire management concerns is located in a state, it may be advantageous for each NPS unit to coordinate with local representatives of the state agency while the regional air quality coordinator maintains coordination with the central state office. In states where more than one state agency is involved—for example, one for smoke management and one for air quality—it is important that there be adequate coordination with each.

Following initial consultation with the state agency, procedures for compliance with state air quality regulations should be drafted for the fire management plan. A copy of the draft procedures should be supplied to the state agency for review prior to approval of the fire management plan.

The NPS unit should continue to coordinate with the state during implementation of the fire management plan to ensure compliance with state regulations. It may be helpful to invite selected state air quality officials to visit the NPS unit when a prescribed fire or wildfire is in progress.

In some states a memorandum of understanding with the state may be appropriate. Such memoranda should clearly specify any procedural and substantive requirements that must be met by the NPS in conducting its fire management programs. Assistance in writing such agreements may be sought from the regional office and the regional solicitor, and should include consultation with the NPS Air Resources Division.

When an NPS unit is notified by the state or local air agency that an air pollution violation has occurred due to the NPS unit's fire activities, the NPS unit will work with the state, as necessary, to investigate and verify the cause of the violation. If appropriate, the NPS unit will provide the air agency with a compliance plan and schedule. The regional office air quality coordinator should be notified, and the NPS Air Resources Division should be contacted if technical assistance is required.

3.4.2 Public Coordination

Educating the public on the values of both clean air and the natural process of fire is important for increasing public understanding and support of NPS unit fire management programs. Interpretation at the NPS unit is the primary method for providing this education. The public should be aware that the NPS is striving to protect air resources in the unit from human-caused sources of impairment while allowing the natural process of fire and smoke to proceed to the fullest extent possible.

Shortly before prescribed fires are anticipated and during the management of wildfires, information will be made available to state contacts, NPS unit visitors, local citizenry, and the press about what is happening in the NPS unit. On-site information can also be used to alleviate visitor concerns about the apparent impacts to NPS unit resources by fire or impairment of views due to temporary smoke.

Exhibit 1



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Briefing Paper

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Topic: Fire Manager and Air Quality Regulator Coordination

Background:

New direction in federal wildland fire policy (*Guidance for Implementation of Federal Wildland Fire Management Policy, February, 2009*) changes the terminology for describing wildland fires and allows for greater flexibility in managing them. Under the new guidance, wildland fires are categorized into two types: wildfires and prescribed fires. All unplanned ignitions are referred to as wildfires, including events formally termed wildland fire use (WFU) fires. In addition, escaped prescribed fires may be declared wildfires by a federal fire manager. Any wildland fire may be concurrently managed for one or more objectives and those objectives can change as the fire spreads across the landscape. Objectives are affected by changes in fuels, weather, and topography; varying social understanding and tolerance; and involvement of other governmental jurisdictions having different missions or objectives. This briefing paper reiterates that when exercising our wildland fire management authority and when considering our objectives we need to evaluate the ramifications of state and local air quality requirements respecting smoke management, which requirements may lag behind our evolving federal terminology and policies.

Many state and local air quality regulators continue to use the term WFU and require a burn plan for WFU fires, and under some rules WFU fires have the same permitting requirements as prescribed fires. Because the term wildfire now includes those unplanned ignitions that were formally termed WFU, as well as escaped prescribed fires, and due to the greater federal flexibility in managing wildfires, we are concerned about the increased potential for friction with state and local air quality regulators and their smoke management requirements. This briefing paper provides information and suggestions to help avoid such friction. There may be instances in which we cannot avoid a disagreement that may result in an air quality regulator seeking judicial or administrative sanctions against a park for not following a directive to mitigate smoke impacts while managing a wildfire. This briefing paper also provides information and suggestions to assist in those situations.

Key Issues:

Are park-managed wildfires subject to state and local requirements respecting the control and abatement of air pollution, such as smoke management requirements?

Yes, the Clean Air Act (CAA) requires federal agencies to comply with state and local requirements respecting the control and abatement of air pollution as if they are nongovernmental entities. For example, CAA Section 118(a) states in part that each "department, agency, and instrumentality of the executive, legislative, and judicial branches of the federal government (1) having jurisdiction over any property or facility, or (2) engaged in any activity resulting, or which may result, in the discharge of air pollutants, and each officer, agent, or employee thereof, shall be subject to, and comply with, all federal, state, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of air pollution in the same manner, and to the same extent as any nongovernmental entity." In addition, Executive Order 12088, *Federal compliance with pollution control standards* (Oct. 13, 1978) calls on executive agencies to cooperate with the U.S. Environmental

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Exhibit 1

Protection Agency (EPA) and state, interstate, and local agencies in the prevention, control, and abatement of environmental pollution, and to consult with them on the best techniques and methods available.

In the event of a potential disagreement between the objectives of a federal fire manager and a state or local air quality regulator, the fire manager should consider Executive Order 13132, *Federalism* (Aug. 4, 1999), which states that “when an agency foresees the possibility of a conflict between State law and Federally protected interests within its area of regulatory responsibility, the agency shall consult, to the extent practicable, with appropriate state and local officials in an effort to avoid such a conflict.” Further, the fire manager should keep in mind the Administration’s general policy, stated in the White House Memorandum on Preemption (May 20, 2009), that “preemption of state and local law should be undertaken only with full consideration of the legitimate prerogatives of the states and with sufficient legal basis for preemption.”

Because CAA Section 118(a) *expressly* makes state and local requirements respecting the control and abatement of air pollution applicable to executive agencies, it is particularly important for Park Superintendents and fire managers to seek to avoid conflict with state and local air quality regulators on fire management issues, and to refer any questions regarding federal preemption of state and local air quality requirements to the Regional Solicitor. While Executive Order 12088, Executive Order 13132, and the White House Memorandum on Preemption call on federal agencies to comply with environmental laws and to cooperate with state and local agencies, they *do not* create any right or benefit, substantive or procedural, enforceable at law by any party against the United States, its agencies, its officers, or any person.

What should a Park Superintendent do if a state or local air quality regulator wants to limit the growth of a wildfire even though suppression would pose excessive risk to firefighter health or safety, or would be inconsistent with an approved planning document that indicates the longer-term resource benefits would outweigh the shorter-term air quality degradation?

The first priority in every fire management activity is firefighter and public safety. Consideration of mitigation measures to curtail smoke impacts is an important factor in wildfire planning, however, not at the cost of human safety. If coordination and communication are at all times maintained between the federal fire manager and the state or local air quality regulator, we feel confident that the air quality regulator will not request suppression of a wildfire if it is made clear to them that firefighters would be exposed to inappropriate risk.

Prepare contingency plans ahead of time, consider sharing them with state and local air quality regulators and, and consider including them in management action points (MAPs) for worst case scenarios (e.g., weather events leading to poor air quality). Waiting until the last moment only leads to frustration and the breakdown of trust between parties. Fire managers will use a decision support process to guide and document wildfire management decisions. The process will provide situational assessment, analyze hazards and risk, define implementation actions, and document decisions and rationales for those decisions. Once an air quality regulator wants to change for smoke management purposes how a fire is being managed by the park, all subsequent communication and decisions, and the social, economic, and other policy concerns weighing in favor and against the park’s decisions, need to be documented. These policy concerns may include (but are not limited to) firefighter and public health and safety; environmental impacts (e.g., air quality impacts, resource benefits, and protection of private

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property); and economic considerations (e.g., fire suppression costs). The protection of human life is the single, overriding priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be done based on the values to be protected, human health and safety, and the costs of protection.

When federal fire managers have addressed the respective policy concerns the courts have typically been reluctant to “second-guess” their administrative decisions and denied civil tort claims. That judicial deference has enabled federal fire management policy to evolve. Park Superintendents and fire managers should take care to preserve their discretion by demonstrating their consideration of such policy issues.

What should a Park Superintendent do if he or she receives a notice of violation by a state or local air quality regulator for non-compliance with a directive to suppress a wildfire or to take some other action?

Coordination and communication with state and local air quality regulators presents the best opportunity to prevent a notice of violation (NOV). Notwithstanding best efforts, a Park Superintendent may receive a NOV for smoke impact, and if this occurs the first step is to contact the Regional Solicitor. Although the CAA requires the United States and its officers, agents, and employees to comply with state and local requirements respecting the control and abatement air pollution, they may not be legally obligated to pay civil penalties for non-compliance. Therefore, a Park Superintendent must not pay any such penalties or enter into settlement negotiations over a NOV unless and until she or he consults with and obtains concurrence by the Solicitor’s Office, which may in turn be required to consult with the U.S. Department of Justice. Even when the Solicitor’s Office recommends payment or settlement of a NOV, legal review is needed in particular to address how any documents or agreements describe matters such as federal liability and sovereign immunity.

Recommendations for Fire Managers:

Understand: It is the air quality regulator’s mission to protect the public health, and that includes oversight of smoke impacts. Fire operation is the responsibility of fire mangers with oversight from the Park Superintendent. Fire managers should actively educate themselves, and seek out opportunities to be educated by, air quality regulators on the various requirements that influence state and local air quality regulators’ actions, including the National Ambient Air Quality Standards (NAAQS) and the EPA’s policies regarding treatment of air quality data influenced by wildfire exceptional events. This will help fire managers to better understand what state and local governments are faced with in a wildfire smoke situation. Fire managers should also actively seek out opportunities to educate state and local air quality regulators on federal wildland fire policy to help them understand what fire managers are faced with in managing a wildfire. This mutual gathering and sharing of information along with discussing issues will help when the crisis situation of an actual wildfire occurs. Once an air quality regulator requests a mitigation action to alter smoke impacts in a particular area, it is necessary to discuss with them the strategic and tactical options available to comply. It is also critical to get in writing any action(s) requested by state or local air regulators pertaining to management of the fire. Any actions undertaken must be able to be accomplished safely and be based on the relevant policy considerations.

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Inform: Notifying state or local air quality regulators of all wildfire starts is imperative, for coordinating with air quality regulators is a critical step in managing air as a resource while achieving land management objectives. Keeping them informed as a fire progresses is also an important element of keeping communication channels open. Use open and simple dialogue to inform everybody on fire management action; do not overwhelm your audience with fire jargon just tell the story of what you are doing, why you are taking the actions, and how it is being done.

Involve: Fire managers should include coordination with air quality regulators as part of the decision process when reviewing the ecological, social, political, and economic considerations of how to manage a fire. This outreach to air quality regulators, both prior to and during incidents, should include ongoing education of the ecological benefits of letting wildfires burn in certain situations. When reviewing approved planning documents (e.g., Fire Management Plan (FMP) and National Environmental Policy Act (NEPA) documentation), the stakeholder involvement of air quality regulators is imperative. The short-term air quality impacts and fire management objectives should be weighed along with the long-term goals and consequences. In ecological communities with burnable vegetation in a fire adapted system, "no fire" is not an option so fire managers and air quality regulators need to plan for fire on the landscape. Fire planning should address acceptable temporal and spatial impacts from smoke while avoiding NAAQS violations or jeopardizing firefighter and public safety. A decision by a fire manager and Park Superintendent not to hold or check a fire based on the long-term ecological benefits could result in a NOV from the air quality regulator.

Communicate: Social, political, and regulatory pressures can challenge fire operations; however, these obstacles are manageable with public outreach, open dialogue, and sound science. Periodically update air quality regulators of the strategic and tactical options available to fire managers during the course of the fire, because this will provide useful context if smoke impacts become a concern. Taking time to advise air quality regulators of the complexities of the current fire strategies and tactics -- in terms they can relate to -- will go a long way in helping them understand the decisions made by the fire manager and Park Superintendent. This understanding will also help when air quality regulators respond to nuisance smoke complaints by being able to talk about the specific management actions occurring on the wildfire. While it is advantageous to engage in open dialogue, clearly documenting conversations, actions, and decisions is essential. These documents will aid in any post analysis, and provide a clear picture of the actions taken.

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