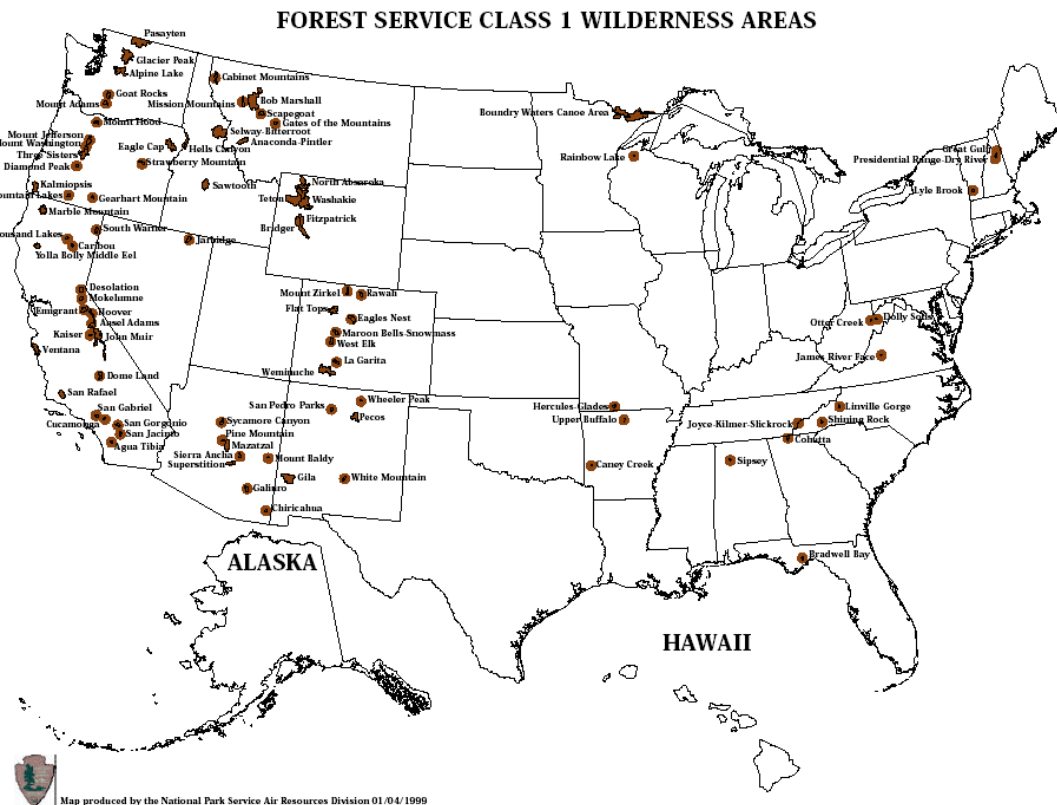


# Visibility Management in the USDA Forest Service: A Strategy

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**Introduction.** The USDA Forest Service (USDA/FS) has, as a requirement under the Clean Air Act, the affirmative responsibility to protect visibility from the adverse effects of human-caused air pollution. Moreover the agency must join other agencies and states in striving to meet National Visibility Goal (NVG) of preventing any future, and remedying any existing, anthropogenic visibility impairment in mandatory Class I federal areas.

The means by which this requirement and this goal are met involves extensive atmospheric monitoring, modeling and data analyses together with a close and effective working relationship with many stakeholders, especially the states .



Within the next few years, each state must develop an approved state implementation plan that describes in detail and with precision how the haze that affects most every class I area will be permanently mitigated over the course of the next ten years. The continuing objective is to stay on a glide path of declining emissions until by the year 2064, a natural background visibility condition will have been reached in all class I areas.

**New Source Review (NSR).** A more immediate visibility management program is the source by source review of emissions from proposed major stationary facilities. Each proposed new source must demonstrate that alone and in combination with other permitted sources that visibility in class I areas will not be adversely affected during construction and after it begins operating. The federal land managers have developed a guideline to aide states and proponents estimate the potential visibility effect of proposed sources. This guideline has the acronym of "FLAG".

**Regional Planning Organizations (RPOs).** Collections of states have been identified by the US Environmental Protection Agency (USEPA) to work together to develop strategies for reaching the NVG in 2064. Industry, advocacy groups and federal land managers are also members of each of these five RPOs. Basic elements of the RPO work includes assembling baseline emission inventories for 2002 and

projecting inventories for 2018 and, later, successive years on the way to 2064. The effect that these inventories will have on air quality and visibility are estimated using dynamic meteorological and air quality models.



RPOs are state air agencies, federal land managers, industry and advocacy groups working together to develop strategies for reaching a natural background visibility condition in all class I areas by 2064.

Key to the (USDA/FS) in the RPO process are two concerns:

1. Will the 86 class I areas managed by the agency, each of which has visibility impairment, see steady improvement throughout the first two thirds of the century?
2. Can smoke-generating fuels management activities on public lands occur at the same time that visibility must improve in class I areas?

**Monitoring.** Key to achieving the objectives of NSR and the RPO processes is continuous monitoring visibility in or near class I areas. IMPROVE (Interagency Monitoring of Protected Visual Environments) is the cornerstone program that characterizes the types of aerosol pollutants that cause visibility reduction. USEPA pays for the equipment and analyses at these sites; the USDA/FS operates the sites. Additionally, the USDA/FS operates several optical devices nationwide that measure light loss properties to help corroborate the aerosol measurements. To capture for the citizen and the decision-maker, just what the varying visibility conditions look like from important vistas near class I areas, cameras, some web-based, are operated. About 80 vistas have been documented by cameras.



IMPROVE aerosol monitoring shelter near the Absaroka Wilderness in Wyoming. Each of the four stacks on the roof draws in air to one of four filter cassettes. Samples are collected for a 24 hour period. A new sample is taken every third day.

**Forest Fire Smoke Management.** Smoke from wildland fire is a natural and historic part of the American landscape. In contemporary times, techniques are available to “manage” some fires so that smoke production is low or more readily dispersed away from class I and populated areas. Regulators and land managers have agreed that smoke from planned fires can and should be managed sufficiently not to contribute to visibility impairment or threaten human health. Smoke from wildfires and native American ceremonial fires are part of the natural visibility landscape.

**Community Collaboration.** Citizens living in and near the wildland urban interface often use wood fuels for residential space heating. The USDA/FS is beginning a new program with the USEPA and wood stove vendors to encourage low income Americans to trade-in their old inefficient wood stoves for state of the science high efficiency low emission wood stoves. The benefits will be healthier communities and a small but symbolically important improvement in visibility. This program will also make it easier to identify smoke from wildfires, forest management activities, and commercial sources.



The USDA/FS operates many portable realtime web-based smoke monitors. Fire managers use the monitors to better manage their smoke. Monitors are often placed at locations where people are sensitive to smoke

#### **A Strategy for the USDA/FS Meeting Visibility Management Obligations in a Constrained Federal Budget.**

1. *Our highest priority is to continue operating assigned IMPROVE aerosol samplers.*
2. *Currently installed optical devices (transmissometers and nephelometers), all of which are maintained and operated by the USDA/FS, will be evaluated each year for their relevance. If no statistically significant permanent change in measured values occurs for three years at a site occur and no changes in air pollution emissions are anticipated, we will consider retiring it.*
3. *New optical sites may be installed if a significant change in visual air quality is anticipated or has been documented visually on the aerosol samplers.*
4. *Web-based cameras and web-accessible historic pictures continue to pay dividends by informing the citizen and the decision-makers about visibility impairment. We will seek opportunities to install such devices when local managers ask for them and to continue the operation of existing web cameras. Non-web cameras will be retired after three to five years of data collection if no significant trends or events occur.*
5. *Smoke monitoring in concert with smoke modeling will continue to be used to manage prescribed and wildland use fires to aide in reducing the impact of smoke on visibility in class I areas and at other sensitive receptors.*
6. *Additional aerosol samplers mayl be installed where an air pollution threat to the national forests has emerged.*
7. *Partners will be sought to help continue operating all sites especially as appropriated funding becomes more scarce.*

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- clean air is essential; and
- science is a foundation for taking action.

**The Mission of the Air Program is to provide sound counsel on air quality issues to Forest Service decision makers.**