

**VISIBILITY PROTECTION PLAN FOR CLASS I AREAS  
(OAR 340-200-0040 , Section 5.2)**

**5.2 What Is Visibility?**

**5.3 Introduction**

5.3.1 Definitions

**5.4 Mandatory Class I Areas**

5.4.1 Areas Redesignated to Class I

**5.5 History of Visibility Impairment in Oregon Class I Areas**

**5.6 Visibility Monitoring Network**

**5.7 Procedures For Review, Coordination and Consultation**

5.7.1 Annual Visibility Advisory Committee Meetings

5.7.2 Periodic Plan Review and Assessment

5.7.3 Other Meetings

**5.8 Control Strategies**

5.8.1 Short-Term Strategy

5.8.1.1 Overview

5.8.1.2 Willamette Valley Open Field Burning  
Reduction in Acreage Allowed to be Burned  
Restrictions on Weekend Burning  
Encourage Early Season Burning (July)  
Smoke Management Improvement  
Improve Burning Methods

5.8.1.3 Jefferson County Open Field Burning

5.8.1.4 Union County Open Field Burning

5.8.1.5 Prescribed Burning  
Smoke Sensitive Areas  
Encourage Spring and Fall Burning  
Naturally-ignited Prescribed Fire

5.8.2 Long-Term Strategy

5.8.2.1 Overview

5.8.2.2 New Source Review Visibility Protection

5.8.2.3 Willamette Valley Open Field Burning

5.8.2.4 Prescribed Burning

5.8.2.5 Emission Reductions Due to On-Going Control Programs

5.8.2.6 Maintenance of Control Equipment

**5.9 Protection of Integral Vistas**

**5.10 Best Available Retrofit Technology**

**5.11 Interstate Visibility Protection**

**Tables**

1. Wilderness and National Park Lands Protected Under the Plan

**Appendices**

- A. Oregon Department of Agriculture Field Burning Rules (OAR 603-077)
- B. Prescribed Burning Smoke Management Directive 1-4-1-601
- C. New Source Review Rules (OAR 340 Division 224)
- D. Jefferson County Ordinance
- E. Union County Ordinance

(Note: Appendices A thru E are available upon request)

## **5.2 What is "Visibility"?**

Although the term "visibility" has a simple meaning, it is a difficult phenomenon to measure in scientific terms. Visibility relates to human perception of the environment and includes color, the contrast of viewed objects against the background sky, the clarity of the atmosphere, and psychological interpretation of the person viewing the scene. Visibility impairment is caused by the presence of particles and gases in the air which either absorb or scatter light. Even under the best conditions, there is some "natural" light scattering that occurs that limits visibility. The degree to which absorption and scattering affects visibility is referred to as "light extinction". Light extinction can vary as a function of sun angle and cloud cover, and can be affected by relative humidity. In addition, natural impairment of visibility is caused by clouds, fog, rain and snow.

## **5.3 Introduction**

Sections 169A and 169B of the Clean Air Act contain requirements for states to protect and improve visibility in national parks and wilderness areas in the country. In 1977 Congress designated certain national parks and wilderness areas as "mandatory Class I federal areas", where visibility was identified as an important value. Currently in the United States there are 156 of these Class I areas, including 47 national parks, 108 wilderness areas, and one international park.

Oregon has 12 Class I areas, including Crater Lake National Park and 11 wilderness areas. These areas are listed in Table I. The importance and value of Oregon's Class I areas lie not only in the intrinsic value of their beauty but also in their importance to tourism in Oregon. They are also valuable as a recreational resource for Oregon residents.

The 1977 Clean Air Act Amendments set forth a national goal for visibility that called for "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". The Act mandated that the U.S. Environmental Protection Agency (EPA) develop regulations to ensure that meaningful progress is made towards achieving this goal. These regulations took two forms – the first addressed visibility impairment that is "reasonably attributable" to one or a small group of man-made sources generally located in close proximity to a specific Class I area – the second addressed "regional haze", which is visibility impairment caused by a multitude of sources and activities located across a broad geographic area. In 1980, EPA adopted Phase I rules to address reasonably attributable visibility impairment. These rules required States to conduct visibility monitoring in Class I areas and revise their State Implementation Plans (SIPs) to establish long-term strategies for making reasonable progress toward the national goal, apply if necessary Best Available Retrofit Technology (BART) to existing stationary sources impairing visibility, and evaluate visibility impacts of new or modified major stationary sources. In 1990, Amendments to the Clean Air Act focused attention on developing better technical tools and increasing scientific understanding of regional haze, and called for EPA to move forward with a national program for addressing this problem. EPA adopted Phase II rules on regional haze in July 1999.

In response to EPA's Phase I visibility rules, the Department adopted the Oregon Visibility Protection Plan in October 1986, as a revision to the Oregon SIP. Referred to herein as the Plan, it represents Oregon's commitment to addressing reasonably attributable impairment in the state's Class I areas through visibility monitoring, control strategies to remedy existing impairment and ensure future visibility protection, periodic plan review, coordination and consultation. The Plan was developed in consultation with Federal Land Managers, the Oregon Visibility Advisory Committee, the Oregon Department of Forestry, the Oregon Seed Council and other groups.

The Plan provides for the protection of the mandatory federal Class I areas based on rules promulgated by EPA on November 30, 1979 and incorporated in OAR 340-204-0050. The Plan has been developed in response to the requirements of Section 169 (A)(a)(4) of the Clean Air Act of 1990.

The Plan is directed at (a) the protection of visibility within Oregon's Class I areas, (b) the mitigation of visibility impairment within the Mt. Hood and Central Oregon Cascade wilderness areas through short and long-term control strategies for forest prescribed burning and Willamette Valley agricultural field burning and (c) mitigation of impairment in the Eagle Cap Wilderness and Central Oregon Cascades resulting from agricultural field burning. Visibility protection for all of Oregon's Class I areas is administered under the provisions of numerous regulations including the Prevention of Significant Deterioration, New Source Review rules and the USDA Forest Service forest planning process.

### **5.3.1 Definitions**

Definitions applicable to this section of the SIP are listed below:

"Best Available Technology (BAT)" means an emission reduction technique which will provide the maximum degree of reduction in air contaminant emissions, taking into account energy, environmental and economic impacts, compatibility with other Federal Land Manager practices and other costs, as determined on a case-by-case basis. BAT technologies applicable to prescribed burning include, but are not limited to, accelerated mopup, rapid ignition techniques, burning during optimum emission-reduction fuel moisture conditions, utilization of residues in lieu of burning and the reduction of emissions in lieu of broadcast or pile burning.

"Best Available Retrofit Technology (BART)" means an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by an existing stationary facility. The emission limitation must be established on a case-by-case basis, taking into consideration the technology available, the cost of compliance, the energy and nonair quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

"Class I Areas" are those mandatory federal Class I areas and any state redesignated

Class I areas within which visibility has been identified as an important resource.

"Integral Vistas" means a view perceived from within the mandatory federal Class I area of a specific landmark or panorama located outside the boundary of the mandatory Class I area.

"Federal Land Manager (FLM)" means the Secretary of the Department with authority over a given Federal Class I area. The FLM for the Department of the Interior is the Assistant Secretary for Fish and Wildlife and Parks; the FLM for the Department of Agriculture is the Forest Service, through the Regional Forester or individual Forest Supervisor.

"Mandatory Federal Class I Area" means certain national parks and wilderness areas over 6,000 acres and 5,000 acres respectively, established by Congress, where visibility has been determined to be an important value. These areas are subject to the visibility protection requirements identified in Section 169 of the Clean Air Act. Oregon's mandatory federal Class I areas are listed in 340-204-0050.

"Manmade Air Pollution" is pollution that results directly or indirectly from human activities.

"Meteorological Impairment" occurs during time periods in which hydrometeors (e.g., fog, rain, clouds, snow or sleet) impair visibility within a Class I area.

"Natural Conditions" includes naturally occurring phenomena that reduce visibility as measured in terms of visual range, contrast or coloration. These phenomenon include fog, clouds, wind blown dust, rain, sand, naturally ignited wildfires and natural aerosols.

"Naturally-ignited Prescribed Fire" means fire ignited by natural sources (lightning, volcanoes, etc.) within any federally managed lands which are permitted to burn within predetermined conditions outlined in the Land Manager's fire management plan.

"New Source Review (NSR)" is a regulatory procedure for reviewing the air quality and visibility impacts from a new stationary (industrial) source or a modification of an existing stationary source where the new emissions are "significant" (see definition of "significant emission rate" under OAR 340-200-0020). Included in the NSR regulations is a requirement that no new major source or major modification cause or contribute to significant impairment of visibility in any Class I area. See definition of "significant impairment" below.

"Plume Blight" means visibility impairment caused by a distinct and coherent plume.

"Prescribed Burning" means the controlled application of fire to wildland fuels in either their natural or modified state, under such conditions of weather, fuel and soil moisture, as allows the fire to be confined to a predetermined area while producing the intensity of heat and rate of fire spread required to meet planned objectives including silviculture, wildlife habitat management, grazing and fire hazard reduction.

"Reasonably Attributable" means visibility impairment in a Class I area caused by

emissions from one or a small group of sources generally located in close proximity to the Class I area.

"Regional Haze" means visibility impairment in one or several Class I areas caused by emissions from numerous sources located over a wide geographic area.

"Significant Impairment" occurs when, in the judgement of the Department, visibility impairment interferes with the management, protection, preservation or enjoyment of a visitor's visual experience within a Class I area. See OAR 340-225-0700 for visibility requirements for new and modified major stationary sources. The determination must be made on a case-by-case basis considering the recommendations of the Federal Land Manager, the geographic extent, intensity, duration, frequency and time of visibility impairment. These factors will be considered with respect to visitor use of the Class I areas and the frequency and the occurrence of natural conditions that reduce visibility.

"Smoke Sensitive Area" means, for purposes of visibility protection, certain Class I areas that are protected from summertime smoke impacts caused by prescribed burning under the Oregon Department of Forestry Smoke Management Program.

"Visibility Advisory Committee" means a group of State and Federal Land Managers, forestry, agricultural, environmental, tourism and public-at-large representatives, appointed by the Director of the Department.

"Visibility Impairment" means any humanly perceptible change in visibility (visual range, contrast or coloration) from that which would have existed under natural conditions.

"Visibility Protection Period" means the period between July 1 to September 15, during which restrictions on agricultural and forestry burning apply for purposes of visibility protection.

#### **5.4 Mandatory Federal Class I Areas**

As mentioned above, Oregon has 12 Class I areas. These areas are listed in Table I. These lands were designated as mandatory federal Class I Areas in 1977. At that time, Congress designated all wilderness areas over 5,000 acres and all national parks over 6,000 acres as mandatory federal Class I areas, subject to the visibility protection requirements in the Clean Air Act. Other wilderness areas, national monuments, scenic areas, etc., are designated as Class II areas. The acreages for the Class I areas listed below include expansions that have occurred since 1977, pursuant to the 1990 Clean Air Act Amendments.

**Table I  
Wilderness and National Park Lands  
Protected Under the Visibility Protection Plan**

<u>Class I Area</u>	<u>Acreage</u>	<u>Federal Land Manager</u>
Crater Lake	183,315	USDI-NPS <sup>1</sup>
Diamond Peak Wild.	52,337	USDA-FS <sup>2</sup>
Eagle Cap Wild.	360,275	USDA-FS
Gearhart Mtn. Wild	22,809	USDA-FS
Hells Canyon Wild.	131,033	USDA-FS
Mountain Lakes Wild.	23,071	USDA-FS
Mt. Hood Wild.	47,160	USDA-FS
Mt. Jefferson Wild.	107,008	USDA-FS
Mt. Washington Wild.	52,516	USDA-FS
Strawberry Mtn. Wild.	69,350	USDA-FS
Three Sisters Wild.	285,202	USDA-FS
Kalmiopsis Wild.	179,700	USDA-FS

Notes: <sup>1</sup> U.S. Department of Interior, National Park Service.

<sup>2</sup> U.S. Department of Agriculture, Forest Service

#### **5.4.1 Areas Redesignated to Class I**

Class II areas can be redesignated by the state to Class I under OAR 340-204-0060 if the Department, in consultation with the Federal Land Manager, determines that visibility within these areas is important to the visitor's experience. Upon completion of this determination, the redesignated Class I area will be included within the Plan. Redesignation to Class I does not subject the redesignated area to the same visibility protection requirements in the Clean Air Act as mandatory federal class I areas established by Congress in 1977. State redesignated Class I areas receive visibility protection under the Prevention of Significant Deterioration (PSD), New Source Review (NSR) rules, and the USDA Forest Service forest planning process. Revision of the Department's list of Class I areas in OAR 340-204-0050 will also be made to assure that the Rule incorporates all Class I areas.

#### **5.5 History of Visibility Impairment in Oregon Class I Areas**

Visibility monitoring in Oregon's Class I areas began in 1982, focusing primarily on visibility conditions in the Oregon Cascade Class I areas. This early monitoring showed that during the summer months in the northern and central Cascades, visibility was frequently impaired by uniform haze and, to a lesser extent, ground based layered haze, and that this haze was mostly smoke from dispersed Willamette Valley agricultural open field burning, forest prescribed burning, and wildfire activity.

In the mid-1980's the Department determined that in Eastern Oregon there was summer visibility impairment in the Eagle Cap Class I area caused by Union County agricultural open field burning. At the same time the Department also found Jefferson

County agricultural open field burning was contributing to visibility impairment in the central Oregon Cascade Class I areas.

The Department determined that specific short-term and long-term visibility control strategies were needed for in the Mt. Hood, Mt. Jefferson, Mt. Washington, Eagle Cap and Three Sisters Wilderness areas to protect against impacts from Willamette Valley, Jefferson County and Union County open field burning and prescribed burning during the visibility protection period, and that long-term control strategies were needed to ensure future visibility protection in all Class I areas in the state.

## **5.6 Visibility Monitoring Network**

Visibility monitoring is essential to the evaluation of visibility impairment and trends, as a means of assessing the effectiveness of visibility control strategies and for identifying the major contributing sources. To meet these objectives, the monitoring network must document visibility within Class I areas on a long-term basis. In addition, the monitoring strategy must strive to meet the needs of, and be a cooperative effort with, the Federal Land Manager.

The Oregon Department of Environmental Quality operates a real-time monitoring network to identify the degree of visibility impairment in Cascade Class I areas, and help identify the sources causing the impairment. This network is operated annually, at a minimum, from July through September, the period of heaviest Class I area visitation. To the extent practicable, the visibility monitoring network will be expanded statewide with the intent of documenting and evaluating visibility within all Oregon Class I areas. Expansion of this network will be subject to the Department being able to secure the necessary funding.

In addition to the Department's monitoring network, the USDI National Park Service and the USDA Forest Service operate a monitoring network of IMPROVE (Interagency Monitoring of Protected Visual Environments) sites around the state. These IMPROVE sites are designed for monitoring regional visibility under EPA's Phase II Regional Haze Rules, and are limited in their ability to identify "reasonably attributable" Phase I impairment from sources located near Class I areas. However, the Department does review IMPROVE data as part of its overall effort to assess visibility conditions and trends.

## **5.7. Procedures for Review, Coordination and Consultation**

The Department has made and will continue a commitment to a strong State and Federal Land Manager coordination program. This section of the Plan explains procedures for maintaining coordination between involved agencies for rulemaking, New Source Review, periodic program reviews and revision of the SIP. For purposes of these reviews, the Department will maintain a mailing list of interested parties that will be advised of the meetings described below.

### **5.7.1 Annual Visibility Advisory Committee Meetings**

The Visibility Advisory Committee will hold an annual meeting no later than May of each year to review monitoring data and discuss visibility plan effectiveness. The meeting

will be open to the public, the news media, and interested persons included on a Department mailing list.

Topics to be addressed at this meeting will include a review of the monitoring data, an assessment of visibility trends and sources contributing to visibility impairment, and discussion of reasonable progress toward achievement of the national visibility goal. A report summarizing this meeting will be prepared and distributed to the Federal Land Manager, EPA, and other interested parties. This report will serve as an important element in the periodic plan review process.

### **5.7.2 Periodic Plan Review and Assessment**

Every three years the Department will conduct a formal review of the Visibility Protection Plan. The meeting will provide an opportunity for affected State and Federal Land Managers, the Oregon Visibility Advisory Committee, the Oregon Seed Council, other affected parties and the public to provide the Department with feedback on the effectiveness of the Plan. Specifically, the periodic review process will address: (a) assessment of visibility trends and impairment; (b) review of annual emissions trends; (c) recommendations regarding the effectiveness of visibility control strategies; (d) assessment of whether Reasonable Progress is being made; and (e) additional measures which may be needed to assure reasonable progress.

All available monitoring and emission data applicable to Class I visibility impact assessment will be summarized and provided for use during the periodic plan review. A report summarizing the periodic plan review will be prepared and distributed to State and Federal Land Managers, EPA and other interested parties.

### **5.7.3 Other Meetings**

Meetings may be called by any interested party at any time to discuss the Plan with the Department.

## **5.8 Control Strategies**

The Oregon Visibility Protection Plan incorporates both short-term and long-term strategies to make reasonable progress toward remedying impairment caused by Willamette Valley, Jefferson and Union County agricultural field burning, and forest prescribed burning. The Plan includes provisions for the protection of all Class I areas from future impairment through the visibility impact assessment requirements of the New Source Review rule. The principal elements of the control strategy are described below.

### **5.8.1 Short-Term Strategy**

#### **5.8.1.1 Overview**

The short-term control strategies are directed at remedying visibility impairment during the Visibility Protection Period (July 1 through September 15, inclusive) caused by plume blight from agricultural field burning and forest prescribed burning. The Department will make efforts to ensure on an on-going basis that good coordination is

achieved between the smoke management programs described below, in order to avoid unwanted impacts on visibility.

### **5.8.1.2 Willamette Valley Open Field Burning**

Under state law (ORS 468A.590) the Oregon Department of Agriculture is required to conduct a smoke management program for open field burning in the Willamette Valley. The short-term strategies for reducing visibility impairment caused by Willamette Valley open field burning listed below have been incorporated into this smoke management program. These strategies are based on smoke management and emission reductions, and are designed to protect primarily those Class I areas to the east of the Willamette Valley, or the northern and central Cascade Class I areas, during the Visibility Protection Period. Strategy 2 below provides additional visibility protection to weekend visitation periods.

1. **Reduction in Acreage Allowed to be Burned.** The Oregon State Legislature revised state law (ORS 468A.610) to reduce the amount of Willamette Valley open field burning, starting in 1991, from 180,000 acres to 40,000 acres in 1998 and thereafter. An additional 25,000 acres can be burned as specified in OAR 603-077-0113 (b), making the actual acreage allowed by law to be 65,000 acres.
2. **Restrictions on Weekend Burning.** During the Visibility Protection Period, weekend field burning is not allowed upwind of Class I areas in the Cascade Range. Exemptions to this restriction are (1) if on a given weekend day there is existing meteorological impairment resulting in more than 50% cloud cover in these Class I areas, and (2) if the Willamette Valley Field Burning Emergency Clause is enacted. This emergency clause requires a joint finding by the Directors of Agriculture and Environmental Quality that adverse economic impacts on the grass seed industry may be likely because of unusual weather or burning conditions. The finding will be based on a review, by August 10th or periodically thereafter, of burning accomplished to date to determine if weekend burning restrictions should be modified or suspended. A report describing the findings of the Directors shall be prepared for review during the Annual Visibility Advisory Committee meetings (Section 5.7.1.) if the emergency clause is enacted.
3. **Encourage Early Season Burning (July).** This is an on-going effort to reduce impacts and emissions by burning early in the summer for certain early maturing grass types. Benefits of early season burning are (1) fields are in optimum condition for burning, and will burn hotter with less emissions than fields burned later in the summer, and (2) better ventilation conditions often occur in early summer as compared to later in the summer. The ability to conduct early season burning is dependent on the frequency of favorable conditions for burning.
4. **Smoke Management Improvement.** This is an on-going effort to improve forecasting capabilities using the latest technology and equipment. Since 1986, new meteorological tools have been incorporated into the smoke management program. Improvements will continue to be made as new tools become available.
5. **Improve Burning Methods.** This is an on-going effort to improve burning through use of rapid-ignition techniques and better field preparation (e.g.,

mechanical fluffing). Oregon Department of Agriculture open field burning rules (603-077-0110) require “every reasonable effort to expedite and promote efficient burning and prevent excessive emissions”. As a result, most field burning now involves rapid-ignition burning (where safe) and significant field preparation.

These short-term strategies have been incorporated into the Oregon Department of Agriculture Open Field Burning Rules, OAR 607-077 (Attachment A).

### **5.8.1.3 Jefferson County Open Field Burning**

Agricultural open field burning in Jefferson County has been found to impair visibility in the central Cascade Class I areas. The short-term strategy to mitigate this impairment is through a mandatory county smoke management program described and enforced through Jefferson County Ordinance (Attachment D). The ordinance requires that all burning be conducted so that smoke is not transported into a Class I area at any time. The enforcement provisions of the ordinance are sufficiently stringent to assure that smoke management instructions issued by the smoke management coordinator are followed. Since most of the burning occurs during the summer months, the benefits of this strategy coincide with the period of heaviest wilderness visitor use.

### **5.8.1.4 Union County Open Field Burning**

Agricultural open field burning in Union County has been found to impair visibility in the Eagle Cap Wilderness. The short-term strategy to mitigate the impairment of visibility caused by agricultural field burning is through a mandatory county smoke management program enforced through Union County Ordinance (Attachment E). The ordinance requires that Union County smoke from field burning is not transported into the Eagle Cap Wilderness at any time. Since most of the burning occurs during the summer months, the benefits of this program coincide with the period of heaviest wilderness visitor use.

### **5.8.1.5 Prescribed Burning**

The prescribed burning short-term strategy applies to the controlled application of fire to wildland fuels for silvicultural, wildlife habitat, fuels management or ecosystem purposes. This strategy is directed at reducing visibility impairment within the northern and central Cascade Class I areas during the Visibility Protection Period.

1. **Smoke Sensitive Areas.** The ODF Smoke Management Plan (OAR 629-043-0043) will consider the following Class I areas as “smoke sensitive areas” and protect accordingly during the Visibility Protection Period: Mt. Hood, Mt. Jefferson, Mt. Washington, Three Sisters and Diamond Peak wilderness areas, and Crater Lake National Park.
2. **Encourage Spring and Fall burning.** Efforts will be made under the ODF Smoke Management Program to conduct all prescribed burning in Western Oregon during the spring and fall months, when Class I area visitation is much lower. In addition, during these months ventilation conditions for burning generally are better, and higher fuel moisture can result in fewer emissions being generated. Western Oregon is defined here as Lane, Linn, Marion, Clackamas, Multnomah,

Hood River, Columbia, Clatsop, Tillamook, Yamhill, Polk, Benton, Lincoln and Washington counties.

3. **Naturally-ignited Prescribed Fire.** Natural fires that are ignited by lightning and then managed like a prescribed burn are one way Federal Land Managers can achieve certain resource management objectives. The Oregon Department of Environmental Quality and the Oregon Department of Forestry will participate in the development and be provided an opportunity to comment on draft fire management plans developed by the Federal Land Managers that include provisions for naturally-ignited prescribed fire and whether smoke impacts on visibility are being considered.

## **5.8.2 Long-Term Strategy**

### **5.8.2.1 Overview**

The long-term strategies are directed at making reasonable progress toward the national visibility goal over the next 10-15 year period, in accordance with Section 51.306(a) of EPA regulations. The long-term control strategies are primarily directed at mitigation of visibility impacts, emission reductions, and preventing plume impairment caused by open field and prescribed burning, and from new and modified large industrial sources. In the development of the long-term strategies, several factors were considered in accordance with Section 51.306(e) and (f) of EPA regulations:

- (a) Emission reductions due to on-going programs, as discussed in Section 5.8.2.5 of the Plan.
- (b) Additional emission limitations and schedules for compliance for stationary sources. These were not considered necessary for the long-term strategy at this time, since there is no monitoring data to support a finding that any industrial point source is contributing directly to visibility impairment.
- (c) Measures to mitigate impacts from construction activities. Visibility impacts from stationary sources are administered through the Air Contaminant Discharge Permitting and the PSD rule process, while soil dust entrained as a result of construction activities is controlled under the A-95 review process, State and Federal Forest Practices Acts and permitting processes.
- (d) Enforceability of emission limitations. This was not considered important to the long-term strategy because of the reasons outlined in (b) above.
- (e) Smoke Management Techniques for agricultural and forestry management. These are essential elements of the strategy, as discussed in the Plan.
- (f) Source Retirement and Replacement. On-going stationary source emission reductions may reduce impairment associated with urban plume impacts on Class I areas in the future.

The elements of the long-term strategy are listed below. As with the short-term control strategies, those related to Willamette Valley open field burning are designed to

protect visibility primarily in the northern and central Cascade Class I areas during the Visibility Protection Period.

### **5.8.2.2 New Source Review Visibility Protection**

In accordance with federal requirements in CFR 51.307, the Department's Major New Source Review (NSR) and Air Quality Analysis rules (OAR 340-224 and 225, respectively) contain requirements for visibility impact assessment and mitigation associated with emissions from new and modified major stationary sources. Specifically, OAR 340-225-0070 references the need for protection of "Air Quality Related Values" (AQRV), which are specific scenic and environmentally related resources that may be adversely affected by a change in air quality. One of these AQRVs is visibility. The primary responsibility of the Department under these rules is visibility protection. Protection of all AQRVs (including visibility) is the primary responsibility of the Federal Land Manager. OAR 340-225-0070 describes mechanisms for visibility impact assessment and review by the Department as well as impact modeling methods and requirements, the result of which is a demonstration of "no significant impairment of visibility in any Class I area".

The Department's NSR visibility requirements apply to "federal major sources". Under the Clean Air Act these are new or modified existing sources that emit 100 tons or more per year of a regulated pollutant for certain categories of sources, or 250 tons or more per year if not in these source categories. Under the Department's NSR rules, smaller sources than this can be called "major" and subject to NSR requirements. The distinction is that the visibility requirements in 340-225-0070 only apply to the larger federal major sources. However, potential visibility impacts from non-federal major sources are assessed on a case-by-case basis by the Department, with the objective to meet the same requirements as federal major sources. Compliance with this voluntary effort has been excellent.

In conducting these reviews, the Department ensures that new source emissions do not impair visibility within any Class I area throughout the entire year, rather than just during the visibility protection period. Any new major source or major modification found through modeling to cause significant visibility impairment will not be issued an air quality permit by the Department unless the impact is mitigated. This modeling is conducted for sources typically out to 200 kilometers from a Class I area. For larger sources this distance can be out to 300 kilometers.

Since the adoption of the Visibility Plan in 1986, major improvements have been made in modeling visibility impacts, and in understanding the processes that contribute to visibility impairment. Both direct plume impacts and regional haze cumulative impacts are now included in the analysis. This has resulted in greater protection being provided to Oregon's Class I areas from new source emissions than 15 years ago.

The improvements in modeling tools provide greater accuracy in predicting visibility impacts. Early visibility modeling involved assessing plume impacts using the VISCREEN and PLUVUE II dispersion models, which worked well in estimating visibility impacts within 50 kilometers of the source, but beyond this distance were less accurate. Due to the lack of other models, these models continued to be used. In the late 1990's, a new and more accurate dispersion model became available for estimating long distance

impacts. This model is known as the CALPUFF model, and it can be used in the 50-200 kilometer range.

In addition to modeling improvements, new visibility impact criteria are now being used which are very protective in terms of what constitutes "significant impairment" in a Class I area. The 2000 FLAG (Federal Land Managers' Air Quality Related Values Workgroup) Report defined "significant" for a single source as an increase in visibility impairment above natural background of 5% (expressed as visibility extinction). There are other significance levels for multiple sources. These FLAG significance levels are currently being used by the Department. These criteria represent levels that are based on a strong scientific foundation and are more comprehensive in protecting visibility for distant sources than the plume visibility criteria which were formerly used.

The ambient air increment provisions in the Department's Prevention of Significant Deterioration rules limit Class I pollutant concentration increases to specific increments above baseline air quality levels, thereby assuring that visibility impairment associated with increased particulate and nitrogen dioxide concentrations will not exceed that allowed by the increment.

### **5.8.2.3 Willamette Valley Field Open Burning**

The long-term strategy for Willamette Valley field burning consists of an ongoing Research and Development Program investigating alternatives to open field burning. Under state law (ORS 468A.550, 468A.585, and 468A.590) the Oregon Department of Agriculture is required to conduct an on-going research and development program (subject to available funding) to seek, develop and promote viable alternatives to open field burning. These alternatives include straw utilization, minimum tillage, less-than-annual burning, and alternate crops not requiring open burning. To date the program has been successful in finding viable alternatives, given the significant reduction in acres burned in the Willamette Valley as described under the short-term strategy. As a result, there has been a major increase in the use of alternatives, which is expected to continue into the future. The Department of Environmental Quality shall encourage the continuation of the use of alternatives through its coordination with the Oregon Department of Agriculture.

### **5.8.2.4 Prescribed Burning**

This long-term strategy consists of on-going research and development of non-burning alternatives to prescribed burning of forest debris. This strategy applies throughout the state of Oregon. The Department of Forestry encourages private forest landowners to burn only those units that must be burned to achieve the landowners' objectives. The Oregon Department of Forestry, through the Oregon Smoke Management Program (OAR 629-043-0043), and in cooperation with state and federal land managers and private land owners, is required to develop and apply Best Available Technology (BAT) related to prescribed burning. BAT elements include research to improve wood residue utilization and marketing, mechanical site preparation, techniques to reduce fuel loading such as chipping and yarding, and incentives for fuel removal such as tax credits. The Forest Practices Act also encourages utilization of residue, fuel reduction measures, low emission-producing burning methods and alternate treatment practices that are consistent with the purposes of the Act. Research programs to implement this strategy

will be encouraged and supported by the USDA Forest Service, Bureau of Land Management, National Park Service and others, to the extent possible within available budgets.

Provisions for the annual Visibility Advisory Committee meeting and 3-year Plan review will provide a forum to review progress toward achieving these long-term emission reduction goals.

#### **5.8.2.5 Emission Reductions Due To On-Going Control Programs**

The Oregon Revised Statutes (ORS) Chapter 468A authorize the Oregon Environmental Quality Commission to adopt programs necessary to meet and maintain state and federal ambient air quality standards. The mechanisms for implementing these programs are the Oregon Administrative Rules (OAR).

A summary of provisions of the OAR which ensure emission reductions benefiting Class I visibility are noted below. Emission growth limits within urban areas, the Department's Stationary Source Plant Site Emission Limits (OAR 340 Division 222), and other provisions of the State of Oregon Clean Air Act Implementation Plan (SIP) are intended to ensure that air pollutant concentrations within Oregon are managed so as to meet National Ambient Air Quality Standards. Further, the growth of air pollutant emissions is managed under the provisions of the SIP in a manner consistent with Clean Air Act requirements and the best interests of the people of Oregon. Each of these elements of the SIP ensures that visibility impairment associated with the transport of urban haze into the Class I areas does not exacerbate visibility improvement to be achieved under the provisions of the Plan.

In addition, the provisions of the Intergovernmental Review (A-95) Process, charge the Department with the responsibility of ensuring that environmental (e.g. visibility) impacts projected as a result of federally funded projects are reviewed and approved prior to implementation. USDA Forest Service Forest Management Plans and Bureau of Land Management Environmental Impact Statements are reviewed by the Department to insure that such plans are consistent with the requirements of the Clean Air Act and State of Oregon SIP.

#### **5.8.2.6 Maintenance of Control Equipment**

The Plan requires, through the Air Contaminant Discharge Permit provisions of the SIP (OAR 340 Division 216), the maintenance and proper operation of emission control equipment in use at industrial point sources throughout Oregon. These requirements will apply to all new sources for which Air Contaminant Discharge Permits are issued.

### **5.9 Protection of Integral Vistas**

The EPA regulations require protection of those integral vistas designated by the Federal Land Manager on or before December 31, 1985. Integral vistas are certain viewpoints within the mandatory Class I Federal area of a specific landmark or panorama located outside the boundary of the Class I area. The Department need not consider any integral vistas which have not been designated by the Federal Land Manager. The

Department may, under its own authority, identify integral vistas to be afforded protection under this Plan.

No integral vistas have been designated by the Federal Land Manager or by the Department. Therefore, integral vista protection afforded under the Plan is limited to that associated with the control strategies included herein.

### **5.10 Best Available Retrofit Technology**

Section 51.302 (c) of EPA regulations describes the general requirements for Best Available Retrofit Technology (BART). Under these regulations, if the Federal Land Manager certifies to the State that there exists visibility impairment in any mandatory Class I Federal Area, the State must identify and analyze BART for each existing stationary facility which may reasonably be anticipated to cause or contribute to impairment of visibility within Class I areas (51.302(c)(2)(iii)).

Based on visibility monitoring and other analysis, the Department has not identified, nor has the Federal Land Manager certified any visibility impairment conditions which can reasonably be attributed to stationary source emissions within Oregon's Class I areas. Since the conditions described in Section 51.302 of the EPA regulations do not apply, BART rules have not been included in the Plan.

### **5.11 Interstate Visibility Protection**

In recognition of the importance of interstate transport of pollutants which can impair visibility within Oregon's Class I areas, the Department will continue to work with neighboring States to coordinate visibility protection plans as required under Section 126 of the Clean Air Act. This coordination will attempt to ensure that economic and social effects of controls are administered fairly and as uniformly as possible. Affected Federal Land Managers and state agencies within the State of Washington, the State of California and other states will be consulted where necessary to address any interstate visibility issues that are identified.

To assure that the State of Washington Visibility Protection Plan provides a comparable level of visibility protection to that afforded under this Plan, the Department will work with the Washington Department of Ecology to improve the current Washington Interstate Protection Plan which is only directed toward summer weekend protection. Prescribed burning conducted under the ODF Smoke Management Program will be conducted in such a manner as to avoid contributing to visibility impairment in Washington Class I areas. The Department will work with the State of California Air Resource Board if necessary to address any impacts on visibility in Oregon Class I areas from prescribed burning activity in northern California.